IPART
New South Wales

Independent Pricing and Regulatory Tribunal

Reforming Port Botany's links with inland transport

Review of the Interface between the Land Transport Industries and the Stevedores at Port Botany

Other Industries — Final Report
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1 Introduction and executive summary

Port Botany is the largest container port in NSW and plays a critical role in the state's economy. It handles 95 per cent of the state's container trade, and generates $1.5 billion in business activity each year. To cope with the forecast growth in container trade over the next 20 years, the NSW Government has approved Sydney Ports Corporation's plans to expand the port. However, to ensure that this investment delivers the intended benefits to the economy, all aspects of the port's operations must be conducted as efficiently as possible.

Some stakeholders have expressed concerns about the landside operations at Port Botany. They have claimed that there are inefficiencies in the flow of containers into and out of the stevedores' premises at the port, which are resulting in congestion, particularly for road transporters.

To help it form an effective response to these concerns and ensure Port Botany is as efficient as it can be, the NSW Government asked the Independent Pricing and Regulatory Tribunal of NSW (IPART) to review the interface between the stevedores and the land transporters and recommend options for improving its efficiency. The Terms of Reference for the review require IPART to examine the stevedores' Vehicle Booking Systems (VBS), the rail access arrangements, and the provision of any other services to industry by or in connection with the stevedores' businesses.

In conducting the review, IPART was required to consider a wide range of matters including:

- the fees and penalties stevedores charge in relation to their services, and whether these are efficient and fair
- the costs of these services
- how relative road and rail charges and reliability affect the choice of transport mode for containers
- whether institutional changes can be made to improve the efficiency of the landside supply chain. (See Appendix A for the full Terms of Reference.)

IPART undertook extensive consultation and conducted its own analysis on the information provided by various stakeholders. It released an Issues Paper in March 2007, considered 23 public submissions, hosted a roundtable discussion with stakeholders, and held face-to-face meetings with many stakeholders.[1]

[1] See Appendix D for list of submissions. Two submissions to the Issues Paper were provided on a confidential basis.

IPART released its draft report in October 2007, and invited further submissions in response to this report. A further 25 submissions were received. IPART then considered these submissions, and undertook further consultation with a variety of stakeholders. IPART has now concluded the final stage of this review and this report sets out its final recommendations to the Minister for Ports and Waterways.

IPART has made 18 recommendations to improve the efficiency of Port Botany's containerised freight supply chain. Some of these recommendations are aimed at addressing inefficiencies in the short term. However, IPART's strong view is that if Port Botany is to cope efficiently with the forecast growth, more fundamental change is necessary.

The key recommendation is that the stevedores' establish VBSs with 'guaranteed' VBS slots that are allocated using a market based price mechanism and 'unguaranteed' slots that are allocated as at present. IPART strongly believes that if this proposal is implemented, it will create significant efficiency improvements at Port Botany, and will encourage a significant shift in the timing of road access to the stevedores' terminals. IPART also recommends that a Port Botany Rail Logistics Team be established. The Team's primary focus will be to secure more efficient and hence greater use of rail to help achieve the NSW Government's rail container traffic target.

1.1 What are the current problems?

The numbers of containers moved at Port Botany has grown rapidly over the last decade. On the whole, the containerised freight supply chain has dealt with this growth reasonably well. The stevedores have devoted sufficient resources to keep containers moving onto and off the wharves fairly quickly. The VBSs they introduced to allocate specific timeslots for individual trucks to collect or deliver containers have helped better manage road access to the port. The long truck queues that were almost an everyday occurrence before the introduction of the VBS are now much less frequent.

Nevertheless, road transporters still experience physical congestion at the stevedores' terminals and 'virtual congestion' in the VBS. Given that further significant growth in the container task is expected over the coming decades, significant changes need to be made now to reduce this congestion and improve the efficiency of the interface between the stevedores and the road transporters.

IPART has identified a range of problems associated with this interface that need to be addressed. In particular:

- VBS slots are not necessarily allocated to the road transporters that value them most. They are allocated on a first-come-first-served basis.
- Importers and road transporters that need access to the stevedores' terminals to collect a container at a particular time cannot be sure that this will occur.

- Waiting times for trucks can sometimes be unreasonably long. This is particularly likely to happen when the stevedores need to accommodate a large influx of containers from the shipside.
- There are no clear rules that apply when delays at the terminals mean the stevedores are unable to serve trucks within the timeslot booked through the VBS. Therefore, trucks still have to turn up at the booked time and wait until they can be served.
- The stevedores are unable to measure the extent of unmet demand from all road transporters who would like to use their facilities during peak periods. However, not all VBS slots are used at night or at weekends.
- There is an absence of publicly available information about the performance of the stevedores on the landside.
- The obligations that the stevedores and the road transporters owe to each other are unclear. This is important since these groups need to work closely together if the supply chain as a whole is to work well.
- The movement of trucks in and out of Port Botany contributes to traffic congestion on Sydney's roads generally. The congestion problems go well beyond the stevedores' facilities – they also affect the wider metropolitan road network, when trucks share the roads with commuters at peak times.
- The use of rail to move containers in and out of Port Botany is limited by poor coordination and the absence of some much needed investment. At present, the rail service is not sufficiently reliable to meet the needs of many importers and exporters.

1.2 Why do these problems arise?

As the number of containers moving through Port Botany increases, land for storing containers at the port is becoming increasingly scarce. This creates a strong incentive for the stevedores to run their landside operations efficiently, so that containers can be moved from their terminals quickly.

However, as noted above, in peak periods demand for road access can go unmet and thus generate congestion in one form or another. It is not possible to pinpoint the precise causes of this congestion, although it should be noted that congestion can still arise in an efficiently run, optimally sized port. It may be that the stevedores have ignored some landside elements of the supply chain in favour of the shipside, or underinvested in equipment and/or labour for their landside operations, or behaved in some other monopolistic way.[2] But there is no systematic evidence available to support any of these assertions. IPART has concluded that, while the port-landside interface at Port Botany is not a competitive market, the stevedores have limited

[2] Whilst the stevedores are technically a duopoly, once the containers are on the wharf, each stevedore becomes effectively a monopolist in the sense that the rail and road operator must deal with that stevedore if it is to take delivery of a particular container.

scope to exploit their landside monopoly power. This is because it is in their own best interests to move containers off the terminal as quickly and efficiently as possible, so that they can meet ship-driven volumes and maintain their own efficiency levels by managing stack densities.[3]

Economic theory suggests that pricing is the most efficient way to allocate goods or services that are in short supply, such as road access to the stevedores' terminals. This is because those participants who place the highest value on those goods or services are usually willing to pay the highest price. Therefore, price mechanisms tend to allocate them to the most productive use.

At present, VBS slots are not priced. Rather, they are allocated to users on a first-come-first-served basis on-line: the road transporters that register their interest in the first minute or two of bookings opening on-line obtain the slots. The charges the stevedores levy are for access to the VBS, not for the slots themselves. As noted above, allocation by price is likely to result in a better, more efficient outcome.

In addition, if slots were priced, the stevedores would need to guarantee to serve the purchasers within specified timeframes, and clearly set out all terms and conditions. This would address some of the communication and coordination issues identified above. Further, a pricing mechanism for VBS slots should encourage some of the demand for road access in peak periods to move to off-peak periods. It should also encourage some demand to shift to rail, by reducing rail's current cost disadvantage.

1.3 IPART's recommendations

IPART proposes the introduction of a two-tiered VBS with auction, a number of measures to improve information flows and communication between the stevedores and the road transporters, and measures to improve operational coordination of and investment in the rail system. It also proposes that in the first instance, the NSW Government encourage stakeholders to introduce these measures voluntarily, and only consider prescriptive regulation if this voluntary approach fails to achieve the desired outcomes.

1.3.1 Two-tiered vehicle booking system

IPART considers that the congestion at Port Botany is best addressed using market-driven price signals, which should be used to the maximum extent possible. In particular, because the port is a scarce resource, access to it should be priced in such a way that the user that values access the most will be allocated access.

[3] IPART's analysis set out in Chapter 3 establishes that the import containers arriving from the shipside and the number of containers in the stacks (stack density) drive the size and the complexity of the daily task. The analysis concludes that it is very hard for the stevedores to predict in advance what their daily landside task will be and that there is no clear relationship between the shipside task and landside congestion (measured by truck turnaround times and truck arrivals).

IPART's core recommendation (Recommendation 16) is that a two-tiered VBS for road access to the stevedores' facilities should be established. Sydney Ports Corporation (SPC) should facilitate its independent introduction by the stevedores. IPART proposes that the stevedores remain responsible for determining the number of VBS slots to be offered because, in its considered view, only the stevedores have the detailed knowledge required to ensure that the VBS operates effectively.

Under IPART's recommended approach there would be two types of slots: 'firm' slots and 'interruptible' slots:

- The firm slots would carry a guarantee relating to the time of entry and the time of exit from the terminal.
- The interruptible slots would have the same features as current VBS slots, including the booking system, prices and penalties.
- Each stevedore would determine the number of firm and interruptible slots to be provided for each 24 hour day.
- The prices for firm slots would be determined by separate descending bid auctions for each stevedore.

Each stevedore would receive a pre-determined payment from the auction proceeds to enable it to recover its costs and earn sufficient return on its investments. The payments would vary between peak and off-peak periods. This will ensure that the stevedores have sufficient incentive to commit resources for the firm slots and offer more slots in the peak periods. The remainder of the auction proceeds would be held in a statutory fund and used to improve the infrastructure and operation of the containerised freight supply chain.

IPART's recommended approach is most likely to be successful if it can be introduced on a voluntary basis. This is because the logistics of stevedoring are complex and it would be easy to make things worse. IPART would expect the stevedores to take an adaptive management approach and to increase over time the number of firm slots that they offer as their confidence increases in their ability to resource and meet the service requirements of firm slots.

However, IPART accepts that the NSW Government may need to intervene further if Port Botany's problems are not addressed through voluntary action. Any such intervention would unavoidably be more interventionist than a voluntary approach. Before undertaking such action, the NSW Government should prepare and publish a regulatory impact statement to evaluate whether the benefit of such action will exceed the costs and to publish the outcome of this evaluation.

IPART recognises that its recommended two-tier VBS with auction approach represents a significant departure from current access arrangements, and that it may require road transporters to make significantly higher payments in some periods than the current VBS fees. However, the higher payments will effectively make

visible the current costs of congestion by valuing the road transporters' benefit from guaranteed on-time access.

The recommended approach will also be complex to implement. Nevertheless, IPART considers that the proposal's benefits outweigh the costs. It will address congestion by facilitating the smooth, efficient flow of container traffic into and out of Port Botany, spread over each day and away from peak hours, by road and increasingly by rail. It will provide benefits to all participants in the supply chain, and to trade in NSW.

Given the considerations outlined above, IPART's recommendation for the two-tiered VBS proposal is as follows:

16 That the Minister request Sydney Ports Corporation to facilitate and each of the stevedores to independently implement a two-tiered system for booking access to each of the stevedores' facilities, as set out in Chapters 7 and 8. Essential features of this system would be:

- each firm slot would carry with it a guaranteed service level relating to time of entry to and time of exit from the terminal
- each firm slot would carry the right to a dual run
- the interruptible slots would have the same features as currently exist, including the booking system, prices, and penalties (subject to changes to be implemented in response to the other recommendations in this report)
- each stevedore would determine the number of firm and interruptible slots it issues in each hour of each day
- all slots except those for empty stack runs in and for Customs purposes would go through the vehicle booking system (for each stevedore), which will be computerised, and there would be clearly stated rules about when and how slots were made available. Data on empty stack runs in would be maintained for auditing purposes.
- each VBS and empty stack runs would be independently audited along the same lines as detailed in recommendation 6
- prices for firm slots would be set through descending bid auctions separately for each stevedore
- there would be penalties on both the stevedores and the road transporters for not meeting firm slot requirements, linked to the costs of delay
- there would be an unrestricted secondary market for the firm slots
- there would be no restriction on the number of firm slots any one party is entitled to acquire through the auction
- each stevedore would receive a pre-determined fee per firm slot that varies between peak and off-peak periods, to cover the costs incurred in offering firm slots plus an appropriate profit.

The issues to be considered for implementation of the proposed two-tiered system would include, but not be limited to:

- the precise service levels attached to the firm slots
- how a missed firm slot might be converted into an interruptible slot
- the precise number of containers that may be picked up (or delivered) per firm slot
- the precise penalties imposed on both the stevedores and the road transporters for not meeting firm slot requirements
- the timing requirements for providing container numbers for firm and interruptible slots, and the incentives for not changing them (or the penalties for changing them)
- who would participate in the auctions for firm slots
- who would conduct the auction
- the dismantling of existing priority schemes
- the mechanics of how the auction would run – in what order slots would be auctioned, how far ahead they would be auctioned, what would happen to unsold firm slots, and the starting price and bid increments
- the amount to be paid to the stevedores, and the allocation of proceeds in excess of those paid to the stevedores
- how the auction proceeds should be collected, held and distributed.

1.3.2 Why is a two-tiered VBS for road access the right answer?

IPART is confident that the proposed two-tiered VBS will reduce congestion at Port Botany and facilitate the efficient flow of container traffic into and out of the port because it adequately addresses the problems identified in section 1.1 above.

Under the proposal:

- The prices for firm slots will be set through the interaction of supply and demand in the market. This will result in both a fairer and more efficient allocation of road access to the port, because it means that the supply chain participant who values a firm slot most will be able to obtain it.
- Road transporters will be able to book either a firm slot or an interruptible slot, thus choosing between certainty and flexibility. This choice is likely to be driven by their customers' needs. Those transporters who do not wish to change will still have access to the present VBS. But if an importer needs to receive a container at a particular time, the transporter will be able to buy a guaranteed slot that enables it to meet that need. Road transporters will also have considerably more flexibility to respond to their clients' needs through a secondary market to trade firm slots.

- The stevedores will allocate most of the road access to their terminals through the VBS,[4] based on clearly specified rules, and their compliance with these rules will be subject to regular independent audit. Making the results of these audits publicly available will increase confidence in the fairness of the allocation process.
- There will be a stronger commercial relationship between the stevedores and downstream participants in the supply chain. As a consequence, there will be more sense of obligation on both sides, and stronger incentives for the stevedores to improve their quality of service and for road transporters to arrive at the time for which they have booked.
- The stevedores will receive a pre-determined fee per firm slot that varies between peak and off-peak periods and face penalties for non-delivery of firm slots. This will change their incentives to provide resources to their landside operations. It should improve their service to the landside transporters and may, over time, lead to a higher number of VBS slots being offered in the hours of peak demand.
- Each firm slot will be long enough to enable a dual run. This will encourage more efficient use of road access and, in time, will lessen the overall number of truck movements at Port Botany below what they otherwise would have been.
- The price of guaranteed VBS slots will make the comparative costs of rail and road freight more equal, which will encourage a greater use of rail transport.

Submissions in response to the Draft Report highlighted stakeholder concerns about the recommended two-tiered VBS approach, particularly in relation to:

- whether this approach will result in an increase in the number of slots being offered
- what would constitute non-performance for firm slots and what should happen in the case of non-performance by the stevedores
- how the auction proceeds should be distributed
- who should participate in the auction and the secondary market, and
- who will ultimately bear the cost of the auction prices.

IPART has considered these issues in detail in Chapter 8.

IPART recognises that its proposed two-tiered VBS will involve some additional cost and complexity. However, it considers that the advantages of this system are sufficiently large to outweigh this. Moreover, IPART considers that it will not be possible to achieve a timing shift (that results in road transporters using the port facilities more evenly across 24 hours a day and seven days a week) or a modal shift (that results in greater use of rail to move containers to and from the port) without using a price system for allocating access. While such timing and modal shifts might occur over time as a result of the goodwill of supply chain participants, it is far more likely that they will happen if prices are allowed to operate.

4 As noted above, the only exceptions will be empty container stack runs and Customs-related container movements.

Some stakeholders proposed alternative approaches to restructuring the VBS to improve road access arrangements. Among them was the NSW Maritime's proposal for establishing a governmental body called the Independent Gateway Authority (IGA) that would take full control of the VBS. IPART has considered this proposal in detail, and remains convinced that it is in the best interests of the supply chain that the stevedores retain the function of determining the number of slots offered, and that the two-tiered system with firm and interruptible slots is the most efficient way to allocate VBS slots and improve road access at Port Botany.

IPART's recommended approach will also achieve many of the objectives of the proposed Freight Infrastructure Charge (FIC)[5], without the problems associated with such a charge. For example, the proposed price mechanism would allow market forces to determine the price of firm slots, and the level of market demand to determine the premium price level. There would be no need for difficult estimates of the efficient level to set the FIC.

1.3.3 Measures to improve the current arrangements between the stevedores and the road transporters

In the course of its review, IPART observed significant communication difficulties between the road transport industry and the stevedores. Various actions can overcome these difficulties. The most important are actions that keep road transporters informed about the state of the stevedoring terminals and give advance warning when potential congestion problems loom. That advance warning would also state how the congestion is to be dealt with should it occur and how it is being dealt with while it occurs.

Some of IPART's recommendations are intended to encourage a stronger and more productive working relationship between the stevedores and road transporters by requiring them to communicate with each other more effectively. Others are designed to directly enhance the efficiency of the landside road interface. Most must be taken by the stevedores and road transporters; some require action by another Government body or by the NSW Government itself.

IPART makes the following 13 recommendations for improving the current arrangements between the stevedores and the road transporters:

1 That each stevedore provides real-time information to the road transporters that would help them understand the shipside and landside tasks and the state of the terminal and, during delays, to convey the length of the truck queue at its terminal, and an estimate of the time that trucks with booked VBS slots will need to wait after their booked slot to enter the terminal.

2 That road transporters invest in the communication devices they need to receive and act upon the stevedores' real time communications.

5 Proposed by the Freight Infrastructure Advisory Board. Further comments are provided in Chapters 6 and 7.

3 That stakeholders adopt a non-discretionary set of communication rules that establish how the stevedores will adjust the number of VBS slots when delays occur in their landside service. Sydney Ports Corporation should take the lead in this matter by acting as the forum convenor.

4 To foster goodwill, that the stevedores provide basic amenities such as toilets and cold drinking water to truck drivers who are required to queue to gain access to the stevedores' terminals. IPART supports efforts by Sydney Ports Corporation to progress a truck marshalling location at Port Botany.

5 That each of the stevedore ensures that its terms of access for road transporters specifies, in clearly expressed terms, how it operates its VBS, the complete terms and conditions of access to this system, and what a holder of a booking to this system is entitled to.

   The operating features of the VBS to be specified should include:

   – a published register of road transporters eligible to enter each terminal and an objective basis for allocating slots per hour between these transporters that limits as far as possible any discretion in that allocation process
   – publishing the total number of slots on offer beforehand or when each on-line VBS is opened (and reopened during the day)
   – an unambiguous policy on the procedure for empty stack runs, including their number and timing
   – collecting and submitting all VBS slot and empty stack run statistics and related information to an independent auditor in order to verify that slots have been allocated in compliance with the established basis of allocation, and
   – making the audit findings accessible to road transporters as soon as practicable after the audit is complete.

6 That Sydney Ports Corporation engages an independent auditor to conduct regular audits of each stevedore's compliance with their terms of access for road transporters.

7 That if the current 'super B-double' trial at Port Botany is successful, the Roads and Traffic Authority approve permanent access for these trucks as soon as practicable.

8 That Sydney Ports Corporation investigates, in consultation with the stevedores, the creation of compatible Vehicle Booking Systems that encourage two-way loading, covering the wider port precinct. Sydney Ports Corporation should also take into account the views of the road transport operators.

9 That the stevedores provide less lenient 'grace periods' to the road transporters for late arrival. Sydney Ports Corporation can help to facilitate negotiations between the stevedores and the road transporters for more clearly defined rules on when penalties for late arrival should not apply.

10 That the NSW Government approach the Australian Government to consider the possibility of the Australian Customs Service making the following changes:
   - Releasing containers on presentation of invoice for duty, and
   - Extending Container Examination Facility operating hours.

11 That the stevedores grant two extra days of free storage rather than the present practice of granting one extra day for containers that have less than 24 hours of free storage available when they are cleared by the Australian Customs Service.

12 That the road transporters invest in the technology needed to fully automate the gate processing for trucks.

13 That the stevedores use whatever container numbers that have been provided 24 hours in advance to do more housekeeping to reduce truck turnaround times.

1.3.4 Measures to improve operational coordination and investment in the rail system

The NSW Government has already recognised that road congestion at Port Botany could be eased by increasing the use of rail to move containers. It has committed to doubling the proportion of containers moved by rail to 40 per cent. IPART agrees that there would be benefit in a far greater proportion of containers being moved by rail, and there are things that can be done to facilitate this.

Rail transporters face challenges with poor coordination of train paths, and difficulties in coordinating spending on infrastructure, leading to slow delivery. While there seems to be a willingness to invest in upgrades to the rail infrastructure, there is a need for better coordination of investment decisions and day-to-day rail operations.

IPART recommends several initiatives that the NSW Government should take to overcome impediments to the increased use of rail, including facilitating rail investment (Recommendation 14). IPART also recommends that a group along the lines of the Hunter Valley Coal Chain Logistics Team be formed and charged with finding ways to make rail operations more flexible, so that trains arrive at and leave the port facilities fully loaded (Recommendation 15). Systems integration will be a key issue in this task.

IPART's two recommendations in relation to improving the use of rail at Port Botany are:

14 That the NSW Government continues to undertake the following non-price initiatives to overcome impediments to increased use of rail to transport containers to and from Port Botany:
   - assist ARTC to secure AusLink funding for necessary improvements to Botany Yard
   - require DP World to lengthen its sidings
   - press for funding of further dedicated freight access across the Sydney metropolitan rail network (beyond the current Southern Sydney Freight Line).

15 That a Port Botany Rail Logistics Team (PBRLT), modelled on the successful Hunter Valley Coal Chain Logistics Team (HVCCLT), should be adopted to improve rail system performance at Port Botany relative to current arrangements. Given the distinctive differences between the Port Botany container chain and the Hunter Valley coal chain, a successful PBRLT would need to embody the following design characteristics:
   - the objective should be to minimise total supply chain costs while meeting shipper demands for overall throughput and quality of service
   - members' adherence to PBRLT decisions on investment should be voluntary, and the PBRLT should have no power to compel members to do anything
   - members should include stevedores DP World and Patrick, track proprietor ARTC, RailCorp, Sydney Ports Corporation, and any of the train operators that wish to join
   - Sydney Ports Corporation should act as a facilitator, declaring any interests in matters in which it has a commercial stake
   - membership should not be available to road transport operators, freight forwarders, importers or exporters, but their views could be taken into account through the equivalent of the HVCCLT Industry Reference Group
   - industry peak bodies should not be represented, either on the Steering Committee or the Industry Reference Group
   - Australian Quarantine Inspection Service, and Australian Customs Service should not be represented, but could be part of the Industry Reference Group
   - as many members compete with each other, ACCC authorisation should be sought as soon as the constitution is established
   - the PBRLT should be staffed by secondees of member organisations, and the management of the team should be independent of all members
   - system performance KPIs should be established, monitored regularly, and high level summaries reported publicly.

1.3.5 Regulation should be considered only if the voluntary approach fails

IPART considers that if the supply chain participants are convinced that the initiatives outlined above will result in an efficiently operating supply chain – and that this is in all their best interests – they will implement them voluntarily. They may need assistance in negotiating and coordinating operations and investment decisions, and there is a role for NSW Government, through SPC, in doing this.

However, IPART considers that the Minister should consider introducing a light-handed form of regulation that requires the stevedores to collect and provide data about their road, rail and shipside performance (Recommendation 17). Initially, this data could be used to monitor the performance of and investment in landside activities at Port Botany. Eventually, it could be used to establish a regime that imposed penalties on the stevedores if they failed to meet specified key performance indicators.

IPART also recognises that if proposed changes are not made voluntarily and current market failure persists, there may need to be government intervention in the future. If this is the case, it recommends (Recommendation 18) that more prescriptive regulation be considered.

IPART's two recommendations in relation to the possible use of regulations are:

17 That the Minister legislates to enable Sydney Ports Corporation to collect information for the purposes of monitoring performance and investment in landside activities at the port. The data should be disaggregated by stevedore and published regularly.

18 That further economic regulation of the Port Botany containerised freight supply chain only be considered if

- voluntary cooperation has been insufficient to achieve the expected improvement in performance, and
- the benefits from more intrusive regulatory intervention are greater than the costs, a conclusion that should be supported by a rigorous assessment of the costs and benefits, with public input to the process and public scrutiny of the reasons for the conclusion, and
- if this more stringent regulation is imposed, it is consistent with the key principles of good regulation and is incentive-based, taking into account the commercial interests of the regulated entities.

1.4 Structure of report

The following chapters present and explain IPART's analysis, findings and recommendations in detail:

- Chapter 2 provides context for the review. It describes the key features of the environment within which the review was undertaken, and provides an explanation of IPART's views on key concepts referred to in the Terms of Reference.
- Chapter 3 examines the current landside arrangements for moving containers from the stevedores' terminals at Port Botany – including the institutional, structural and pricing frameworks in which the stevedores and land transporters work. It also identifies and discusses four aspects of these arrangements that lead to inefficiencies in the port.
- Chapter 4 focuses on what should be done to modify these landside arrangements and causes of inefficiency to increase efficiency – for example, to reduce congestion in the vehicle booking systems, the stevedores' terminals and the surrounding suburbs, and to alter the way the landside road task is performed to make it more efficient.
- Chapter 5 addresses what can be done to increase rail's share of container traffic, including considering the impact of pricing on the choice between road and rail.
- Chapter 6 discusses how better coordination of the supply chain for both road and rail transport might be achieved.
- Chapters 7 and 8 look at the use of price to encourage timing and modal shifts and set out in detail IPART's recommended approach which involves a two-tiered system for booking slots and an auction to sell firm slots.
- Chapter 9 looks at implementation options available to the Government should participants not accept the recommendations voluntarily.

2 Context and background

Port Botany is the largest container port in NSW, and handles 95 per cent of the state's containerised freight trade. The volume of containers moving through the port is growing rapidly, and this growth is forecast to continue for the next 20 years. In response to the forecast growth, the NSW Government has approved plans by Sydney Ports Corporation to expand Port Botany terminal facilities to provide a new container terminal with a further five berthing facilities.

While the new facilities are important, it is equally important that the capacity of the existing terminal facilities be used more efficiently if the port is to cope with the expected growth. In general, capacity at port facilities is determined by:

- The quay length and the equipment employed by the stevedores to load and unload containers from ships, and how efficiently these resources are used.
- The land area available to temporarily store containers, and how efficiently this land is used.
- The landside clearance area and the interface between the stevedores and the road and rail transporters that are collecting import containers and dropping off export containers, and how efficiently this area is used.

It is this last determinant of capacity – particularly the interface between the stevedores and road and rail transporters – that is the focus of this review. There is evidence that Port Botany is hitting landside capacity constraints in peak periods, and that this is causing inefficiencies and higher costs in the downstream containerised freight supply chain.

To help explain the context of IPART's review, the sections below set out the key features of the Port Botany environment within which the landside participants in the supply chain operate. These features include:

- Rapidly increasing container throughput.
- Multiple supply chain participants, most of which are privately owned firms motivated by profit.
- Contractual relationships between the stevedores and shipping lines.
- VBSs for allocating specific timeslots to road transporters for accessing the stevedores' terminals.

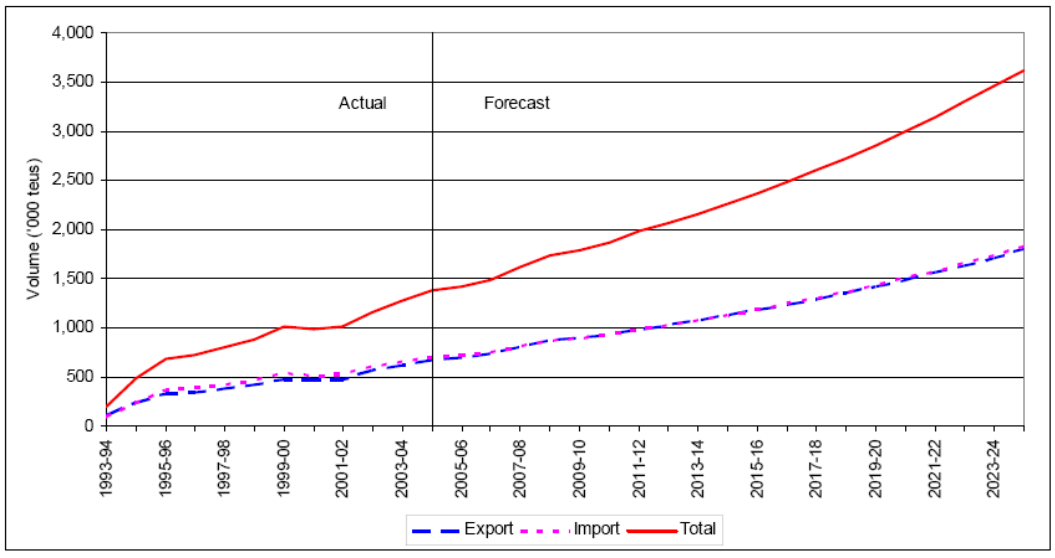
- Other initiatives being undertaken to relieve inefficiencies, particularly congestion, at Port Botany.

The final section in this chapter explains IPART's understanding of the key concepts referred to in the Terms of Reference for this review – including transparency and fairness, congestion and efficiency.

2.1 Rapidly increasing container throughput

One of the main challenges facing the containerised freight supply chain at Port Botany is rapidly increasing container throughput. The Bureau of Infrastructure Transport and Regional Economics (BITRE) have forecast annual average growth of 5 per cent in this throughput over the next 20 years.[6] This level of growth will more than double the port's total annual throughput – taking it from 1.38 million twenty-foot equivalent units[7] (TEUs) in 2004/05 to 3.63 million TEUs in 2024/25 (Figure 2.1).

Figure 2.1 Forecast of container throughput at Sydney ports to 2024/25



Source: BTRE, *Container and ship movements through Australian Ports 2004/05 to 2024/25*, Working Paper 65, Figure 4.5, p 41.

However, it is possible that actual growth will be higher than the BITRE's forecast. IPART notes that Port Botany's actual throughput for 2005/06 (1.45 million TEUs) was very close to the BITRE forecast for that year (1.42 million TEUs); however, the actual throughput for 2006/07 exceeded the forecast by 7 per cent, taking Port

6 BTRE, *Container and ship movements through Australian Ports 2004/05 to 2024/25*, Working Paper 65. http://www.btre.gov.au/publications/41/Files/wp65.pdf

7 The international standard measure of container vessel capacity and port throughput capacity is twenty-foot container equivalent units (TEUs).

Botany's throughput to record levels.[8] Given recent rapid growth and the fact that containerised trade has increased annually by 6.2 per cent in the five years to 2004/05, it's possible that the BTRE forecast will prove to be conservative.

But whatever the precise growth rate is, volumes at Port Botany are growing significantly. Using the BITRE's growth assumptions,[9] Port Botany's containerised freight task will at least double in the next 20 years. Port activities will need to match this growth by increasing the capability to process containers in two ways:

1. by increasing stevedoring facilities, and
2. by improving the efficiency of those facilities.

2.2 Multiple supply chain participants

There are thousands of participants in the containerised freight supply chain that are affected by or influence the interface between the stevedores and land transporters at Port Botany. Most are privately owned businesses with shareholder expectations that profits will be maximised.

The following sections outline the key types of participant – including shipping lines; stevedores; rail infrastructure providers; rail operators; intermodal terminals; road transporters; importers, exporters and freight forwarders and customs brokers; and regulatory authorities.

2.2.1 Shipping lines

Around 20 shipping lines and consortia service Port Botany regularly. Each has contractual arrangements with one of the two stevedores, and a few have contractual arrangements with both. All are part of large companies that service many trade routes around the world. The routes to Australia generally fit into a worldwide network of operations; and no ships visit only Port Botany when they travel to Australia. Therefore, the shipping lines that derive income from their activities at Port Botany are a part of much more extensive operations throughout Australia and the world.

8 For 2005/06 containerised trade figures, see Sydney Ports Corporation, *Logistics Review 2005/06*, p 4. Sydney Ports Corporation Media release on 19 July 2007 reported that container trade through Sydney's ports has hit an all-time high with preliminary trade figures for 2006/07 showing a 12.0 per cent increase over the previous year to over 1.619 million TEUs: http://www.sydneyports.com.au/__data/assets/pdf_file/0006/3858/190707_End_of_year_trade_figures.pdf

9 Chapter 3 of BTRE's *Container and ship movements through Australian Ports 2004/05 to 2024/25* outlines the assumptions and modelling data used to develop the forecasts of container and ship movements. Assumptions on macroeconomic variables included population and economic growth rates for Australia, USA and Japan, exchange rates, the proportion of 40-ft containers and vessel size.

2.2.2 Stevedores

Two stevedores currently service Port Botany's containerised freight trade: DP World and Patrick. The NSW Government has indicated that a third stevedore may operate at Port Botany after a new container terminal is completed (scheduled for 2011 - section 2.5 provides further detail).

DP World and Patrick Terminals compete for trade from the shipping lines. Neither has significantly more market share (measured by TEUs) than the other, although their relative shares do vary from time to time.

Both stevedores derive most of their revenue from their contracts with the shipping lines and consortia. The services covered by these contracts include landside activities and are discussed in more detail in section 2.3.

Across all Australian ports in 2006/07:

- The vast majority of stevedores' revenue – 87 per cent (up 2.5 per cent from 2005/06) – was derived from stevedoring functions.
- The other revenue (13 per cent) was derived from a range of other sources, including break bulk; berth hire; container storage and repositioning; penalties and services provided to the Australian Customs Service as part of the customs examination facility program; and Vehicle Booking System (VBS) service fees.
- Container storage revenue was $31 million, or 3.6 per cent of stevedores' total revenue and 27.5 per cent of 'other' revenue. This revenue has fallen by $7 million since in 2005/06. As a percentage of 'other' revenue, this represents a 3.4 per cent reduction. IPART notes that this data does not support the view expressed by some stakeholders that stevedores seek to exploit storage for revenue gain.
- VBS fees comprised 9 per cent of other revenue (1.2 per cent of total revenue) and, as the Australian Competition and Consumer Commission (ACCC) has concluded, "is therefore not a significant component of total revenues in the industry." While VBS revenue has increased by 3.4 per cent compared to 2005/06, the increase is less than the annual TEU increase. IPART therefore considers that the increase offers no evidence that stevedores are exploiting VBS fees for revenue gain.[10]

DP World (formerly P&O Ports) is part of a Dubai Government-owned business that is the fourth largest port operator in the world. This business purchased the P&O group in early 2006. At the time of purchase, the P&O group included P&O Trans, a business that currently provides a range of non-stevedoring services in the PortBotany container supply chain (including metropolitan transportation of full and empty containers by road and rail; container bonding and fumigation; container survey, repair and storage; container pack/unpack; and freight station operations). In early 2007, Kaplan Funds Management purchased 50 per cent of P&O Trans from DP World.

10 ACCC, *Container stevedoring - Monitoring report no. 9*, October 2006, pp 16, 20 and 21.

Patrick Terminals was recently purchased by Asciano,[11] an Australian Stock Exchange-listed company that also owns all of Pacific National (an Australian freight rail operator) plus Patrick PortLink and Patrick Port Services. Patrick PortLink operates rail services to Port Botany and the rail intermodal facilities at Yennora and Camellia. Patrick Port Services provides a range of non-stevedoring services in the container supply chain (including transportation between container parks and terminal operators and importer/exporter warehouses by road; container storage and handling; container pack/unpack services; container repairs; warehousing and bonding; and quarantine inspection and fumigation services).

Both stevedores must deal with these affiliated businesses on arm's length terms, in order to meet the requirements of the *Trade Practices Act 1974*. The Terms of Reference for this review do not require IPART to assess whether there have been any breaches of the Trade Practices Act, including whether windfall profits have been generated, or whether market power has been used to benefit the stevedores' affiliates – such an assessment is clearly a matter for the ACCC. However, there are issues of transparency and fairness in relation to transactions with affiliates, which IPART has addressed in its analysis and recommendations later in this report.

2.2.3 Rail infrastructure providers

There are effectively two track providers, both of which are government-owned corporations. RailCorp, owned by the NSW Government, currently owns and operates the Metropolitan Freight Line, including Botany Yard. Australian Rail Track Corporation (ARTC), owned by the Commonwealth Government, has agreed to lease these assets and take over operations once the Southern Sydney Freight Line (SSFL) is completed (expected to be in 2009). RailCorp also operates the Metropolitan Passenger Network, which is used for some freight rail transportation.

Although RailCorp is still the owner and operator of the freight-specific rail assets, ARTC has already started planning infrastructure upgrades and considering operational issues, in preparation for when it assumes the lease of the assets. RailCorp is cooperating in this transitional process.

2.2.4 Rail operators

Four rail operators service both stevedores' terminals at Port Botany:

- Patrick PortLink, which is owned by Asciano, as described above
- Southern and Silverton, which is also privately owned, with rail operations across Australia

11 In June 2007.

- Independent Rail of Australia (IR),[12] which is owned by the group that also owns Macarthur Intermodal Shipping Terminal (MIST) and the road transporter, Bowport Allroads Transport
- Australian Railroad Group, which is owned by Queensland Government-owned Queensland Rail.

Pacific National, which is owned by Asciano and thus an associate of Patrick, moves freight interstate and to inland terminals, including the Cooks River, but does not travel to Port Botany.

2.2.5 Intermodal terminals

Intermodal terminals facilitate the transfer of containers between transport modes, allowing the most appropriate transport mode to be selected for different segments of the transport task.

There are currently six metropolitan intermodal terminals, and a further 17 regional intermodal terminals in NSW. A range of privately owned intermodal companies, some of which are associated with the two stevedores, operate all intermodal terminals as set out in Appendix E.

The NSW Government supports the establishment of several new intermodal terminals in the Sydney metropolitan area, including one at Enfield that received planning approval in September 2007.[13] It is expected that these terminals would also be privately operated.

2.2.6 Road transporters

Around 250 road transporters subscribe to the two stevedores' VBS at Port Botany, and therefore use the port facilities relatively frequently. However, data obtained from the stevedores suggests that a further 100 road transporters collect or drop off containers irregularly.

None of these transporters has a position of significant market share, either with the stevedores or with importers and exporters. Roughly, the largest 25 carry half of the containers moved by road, and the smallest 100 carry 4 per cent. As outlined above, two of the larger road transporters – P&O Trans and Patrick Port Services – are affiliated with the two stevedores.

Given the large number of road transporters, it is desirable that peak bodies exist to advocate on their behalf and provide a representative view to other players in the container supply chain in order to achieve a collective outcome for the industry.

12 Formerly Lachlan Valley Rail Freight.

13 See NSW Department of Planning Notice of Determination MP 05_0147 Intermodal Logistics Centre – Enfield available at http://www.planning.nsw.gov.au/asp/pdf/05_0147_enfield_intermodal_project_approval.pdf

Two peak bodies representing the NSW road transport industry made submissions to this review – the Australian Trucking Association of NSW (ATANSW) and the Container Logistics Action Group (CLAG). ATANSW states that it represents road operators, although IPART does not know how many of the road transporters attending Port Botany belong to and are represented by ATANSW. CLAG represents 26 container carriers, freight forwarders, and customs brokers. Both these peak bodies claim that the current terminal access arrangements and charges at Port Botany are administered in a non-transparent and unfair manner by the stevedores, and submitted a wide array of detailed operational issues that they consider need to be resolved with the stevedores.[14]

IPART has received documentation from several individual road transporters outlining their frustrating experiences at the Port Botany container terminals. These case studies illustrate the issues raised in the peak bodies' submissions, and have assisted IPART by highlighting instances where operational changes could usefully be made in stevedore and road transporter practices. However, IPART notes that while road transporters claim insufficient access is provided in peak periods, they have not been able to quantify the level of unmet demand.[15]

During the course of this review, road access at the Patrick terminal has improved (see Figure 3.6). The stevedore attributes this improvement to:

- better handling of empty export containers (moving more in the midnight to 6am shift rather than during the daytime)
- increasing the share of containers moved out by rail
- working with the road transporters to encourage them to make more use of the port facilities in the off-peak period
- re-jigging the yard layout and doing better housekeeping
- restructuring its yard management that now includes more yard managers
- employing and training more labour, and
- acquiring and using six more straddles.

More detail is provided on the stevedores' recent landside performances in section 3.2.2.

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14 To the extent it considers necessary in addressing its Terms of Reference, IPART has investigated the individual complaints raised in submissions. IPART notes that its role is not to arbitrate between the various parties in the containerised freight supply chain, but rather, is to provide recommendations that will increase efficiencies in the supply chain and thereby assist in reducing these complaints in future. The recommendations in this report are aimed at making structural changes to the processes for moving containers to and from the wharves and to provide incentives to all parties in the supply chain to work efficiently to move containers, rather than tinkering with the processes to address each individual claim.

15 See: Alltrans Logistics Pty Ltd & Alltrans Container Parks Pty Ltd submission, 26 November 2007, p 3; ATANSW/CLAG submission, 1 January 2008, p 28. These submissions state that the stevedores' insufficient investment in capital and labour has limited their ability to properly service road transporters during peak periods.

2.2.7 Importers, exporters and freight forwarders and customs brokers

Hundreds of importers and exporters in NSW and other states ship containers through Port Botany, using direct contracts either with the shipping lines or with freight forwarders and customs brokers. These latter participants market container space and act as agents for exporters and importers, reserving space on shipping vessels, organising container pick ups and deliveries, and arranging for the return of empty containers to terminals in the timeframe required by the shipping lines.

2.2.8 Regulatory authorities

Four key regulatory authorities influence the movement of containers at Port Botany.

Australian Customs Service (ACS) manages the security and integrity of Australia's borders, facilitate the movement of legitimate travellers and goods across the border and collect border-related duties and taxes. Australian Quarantine Inspection Service (AQIS) provides quarantine inspection for internationalised cargo arriving in Australia and certification for some agricultural exports. Both these regulatory authorities are Commonwealth Government agencies. All supply chain participants must communicate with them from time to time regarding import and export container contents, and all must comply with their requirements for the physical movement of containers.

NSW Maritime is responsible for the monitoring, coordination and development of maritime legislation in NSW. It provides policy advice on port matters and provides support for the NSW Ports Growth Plan and forums such as the Minister's Port Botany Logistics Taskforce. NSW Maritime also administers and audits the Sydney Port Corporation's Port Safety Operating Licence at Port Botany.[16]

Sydney Ports Corporation (SPC), a NSW Government-owned corporation, owns most of the land at Port Botany and leases it to the stevedores and other entities. Its role is discussed in detail later in this report.

2.3 Contractual relationships between the stevedores and shipping lines

There are many variations in the individual contractual arrangements between the two stevedores and the 20 or so shipping lines that regularly visit Port Botany. However, IPART understands that some key features relevant to this review are standard ones.

The two stevedores that operate at Port Botany also operate at most other ports in Australia. Each stevedore typically enters into a single contract with a shipping line

16 NSW Maritime website, sourced 12 February 2008, available at http://www.waterways.nsw.gov.au/sspc-home.html and http://www.waterways.nsw.gov.au/pmp-home.html

or consortium, covering any or all of the five mainland ports plus one in Tasmania. The contract period varies from one to five years.

The services to be provided by the stevedore under the contract include the shipside activities of discharging, loading and re-stowing containers, and providing an access facility for electronic messaging in UN/EDIFACT[17] format for both import and export containers.

These services also include landside activities, namely the receival and delivery of containers to road transporters (using a VBS) and rail operators (using rail windows).

Terms in the contracts relevant to issues considered in this review include:

- A requirement that the stevedores be open for business on the shipside 24 hours a day, seven days a week, with the exception that the stevedore may close on some defined days. These days are voluntary days (Picnic Day, Good Friday, Anzac Day and NSW Labour Day) and closed port days (from the end of the day shift on Christmas Eve 24 December to commencement of day shift on Boxing Day 26 December and evening and midnight shifts on New Year's Eve 31 December).[18]
- Specification that the stevedores provide a free storage period of five days for export containers and three days for import containers, including the first day they are available for collection.

The shipping line is charged for a range of services provided by the stevedore on the shipside, including discharge, loading, restowing, transhipment, lashing and unlashing etc. The shipping line is also charged for a number of landside services provided by the stevedores, including:

- *delivery and receival* of containers (linked with discharge and loading on the shipside)
- *yard services*, which is for additional yard handling made at the agent's request, or required by a regulatory authority such as AQIS or ACS, or where a container is received but not shipped on the scheduled ship (either because it is returned to the exporter or put onto a subsequent vessel)
- *storage* for containers that remain on the stevedore's premises in excess of the free storage period, with the exception of full import containers (where the road or rail transporter is charged)

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17 United Nations/Electronic Data Interchange For Administration, Commerce, and Transport, which provides a set of syntax rules to structure data, an interactive exchange protocol, and standard messages allowing multi-country and multi-industry exchange.

18 These days exactly mirror the stevedores' arrangements with their employees. For example, see Patrick Certified Agreement (Terminals) 2004 and P&O Ports Port Botany Terminal Enterprise Agreement 2005, which are respectively available at http://www.airc.gov.au/tracee/agreements/pdf/AG837565.pdf and http://www.airc.gov.au/tracee/agreements/pdf/AG847215.pdf

- *other ancillary charges*, which generally relate to providing facilities for compliance with statutory requirements, ranging from laying salt to treat potential snail infestation to providing facilities for quarantine inspections.

The contracts require the stevedores to provide berthing facilities in accordance with a specified sailing schedule (which can be amended with certain notification requirements.) The contracts also require immediate provision of sufficient cranes, labour and other equipment, once a ship has berthed. The contract sets out productivity requirements that the stevedore is required to meet on the shipside, expressed as exchanges during certain periods.

The contracts place many obligations on the shipping line, including an obligation to provide the vessel 'on window', in compliance with MO32[19], and to provide the stevedore with certain information relating to export and import containers to facilitate the stevedore's yard and ship work planning.

IPART considers that the contracts between the shipping lines and stevedores are conducted at arm's length within a functioning market, and the contracts represent a rational commercial outcome. IPART does not recommend that there should be any regulatory intervention in the processes through which these contracts are negotiated nor in the outcomes.

It seems reasonable to IPART for the stevedore to pass onto the landside any obligations imposed on it by the shipside. Back-to-back contracts are common in many areas of commerce, as an effective strategy to manage risk. In the case of the stevedores, the back-to-back arrangements include operational arrangements questioned by stakeholders, particularly the number of free days before storage fees apply and the definition of working days. Given that the contracts between the stevedores and the shipping lines represent rational commercial outcomes, it can be expected that these requirements are of benefit to those parties. The effect of the contractual requirements on the stevedores' operations, and how that affects the road transporters, is discussed further in Chapter 3.

The two stevedores at Port Botany provide a platform to bring together the shipside and landside transporters of containers. They provide the infrastructure and the rules that facilitate the two group's transactions. There is a distinct group of users on both sides and costs on both sides. However, this is not currently a two-sided network, where the economic literature indicates that consideration should be given to appropriately charging each side.[20] In this case, it is the shipping lines' relationship with importers, exporters and freight forwarders that drives value to

[19] Marine Orders part 32, issued by the Australian Marine Safety Authority, regarding safe use of cargo handling equipment, available at http://www.comlaw.gov.au

[20] Jean-Charles Rochet and Jean Tirole, "Two sided markets: an overview" March 2004, *Working Paper,* available at http://faculty.haas.berkeley.edu/hermalin/rochet_tirole.pdf
Eisenmann T, Parker G, Van Alstyne M, "Strategies for two sided markets", *Harvard Business Review,* October 2006.
Armstrong M 2005, "Competition in two-sided markets", *RAND Journal of Economics*, Vol. 37, No. 3, Autumn 2006, available at http://www.econ.ucl.ac.uk/downloads/armstrong/veniceRAND3.pdf

each stevedore. The road and rail transporters, despite being one side of the stevedores' operations, do not have a role in generating demand and adding revenue to the stevedores' businesses. There is no benefit to the shipping lines to have an increasing number of road or rail transporters; the benefit is derived from the shipping lines' relationships with players further down the chain – in particular the importers and exporters.

Thus from an economic perspective, the significant revenue derived on the shipping side for the stevedores and the relatively small 'only recovery of cost' revenue amount on the land transport side seems appropriate, given the current contractual arrangements and requirements on the stevedores for landside performance.

IPART has been advised that this arrangement, where the vast majority of the stevedores' revenues are earned on the shipside with only a relatively small amount earned on the landside, applies in 90 per cent of ports around the world.

Perversely, poor performance on the landside adds to the costs of the stevedores, and tension will be created when costs are incurred due to actions of landside transporters outside the influence of stevedores. Currently, the stevedore's only influence on landside behaviour is through non-price mechanisms such as access conditions.

CLAG identified problems in the relationship between the stevedores and shipping lines, submitting:

> The stevedores regard the shipping companies as their only contracted clients. They have based their stevedoring strategy upon manning up and providing sufficient Lift assets to meet the ship discharge and loading volumes.[21]

IPART's view is that the stevedores are not subsidising the landside by charging the shipside, rather they are recognising that volumes and therefore margins are created by the shipside. IPART considers that the stevedores have a profit margin incentive to reduce the costs imposed by the interface with the landside, and in particular have a clear incentive to remove containers from their terminals to create space to handle further volumes generated by the shipping lines.

2.4 Vehicle Booking Systems

Most landside transport of containers to and from Port Botany is by road. Until the late 1990s, trucks were admitted to Port Botany facilities on a 'first come first served' basis by the stevedores. This led to congestion, and long truck queues commonly extended out past port entry. This congestion slowed the distribution of freight into and out of the port, affecting the NSW economy, and also disrupted normal traffic flows on the roads outside the port entry.

21 CLAG submission, 6 June 2007, p 6.

To reduce the congestion, the stevedores introduced Vehicle Booking Systems (VBS) to allocate specific timeslots for individual trucks to collect their freight from the port. But a booked timeslot does not carry a guarantee that the stevedore will be able to service the road transporter in that slot. Rather, the booking systems simply aim to reduce the physical congestion caused by truck queues, by allowing trucks to arrive at the port close to their allocated timeslot. The systems also allow better planning, which is intended to result in more efficient movements of containers to and from importers and exporters.

Both stevedores charge fees to access their VBS. Both also charge penalty fees for 'no shows' and late arrivals to discourage over-booking and waste of their resources, but sometimes waive these fees at their discretion. In addition, both charge storage fees for containers that have been on the wharf for longer than the free storage period, to encourage turnover of containers within the limited space available at the wharf.

Road transporters have raised concerns about delays and costs in delivering and collecting containers at Port Botany, caused by the lack of availability of VBS timeslots at certain times of the day, and a lack of certainty about the fees to be charged and the circumstances in which fees will be waived.

2.5 Other initiatives being undertaken to relieve congestion at Port Botany

Several other initiatives are already in train to relieve the current and forecast congestion at Port Botany, including the expansion plans of SPC and rail infrastructure developments relating to the NSW Government's target that 40 per cent of containerised freight at the port be moved by rail. These initiatives are not the subject of this review, but will impact on aspects of IPART's consideration of the issues set out in the Terms of Reference.

The key component of SPC's expansion project is infrastructure for a new container terminal to provide 1,850m of extra berth length (five berths) through the reclamation of about 60 hectares of land and a dedicated road and rail access.[22] SPC expects trade operations to commence by 2011. The NSW Government has indicated that its preferred option is for a new third stevedore to operate the new terminal facility at Port Botany.[23]

In November 2006, the NSW Minister for Ports and Waterways announced a taskforce to provide strategic advice to the Government on a range of freight logistics issues including port operations, road and rail freight operations, container parks,

22 Further details available at http://www.sydneyports.com.au/port_development/port_botany
23 Sydney Morning Herald, 'Brisbane move on port duopoly', Wednesday 2 August 2006.

planning and regulation.[24] The taskforce is to assist the NSW Government determine how best to manage freight expansion at Port Botany. (One of the recommendations of the taskforce's first meeting was the commissioning of this IPART review.)

The NSW Government has also endorsed the recommendations of the Freight Infrastructure Advisory Board (FIAB) relating to plans to establish new freight terminals at Enfield and Moorebank (the latter subject to discussions with the Commonwealth Government).[25] It has set up an Enfield-Port Botany Logistics Steering Committee,[26] to consider the business model and operational concepts for the Enfield Intermodal Logistics Centre.

The work being undertaken by these groups and the decisions already made by the NSW Government to address congestion at Port Botany have been taken into account in the preparation of this report.

2.6 Explanation of key concepts referred to in the Terms of Reference

The Terms of Reference for this review refer to some concepts, including transparency and fairness, congestion and efficiency. IPART considers it useful to explain these concepts, and how it has interpreted them in its review.

2.6.1 Transparency and fairness

The Terms of Reference refer to the stevedores providing "a transparent and fair allocation of access and provision of services in connection with the terminals."

Stakeholders have also referred to the need for transparency in their submissions. For example, CLAG submitted:

- The major issue in relation to the VBS is the absence of transparency in the system. The erratic number of slots available in each time period suggests that there must be a level of discretion being exercised by the stevedores for a number of slots. There may be some valid purposes for the discretion, but we are not aware of them. It is important in circumstances where peoples businesses depend upon equity of treatment that there should be no potential for bias.[27]

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24 The taskforce consists of The Hon. Joe Tripodi (Chair), Minister for Ports and Waterways; Mr Geoff Farnsworth, Sea Freight Council of NSW; Mr Vince Graham, RailCorp; Mr Sam Haddad, Department of Planning; Mr Greg Martin, Sydney Ports Corporation; Mr Chris Oxenbould, NSW Maritime; Mr John Robertson, Unions NSW; Ms Liesbet Spanjaard, Saha International; Mr Terry Tzaneros, Austate Logistics Terminal; Mr John West, Dangerous Goods Logistics; and Mr Les Wielinga, Roads and Traffic Authority.

25 Further details available at http://www.transport.nsw.gov.au/news/media/2007/07-05-31-premier-ports-freight-strategy.pdf and http://www.transport.nsw.gov.au/publications/IIG-review-of-FIAB-report.pdf

26 The committee consists of Professor David Richmond AO, NSW Coordinator-General from the Department of Premier and Cabinet (Chair); and representatives from the Office of the Coordinator General, NSW Maritime, Sydney Ports Corporation, Ministry of Transport, RailCorp, Department of Planning, and Australian Rail Track Corporation.

27 CLAG submission, 6 June 2007, p 37.

- There is no publicly available rationale for the number of time slots issued for the road landside function. At the time that the ACCC complaint began to be investigated there was survey evidence (collected by the NSWRTA and submitted to the ACCC in October 2004) that P&O Trans (then Smith Bros) trucks were receiving a disproportional number of time slots at 7:00 am and anecdotal evidence that affiliate trucks were permitted to jump the queue outside the terminal gates. The affiliates now collect containers at night in areas away from the general port Lift areas. There is no evidence that they use or pay for the VBS.[28]

In addition, the Customs Brokers and Forwarders Council of Australia (CBFCA) submitted that there are:

- …many outstanding issues affecting the efficiency of customs brokers, freight forwarders and transport operators such as . . . rail transport processes including capacity, booking arrangements and transparency.[29]

It also stated that it "is of the view that accountability and transparency be provided by stevedores to justify the structure of existing storage charging regimes",[30] and suggested that "independent management of a VBS would provide transparency in slot allocation and availability of slots and costs."[31]

Transparency relates to openness and impartiality in the design, administration and enforcement of a system. There should be procedures that are clearly articulated and understandable by all participants in the system, and that are publicly available. Any changes to these procedures should be communicated clearly in a timely and efficient way with adequate time for implementation.

The Terms of Reference link transparency with fairness. 'Fairness' is not an economic concept. Rather it involves a concept of social justice in which equal treatment of different persons or organisations in similar circumstances is mandated. The ambiguity inherent in a broad concept such as fairness inevitably leads some parties to interpret it in such a way that it may run counter to economic efficiency. For example, some people may consider that it would be 'fairer' to charge peak and off-peak electricity users the same price, but doing so would be inefficient because the demand management benefits of a price system would be lost.

Some forms of price discrimination are efficient, yet a plain-text reading of the fairness requirement might appear to rule them out. It would be absurd if the pursuit of 'fairness' resulted in some customers paying far less than they were willing to pay for a product, while others were unable to buy the product at all, even though their willingness to pay was greater than the marginal cost. To this extent, 'fairness' must be balanced against the concept of 'efficiency' (discussed below).

28 CLAG submission, 6 June 2007, p 41.
29 CBFCA submission, 12 June 2007, p 4.
30 CBFCA submission, 12 June 2007, p 17.
31 CBFCA submission, 12 June 2007, p 18.

This problem exists not just with discriminatory pricing, but also with price as a means of allocating scarce resources. It might seem fairer to allocate scarce tickets to a sporting event or concert by lottery than to raise the price until only the wealthy could afford them, yet the lottery approach invites ticket scalping, which is also objectionable on fairness grounds. The efficiency problems with the lottery approach are that in the first instance, tickets are not allocated to those that value them most highly, and in the second instance, resources must be expended policing and punishing scalpers.

Given these tensions between some concepts of fairness and economic efficiency, it is useful to emphasise the efficiency-based rationale for fairness. Monopolisation could be considered an unfair practice, but the economic reason to object to it is that it leads to an artificial restriction on supply and a deadweight loss of social welfare. Suppliers that favour their own affiliated firms over other customers would arguably be violating a fairness standard, but the larger problem with this type of behaviour would be the potential harm to competition among these customers.

In light of these issues, IPART's approach in this review has been to identify fairness with rules and allocation methods that are economically efficient, promote competition and give all participants an opportunity to purchase services in accordance with the value they place on those services. To the extent that the concept of fairness extends beyond the concept of social welfare, IPART considers that it requires that parties in similar circumstances not be discriminated against purely on the basis of their identity. Of course, where the costs of serving different parties differ, 'fairness' should not prevent charging them different prices.

Given the above, IPART considers that at Port Botany, the goal of fairness requires that any system for allocating access to the port facilities be non-discriminatory between road transporters on the basis of who they are, and with whom they are affiliated. It does not exclude some degree of discrimination where distributional efficiency would be affected; for example, it would not preclude recognition that there may be scale economies to the stevedores for providing access for a bulk run of 50 containers compared with a road transporter seeking access in relation to one or two containers at a time.

Perceptions of fairness also have a bearing on the efficiency of particular arrangements. A system that is seen as transparent and fair to participants is likely to instil confidence, which may lead to improved market efficiency and increased activity and investment. Conversely, a lack of trust between participants will lead to wasteful strategic behaviour: resources will be expended seeking to exploit hold-up opportunities or trying to prevent opportunism.

IPART's view is that transparency and fairness of the systems for allocating port facility access to road transporters refers to the ability of these participants to see and know how decisions are made, so that they are comfortable that due process is being followed and that they are not being discriminated against because they are not affiliated with the stevedores or because of the personal biases of individual staff. It

does not extend into any third party, including the road or rail transporters, having any say in the operational decisions made by the stevedores about how they allocate resources or operate the system for access to port facilities.

As well as benefiting the road transporters, a fair and transparent access allocation system should also benefit the stevedores, in that they will have greater certainty about the interface with the road transporters and less administrative time will be spent in dealing with disputes. On the other hand, a system that is more rigidly applied will offer less flexibility, and this disadvantage needs to be balanced against the benefits of a more transparent system.

It is important that any changes to the access allocation system, including information provided about allocations, be applied only for the legitimate purpose of assisting the participants to have confidence that the system is transparent and fair. There is no implied entitlement to the road transporters to obtain commercially sensitive information about the way that the stevedores manage their resources to provide slots.

Changes required to achieve a more transparent and fair access outcome are set out in subsequent chapters of this report.

2.6.2 Congestion

The Terms of Reference refer to the need to address truck congestion. Definitions of congestion focus on some aspect of network behaviour under high load:

- **Recurrent congestion,** occurring at regular times of the day, can be anticipated by those that normally use the system during those times. In the case of Port Botany, road transporters confront congestion every morning as they use the VBS to make bookings for slots. The road transporters contend with this congestion by dedicating office resources to the task at specific times, and by using the flexibility afforded by stevedores not requiring container numbers at the time of booking to 'juggle' priorities.
- **Non-recurrent congestion** is unpredictable, and could be due to many things, including but not limited to equipment breakdown, unexpected labour shortages, bunching of ship arrivals due to other shipside delays, traffic conditions on the metropolitan road system, and delays on the metropolitan passenger rail network. As CLAG's submission noted, at Port Botany there "is no absolute solution to some spasmodic episodes of congestion at the ports. There is considerable scope for process improvement."[32] IPART agrees that processes need to change in order to adequately address congestion.

IPART considers congestion to exist where the number of trucks and/or trains arriving exceeds the ability of the port facilities to service them immediately or within a 'reasonable' timeframe (such as the timeframes nominated by the stevedores through the VBS). The service timeframe is determined by the volume of containers

32 CLAG submission, 6 June 2007, p 23.

on the wharf that have been unloaded, the equipment and labour provided to move the containers, and the clearance by road and rail. A bottleneck leading to delays may arise when any of these three is not in balance. Delays can cause trains to leave empty, or trucks to miss subsequent slots, increasing the load on the bottleneck. This feedback leads to a rapidly deteriorating situation where effective throughput rapidly diminishes as new trucks meeting later slots may not be allowed to enter the facilities. There is no exact point at which the port's landside facilities can be said to be congested – it is a sliding situation that may reverse itself through the good management or flexibility of the stevedores and/or road transporters, or may escalate to the point where a shock needs to be administered.

Congestion depends on a user's perspective. A user who demands little from the facility can tolerate a loss in performance much better than a more demanding user. For example, a road transporter who uses the Port Botany container terminals irregularly may accept a delay that is unacceptable for a road transporter whose entire business is carting containers to and from the port.[33]

As noted in section 2.2 above, most players in the supply chain are private sector businesses, driven by profits, and to some degree exposed to market competition. In these conditions, the appearance of market failure in the form of congestion or bottlenecks may indicate the need for a price rise, or some structural change in the supply chain that will occur 'naturally' as a result of market forces. That is, the necessary change may be inevitable and it may be simply a matter of waiting until equilibrium returns. Alternatively, a 'shock' may need to be administered either to effect a faster response to the market failure, or to contend with the market failure itself.

IPART considers that a shock may be needed to reduce congestion at Port Botany, for several reasons:

- The stevedores do not bear all the costs of congestion – some are borne by downstream participants in the supply chain – and consequently a structural change would be necessary for the price signals to be felt at the right point.
- The demand for containerised trade at Port Botany from NSW importers and exporters is growing so rapidly that there is not time to wait for market forces to occur.
- There is some degree of dysfunction in market interactions at present, leading to poor coordination of operational planning and investment decisions. The NSW Government has a role in supporting better coordination, which would support more efficient market transactions.

In addition, the fact that the shipping lines and consortia have worldwide or Australia-wide contracts with the stevedores (see section 2.2.1) suggests that the specific landside arrangements for containers at Port Botany are unlikely to register

[33] Patrick submitted that it is in the interest of all parties that truck queues are cleared as quickly as possible in the event of severe congestion and that truck drivers should not be required to join inefficiently long queues (Patrick submission, 21 December 2007, p 4).

as a large factor in their incentives to sign with one or other of the stevedores. These arrangements are likely to be a little more important in influencing the decisions of importers, exporters and freight forwarders about which shipping lines they will use to move containers (and hence which stevedore's terminal they will need to interface with). However, IPART understands that price, route, timing, and availability are of greater significance.

2.6.3 Efficiency

The Terms of Reference refer to 'efficiency' several times – they require IPART to look at the efficiency of the port-land transport interface; the efficiency of the landside logistics chain: the efficient allocation of space/movement of truck; issues specifically related to the efficiency of the interface between stevedores and land transport operators; and institutional changes that could be made to improve the efficiency of the landside logistics chain.

Recognising that economic efficiency is achieved when the cost of producing a given output is as low as possible, the economic principle for determining efficient prices relate to three aspects of efficiency:

- *Allocative efficiency*, which is achieved when the price paid by any consumer reflects the costs incurred in meeting their demand
- *Productive efficiency*, which means meeting demand at the lowest possible costs, including minimising transaction costs, and
- *Dynamic efficiency*, which means maintaining allocative and productive efficiency over time.

In a competitive market, in which a number of providers of goods or services compete, the forces of demand and supply ensure that through time, the appropriate levels and qualities of goods and services are produced (or supplied) at least cost, with optimal levels of consumption and production (or supply) brought about by prices reflecting marginal costs.[34]

Achieving the highest-valued use of resources requires prices to equal the short run marginal cost of supply, thus ensuring that there is optimal level of demand and supply. In competitive markets, in the absence of externalities and other distortions and with constant or increasing average costs, pricing at the short run marginal cost also ensures that total costs are covered over time. This ensures that efficient producers will receive a 'normal' rate of return on their investment, including an appropriate margin for risk. Consequently producers have an incentive to invest efficiently over time.

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[34] *Marginal cost* means the additional or incremental cost incurred in providing an additional unit of a good or service. *Short run marginal costs* are the additional costs of providing one extra unit, given existing infrastructure capacity. *Long run marginal costs* include the additional capital costs of meeting additional demand. Short-run marginal costs and long run marginal costs are equal when capacity is optimal.

The service provided by the stevedores on the landside does not operate in a competitive market, in that once the containers are on the wharf, each stevedore effectively becomes a monopolist – the rail and road transporter must deal with that stevedore if it is to take delivery of a particular container. Therefore, there is no effective mechanism to ensure that costs and prices do not substantially deviate from efficient levels (ie, marginal costs).

However, IPART recognises that it is not always possible to identify all cost drivers, as the costs of gathering information, monitoring use and other related tasks may, at some point, simply outweigh the benefits of attempting to make prices yet more cost reflective. In the event, the status quo may be 'efficient', in the sense of being the best that is achievable and workable given the constraints.

3 Current landside arrangements and sources of inefficiencies

IPART examined the current landside arrangements for moving containers at Port Botany. These arrangements include the institutional, structural and pricing frameworks within which the stevedores and the land transporters at the port work.

IPART found that the stevedores' shipside task – particularly unloading import containers from ships – has a major influence on their landside task. IPART's analysis shows that, over a number of days, the stevedores make sufficient resources available to deal with the landside task, but problems can occur on particular days. The number and timing of ship arrivals at the port are highly variable and unpredictable. When a large number of ships arrive at the same time, the size of the stevedores' shipside task is much bigger, and this contributes significantly to non-recurrent congestion on the landside. The stevedores appear to use several strategies to balance their shipside and landside tasks; however, to a large degree this source of congestion is outside their control.

And while the variation in the size of the shipside task is important, IPART's analysis indicates that it explains only a minor portion of landside congestion. Several other factors potentially explain the remainder, and some of these are also outside the control of the stevedores and the road and rail transporters. However, IPART's examination of the arrangements for providing these transporters with access to the stevedores' terminals identified four factors that lead to inefficiency that are controllable. These are:

1. The number of opportunities for trucks to gain access to the terminals via the stevedores' VBS is often less than the demand for these VBS slots, and there is no mechanism for measuring the level of unmet demand.
2. Access to the available VBS slots is allocated to road transporters without regard to the value of the slots to those transporters, which means that the slots do not necessarily go to the transporters who value them most.
3. The stevedores work on a 24/7 basis, whereas road transporters mostly work weekdays between 8am and 6pm. This mismatch in the participants' hours of operation results in excess demand for VBS slots during weekday business hours and inefficient utilisation of available port facilities outside these hours.

4. Until recently, there was no formal mechanism for reducing the impact of uncontrollable delays on road transporters at the stevedores' terminals. However, the stevedores have now made real-time information via webcams and email bulletins readily available. IPART sees the provision and dissemination of this information as a step in the right direction.

The sections below discuss the current landside arrangements at Port Botany and the impact of these arrangements on the efficiency of the landside task in detail:

- Section 3.1 explores the relationship between the shipside and landside tasks, and analyses the impact of the shipside task on congestion on the landside.
- Section 3.2 examines the arrangements for access to the stevedores' terminals and the inefficiencies associated with these arrangements.
- Sections 3.3 and 3.4 discuss the prices stevedores charge for access and the costs of providing this access.
- Sections 3.5 and 3.6 discuss the availability and cost to road transporters of empty container parks, and the impact of inefficiencies in the landside task on importers and exporters.

3.1 Relationship between the shipside task and the landside task

The stevedores' task on both the shipside and landside is highly complex, and is strongly influenced by a range of factors outside their control. One of the stevedores' main shipside tasks is to ensure that containers are loaded onto and off ships in line with the key performance standards set by their contracts with shipping lines[35] (see section 2.3 for information about these contracts). This task is made more difficult by the fact that container ships vary widely in capacity (from 5,000 gross tonnes to over 55,000) and their arrival time is unpredictable (less than half arrive on schedule).[36] As a result the size of the shipside task varies widely from day to day in ways that can be difficult to predict.

To illustrate the variability in the size of the shipside task, SPC data indicates that in 2006/07, container ships arrived at Port Botany with import containers on all but two days of the year, and left with export containers on all but nine days of the year. If the stevedores had unloaded all the import containers on the day of ship arrival and loaded all the export containers on the day of ship departure, the number of TEUs they moved per day would have varied between 648 and 9,237.[37]

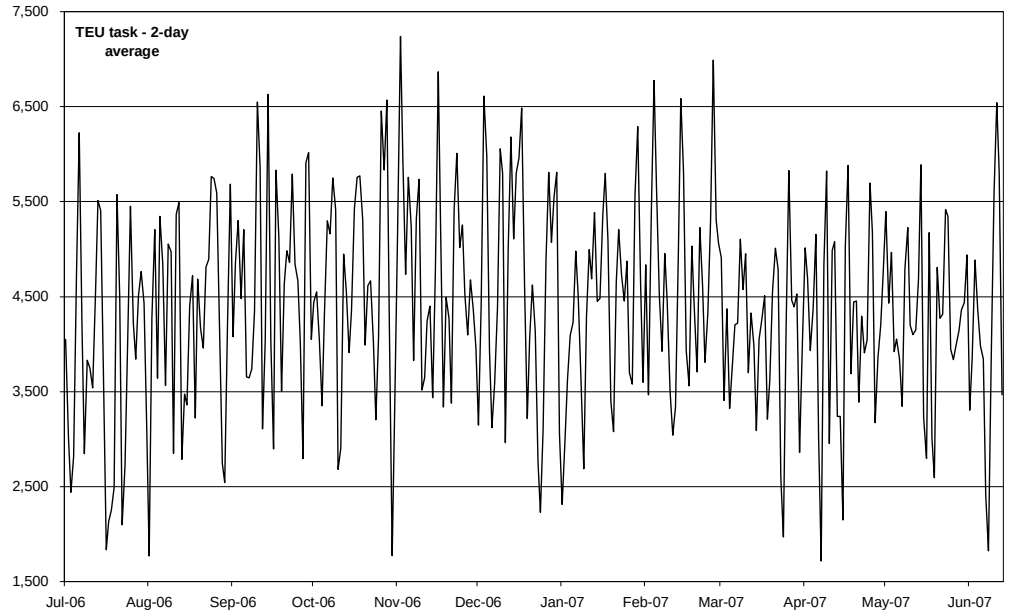
35 These contractual arrangements are the reason why many ships berth one day and leave the next.

36 In the June quarter, in 2007, only 43 per cent of ships arrived within an hour of the time advised to SPC 24 hours earlier, see BITRE *Waterline* 43 January 2008, Table 6.1, p 46.

37 The shipside task is stated this way because the data provided by SPC records all import TEUs on the day of ship arrival and all export TEUs on the day of ship departure. For interest, the low was recorded on Boxing Day (a Tuesday) and the high on Sunday 31 December.

However, on average, ships stay in port for more than one day, so if a single number is used to approximate the daily shipside task it is more accurate to illustrate daily variability by looking at the two-day rolling average of the daily number of TEUs moved shipside over 2006/07, as shown in Figure 3.1. This figure shows that daily two-day average varied from 1,718 TEUs (in April) to 7,238 TEUs (in November).

Figure 3.1 Daily shipside TEU task at Port Botany 2006/07



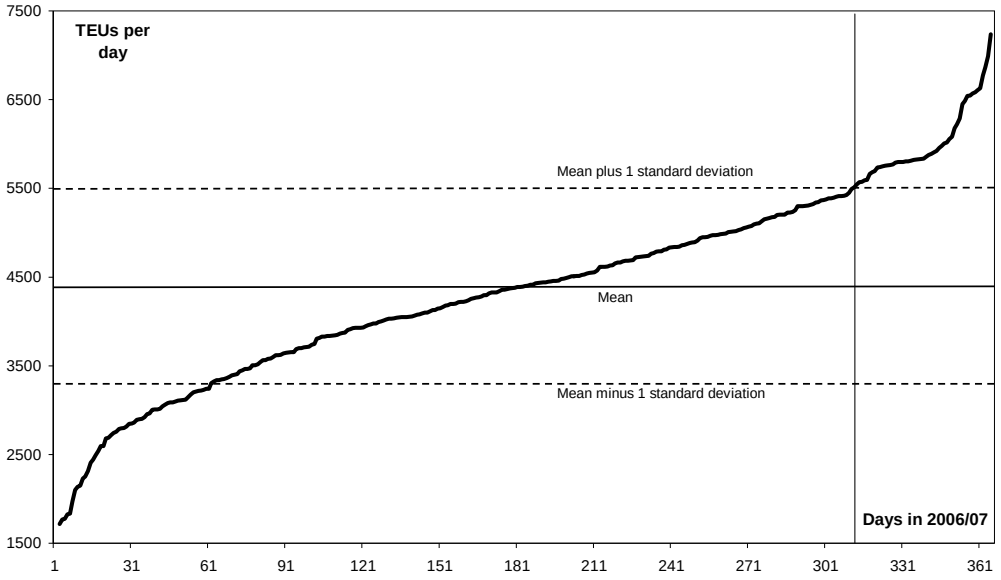
Source: IPART analysis of data provided by Sydney Ports Corporation.

A third way to illustrate the variability in the size of the shipside task is to look at the cumulative daily number of TEUs moved shipside, from the day of the lowest TEUs to the day of the highest, as shown in Figure 3.2.

This figure indicates that:

- on most days of the year, the daily task was within one standard deviation of the mean of 4,450 TEUs per day (ie, it was between 3,400 and 5,500 TEUs per day)
- on 54 days of the year, the daily task exceeded 5,500 TEUs.

Figure 3.2 Daily shipside TEU task at Port Botany 2006/07: cumulative distribution



Source: IPART analysis of data provided by Sydney Ports Corporation.

The days when 5,500 or more TEUs need to be moved are presumably the days of greatest potential operational difficulty for the stevedores. This difficulty is likely to be heightened if one 5,500+ TEU day is followed by another, or when two occur in a three-day period. The latter happened on 16 occasions in 2006/07.[38]

In the two previous years, the number of days when 5,500 or more TEUs were moved was much fewer – 10 in 2004/05 and 15 in 2005/06. And these 5,500+ days occurred on two of three consecutive days only once and twice per year respectively. Perhaps the much higher numbers of 5,500 days in 2006/07 were abnormal, but it is likely that higher numbers will become increasingly the norm as volumes through the port increase over the next 20 years.

Most industry participants believe that the variability in the size of the shipside task is an important determinant of the congestion at the port and the efficiency of the landside task.

[38] All but four were in the September to January period with the greatest concentration in the weeks either side of Christmas. There was no consistent association between one day of 5,500+ TEUs arriving on the shipside and the same day or the following day's average truck turnaround times for either stevedore.

To better understand how this variability impacts on the efficiency of the landside task, the extent of these impacts, how they are currently managed and whether they could be better managed, IPART looked at:

- the relationships between each stevedore's shipside task and truck turnaround times
- whether the required number of truck entries on a specific day, and the number of VBS slots per hour, can be accurately predicted
- the relationship between truck turnaround times and total truck waiting times
- how the stevedores seek to balance their shipside and landside tasks
- the role of on-port storage in achieving this balance
- the relative likelihood of congestion at each stevedore's terminal, and
- the extent of this congestion.

3.1.1 Relationships between each stevedore's shipside task and truck turnaround times

IPART compared the daily shipside task of each stevedore with the number of truck entries to each terminal (a measure of the landside task) and average truck turnaround times (TTT) for the terminal (a measure of the efficiency of that task). More specifically, recognising that there are time-lags involved in the sequence of events that link the shipside task to the landside task, IPART:

- compared each of the previous seven days' import TEUs and each of the next seven days' export TEUs with the daily number of truck entries
- compared the daily number of truck entries with average daily TTTs, and
- compared each of the seven days' import and export TEUs with average daily TTTs.

For each of these analyses, IPART relied on data supplied by SPC and the stevedores.

The first analysis showed there is a close relationship between the daily number of truck entries at each terminal and the inflow of import TEUs over the preceding seven days. Most of the variation in the number of daily truck entries at each stevedore (87 per cent at Patrick and 96 per cent at DP World) was associated with variations in the inflow of import TEUs in the preceding seven days (after allowing for low truck entries on Saturday, Sunday and public holidays that are related to work practices in the downstream supply chain rather than the inflow of TEUs). However, there was little relationship between the daily number of truck entries and the outflow of export TEUs.

Based on this analysis, IPART concluded that:

- The size of each stevedore's shipside task – measured as the number of import TEUs unloaded over the previous seven days and the number of export TEUs to be loaded over the coming seven days – is the crucial driver of the size of the landside task, measured as the daily number of truck entries into the stevedores' terminals.
- The number of import TEUs has a much greater effect on daily truck entries than the number of export containers. This result confirms the widely held view that the landside task at Port Botany is driven primarily by import traffic, due to the fact that half of all export containers are empty and therefore not time-critical.

When linked with the relatively small proportion of containers that are at the stevedores' terminals for a long enough time to attract storage fees (see section 3.3.3), the close relationship between the daily number of truck entries at each terminal and the inflow of import TEUs over the preceding seven days also suggests that the stevedores are devoting sufficient resources to the landside task. Containers are moving on and off the wharf in a manner that meets the stevedores' obligations under the contracts with the shipping lines for delivery and receival of containers, linked with discharge and loading on the shipside (see section 2.3).

The second analysis identified a much weaker relationship between the number of truck entries and average daily TTTs. Less than a quarter of the total variation in TTTs (16 per cent at Patrick and 22 per cent at DP World) was associated with the variation in the number of truck entries.

Given the modest strength of the relationship between average daily TTTs and the number of truck entries, it is not surprising that the direct relationship between the shipside task and TTTs was also weak. About one third of the total variation in TTTs (34 per cent at Patrick and 31 per cent at DP World) was associated with the variation in the previous seven days' inflow of import TEUs (allowing for separate Saturday, Sunday and public holiday effects).[39]

[39] IPART does not intend to publish detailed results that pertain to individual stevedores. However, regression analysis on data that combines the stevedores' activities shows that the relative strength of these relationships was preserved in the combined analysis. Around 94 per cent of the variation in truck entries and around 30 per cent of the variation in average daily TTTs were associated with the previous seven days' import TEU inflows, allowing for Saturday, Sunday and public holiday effects (details in Appendix G).

Based on these findings in relation to TTTs, IPART concluded that:

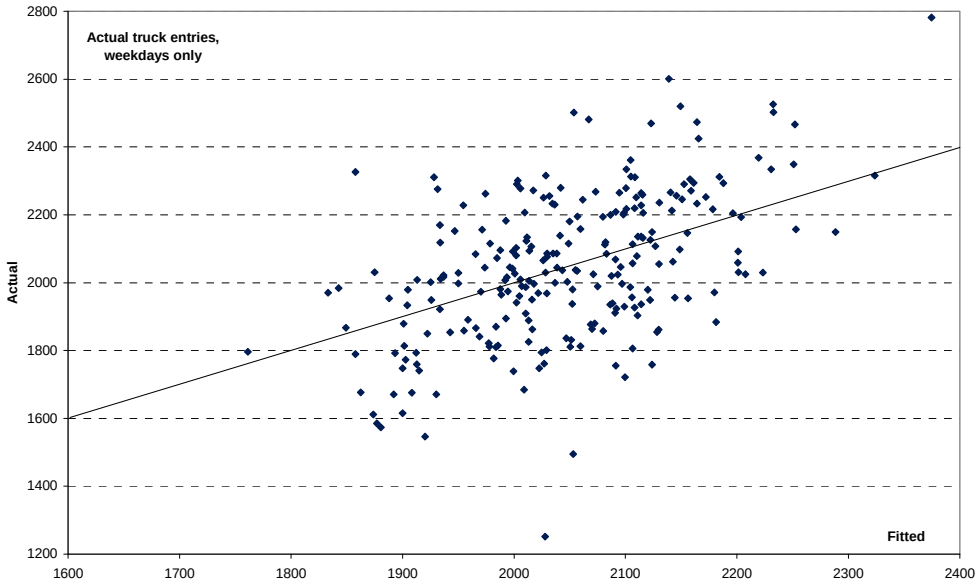
- Variation in the size of the shipside task accounts for around 30 per cent of the variation in average daily TTTs for either stevedore. The remaining 70 per cent of that variation must be explained by other factors. The stevedores indicated that one important factor is how densely containers are stacked on the wharf. Patrick provided some confidential analysis of average stack density information over a 12-month period, which IPART used to assess what impact increasing the number of days free storage at port would have on stack density and, in turn, port efficiency (see Appendix H). This analysis confirmed the importance of stack density in explaining variations in TTTs. Although it is difficult to say how important other factors might be, they include:
  - the stevedore's equipment being out of service (either because of breakdowns or planned maintenance)
  - the stevedore experiencing temporary manning shortages
  - adverse weather conditions.
- The performance of the two stevedores, in terms of managing the impact of variations in the size of their shipside task on their TTTs, was very similar.

3.1.2 Predicting required truck entries and VBS slots per hour

The fact that there is a close relationship between the daily number of truck entries at the stevedores' terminals and the inflow of import TEUs over the preceding seven days suggests that it might be possible to predict how many truck entries are likely to be required on a specific day, and therefore the number of VBS slots required per hour, using the import TEU data. If this were possible, the predictions could be used to guide the stevedores' landside resource planning, and thus improve the efficiency of the landside task.

However, IPART considers that it would be very difficult for the stevedores to make such predictions with a reasonable degree of accuracy, for three reasons. The first is limitations of the statistical analysis itself. For example, IPART undertook regression analysis of the relationships between both stevedores' shipside and landside tasks (discussed in Appendix G). The aggregate results of this analysis indicate that, broadly, stevedores could use regression analysis to distinguish between the level of resourcing they need for Sundays and public holidays, Saturdays, and weekdays. But this analysis would not enable them to predict with adequate certainty the total number of truck entries required on any individual weekday. Figure 3.3, which plots the actual daily truck entries in 2006/07 against the number that would be predicted using the regression relationship, illustrates this point.

Figure 3.3 Scatter plot of actual and predicted (fitted) truck entries – weekdays only, for 2006/07



Source: IPART analysis of data provided by DP World and Patrick.

The second reason is that the stevedores are unlikely to have access to necessary data in sufficient time. VBS slots on a particular day are offered to road transporters three days in advance of collection. At the time the analysis needs to be done to predict the number of truck entries and the number of VBS slots per hour to be offered, some of the ships whose containers will be transported via those slots have not yet berthed. This means that the future number of import TEUs in the terminal would have to be estimated, and such estimation is uncertain because the timing of ship arrivals is known to be unpredictable.

The third reason is that for this kind of prediction to be useful for resource planning purposes, the stevedores would actually need to predict the number of truck entries required per hour (or at least per shift), rather than just the total number of entries per day. However, the exact timing of truck arrivals during the day depends on a range of factors, including the choices made by importers, exporters, and road transporters, all of which are outside the stevedores' control. Therefore, even if it were possible to predict the daily total number of truck entries with a reasonable degree of precision, predicting the hourly pattern would present considerably greater difficulty.

IPART considers that the difficulty of predicting the size of the landside task, and thus the likely demand for VBS slots per hour, is one of several reasons why it would be extremely difficult for a party other than the stevedores to operate the VBS. The issue of independent ownership or operation of the VBS is discussed further in Chapter 4.

3.1.3 Relationship between truck turnaround and total waiting times

TTTs measure how long it takes a truck, once it enters the stevedore's terminal gate, to be served by the stevedore and leave the gate. But trucks often wait on the roads around the port, and on stevedore driveways, before they can enter the terminal gate. Therefore, the most appropriate measure of congestion at the port is total truck waiting times. Unfortunately, truck waiting times at Port Botany are not generally measured.

However, the Sydney Ports Cargo Facilitation Committee (SPCFC) periodically conducts a one-week survey of total waiting times of trucks arriving at Port Botany.[40] In 2007, the week was 21-28 May. The results of the survey (excluding Saturday and Sunday) are shown in Table 3.1.

The week of the survey did not involve an episode when the shipside task was particularly large (the size of the aggregate shipside task is shown as Shipside TEUs 2-day averages in the table). And only around 80 per cent of actual truck entries from Tuesday through Friday were surveyed (comparing the 'number of trucks surveyed as entering' with the number of 'truck entries' recorded by the stevedores). Keeping these limitations in mind, the survey indicates that:

- TTTs rose either before the weekend (Patrick) when the shipside task got close to 5,500 TEUs or immediately after it (DP World)
- additional truck waiting times also rose either before the weekend (Patrick) or after it (DP World)
- therefore, overall truck waiting times rose before the weekend (Patrick) or after it (DP World)
- additional waiting time varied between nine per cent and 50 per cent of average daily TTTs, but was 16 per cent or lower for two-thirds of the days during the survey period.

IPART considers that for most of the days of the survey, additional truck waiting times were not inordinately long. IPART also notes that the higher TEUs moved on the shipside on 24 and 25 May may not have been the main contributor to the rise of truck waiting times: DP World reported that a rubber tyred gantry (RTG) had broken down on Monday 28 May, and Patrick was doing surface repaving that shrank the size and efficiency of its container storage areas during the survey period.[41]

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40 The survey is independently conducted by Sydney Ports Corporation and reports to the industry through the Sydney Ports Cargo Facilitation Committee every 15-18 months (Sydney Ports Corporation submission, 13 June 2007, p 13).

41 Sydney Ports Cargo Facilitation Committee, *Report on Analysis of Truck Turnaround Times at Port Botany Container Terminals*, August 2007, pp 10 and 12.

Table 3.1 Daily average truck turnaround and waiting times, late May 2007

	Mon 21 May*	Tues 22 May	Wed 23 May	Thurs 24 May	Fri 25 May	Mon 28 May#
Average daily TTTs (minutes)						
SPCFC survey - DP World	**35.4**	**41.8**	**38.5**	**45.1**	**39.7**	**67.5**
SPCFC survey – Patrick	**32.1**	**55.2**	**61.4**	**79.6**	**60.6**	**30.0**
Number of trucks surveyed as entering:						
into DP World	192	646	1015	990	843	334
into Patrick	276	691	611	592	752	380
Additional truck waiting times (minutes)						
Friendship Rd waiting area to DP World in-gate	**3.8**	**11.8**	**7.8**	**4.7**	**4.2**	**17.7**
Simblist Rd waiting area to DP World in -gate	**44.7**	**33.5**	**44.7**	**32.0**	**37.3**	**45.2**
Patrick queue	**3.3**	**5.7**	**9.9**	**33.6**	**17.6**	**9.4**
Number of trucks surveyed as waiting:						
Friendship Rd	56	216	533	234	241	263
Simblist Rd	13	53	49	109	73	30
Patrick queue	246	588	419	702	701	341
Total, weighted average per truck (minutes)						
DP World	**39.5**	**48.5**	**44.8**	**49.7**	**44.1**	**85.5**
Patrick	**35.0**	**60.1**	**68.2**	**119.4**	**77.0**	**38.4**
Extra waiting time as % of TTTs						
DP World	12%	16%	16%	10%	11%	27%
Patrick	9%	9%	11%	50%	27%	28%
Shipside TEUs 2- day averages	4,808	4,271	4,315	5,417	5,343	3,999
No. of daily truck entries	1,777	1,616	2,044	1,961	2,029	1,685

Notes: * from 2pm # until 2pm for SPCFC survey.

Source: Sydney Ports Cargo Facilitation Committee, Sydney Ports Corporation, Patrick and DP World communications to IPART, August 2007.

3.1.4 How the stevedores seek to balance their shipside and landside tasks

Conceptually, the stevedores seek to match their *total* resources to the size of the daily task, and to allocate those resources between their shipside and landside activities. The shipside performance and landside performance are inter-related, with a buffer between them provided by the inventory of containers held within the stevedores' terminals. Depending on how close a terminal is working to full inventory capacity, any concentration of resources on the shipside may cause import

containers to build up in the stevedore's terminal. This congestion in the terminal has knock-on disruptive effects to the landside task.

Decisions on resource allocation made by the stevedores are based on their assessment of the required equipment and labour that is commercially viable to use. Research reported in the literature on the decision-making required to achieve efficient resource allocation in stevedoring shows it to be a complex and ongoing process.[42] Efficient stevedoring resource allocation decisions are driven by commercial imperatives.

When the ship berths are full, the stevedores say that they concentrate their resources on unloading/loading the ships. IPART's analysis of DP World data for 2006/07 suggests that DP World does not reduce the total number of daily VBS slots offered in response to the inflow of import TEUs. However, that stevedore does appear to reduce the number of VBS slots offered during the hours of peak demand on a particular day in response to import TEUs on that and the previous day. It then boosts substantially the number of VBS slots offered in the peak hours a few days later (presumably to clear the backlog).[43]

When the number of berthed ships falls, the stevedores have greater capacity to switch more resources to the landside to reduce any build-up of containers (and trucks queued on the road outside the entry gate or inside the terminals), and to redress any imbalance between the numbers of import and export containers in the terminal. How quickly a build-up is reduced or balance is restored depends, in part, on the amount and timing of access to the terminal offered by the stevedores.

3.1.5 The role of on-port storage in achieving this balance

The rate at which container stock levels are reduced or the export/import balance is restored also depends on the extent to which land transporters take up the stevedores' offers of access to their terminals.

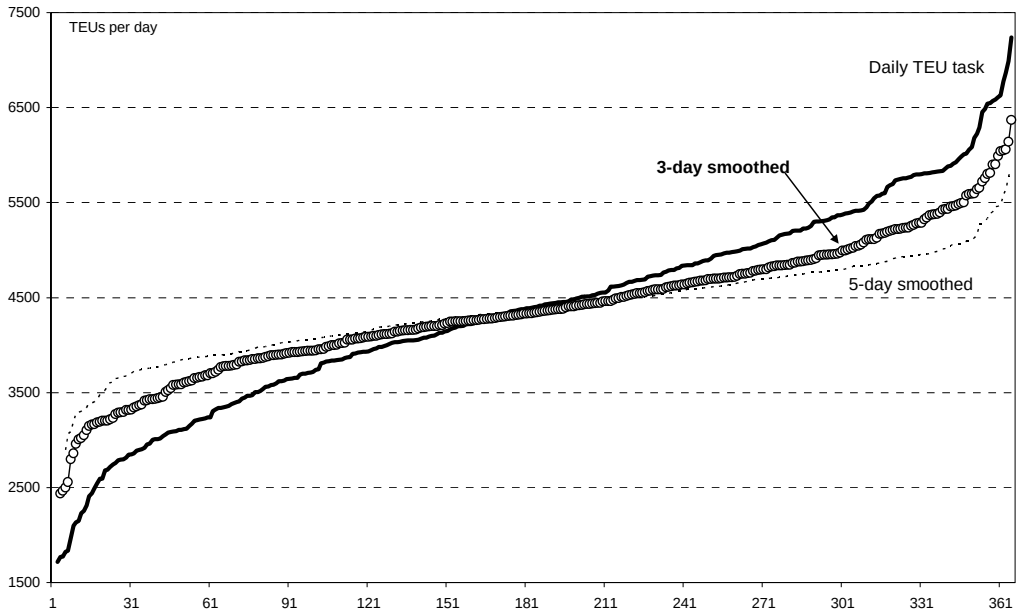
The stevedores reduce the chance that a large daily shipside task will translate into an equally large daily landside task by allowing the land transporters three days to remove import containers and five days to provide export containers. To illustrate this effect, IPART applied 3-day rolling averages to the data underlying Figure 3.2 (which shows cumulative daily number of TEUs moved shipside, from the day of the lowest TEUs to the day of the highest, for 2006/07). Three-day averages were chosen to correspond with the three-day free on-port storage period the stevedores currently

42 See, for example, Froyland G, Koch T, Megow N, Duane E and Wren H, "Optimizing the Landside Operation of a Container Terminal" in Konrad-Zuse-Zentrum fur Informationstechnik Berlin (ZIB) Report 06-06, November 2006, which is a case study of the logistics problems to be solved in relation to optimal operations based around the installation of five rail mounted gantries at Patrick's Port Botany Terminal.

43 IPART does not intend to publish the detailed regression results that underpin the statements in this paragraph.

provide (and are required to provide in their contracts with the shipping lines).[44] The results of this analysis are shown in Figure 3.4.

Figure 3.4 Daily shipside TEU task smoothed to 3-day and 5-day averages, 2006/07



Source: IPART analysis of data provided by Sydney Ports Corporation.

This figure illustrates the smoothing effect created by the three free days of on-port storage. It shows that this effect should result in a less peaky daily pattern of truck entries, as the number of days on which the daily landside task exceeded 5,500 TEUs was reduced, and there were almost no days when the daily landside task was less than 2,500 TEUs.

During this review, the road transporters, especially CLAG, argued for an increase in the free on-port storage period. For example, CLAG submitted that:

> The rationale for free storage is port efficiency. If there were no period of free storage then every carrier would be competing to pick up all containers on the first day of availability. The more days of free availability the less congestion and the greater operational efficiency throughout the supply chain. Port Botany is a conduit and any measures that shorten the number of days of free availability may reduce costs to the shipping companies but they add more than commensurate costs to the rest of the cross border supply chain.[45]

[44] Export containers are allowed five free days, but half enter the terminals as empties, many via stack runs. Therefore, since empties often enter with a day or less to go before loading, a three-day rolling average for all export containers seems a reasonable approximation to reality.

[45] CLAG submission, 6 June 2007, p 63. Other references may be found on pp 11, 21-22, 45, 52 and 58.

To test this view, IPART also applied 5-day rolling averages to the data underlying Figure 3.2 (shown in Figure 3.4). This analysis suggests that further free days on-port storage would further smooth the daily pattern of truck entries so that there would be fewer extremely busy landside days.

However, additional analysis conducted by IPART (described in Appendix H) shows that the overall impact of this further smoothing on port congestion would be detrimental. Through the effect of the number of daily truck entries on TTT, this smoothing would likely have some moderating influence over the range of TTTs. But it would have no effect on the annual average TTT. However, it would substantially increase the average stack density at the port, and this is likely to increase TTTs.

IPART estimated that increasing the free on-port storage period from three to five days would lead directly to a 50 per cent increase in the average number of import containers held at the terminal. If this were the case, stack densities at the Patrick terminal, for example, would exceed two containers per ground slot on average for the entire year. At such high densities, the number of containers requiring rehandling would increase more than proportionally, and this would severely impede both the landside and shipside operations of the stevedore.

The impact on the road transporters would also be adverse. IPART's analysis shows there is a reliable statistical relationship between TTTs and two driving factors: truck entries and stack density. Although increasing the free on-port storage period from three to five days would reduce the standard deviation of daily truck entries (mitigating peak road access days), it would substantially increase the average container density on the port.

IPART estimated that the net effect of these factors would be a 50 per cent increase in TTTs. Quantitative analysis shows that the stack density effect far outweighs the smoothing effect on truck entries. Intuitively, this result arises because the smoothing effect on truck entries is only important on a small number of days of the year, and has no effect at all on the average daily truck entries, whereas the density effect on container rehandling is experienced every day of the year. And increases in stack density unambiguously increase average TTTs.

Based on this analysis, IPART concludes that the impact of increasing the free on-port storage period would be to worsen the supply chain performance for all participants, including the road transporters themselves, who would suffer a substantial increase in TTTs as a direct result of this increase.

3.1.6 The relative likelihood of congestion at each stevedore's terminal

Some stakeholders expressed the view that episodes of serious congestion are more frequent at the Patrick terminal than at the DP World terminal. Anecdotally, stevedore terminals are believed to reach a state of 'distressed' operation once the number of TEUs handled exceeds some threshold.[46] One measure of such a threshold might be stevedore-specific – for example, when daily TEUs handled are greater than one standard deviation above the average for the terminal. However, IPART does not know what level of TEU/day would lead to a level congestion that causes 'distress', or even whether the same threshold would apply to both stevedores.

However, IPART does know that there is a strong correlation between shipside activity and the number of truck entries (see section 3.1.1). To analyse the relative likelihood of episodes of serious congestion at each terminal in 2006/07, IPART assumed that each stevedore's 'distress' is related to the size of the landside task, which is strongly correlated to the shipside task. It defined the shipside task as a 3-day average of import TEUs (today, yesterday, and the day before yesterday) plus a 3-day average of export TEUs (today, tomorrow, and the day after tomorrow).[47] It then plotted the 3-day smoothed number of TEUs for the year ended 30 June 2007 for each terminal.

The results of this analysis are shown on Figure 3.5. The values on the vertical axis are not shown to maintain confidentiality. The daily three-day average numbers of TEUs have been arranged in increasing order so that the curves represent a type of cumulative frequency distribution.

This figure indicates that if the threshold of 'distress' for both stevedores was the same (ie, the same sized shipside task), then Patrick would have experienced considerably more 'distressed' days of operation than DP World in 2006/07, simply because Patrick handled more shipside TEUs than DP World.[48]

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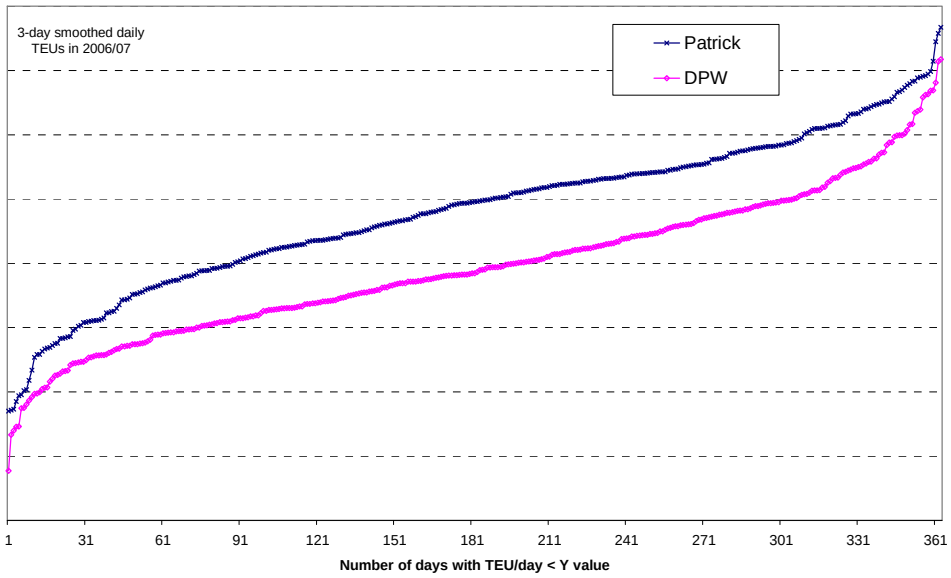
46 Symptoms of distress days would include an inability to remove import containers from the terminal as quickly as they arrive, higher than optimal container density in the stacks, the need for excessive double-handling of containers in order to pick the container needed by the land transport operator, and an inability to handle the expected level of landside activity within normal truck queuing and turnaround time parameters.

47 For import containers, IPART chose three days because that is the length of the free storage period. For export containers there is a five-day free storage period, but as empty export containers tend to arrive 'just in time' it does not seem implausible that the average wait for an export container is also around three days.

48 This observation may explain why road transport industry complaints about Patrick's landside service seem to be more frequent than those about DP World.

Figure 3.5 Daily 3-day average number of shipside TEUs at each terminal, 2006/07



Source: IPART analysis of data provided by Sydney Ports Corporation.

3.1.7 The extent of congestion at the stevedores' terminals

Despite the smoothing effected by the free days of storage, the stevedores' terminals at Port Botany suffer periods of non-recurrent landside congestion, sometimes severely so. For example, anecdotal evidence on truck waiting times and average daily TTTs in a period of congestion (August 2007) is contained in Appendix F.

At those times, for whatever reason, there are delays in the stevedores' landside operation that can have knock-on effects for road transporters. IPART did not receive much data on the extent of these delays. However, the SPCFC survey described in section 3.1.3 provides some indication. This survey recorded both average TTTs and the 95th percentile of TTTs (that is, the time in which 95 per cent of trucks that entered had left the terminal). In general, the survey found that the 95th percentile of TTTs was at least twice the size of the average TTT, which indicates that individual trucks experienced a wide range of TTTs.

Of course, some minor truck queuing is efficient to the extent that it means that a stevedore's landside activity is not slowed down, because there are no trucks waiting.[49] As the stevedores' capital investment is large relative to that of a road transporter, it is more efficient for trucks to face short waits at the stevedores, and not vice versa. However, if the truck queue lengthens inordinately and exists constantly, then there is a potentially significant cost to the economy in the form of idle trucks

[49] Optimal queuing is akin to optimal inventory control. Too little inventory causes delays in a manufacturing production process or consumer dissatisfaction at a retail outlet while too much needlessly ties up working capital. Too short a queue at the local bank means that tellers can be idle at times, too long a queue means that customers are poorly served.

and drivers. The stevedores are likely to be relatively insensitive to this cost since they do not bear it. IPART recognises that whatever queuing exists now, if nothing is done, in five or ten years time, queuing will certainly be unacceptably long and extensive.

3.2 Arrangements for access to the stevedores' terminals and sources of inefficiency

To facilitate their landside activities, the stevedores have each put in place arrangements for offering land transporters access to their terminals. The rail operators are offered access via rail windows. Road transporters may enter the terminals by either:

- booking a timeslot via each stevedores' VBS
- being accepted in a bulk or 'stack' run (whereby repeated entry by several trucks may bring in, or take out, 50 or more containers without booking VBS slots), or
- in the case of DP World, via the standby queue.

The stevedores determine the number of rail windows and truck entries offered per day. Data from DP World indicates that, at its terminal, for every 100 VBS slots, there are 12 truck entries via the standby queue and 32 stack runs.[50]

The likelihood of gaining road access depends on the access method used. Access via the standby queue is obviously highly variable, depending on the size of the queue and conditions at the terminal. Access via stack runs is usually reliable, because they are pre-arranged. Access via a VBS booking is uncertain because having a VBS slot does not guarantee access into the terminal during that timeslot. If the stevedore is running behind the VBS schedule, trucks with VBS timeslots simply have to wait until they are let in.

To better understand the access arrangements, and identify how they might be improved to increase the efficiency of the port-landside interface at Port Botany, IPART examined:

- the available measures of the efficiency of road access
- the basis on which the stevedores allocate road access via the VBS
- the stevedores' Carrier Access Agreements for the VBS, and
- allegations of bias in the allocation of road access via the VBS.

The sections below discuss IPART's findings, and set out the four main sources of inefficiency associated with the road access arrangements.

50 Data provided by DP World for 2006/07.

3.2.1 Measures of the efficiency of road access

In the past, almost no measures of landside efficiency were publicly available. However, the BITRE has recently started to publish data for a limited number of indicators of road access efficiency.[51] These indicators, and the data published to date are shown in Table 3.2.

Table 3.2 Indicators of road access efficiency

		Sep - 06	Dec - 06	Mar - 07	Jun - 07
1	Average number of containers per truck	1.3	1.5	1.3	1.3
2	Average TEUs per truck	1.9	1.9	2.1	2.1
3	Average container turnaround time (minutes)	30.4	32.9	24.9	26.7
4	Average truck turnaround time (minutes)	40.0	43.4	42.8	44.9

Source: BITRE *Waterline* 43 January 2008 Table 1.1, p 14. The data is reported for "Sydney ports", which may include some container performance indicators relating to smaller facilities other than at Port Botany.

A rise in the average number of containers per truck, or the average TEUs per truck would signal improved landside road efficiency because it would mean that more containers/TEUs are being moved per truck entry, either because trucks are getting bigger or because more dual runs are occurring, or both. A fall in the last container turnaround time or the truck turnaround time would also signal improved efficiency, either because trucks are moving through the terminals more quickly (average TTTs are falling) or because the number of containers per truck are rising, or both.[52] Until longer data series are available, no inferences about present trends can be drawn.

Other measures not published by the BITRE that are particularly significant to road transporters include total truck turnaround times and total truck waiting times, and any variation in these times across the hours of the day (these measures are considered in Appendix G).

3.2.2 The recent performance of stevedores' landside operations

Since the publication of the Draft Report, IPART has received additional data on TTTs and container numbers at the Patrick and DP World terminals. This data shows that there has been a recent improvement in performance at the Patrick terminal. The stevedore attributes the improvement to:

- better handling of empty export containers (moving more in the midnight to 6am shift rather than during the daytime)
- working with road transporters to encourage them to increase their use of the port facilities during the off-peak period

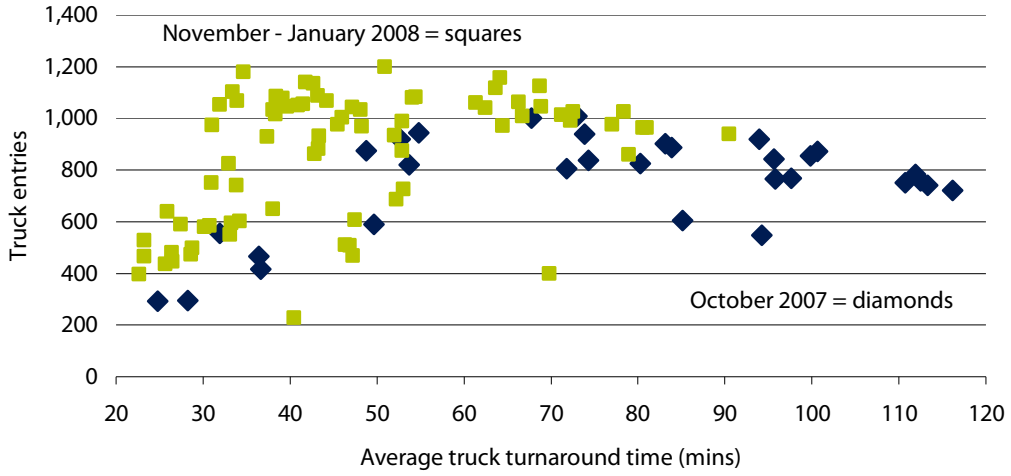
51 Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2008, Waterline, January 2008, Issue no. 43, BITRE, Canberra ACT.

52 The third indicator is derived by dividing TTTs (the fourth indicator) by containers per truck (the first). The first two measures are based largely on VBS data. The BITRE seeks to exclude bulk runs and ACS runs which would distort the measures.

- re-jigging the yard layout and doing better housekeeping
- restructuring its yard management that now includes more yard managers
- employing and training more labour, and
- acquiring and using six more straddles

This improvement can be seen in Figure 3.6, which relates the number of truck entries per day to the average truck turnaround time (TTT) for that day over the period October 2007 to mid-January 2008. The figure shows that Patrick achieved lower TTTs on days with a similar number of truck entries from November, compared to its performance in October.

Figure 3.6 Truck entries and average daily truck turnaround times - Patrick



Source: Data provided by Patrick.

Patrick's recent landside performance also represents an improvement relative to its performance in 2006. Table 3.3 shows that the average TTTs Patrick achieved during the period November 2007 to January 2008 are similar to those achieved in 2006, even though the average number of containers it moved in that period was significantly higher. This indicates an improvement in average TTT performance.

Table 3.3 also shows that the variability of TTTs (measured by standard deviation) at the Patrick terminal decreased in the period November 2007 to January 2008, compared to the period July to December 2006. This is another indicator of improved performance, as a lower standard deviation increases the predictability of TTTs, which aids road transporters' resource planning.

Table 3.3 shows that DP World's performance in terms of daily average TTTs and the variability of TTTs has remained consistent throughout 2006 and 2007.

Table 3.3 Indicators of road access efficiency

	DP World		Patrick	
	TTTs (mins)	No. Containers (per day) [a]	TTTs (mins)	No. Containers (per day) [b]
Jan - Jun-06				
Average	32	846	42	919
Standard deviation	8	471	16	522
Jul - Dec-06				
Average	35	941	51	1083
Standard deviation	11	498	20	553
Jan - Jun-07				
Average	35	835	50	1153
Standard deviation	39	478	19	509
Nov-07 - Jan-08				
Average	37	947	47	1355
Standard deviation	12	543	16	488

[a] DP World no. container = containers moved via VBS.

[b] Patrick no. container = no. of lifts (on and off) including stack runs.

Source: Data provided by DP World and Patrick.

3.2.3 Basis on which stevedores allocate road access via the VBS

Each stevedore's VBS was established as a tool for coordinating road access to its terminals.[53] The total number of VBS timeslots offered in each hour of the week is constrained by the size of the terminal land, the operating and safety procedures at the terminal, and the other resources that the stevedore devotes to the landside task.

Of the overall total number of VBS slots, the stevedores allocate a quota per road transporter on two different bases:

- Patrick allocates timeslots according to the road transporter's size, where size refers to the amount of container business that transporter undertook with the stevedore in the previous financial year
- DP World allocates timeslots according to which of the three classes of subscription to its VBS the road transporter holds.[54]

Most road transporters seek terminal access via the VBS. Both stevedores release the timeslots for a particular day three days in advance. The releases are made via the internet at pre-arranged early morning times. Based on data provided by DP World,

[53] Prior to the VBSs, road transporters were served on a first-come-first served basis and the result was long queues outside the stevedores' terminals. The queues produced congestion and pollution in the Botany area and idle drivers and trucks. None of the current participants at Port Botany has expressed a desire to return to this 'system', even if it were permissible.

[54] The subscription rates are set out in section 3.3.

it appears that all the timeslots offered through its VBS in the hours between 8am and 4pm are fully booked within minutes of release.[55] Unbooked slots are then re-offered later in the day. There is also an informal secondary market, where road transporters offer slots that they have booked but no longer need.

3.2.4 Carrier Access Agreements for access to the VBS

DP World and Patrick each have in place a standard agreement with road transporters for access to their VBS. The standard agreements are publicly available, and IPART understands that the same conditions apply to all road transporters seeking access to each of the Port Botany terminals.[56] Most road transporters subscribe to both the Patrick and the DP World VBS.

It's important to note that the current agreements only entitle the road transporters to access each VBS. In addition, a booking via the VBS does not entitle the holder to access to the stevedores' terminals within the booked timeslot. Indeed, IPART notes that currently the contractual arrangement between the stevedores and the road transporters is very limited.

The fees applicable under the agreements are set out in section 3.4. The stevedores have advised IPART that these fees aim to cover some of the administrative costs of setting up and running the VBS, and that they do not consider their VBS to be profit centres.

All road transporters are subject to the standard terms of access under the VBS, and cannot negotiate their own individual terms of access. However, the stevedores exercise considerable discretion in applying some terms and conditions (for example, those related to penalties for 'no shows' and 'wrong zone'). In addition, some of their operational arrangements are not documented in the agreements. (For example, Patrick offers as standard a lengthy 'grace period' during which a truck can turn up after its booked timeslot and not be penalised. This period is not mentioned in its agreement.)

Given the number of road transporters, and the level of competition between the road transporters, IPART considers that standard agreements are appropriate. However, the terms and conditions should all be clearly documented and made publicly available. The current situation creates inefficiencies in the market, when time is spent arguing over whether a fee is applicable and whether the stevedore

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55 IPART has been led to believe that timeslots are often fully booked well outside the period 8am to 4pm. The comment in the text simply reflects the aggregated nature of the data. IPART also notes that each carrier is restricted to a certain low number of slots in the 'opening round'. It is difficult to reconcile an allocation that appears to be made per business with the basis of volume of business cited by the stevedores.

56 DP World's 2007/08 Carrier Access Agreement for Port Botany Terminal was attached to its submission. Its 2005/06 Carrier Access Arrangements is available at http://www.eports.com.au/subscription/membership/PBT_Carrier_Access2005-6.pdf and Patrick's VBS Handbook and Conditions of Access is available at http://1-stop.biz/patrickvbs.htm

should exercise discretion. It also encourages perceptions of bias in the stevedores' treatment of different transporters.

3.2.5 Allegations of bias in allocating road access and VBS slots

Some stakeholders have claimed that the stevedores give preferential access to their terminals to land transport operators affiliated with the stevedores, constituting unfair processes under their Carrier Access Agreements.[57] Three of the land transport operators working at Port Botany are affiliated with the stevedore firms. DP World owns 50 per cent of P&O Trans (a road transporter) and Patrick's subsidiary companies include Patrick PortLink (a rail operator) and Patrick Port Services (a road transporter).

ATANSW provided IPART with details of a 2004 survey conducted by the now-defunct NSWRTA, which ATANSW contends provides evidence that DP World gave preferential access to its affiliate, P&O Trans.[58] The data shows that 13 P&O Trans trucks entered DP World's (then P&O Ports') terminal in a 7am timeslot. Both ATANSW and CLAG claim that no B-Class carrier could have achieved that number of slots at 7am on a weekday because the VBS limits bookings to four slots in any hour.[59]

The stevedores deny that their affiliates have been or are being given preferential access. Patrick noted that, in the year to March 2007, less than 1.5 per cent of the truck movements into its terminal were by its affiliate.[60] DP World indicated that historically P&O Trans has moved bulk volumes in off-peak periods and that, in the light of the separation and restructuring of P&O Trans, DP World would continue to explore means of encouraging the carrier to do so.[61]

IPART notes that the 2004 survey data described above do not distinguish between trucks that entered the terminal via a VBS booking and trucks that entered via bulk runs. Therefore, it cannot conclude that there was bias. However, IPART considers that the VBS allocation system could be better structured to lessen the possibility of bias occurring and to promote a more transparent and fair allocation of access to the terminals.

57 CLAG submission, 6 June 2007, p 41, ATANSW submission, 12 June 2007, pp 16 and 34. IPART notes that the ACCC is separately investigating allegations of historic self-favouritism by the stevedores.

58 NSWRTA conducted a survey in 2004 to observe any discrepancies in operating practice between DP World (then P&O Ports) affiliated trucks and other road transporters accessing the DP World terminal.

59 CLAG submission, 6 June 2007, p 17. According to DP World's VBS rules, B-Class carriers can only book a maximum of four slots an hour and 96 slots in any 24 hour period. Each carrier can make further bookings if, after the exclusive booking period, there are unfilled slots.

60 Patrick submission, 8 June 2007, p 60.

61 DP World submission, 12 June 2007, p 37 at para 29.b.1 and also comment at para 29.c.

3.2.6 Four sources of inefficiency associated with access arrangements

Based on its examination of the arrangements associated with access to the stevedores' terminals, IPART identified four sources of inefficiency in the port-landside interface. These are:

1. The number of opportunities for trucks to gain access to the terminals via the stevedores' VBS is often less than the demand for these VBS slots, and there is no mechanism for measuring the level of unmet demand.
2. Access to the available VBS slots is allocated to road transporters without regard to the value of the slots to those transporters, which means that the slots do not necessarily go to the transporters who value them most.
3. The stevedores work on a 24/7 basis, whereas road transporters mostly work weekdays between 8am and 6pm. This mismatch in their hours of operation results in excess demand for VBS slots during weekday business hours and underutilisation/inefficient utilisation outside these hours.
4. Until recently, there was no formal mechanism for reducing the impact of uncontrollable delays on road transporters at the stevedores' terminals. However, the stevedores have now made real-time information via webcams and email bulletins readily available. IPART sees the provision and dissemination of this information as a step in the right direction.

Each of these sources of inefficiency is discussed in more detail below.

Inefficiency 1: Supply of VBS slots often less than demand, but no mechanism for measuring unmet demand

IPART received evidence that, at times, there are no unfilled VBS slots available to road transporters at any time, day or night, except on Sundays. It can be particularly difficult to get VBS slots during the daytime on weekdays.

The stevedores monitor the proportion of VBS slots that are unfilled and note how frequently this proportion hits zero, and centrally record individual emails and phone calls from road transporters requesting slots. However, there seems to be no mechanism for systematically measuring the extent of any unmet demand for slots at different times of the day or night.

That the stevedores do not know the extent of the excess demand may make their allocation of resources to the landside inefficient. If they have no measure of unmet demand, then they cannot forecast what would happen if they did add resources to the landside operations.

Inefficiency 2: Access to available VBS slots is allocated to road transporters without regard to the value of the slots to the transporters

In effect, the present VBS allocates access on a first-come-first-served basis. Each VBS is opened to accept bids for particular slots on a day three days ahead, at predetermined times each day. The road transporters who are the fastest to get their bids in get the most desired peak period slots. Superimposed on this lottery is a quota system. Individual road transporters are prevented from acquiring more than a set number of VBS slots in a given peak period when they are first made available.

Economic theory suggests that a price-based allocation system would result in more allocatively efficient outcomes than this first-come-first-served/quota system. With a price-based system, the available VBS slots could be allocated to those road transporters who value them most highly. It follows that these will also be the road transporters who can make the most productive use of these slots.

Inefficiency 3: Mismatch in hours of operation results in excess demand for VBS slots during weekday business hours

The extent to which the offers of access are taken up by the road transporters is partly determined by the day of the week and time of day in which access is offered. Currently, the stevedores operate on a 24/7 basis, which reflects the nature of ship arrivals. However, the road transporters mostly work more typical business hours, which reflects their clients' (importers and exporters) normal opening hours.

This mismatch in operating hours is one cause of excess demand for daytime weekday VBS slots. This excess demand occurs because road transporters seek to make several cycles of same-day deliveries to importers and return to the stevedores' terminals via empty container parks. Same day cycles are the cheapest way to conduct road transport businesses. But most importers and empty container parks only open during normal business hours so that, if a road transporter fails to deliver to the importer or to the empty container park in time, it must incur overnight unloading/loading and storage costs.

Whenever delays occur in the supply chain, they tend to cause less proportionate disruption to an operation that is working 24/7 than they do to one that is working an eight, ten or twelve hour day. Although IPART's analysis suggests that over a period of a few days the stevedores are devoting sufficient resources to the landside task to keep containers moving through their terminals, resources are likely to be switched from the landside away from the road transporters at particular times when the stevedores face a large shipside task. An around-the-clock operation on both the shipside and the landside will allow episodes of unexpected congestion to be cleared relatively quickly.

From the road transporters' perspective, it is most efficient to use the port facilities during the day. From the stevedores' perspective, it is most efficient if the facilities are used at all times when they are available, that is, continuously around-the-clock.

Given that the port facilities are a scarce resource, it would be most efficient if all available slots at night-time and on weekends were used more consistently.

The mismatch in operating hours is primarily seen in road transportation of containers. The rail side is not constrained to working normal business hours because import containers must be unloaded at inter-modal terminals before they can be delivered to importers in any case.

Inefficiency 4: Limited mechanisms for reducing the impact of uncontrollable delays at stevedore terminals on road transporters

As discussed earlier in this chapter, variations in the size of their shipside task can result in the stevedores reaching a state of 'distressed' operation. When this occurs, there can be significant delays at their terminals, and a road transporter with a VBS slot may not gain access to the terminal until a significant time after that timeslot.

Because a VBS booking stipulates that a truck needs to arrive during a particular window of time, that truck needs to be in the queue at that time or risk a wrong-zone or no-show penalty. This means that truck drivers are effectively forced to join inefficiently long queues.

In addition, the road transporters affected by the delay may also need to make major adjustments to their planned activities for that day and perhaps for several days after. These knock-on effects may mean that trucks are not able to return to the port in time to fill VBS slots the road transporter booked two days earlier, which further reduces their efficiency.

Prior to the release of the Draft Report, there was no mechanism to reduce the impact of delays at the terminals on road transporters. However, in recent times, the stevedores have started to provide real-time information for road transporters. Patrick and SPC have installed webcams to indicate the length of truck queues.[62] Both stevedores and SPC have also indicated that further webcams will be brought into use in 2008.

IPART notes that in addition, both stevedores have either commenced or are continuing to disseminate emails to the industry. DP World, for example, issues email broadcasts with estimates of delays where road transporters with VBS bookings will be significantly affected. Further updates (generally hourly) are provided as the situation changes.[63]

IPART supports the dissemination of real-time information to inform road transporters of delays and congestion at the port. Such information allows road

62 Patrick installed a webcam at Port Botany in October 2007. This was installed to provide real-time information about the size of the truck queue at the Penrhyn Road terminal entrance. The webcam operates 24/7 and is accessible via the Patrick website (Patrick submission, 21 December 2007, p 3).

63 DP World submission, 21 December 2007, p 3.

transporters to adjust their own plans to minimise the impact of delays on their efficiency. This is discussed further in section 4.2.1.

3.3 Access prices

Each stevedore charges fees and penalties related to access to its terminal by road, and fees related to access by rail. Each also charges on-port storage fees after the free storage period has elapsed.

3.3.1 Road access fees

DP World charges different annual subscription fees to access its VBS, and various penalties for not meeting a booked timeslot. These fees and penalties are shown in Table 3.4. Separate arrangements apply for stack runs, and there is no charge for access via the standby queue.

Table 3.4 DP World VBS charges and penalties

Carrier Class	No. of Carriers (as at February 2006)	Annual Charge [a]	Penalties (per timeslot) [b]
B Carrier	28	$29,221.50	No show $100
A Carrier	162	$1,334.00	Wrong zone $50
AB Carrier	39	$667.60	

a includes GST. **b** plus GST.
Source: DP World submission, 12 June 2007, p 20 and DP World 2007-08 *Carrier Access Arrangements Port Botany Terminal*.

The B Carrier subscription is intended for large road transporters, and those with this subscription get the lion's share of access to the VBS via the internet. The A Carrier subscription is intended for standard-sized road transporters, and provides more limited online access. The AB Carrier subscription is for standard road transporters who book VBS slots by telephone. Road transporters elect to subscribe to the subscription that makes most economic sense based on the volume they carry.

Road transporters incur 'no show' penalties when a truck does not arrive for a booked timeslot. They incur 'wrong zone' penalties when a truck arrives outside its hour-long VBS slot.[64] DP World submitted that their staffs are regularly asked to waive these penalties, especially when carriers believe that the penalties have been incurred unfairly.[65]

Patrick charges a monthly fee and a small uniform fee per VBS timeslot. Patrick's charges and penalties in relation to the VBS are shown in Table 3.5.

64 DP World submission, 12 June 2007, p 21.
65 DP World submission, 12 June 2007, p 21.

Table 3.5 Patrick's VBS charges and penalties at Port Botany

Charges	Penalties
$4.00 per timeslot [a]	No Show $50 [b]
$10 monthly access fee [b]	
$770 pa annual national subscription fee to 1-Stop [a]	

[a] includes GST [b] plus GST.
Source: Patrick VBS Handbook and Conditions of Access and CBFCA submission, 12 June 2007, p 12.

Patrick's VBS is operated through 1-Stop, a company established in 2003 as a joint venture between Patrick and DP World in order to standardise VBS platforms. In addition, 1-Stop charges carriers an annual national subscription fee.[66]

DP World suspended the roll-out of its VBS through 1-Stop at its ports across Australia, including Port Botany, due to concerns about how lawful it would be for it to standardise its charges (considering section 45 of the Trade Practices Act).[67] Patrick has also stated that it may not be possible for the stevedores to standardise their VBS charges under current regulatory environment.[68] IPART understands that there is an on-going ACCC investigation into the proposed joint VBS.[69]

3.3.2 Rail access

Rail operators access each stevedore's rail sidings via an assigned rail window. The timing, duration and size (number of lifts) of the window is negotiated with the stevedore. The rail operator seeks to align the window to the train path acquired into Botany Rail Yard from RailCorp.

DP World charges $360 per hour for a rail window, during which it guarantees to load/unload 30 containers.[70]

Patrick's charges are based on the length of the window and the number of lifts, which are charged at $10 per lift. In principle, the length and cost of the window depends on the number of lifts required. However, Independent Group states that the window fee at Patrick is payable in full even if the actual number of lifts is less than the negotiated rate, but additional lifts are charged if actual lifts exceed the number agreed.[71] Further, one container moved off or on to a train may require several lifts if the container is not on the top of the stack.

Prices to access rail windows are examined in detail in Chapter 5.

66 Patrick submission, 8 June 2007, pp 22-23.
67 DP World submission, 12 June 2007, p 28.
68 Patrick submission, 8 June 2007, p 26.
69 DP World submission, 12 June 2007, (pp 32-33) refers to "…recent actions by Government regulators have unfortunately further hindered efforts to progress VBS and other carrier access issues at DP World Sydney." Notwithstanding, DP World has suggested that consideration be given to a single VBS platform.
70 DP World submission, 12 June 2007, p 34.
71 Independent Group submission, 8 June 2007, p 12.

3.3.3 On-port storage after the free storage period has elapsed

As discussed earlier, both stevedores provide three working days[72] of free on-port storage for import containers, and five working days of free on-port storage days for export containers.[73] After the free storage period expires, storage charges apply (see Table 3.6 below).

Table 3.6 On-port storage charges for import containers at Port Botany (per day fee applicable after three free day period expires)

	20ft container	40ft container
PATRICK		
1-2 days	$52.66	$105.32
>3 days	$128.77	$257.54
Yard handling fee [a]	$76.12	$76.12
DP WORLD		
1-3 days	$48.00	$96.00
>4 days	$120.00	$240.00
Yard handling fee [a]	$66.00	$66.00

[a] Yard handling fees (per container) are for consolidating containers in various stack positions until collected.
Note: storage rates are exclusive of GST.
Source: Stevedore storage rates from Patrick Import Storage Tariff Notice, effective 1 July 2007 and DP World Import Storage Notice effective 1 September 2007.

DP World submitted that in 2006, 93 per cent of its containers were collected within the three free days, but half its storage revenue was attributed to containers staying at the port for longer than six days after the free storage period.[74] Patrick noted in its submission that 79 per cent of its storage revenue is generated from containers not collected after two days beyond the free storage period.[75]

Based on the rates shown in Table 3.5, a 20ft container stored for 6 days after the free storage period would cost $570 in storage fees at the DP World terminal ($1,074 for a 40ft), and $696.50 at the Patrick terminal ($1,316.90 for a 40ft).

In their joint submission, ATANSW and CLAG stated that in their view:

> … storage profitability has directly impacted upon the stevedores' mutual movement to increasingly restrict days of free availability.[76]

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72 Currently, both Patrick and DP World classify Monday to Saturday as working days. Patrick does not count Sundays and Public Holidays as working days (Patrick submission, 8 June 2007, p 37). DP World appears to count some Public Holidays as working days. Evidence cited by the CBFCA shows that over the 2007 Easter holiday period, Good Friday (6 April 2007) and Sunday (8Apil 2007) were the only days declared to be not working days. Easter Monday was a working day (CBFCA submission, 12 June 2007, p 15).

73 These terms mirror those typically found in the stevedores' contracts with the shipping lines, as discussed in section 2.3 of this report.

74 DP World submission, 12 June 2007, p 36.

75 Patrick submission, 8 June 2007, p 37. Further, Patrick states that "only 2.2 per cent of containers incurred storage charges in the prior 12 months", p 3.

76 ATANSW/CLAG submission, 1 January 2008, p 19.

However, as noted in section 2.2.2, recent ACCC data shows that storage revenue for all Australian ports decreased in 2006/07, and represented just 3.6 per cent of total revenue for that year. Contrary to ATANSW/CLAG's view, this does not suggest that stevedores seek to exploit storage for revenue gain.

3.4 Access costs

The stevedores incur costs to operate their VBS, including:

- IT development and maintenance costs, and
- management and administration costs.[77]

In its Issues Paper for this review, IPART asked whether a wider range of costs could be attributed to the VBS, but stakeholders expressed the view that this limited range is appropriate.

IPART has not been provided with any detailed information on the quantum of these costs and therefore is not able to precisely ascertain the cost base underpinning the stevedores' VBS. However, as noted above, both stevedores submitted that they view their VBS as a tool to assist them in moving containers between ships and landside transporters, and not as a profit centre. Consequently, prices are unlikely to be above the costs of running the booking systems and to that extent, the current charges are unlikely to under or over recover costs.

Further, IPART understands that direct VBS costs and the VBS revenues generated are both only a small proportion of the costs incurred by the stevedores to service the landside transporters.

When containers are left in the stevedores' terminals beyond the free storage period, the stevedore incurs costs to manage and store them. These costs include an implicit rental for the space occupied and the number of consolidation moves or rehandles required (both of which will vary with the stack density of the yard). No estimate of these costs is available to IPART.

3.5 Access to empty container parks

The final stage in an import container's journey is its return to the empty container park nominated by the shipping line on the import delivery order. Shipping lines allow 7 to 10 days from date of availability at the port to return (or 'de-hire) to their nominated sites. Because shipping lines often want quick access to empty containers for loading, most empty container parks are near the port. Almost all are only accessible by road.

77 DP World submission, 12 June 2007, p 18.

In its submission, Patrick supported the greater use of inland terminals away from the scarce and expensive land surrounding the port. It argued that by:

> … using rail or dedicated land bridging from the ocean terminal to the inland port where road operators can deliver or pick up the containers. . . the potential of a bottleneck at the ocean terminal can be avoided, containers can be temporarily stored at a lower cost and there can be greater flexibility for users of the inland terminals.[78]

Rising land values around the port are increasing the opportunity cost of using land for storage. The returns on investment in empty container parks also appear to be being squeezed because the fees paid by the shipping lines for storing an empty container are low – only $0.75 a day plus a yard lift fee of $10.[79]

Low returns may be one reason why most parks do not open on weekends or after 4pm or 5pm. It may also be that some of those around the port precinct in Botany, Banksmeadow and Marrickville may have restricted opening hours imposed by local councils.

Such limited opening hours act as a constraint on the way road transporters function. At worst, a missed de-hiring means that the loaded trucks become storage platforms and not transport vehicles. In response, road transporters can either:

- accept that the trucks are tied up and park the trailers overnight, either along Foreshore Road or elsewhere,[80] or
- pay for after-hours access to staging yards (costing around $120).

Either way, another consequence is that they may end up paying 'container detention charges' to the shipping lines for making late returns. These charges vary from $30 to $100 per day per container.[81]

3.6 Impact of inefficiencies on importers and exporters

It is hard to measure the impact of the inefficiencies from queuing delays on the importers and exporters. The terms of dealing entered into by these players in the supply chain may range from 'ex-works', where the buyer pays all transportation costs from the seller's premises, through to 'delivered duty paid' where the seller pays for all transportation costs and duties. In between these two extremes, the commonly used 'free on board' terms of dealing require that the seller loads the goods on board the ship nominated by the buyer, so that the buyer pays all transportation costs for shipping and for land transport to its premises. Regardless of the terms of dealing entered into by the importer or exporter, a transporter may decide not to pass on costs in order to retain a particular customer.

78 Patrick submission, 21 December 2007, p 2.
79 ATANSW submission, 12 June 2007, p 13.
80 For example, on a trip to the port in the afternoon of 7 August 2007, IPART counted 7 loaded truck trailers (and 60 empty truck trailers) parked along Foreshore Road.
81 ATANSW submission, 12 June 2007, p 39.

4 Modifying the current system to enhance efficiency

Taking account of the current port-road transport arrangements and their inefficiencies as discussed in Chapter 3, IPART considered how these arrangements could be modified to increase efficiency. The aims of this modification include reducing congestion in the vehicle booking systems, the stevedores' terminals and the surrounding suburbs, and altering the way the landside road task is performed to make it more efficient.

During the review, stakeholders suggested various options for achieving these aims, including:

- that the stevedores offer more VBS slots at times of peak demand
- that the VBS be owned or operated by independent third parties, rather than the stevedores
- that the stevedores provide road transporters with real-time information about delays at their terminals and the action being taken to adjust VBS timeslots
- that road transporters move more towards 24/7 operations
- that road transporters increase their container density per truck and/or make more dual runs, and
- a range of other improvements, including that
  - the road transporters arriving at the terminals on time, having all the administrative details in order, and adopting technology to enable the automation of paperwork
  - the stevedores doing more 'housekeeping' prior to the road transporters arriving at the terminal
  - the establishment of a single, effective peak body to represent road transporters.

IPART has examined each option and the associated issues. It concludes that in the short-term, action to address some of these issues is likely to help reduce congestion and increase efficiency at the port-road transport interface – particularly taking steps to improve the transparency of the VBS slots allocation process and assuring road transporters that this process complies with established rules; providing real-time information to road transporters about the current and likely immediate future state of the stevedores' terminals, and especially about delays at them; and adjusting the VBS in response to these delays and to encourage two-way loading.

However, in the medium term, as the growth in container trade continues to add to the size and complexity of the landside task, change that is much more substantial will be required to the VBS to ensure the smooth, efficient flow of container traffic into and out of Port Botany. IPART's proposal for this substantial change is discussed in Chapters 7 and 8.

The sections below discuss each of the options listed above, and IPART's considerations and recommendations in relation to them.

4.1 Stevedores offer more VBS slots in times of peak demand

Various stakeholders suggested that congestion in the VBS could be reduced by the stevedores offering more timeslots during the periods when road access is most in demand – roughly between 5am and 5pm, Monday to Friday.[82] They also suggested this could be achieved by:

- the stevedores undertaking all stack run activities outside the hours of peak demand, and
- the stevedores allocating more resources to their landside operations.

Shipping lines often request empty stack runs during the day when the cost is lowest and empty container parks are open. Therefore, it appears that the timing of stack runs are heavily influenced by the shipping contracts and that means stack runs occur during peak periods as well as off-peak periods.

In relation to undertaking stack runs outside peak hours, Patrick submitted that stack runs of large numbers of empty containers "at times when the terminal is less busy, such as the evening and night shifts" are one of the tools it uses to allocate capacity.[83] The stevedore provided data in confidence to IPART which demonstrated that it heavily weights its empty stack run-ins towards off-peak times.

DP World informed IPART that it performs more than 90 per cent of its stack runs between 6am and 10pm, but did not indicate how much of this activity occurs outside peak hours (ie, between 5pm and 10pm).[84] However, DP World advised that because of the nature of its yard and the weight of empty containers, it is able to conduct its empty stack run-ins with yard equipment that is not used for servicing full containers via the VBS (which requires the use of RTGs). Because of this, DP World contends that removing all empty stack runs from peak times will not free up resources that could service trucks that enter via the VBS at its terminal.

82 Sydney Ports Corporation, *Logistics Review 2005/06*, Figure 5, p 11 indicates most truck entries occur during this period.
83 Patrick submission, 8 June 2007, p 18.
84 DP World submission, 12 June 2007, p 4.

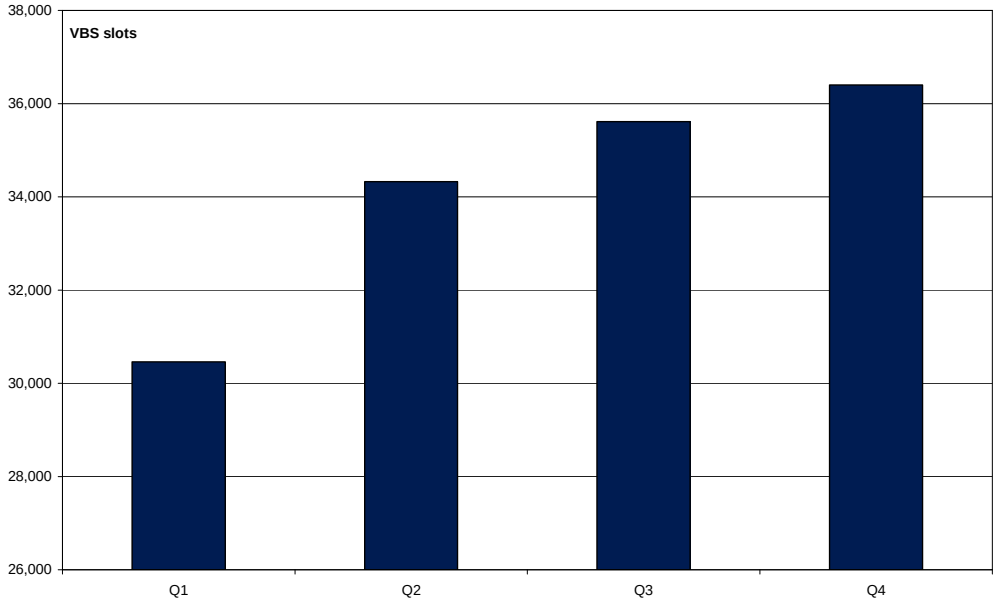
At present, Patrick does not charge for stack runs of empty containers, and DP World only charges a separate fee for stack runs by carriers without B Class subscriptions.[85] Without pricing signals, there seems to be little incentive for the stevedores to alter their present use of stack runs. In particular, there may be disadvantages to their terminal management if all stack runs were to be switched to off-peak hours. The issue of how best to treat empty stack runs is considered in Chapter 8.

In general, there seems little *immediate* scope for reducing congestion in the VBS by requiring all stack runs to be made during off-peak hours.

In relation to allocating more resources to the landside operations, the limited evidence available to IPART suggests that the stevedores at Port Botany increase resource levels in their landside operations in response to demand. For example, IPART notes that Patrick attributes the recent improvements in the performance of its terminal to (among other things) employing and training more labour and acquiring six more straddles (see section 3.2.2).

DP World data for 2006 also show that it offered a greater number of VBS slots in the period between 8am and 4pm in the third and fourth quarters of the year when the port was busier due to increased trade over the Christmas/New Year and Chinese New Year periods (see Figure 4.1). The results of IPART's regression analysis shown in Appendix G also suggest this.

Figure 4.1 Number of VBS slots offered by DP World at Port Botany in 2006



Source: DP World VBS daily data 0800 to 1600 hours aggregated by IPART.

85 DP World *2007/08 Carrier Access Arrangement Port Botany Terminal*, p 6 (attached to DP World submission, 12 June 2007).

However, the supply of VBS slots appears to differ widely between terminals in different ports. For example, DP World offers a significantly larger number of VBS slots in the period between 8am and 4pm in Melbourne than it does in Sydney. DP World attributes this to the following factors:

- the total number of containers it moves is larger in Melbourne
- the need to move containers through the VBS to the off-terminal rail link in Melbourne, which is not required in Sydney because the rail link is on-port
- a higher percentage of the containers it moves in Melbourne are full export containers (which are far less likely done in stack runs like empty containers).

According to DP World, these differences mean that a higher number of VBS slots per quarter are required in Melbourne to do essentially the same job as it does in fewer slots in Sydney.[86]

Whatever the reasons, the fact remains that DP World offers many more VBS slots during the hours of peak demand in Melbourne than it does in Sydney, and presumably allocates more resources to its landside operations to do so.

Based on these examples, it is reasonable to infer that the stevedores *could* offer more VBS slots in the in peak periods at Port Botany if they chose. IPART also infers that the reason the stevedores may not be doing so is that, under the present pricing/incentive arrangements it is not cost-efficient for them to do so. The stevedores seem to spread the number of VBS slots available across peak and off-peak hours in a way that is consistent with their commercial incentives to minimise costs and maximise the use of available terminal resources on a 24 hour basis. These incentives contrast with the road transporters' commercial disincentives for off-peak operations (discussed in section 3.3.6).[87]

Some stakeholders argued that in order to increase the number of VBS slots available in peak times, the operation of the VBS should not be left to the stevedores but should be run by an independent third party.[88] Independence of VBS operation can involve two things as exemplified by the proposal of the NSW Maritime to establish an Independent Gateway Authority (IGA) that would provide both independent oversight of the VBS slot allocation process and mandate the number of VBS slots to be provided.

IPART does not oppose independent oversight of the VBS, but it does consider that it would be very difficult for a third party such as the IGA to determine the number of VBS slots the stevedores should offer. More importantly, based on its analysis and understanding of the stevedores' operations, IPART considers that such

86 Appendix I contains an analysis of the DP World data.

87 ATANSW/CLAG submission points out that "The fundamental disincentive for carriers is that their costs for night and weekend shifts are greater than their revenues", 1 January 2008, p 15 and see generally pp 24-25.

88 See for example, CBFCA submission, 19 December 2007, p 13, ATANSW/CLAG submission, 1 January 2008, p 8, and NSW Maritime submission, 24 December, p 3.

arrangements are likely to impair the stevedores' ability to move containers in and out of the terminal in the most efficient manner. The issue of third party ownership and/or operation of the VBS, and IPART's considerations in relation to the various stakeholder proposals for such an arrangement, are discussed in more detail in Section 4.3 below.

In addition, IPART is not convinced that the total number of VBS slots available is a key cause of inefficiency at Port Botany. IPART notes that most containers in fact clear the terminals within the three-day free storage period currently offered by the stevedores. This suggests that the current VBS demand-supply balance is reasonable when taken over several 24 hour periods. For example, DP World submitted that it provides sufficient VBS slots within that period:

> What determines the number of slots made available are resource levels provided at the container terminal. DP World Sydney provides more than sufficient resource levels to enable all containers to be delivered as required to road within the three free day period, even accepting the industry's current limited use of the available 24/7 terminal operation. It is acknowledged that resource levels provided to road operations may be varied day to day as resources may need to be directed to ship operations but this follows from running the terminal as an integrated operation which is ultimately most efficient.[89]

Finally, while increasing the number of VBS slots during the hours of peak demand could help reduce congestion in the short term, it would not be a sufficient solution to the problem of congestion in the medium-term. Making recommendations that go no further than creating more 5am to 5pm VBS slots will fail to do justice to the magnitude of the task facing both the shipside and the landside in coming years. Therefore IPART has proposed a two-tier VBS (discussed in Chapters 7 and 8) that relies on market forces to align the stevedores' commercial incentives with the road transporters operational imperatives. This approach will result in a more efficient use of all available VBS slots and encourage higher number of VBS slots being offered in hours of peak demand over the longer term.

4.2 Stevedores inform and forewarn road transporters of terminal delays and remedial actions

As Chapter 2 discussed, some degree of congestion occurs at Port Botany every day at predictable times of the day (recurrent congestion). But there are also more severe and less predictable periods of congestion caused by a range of factors such as equipment failures and unexpected labour shortages at the stevedores' terminals, and unexpected bunching of ship arrivals (non recurrent congestion).

IPART received no data on the way the stevedores manage their resources when faced with unexpected ship arrivals. They will certainly put more resources into the shipside task, but it is not clear whether they will consistently put more or less resources into the landside side and to what extent they do so. If a stevedore were to switch workers and equipment from the landside, the effectiveness of the VBS would

89 DP World submission, 12 June 2007, p 3.

be much more significantly impaired than if the stevedore left the landside allocation unchanged (and employed whatever extra resources that were hired to the shipside).

Non recurrent congestion causes long delays for road transporters, even for those who have VBS slots. One way to reduce these delays – and the frustration, inconvenience and costs for road transporters they impose – is for the stevedores to provide real-time information about the current and likely immediate future conditions at each terminal, particularly about delays, and introduce rules that establish what action the stevedores will take to readjust the VBS slots when delays occur. In addition, given that some delays are inevitable, the stevedores should also provide basic amenities for truck drivers who are required to queue.

4.2.1 Provide information about delays in real time

Various stakeholders suggested that the truck queues that form as a result of problems at the stevedores' terminals could be alleviated if the stevedores provided real-time information to road transporters about the size of the queue at each terminal, and an estimate of the time that trucks with booked VBS slots will need to wait (after their slot) to enter the terminal. This may enable road transporters to deploy their trucks elsewhere when the queues are long.

IPART notes that some ports around the world already provide extensive real-time information on their landside operations. For example, the Port of Auckland in New Zealand uses a combination of live feed webcams at its entry gates and email bulletins to keep road transporters informed of any slowdowns or disruptions in stevedore operations.[90] Southampton Container Terminals in the United Kingdom, which operates a VBS similar to those at Port Botany, also provides daily terminal reports on the status of its landside task as well as live data on the number of trucks in queue at the terminal gate on its website.[91] NSW road transporters' industry peak bodies suggested provision of similar types of information at Port Botany.

Since the release of IPART's Draft Report, real-time information from the stevedores has become more readily available at Port Botany. Patrick and SPC have installed webcams that indicate the length of truck queues, if any, into the Patrick and DP World terminals.[92] Both stevedores and SPC have also indicated that further webcams will be introduced during 2008. IPART acknowledges that this is a step in the right direction.

IPART also notes that both stevedores have either commenced or continued to disseminate daily emails to the industry. The number of road transporters receiving these emails is likely to increase as more become aware of their availability.[93]

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90 See http://www.poal.co.nz/

91 See http://www.sct.uk.com/portuserzone.aspx

92 See http://www.sydneyports.com.au/trade_services/logistics/road_operations/truck-cams

93 Carriers may contact Patrick Port Botany or email DP World at pbt.transport@dpworld.com for details.

IPART believes that road transporters would further benefit if the stevedores continued to provide daily information to road transporters on the state of their terminal operations. Therefore it suggests that the current email bulletins include more specific information on a range of daily performance indicators that are relevant to the road transporters for their planning purposes. These indicators, many for which data are already collected, could include:

- number of trucks served
- 'gate to transaction complete' average TTTs
- 'gate to gate' average TTTs
- number of VBS slots made available
- number of VBS slots booked
- number of VBS slot 'no shows'
- number of VBS slot 'late shows'
- number of empty stack run containers/TEUs
- outside gate queuing time, and
- number of Customs-inspected containers.

IPART also suggests that when delays are being experienced or expected, the real-time information on the email bulletins should include advice such as "expected delay (in minutes) after slot expiry before road entry to terminal" or equivalent, and statements about the cause(s) of the delay.

In Chapter 9, IPART recommends that SPC be given regulatory powers to collect more detailed information from the stevedores on their roadside, railside and shipside terminal performance. Once collection has begun, wider dissemination of these types of information by SPC will help the wider port community monitor each stevedore's performance over time.

Recommendation

1 That each stevedore provides real-time information to the road transporters that would help them understand the shipside and landside tasks and the state of the terminal and, during delays, to convey the length of the truck queue at its terminal, and an estimate of the time that trucks with booked VBS slots will need to wait after their booked slot to enter the terminal.

To enable this kind of real-time communication between the stevedores and the road transporters, many road transporters will need to change the way they operate. In particular, they will need to ensure that they have the necessary electronic communication devices to receive the stevedore's real-time information.

Stakeholders have expressed widespread support for the uptake of communication devices by road transporters. IPART notes that road transporters with internet and email access can already take advantage of some terminal information via the webcams and the stevedores' emails as noted above.

Recommendation

2 That road transporters invest in the communication devices they need to receive and act upon the stevedores' real time communications.

4.2.2 Introduce rules to establish the action stevedores will take to readjust the VBS slots when delays occur

While access to real-time information is likely to improve landside efficiency, it will not address the problems caused by delays at the stevedores' terminals. The operational protocols of the VBS will also need to change. Currently, because a VBS booking stipulates that trucks need to arrive during a defined window of time, these trucks will attempt to be in the queue at that time or risk a wrong-zone or no-show penalty. This means that trucks are effectively forced to join inefficiently long queues.

IPART considers that, as a minimum, the existing VBS rules should be complemented with additional rules that establish what a stevedore will do when there is a delay in its landside operations. When delays occur, the number of VBS slot holders exceeds the number of trucks that can physically be served within that shift or that day. Therefore, there should be a set of rules for readjusting the number of slot entitlements in a transparent and equitable manner to match the number of trucks that can physically be served.

IPART has identified two examples of a rule-based readjustment for VBS slots in the event of terminal delays:

1. Based on the estimated length of the delay, the stevedore could defer the start time for all VBS slots by adding a specified number of hours to them.
2. When the delay exceeds a specified limit, the stevedore could cancel all slots so that the trucks with slots in the following hours can be served at their booked time.

Illustrations of both examples are presented in Box 4.1. Option 1 (deferring the start time for all VBS slots) would be better suited to short delays because the allocated order of slots would remain in place and landside operations would resume without the carrier-specific disruption implicit in Option 2. On the other hand, Option 2 (cancelling all slots) may be most appropriate for prolonged delays because it would enable the stevedores to concentrate on addressing the cause of the delay without simultaneously dealing with landside congestion. In their responses to the Draft

Report, Patrick indicated that it prefers option 2,[94] while DP World noted that it prefers rules that allow some degree of flexibility in the choice of response.[95]

Box 4.1 Options for readjusting VBS timeslots when delays occur

Option 1: Convert existing VBS slots into virtual queue, provide information about length of delay, and waive wrong-zone penalties

Under this option, the stevedore, through the VBS message board, would notify:

- *That delays of X* hours are expected to occur (or are occurring) at the terminal, and when on-time access is expected to resume.
- *The reason(s)* for the delay.
- *The action to be taken* – ie, all VBS timeslots commencing with Zone A today (or tomorrow or next day etc) and ending with Zone K today (or tomorrow or next day etc) will have X hours added to them.
- *When the next notice* will be posted, updating the information above.

Option 2: When delay exceeds specified limit, cancel all VBS slots in a specified time window

Under this option, the stevedore, through the VBS message board, would notify that:

- *That delays of X* hours are expected to occur (or are occurring) at the terminal, and when on-time access is expected to resume.
- *The reason(s)* for the delay.
- *The action to be taken* – ie, all VBS timeslots commencing with Zone A and ending with Zone K will be cancelled, the holders of those timeslots will need to re-book through the VBS, and the stevedore will do its best to accommodate them.
- *When the next notice* will be posted, updating the information above.

IPART recognises that terminal delays may occur for a number of reasons - such as short-term equipment break-down, shift-long staff shortages and unexpectedly high TEU ship arrivals - and the duration of the delay will inevitably depend on its cause.

Therefore, the options for readjusting VBS slots considered above need not be mutually exclusive, but should take into account the need for flexibility depending on the nature and cause of the delay. The communication rules should simply establish the procedure that will be followed in the light of the circumstances.

It will not be easy to establish a set of rules that will satisfy all parties. Therefore IPART agrees with SPC's suggestion that these types of communication rules can best be developed through a forum of industry participants.[96] IPART suggests that SPC take the initiative in convening such a forum.

94 Patrick submission, 21 December 2007, p 4.
95 DP World submission, 21 December 2007, p 3.
96 Sydney Ports Corporation submission, 24 December 2007, p 5.

IPART also recommends that more substantial changes be made to the VBS, including creating 'firm' VBS slots to which access is guaranteed and for which prices would be determined by an auction process. Firm slots affected by delays will require a separate adjustment process through a reciprocal penalty regime. These matters are discussed in more detail in Chapter 8.

Recommendation

3 That stakeholders adopt a non-discretionary set of communication rules that establish how the stevedores will adjust the number of VBS slots when delays occur in their landside service. Sydney Ports Corporation should take the lead in this matter by acting as the forum convenor.

4.2.3 Provide basic amenities for truck drivers required to queue

Given that some delays are inevitable, and therefore some truck drivers will have to queue for long periods to gain access to the stevedores' terminals, IPART considers that it is reasonable that the stevedores continue to provide basic amenities on terminal land, such as a toilet, cold drinking water and perhaps some vending machines. Ideally, access to these amenities should be freely available to all those involved in landside queuing.

Stakeholders were generally supportive for provision of driver amenities that also encompassed occupational health and safety concerns.[97] Both stevedores already provide some amenities to truck drivers within their terminals. Patrick currently provides toilet facilities and vending machines (just inside its terminal gate 800 metres away from the threshold of terminal land) and is in the process of installing chilled water fountains.[98]

IPART understands that SPC is currently discussing the possible development of a truck marshalling location at Port Botany in the broader context of fatigue management, and in light of the 'chain of responsibility' legislation applicable to the road transport industry.[99] IPART considers that such a marshalling area would benefit the port, as it could accommodate more extensive amenity facilities for truck drivers. The marshalling area could also provide parking areas for trucks that arrive early and act as a temporary holding area for any queues during terminal delays.[100] Therefore, IPART supports SPC's initiative and encourages it to progress the development of these facilities.

97 Transport Workers Union submission, 14 December 2007, pp 6-7.
98 Patrick submission, 21 December 2007, p 6.
99 Sydney Ports Corporation submission, 24 December 2007, p 6.
100 Patrick submission, 21 December 2007, p 6 and Lynda Newnam submission, 10 January 2008, p 3.

Recommendation

4 To foster goodwill, that the stevedores provide basic amenities such as toilets and cold drinking water to truck drivers who are required to queue to gain access to the stevedores' terminals. IPART supports efforts by Sydney Ports Corporation to progress a truck marshalling location at Port Botany.

4.3 The VBS be independently owned and/or operated

As noted in section 4.1, several stakeholders argued that the VBS should not be owned or operated by the stevedores, but by an independent third party. The objectives stakeholders seek to meet through an independently owned and/or operated VBS appear to be:

- to increase the number of VBS slots available
- to establish a more transparent and fairer system of slot allocation, and
- to reduce the degree of discretion currently exercised in the slot allocation systems.

In the Draft Report, IPART concluded that it would be very difficult for a third party to determine, let alone increase, the number of slots required to balance the stevedores' need to move containers into and out of their terminals as efficiently as possible and the road transporters' demand for peak period VBS slots.

IPART also concluded that a two-tiered VBS, together with more clearly defined rules, terms and conditions of access and periodic independent audits of the stevedores' compliance with those rules would also achieve the other two objectives listed above, without requiring an independently owned or operated VBS.

However, in their responses to the Draft Report, some stakeholders continued to argue for an independently owned and/or operated VBS. For example, ATANSW and CLAG submitted that the stevedores do not have "… an inalienable or efficiency justified right to own the VBS"[101]. The CBFCA argued that "a fundamental tenet of any VBS is that it be operated and managed by an independent, preferably not for profit, third party provider".[102]

NSW Maritime proposed the establishment of an Independent Gateway Authority (IGA) that would assume full control of the VBSs. It argued that:

> An independently managed and integrated system is preferable. Allowing the system to be run by terminal operators may not be flexible enough to accommodate future players and cope with the increasing size and complexity of the logistics task.[103]

101 ATANSW/CLAG submission, 1 January 2008, p 5.
102 CBFCA submission, 19 December 2007, p 13.
103 NSW Maritime submission, 24 December 2007, p 3.

Most of these stakeholders recognised that there are two distinct aspects to VBS operation. One is determining how many slots should be on offer, and the other is the booking and allocation process itself. NSW Maritime argued that both aspects of VBS operation should be removed from the stevedores and assigned to its proposed IGA.[104] ATANSW and CLAG, on the other hand, proposed establishing an independent VBS operator that could oversee the allocation process but still depend on the stevedore's advice on the number of slots to be offered.[105]

4.3.1 Independent VBS that determines slot numbers and oversees their allocation

IPART's view is that any independent management of the VBS that specifies the number of VBS slots that the stevedores should make available is likely to impair the stevedores' ability to move containers in and out of the terminal in the most efficient manner. This is because, in practice, it would be very difficult for a third party such as the proposed IGA to determine the number of VBS slots the stevedores should offer. The third party operator would be required to constantly ascertain and monitor the storage capacity of the terminal as well as the capacity of landside resources and balance it with the level of unsatisfied peak time VBS demand.

However, throughout its review, IPART did not receive any detailed information on the feasible maximum storage and throughput capacities of the stevedores' terminals, or the operational capacity of their landside resources. Nor did it receive any systematic or comprehensive evidence on the extent of unsatisfied demand for peak-time VBS slots by road transporters. Further, IPART was unable to accurately forecast the demand for these slots because, as section 3.1.2 discussed, it is very difficult to predict accurately the number of truck entries required on any day, let alone each hour.

For these reasons, IPART does not consider that an independent VBS that prescribes the number of slots available will be more accurate and efficient than the current system and, is of the view that there is good reason to believe such a VBS will reduce efficiency. The stevedores have specialised knowledge of the operation and capabilities of the lifting equipment on the wharves, and have commercial incentives to arrange their assets and staff to best move containers off their premises to make way for more containers. Therefore, the stevedores are in the best position to decide on the number of VBS slots to be offered in a given period. An independent operator responsible for determining how many VBS slots should be on offer is unlikely to have sufficient information and understanding be able to satisfy the needs of either the stevedores or the road transporters during periods of congestion.

104 NSW Maritime submission, 24 December 2007, pp 3-4.
105 ATANSW/CLAG submission, 1 January 2008, p 8.

4.3.2 Independent VBS that oversees slot allocation only

Some stakeholders have argued that an independently operated VBS that allocates slots in a transparent manner according to a pre-determined set of rules will help to dispel present suspicions that the VBS are being operated to the advantage of the stevedores and/or their affiliate transport companies. To this end, ATANSW and CLAG proposed creating an independent VBS operator that would only be responsible for allocating VBS timeslots, and would depend on the stevedores' advice is determining the number of slots to be offered.[106]

In IPART's view, independent allocation of VBS slots is feasible but would not necessarily provide any benefits to road transporters in addition to those that could be achieved through greater transparency in the rules, operations and performance of the slot allocation system. In addition, it also raises a new issue – to whom would the independent VBS operator be accountable for performance and fairness?

IPART considers that its recommended two-tiered VBS, where the stevedores determine the number and timing of slots, is the best alternative for achieving the objectives road transporters and other stakeholders seek through an independently owned or operated VBS. If implemented, IPART considers that its recommend system will lead to increased VBS slots in peak periods in the long term, without impairing the stevedores' ability to move containers in the most efficient manner. It will also lead to a fairer and more transparent VBS by establishing stricter rules increasing transparency in the allocation process and ensuring periodic independent auditing systems.

However, IPART recognises that the introduction of this VBS proposal will require extensive consultation and should not be rushed. For this reason, it recommends in Chapter 8 that SPC facilitates the design and implementation process in consultation with the stevedores. In the meantime, it is important that steps be taken to increase stakeholders' confidence in the current VBS and assist in the transition to the new system. These steps include:

- ensuring that the terms of access to each VBS are specified clearly and comprehensively
- undertaking regular independent audits of each stevedore's compliance with these terms of access.

Each of these steps is discussed below.

4.3.3 Ensuring that the terms of access to the VBS are specified clearly and comprehensively

To increase stakeholders' confidence that the VBS are run in a fair and transparent manner – particularly that the available VBS slots are allocated fairly among

106 ATANSW/CLAG submission, 1 January 2008, p 8.

competing road transporters – the stevedores need to clearly set out their terms of access for road transporters. This should include details of how they operate the VBS, all the terms and conditions of access to the VBS, and what a holder of a booking in that system is entitled to. The stevedores should then enforce these arrangements according to those rules.

IPART recognises that if the specified arrangements are enforced, the road transporters will have less operational flexibility. This has to be weighed against the greater transparency that will result from this proposal.

Since the purpose of the proposal is to increase stakeholders' confidence that the VBS will be run in a fair and transparent manner, this is achievable by including a model of transparency and accountability in the present VBS arrangements.[107]

That model is encapsulated in the second paragraph in the recommendation below. The requirements are expected to demonstrate to stakeholders that transparency in total slots offered each hour and impartiality in slot allocation can be achieved without requiring the VBS to be independently owned or operated.

Recommendation

5 That each of the stevedore ensures that its terms of access for road transporters specifies, in clearly expressed terms, how it operates its VBS, the complete terms and conditions of access to this system, and what a holder of a booking to this system is entitled to.

   The operating features of the VBS to be specified should include:

   - a published register of road transporters eligible to enter each terminal and an objective basis for allocating slots per hour between these transporters that limits as far as possible any discretion in that allocation process
   - publishing the total number of slots on offer beforehand or when each on-line VBS is opened (and reopened during the day)
   - an unambiguous policy on the procedure for empty stack runs, including their number and timing
   - collecting and submitting all VBS slot and empty stack run statistics and related information to an independent auditor in order to verify that slots have been allocated in compliance with the established basis of allocation, and
   - making the audit findings accessible to road transporters as soon as practicable after the audit is complete.

[107] See for example, ATANSW/CLAG submission, 1 January 2008, p 5; Shipping Australia ltd submission, 18 December 2007, p 3; and the CBCFA submission, 19 December 2007, p 13. One stakeholder suggested that SPC be the auditor. If SPC were to conduct the audits, it would need to conduct them in compliance with Australian Standard Assurance Engagements (ASAE 3000).

4.3.4 Undertaking regular independent audits

The combination of clearly specified terms of access to the VBS -- that include how the stevedore will operate the VBS and what a holder of a booking to this system is entitled to – and an independent audit of the stevedores' compliance with these terms will minimise the discretion available to the stevedores in allocating access. Positive audit outcomes will also give assurance to the road transport industry that the stevedores' affiliated transport entities have not been receiving favourable treatment.

The general objective of the audit should be to verify compliance with the terms of access for road transporters. For the audits to be effective in providing sufficient assurance, they should establish that:

- the allocation of VBS timeslots is carried out in accordance with the rules that have been set and that are publicly available
- physical access to the terminals occurs in accordance with the allocation rules
- published performance statistics are accurate and reliable, and
- penalties charged are in accordance with the publicised terms of access.

The auditor should conduct the audit in compliance with Australian Standard Assurance Engagements ASAE 3000.[108]

To alleviate some stakeholders' concerns about a possible conflict of interest and lack of transparency should the stevedores engage the auditor, IPART recommends that SPC engage a qualified independent auditor. IPART believes that SPC is sufficiently detached from the outcome of the audit to do this in an unbiased way. Such a role for the SPC appears to be consistent with the SPC's objective under the Ports *and Maritime Administration Act 1995* to "promote and facilitate trade through its port facilities".

The specific objective of the audit should be set by SPC who should also determine the best means of disseminating the audit report to the industry. The exact scope of the audit and its frequency should ideally be determined by the auditor so as to meet the objective of the audit and the standard of assurance. To assist SPC in establishing the audit requirements, IPART has provided some guidelines on the auditor's engagement and the audit process including possible funding arrangements in Appendix K. These guidelines have been drafted specifically for audits of compliance with IPART's recommended two-tiered VBS discussed in Chapters 7 and 8. However, they will also help to increase stakeholders' confidence in fairness and transparency of the current systems until two-tiered VBS can be implemented.

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108 The Auditing and Assurance Standards Board of Australia issues and maintains auditing standards for financial and non-financial audits of business entities. ASAE 3000 deals with the Framework for Assurance Engagements and is available at www.auasb.gov.au/standards_new_AuASB.htm.

Recommendation

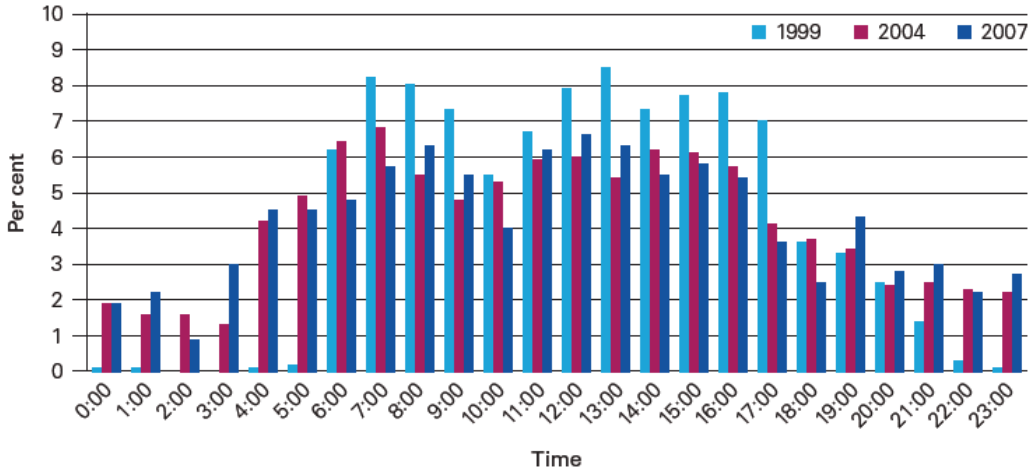
6 That Sydney Ports Corporation engages an independent auditor to conduct regular audits of each stevedore's compliance with their terms of access for road transporters.

4.4 Road transporters move more towards 24/7 operations

The stevedores suggested that the road transporters should move towards 24/7 operations to reduce the demand for weekday VBS slots during normal business hours and to reduce traffic congestion in the Sydney metropolitan area during the morning and afternoon commuter peak periods.

In recent years, the proportion of trucks that enter the stevedores' terminals outside normal business hours on weekdays has increased, suggesting that a shift towards 24/7 operations is already occurring (see Figure 4.2).[109]

Figure 4.2 Proportion of truck entries by time of day



Source: Sydney Ports Corporation, *Logistics Review 2006-07*, p 11.

However, IPART found that there are some disincentives for road transporters to increase their off-peak use of the terminals. The key disincentive is that the price structure for storage makes off-peak pickup commercially unattractive.

Off-peak pickup from the terminal is likely to entail costs associated with overnight storage of the container in an off-port facility until it can be delivered. For containers that are still within the free on-port storage period, there is no direct cash cost of waiting until the next day to pick up the container from the terminal. Even for containers that are past the free on-port storage period it may still be cheaper to pick up the container the next day than to pick it up sooner during the off-peak and incur

[109] Over the past four years, the proportion of trucks that accessed the DP World terminal between 2:30pm to 10:30pm and 10:30pm to 6:30am ranged between 53 and 58 per cent: see DP World submission, 12 June 2007, Table 4, p 23.

off-port costs. This anomaly in the relative storage cost structures tends to deter greater off-peak use of the terminal.

Table 4.1 shows that off-port storage for a 20ft container costs $7.50 a day. On the face of it, this appears to be much cheaper than on-port storage of $48 or $53 per day (applicable after the three free day period has elapsed) shown in Table 3.6 in Chapter 3. However, there are also additional costs related to placing the container at an off-port storage facility. ATANSW estimates that these additional costs for a full container include $100 in transport costs (based on extra truck time of 1.25 hours at $80 per hour) plus $20 in extra operational and administrative tasks.[110]

Table 4.1 Indicative off-port storage and transport charges

	20ft container	40ft container
Indicative off-port yard rates		
Storage fee per day	$7.50	$15.00
Yard handling fee[a] – per lift	$30.00	$45.00
Transport and administrative costs		
Truck hours - 1.25, $80 per hour	$100.00	$100.00
Administrative – 0.25 truck hours equivalent	$20.00	$20.00

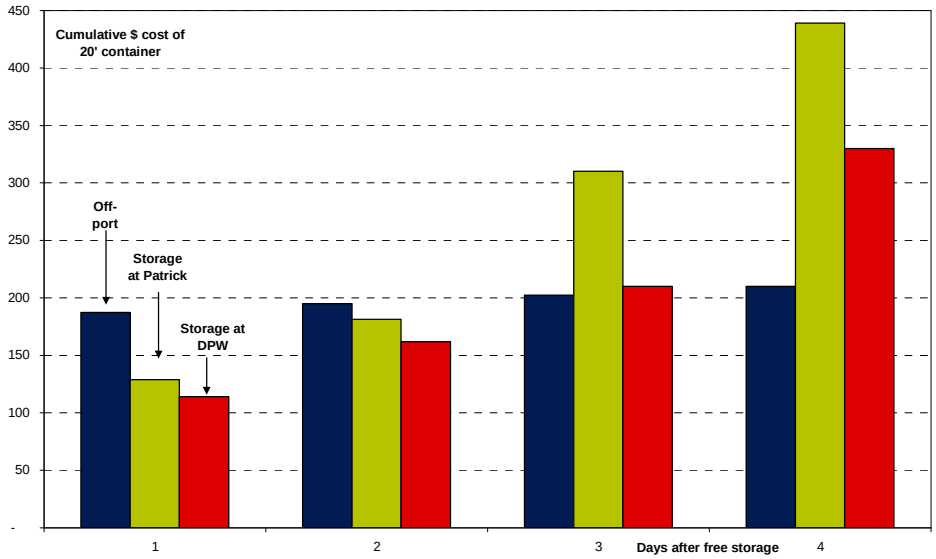
Note:[a] Yard handling fees (per container) are for lifting containers off the truck for storing and on again upon re-collection for delivery to importers' premises. The $30 per lift agrees with the Sea Freight Council minimum figure quoted in Chapter 5. The $45 lift fee for 40 ft containers is slightly higher than the maximum figure cited by the Sea Freight Council.

Source: CBFCA communication to IPART, 4 July 2007; ATANSW submission, 12 June 2007, p 12 Table 2.

Based on the data in Tables 3.6 and 4.1, the comparison between on-port and off-port storage charges, including relevant transport and administrative costs, is shown in Figures 4.3 and 4.4 for a 20ft container and a 40ft container respectively.

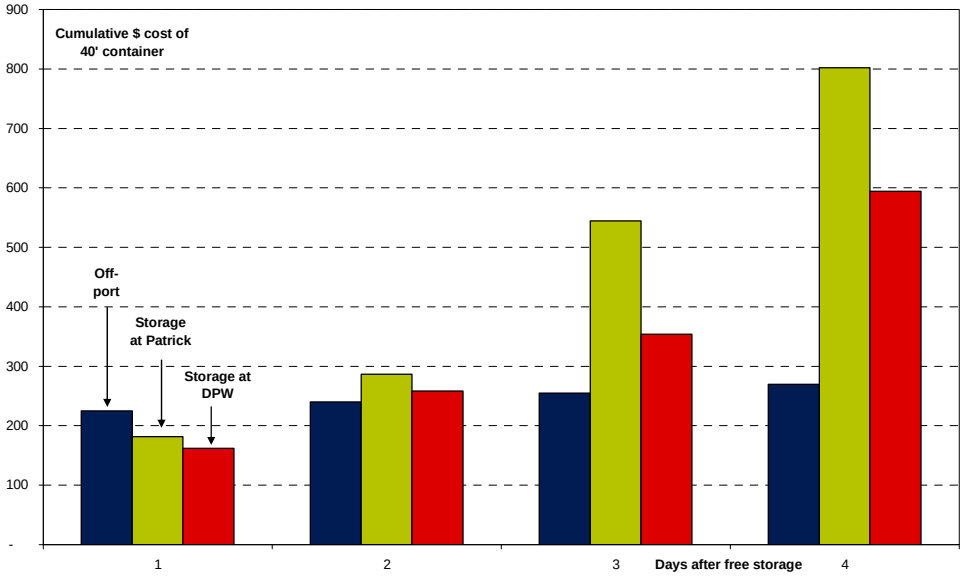
110 ATANSW submission, 12 June 2007, p 12 and J.J. Lawson, private communication to IPART, 5 July 2007. The extra $20 is based on 0.25 hours at $80 per hour truck time (as the driver gains entry and processes paperwork at the staging depot). The same costs are incurred again if the road transporter cannot gain access to an empty container park on the inward journey to the port.

Figure 4.3 Costs of on-port and off-port storage – 20ft container



Source: IPART analysis based on data presented in Tables 3.6 and 4.1.

Figure 4.4 Costs of on-port and off-port storage – 40ft container



Source: IPART analysis based on data presented in Tables 3.6 and 4.1.

These figures demonstrate that on-port storage is cheaper for the cargo owner than off-port storage until a 20ft container is three days or more past the end of the free storage period, and a 40ft container is two days or more past the end of this period. Given this pricing incentive, off-peak pickup is quite unattractive commercially. In other words, the price structure for storage drives cargo owners to prefer peak operation.

Other disincentives to road transporters moving more towards 24/7 operations exist in the form of council requirements that constrain the operating hours of some warehouses, and council curfews on the use of local roads by container trucks.[111] Transport and planning matters relating to local councils would best be taken up at a government-to-government level, where the interests of local residents could be balanced against supply chain efficiency.

Given the above, IPART considers that weekday congestion at Port Botany can be alleviated by more off-peak activity by road transporters and by more off-port storage. However, to remove the current disincentives for overnight or even two-night off-port storage,[112] changes to the relative prices of on-port and off-port storage will be required.

Some stakeholders suggested that IPART consider a peak/off-peak pricing structure for VBS access. In such a structure, a much higher price would be charged for access during the 'peak' hours on Monday to Friday and a rebate would be paid to road transporters for each slot accessed outside those hours.

In IPART's view, it would be an important step forward for the supply chain participants in recognising the different values of peak and off-peak slots. One of the main benefits of the peak/off-peak pricing structure would be that it can help encourage the road transport industry to shift to off-peak operations. However, such a pricing structure would not be as efficient in allocating slots as the auction process recommended by IPART in Chapters 7 and 8. While a peak/off-peak price structure would reduce congestion in the VBS, it would not remove it altogether. Therefore it would still be necessary to allocate slots on a more arbitrary basis (eg, first-come-first-served basis) when demand exceeds the number of slots.[113]

4.5 Road transporters increase container density per truck or make more dual runs

Currently, most VBS timeslots are booked for a single run – that is, to either pick up or drop off a single container. Some stakeholders suggested that congestion in the VBS could be reduced if the road transporters used the existing VBS slots more productively, by increasing the container density per truck and/or making more dual runs. (A dual run occurs when a truck drops off an export container and picks up an import container before leaving the terminal.)

111 These constraints differ, depending on the council and the particular stipulations of the development consent.

112 The same disincentive applies when empty containers do not get returned to an empty container park in normal business hours. This disincentive may also explain why loaded truck trailers are parked along Foreshore Road.

113 See section 7.5.1 for IPART's consideration of administratively pricing peak/off-peak VBS slots.

4.5.1 Increase container density per truck

Table 4.2 shows that Sydney has the lowest container density per truck across Australia, both at DP World terminals and overall.

Table 4.2 Container density rates per truck

Port	DP World averages January 06 to April 07	All terminal averages September 06 to June 07
Brisbane	1.43	1.7
Sydney	1.16	1.4
Melbourne	1.59	1.6
Adelaide	1.67	1.5
Fremantle	1.34	1.7

Source: First column - DP World 12 June submission, p 7. Second column – BITRE *Waterline*, 43, January 2008, Table 1.1, pp 13 - 17.

One explanation for Sydney's low container density may be that, of the 250 road transporters in the city, many serve many small "LCL" importers.[114] If this is the case, some form of information exchange arrangement would be needed to encourage higher container densities per truck.

Another explanation may be that the size of the trucks in Sydney's road transporters' fleets is smaller than elsewhere. For example, in Melbourne, almost all containers are moved by articulated and B-double trucks that can carry 2-3 containers, and some are moved by "super B-doubles" that can carry 4 containers.

Super B-doubles are currently prohibited at Port Botany. Many stakeholders support the idea of lifting this prohibition and to this end the Road and Traffic Authority (RTA) has recently commenced a three-year trial of super B-doubles on selected roads around Port Botany.[115]

IPART considers that in order to improve Port Botany's truck servicing efficiency, the use of larger trucks will be necessary to increase truck container densities. It therefore supports the RTA's trial program.

Recommendation

7 That if the current 'super B-double' trial at Port Botany is successful, the Roads and Traffic Authority approve permanent access for these trucks as soon as practicable.

114 LCL is "Less than full container load", where a container has more than one importer's cargo. FCL is "Full container load", where a container has only one importer's cargo.

115 Roads and Traffic Authority submission, 14 December 2007, p 1.

4.5.2 Conduct more dual runs

IPART did not receive any data on the proportion of dual runs compared to single runs. However, there appears to be some impediments to dual runs. The CBFCA stated that the current system "does little to facilitate the two way running of containers."[116]

Currently, DP World only allows its B class carriers to conduct dual runs through 'tagging' export containers with booked VBS import container slots. This generally works well for B class subscribers as they tend to be the larger road transporters and therefore can match multiple container movements. However, other subscriber classes do not have access to this function and consequently have to use the VBS to book two runs in sequence.[117]

Patrick requires all multiple-container trucks wishing to conduct dual runs to book multiple slots in sequence, which might discourage such runs. However, Patrick is examining ways to modify its VBS to allow road transporters greater opportunities for dual runs.[118]

IPART has identified several changes that can be made to increase the number of dual runs. One is to introduce 'firm' VBS slots that will entitle the holder to make a dual run within one booked slot. This is discussed in Chapter 8.

Another change would be to create an integrated VBS that covers the wider port precinct – ie, including the two current stevedores' terminals, the empty container parks, and eventually the third stevedore's terminal.

In IPART's view, enabling the road transporters to access a booking system that covers the wider port precinct in a coordinated way would generate significant operational benefits. These benefits include encouraging more two-way loading by dual runs, by running between the stevedores' terminals and by running between the terminals and the empty container parks.

Because the consideration of a wider booking system involves port-wide concerns, the port community will be best served by a party with a whole-of-port perspective, namely SPC, to lead an investigation into the need for such a system.

In its response to the Draft Report, the CBFCA supported this initiative and noted, that there was "…merit in introducing an online container management facility, within a VBS, that promotes the utilisation of the unladen truck journey for the

116 CBFCA submission, 19 December 2007, p 9.

117 According to DP World's submission, "All B Class carriers are allowed to engage in a process called "export tagging". Export tagging involves a carrier booking an import timeslot in ePorts which will give them access to the terminal. A carrier is then able to bring an export container on the truck that is arriving to collect the import container without booking a slot for that export container (during most timeslots in the day). The purpose of this flexibility to carriers is to increase two-way running which reduces costs to carriers and decreases the number of trucks in the port community", p 12.

118 Patrick submission, 21 December 2007, p 11.

movement of empty containers for re-export."[119] IPART suggests that this could be a feature SPC examines as part of this recommendation.

Some stakeholders expressed concerns about possible breaches of the Trade Practices Act if any port-wide integration of the different VBS platforms were to be attempted. IPART is not necessarily advocating a joint VBS but emphasises the need to consider ways in which the current VBSs might be improved to incorporate the wider port precinct container flows.

IPART considers that it should be possible to construct a wider booking system that complies with the Trade Practices Act, taking into account the following principles:

- the objective of the system should be clearly stated as increasing the volume and proportion of dual runs
- access principles should be clearly articulated, and be transparent and fair (as discussed in Chapter 2)
- fees and key performance indicators for services applicable to the different classes of user should not discriminate between road transporters once a certain subscription is paid
- the parties should develop protocols for dealing with each other that comply with, rather than risk breaches of, the Trade Practices Act.

Recommendation

8 That Sydney Ports Corporation investigates, in consultation with the stevedores, the creation of compatible Vehicle Booking Systems that encourage two-way loading, covering the wider port precinct. Sydney Ports Corporation should also take into account the views of the road transport operators.

IPART notes that a common VBS *platform* already operates successfully in other ports around Australia despite concerns identified by stakeholders of a pending ACCC investigation. For example, Patrick uses as its VBS platform provider, 1-Stop Pty Ltd, which provides VBS access to road transporters across all of Patrick's Australian ports. DP World also uses 1-Stop at it terminals in Fremantle and Brisbane.

The VBS system offered by 1-Stop is a common software platform but with the slot inputs, fee structures and rules of operation that differ between stevedores and over which there is no stevedore-to-stevedore collaboration. IPART understands that DP World's Melbourne terminal is shortly to adopt the 1-Stop platform.[120]

119 CBFCA submission, 19 December 2007, p 9.
120 IPART discussion with Mr Peter Kosmina, Chief Executive Officer, 1-Stop Pty Ltd, 7 February 2008.

4.6 Other possible improvements

Other stakeholder suggestions for reducing delays at the stevedores' terminals include that:

- the road transporters 'arrive' at the terminals 'on time' for their booked VBS slots
- the road transporters comply with all processes required by Customs regulations (including checking that the container is given a 'clear' status by ACS and customs duty paid) before they arrive at the terminal to collect the containers
- the road transporters adopt technology to enable the automation of paperwork
- the stevedores undertake housekeeping as a matter of course
- the road transporters establish a single, effective industry peak body to represent them.

4.6.1 Road transporters arrive on time

Both stevedores commented that road transporters in Sydney are often late for their booked slots. Table 4.3 shows data submitted by Patrick, which indicates that many trucks don't arrive on time to take up their VBS slot. In the first three quarters of 2007, 45.6 per cent of trucks arrived after the zone time expired (last column), and only 33.2 per cent arrived on time (second last column).

Table 4.3 Truck 'arrivals' by time zone entry, January to 18 September 2007

Date	Trucks arriving before zone (1)	Trucks arriving in zone (2)	Trucks arriving after zone (3)	Total trucks (4)	% Trucks arriving in zone =(2)/(4)	% Trucks arriving after zone =(3)/(4)
Jan	4,581	6,910	9,721	21,212	32.6%	45.8%
Feb	4,522	6,673	8,607	19,802	33.7%	43.5%
Mar	4,920	7,085	8,577	20,582	34.4%	41.7%
Apr	4,057	6,499	9,800	20,356	31.9%	48.1%
May	4,661	8,495	10,098	23,254	36.5%	43.4%
Jun	3,967	6,924	8,529	19,420	35.7%	43.9%
Jul	4,782	7,746	9,845	22,373	34.6%	44.0%
Aug	4,876	7,093	11,198	23,167	30.6%	48.3%
Sep	2,293	3,251	5,878	11,422	28.5%	51.5%
Total	38,659	60,676	82,253	181,588	33.2%	45.6%

Source: Patrick, private communication to IPART 21 September 2007.

However, Patrick only records the time that a truck enters its terminal's in-gate. This means that the data do not distinguish between trucks that arrive at Port Botany on time but are not permitted entry, and those that are genuinely late in arriving.

There are many reasons why trucks may enter the terminal gates after their VBS slot has expired, including:

- specific actions by the stevedores – for example, if a stevedore has delayed the truck in question earlier in the day
- events within the domain of road transporters – for example, inefficient planning/scheduling or a truck breakdown or failure of associated equipment
- actions of importers or exporters – for example, failure to have a container available for collection at the designated time, or to be available to unload a container at a pre-arranged time
- wider systemic problems, such as unexpected congestion on Sydney's road network (road transporters' planning takes account of expected congestion)
- a combination of any of the above.

But whatever the reasons for late arrival of trucks, it nonetheless contributes to recurrent delays at the terminal.

IPART further observes that the current practice by the stevedores of granting 'grace periods' to road transporters does not encourage trucks to arrive on time where it is within the control of the transporter. Each stevedore's grace period policy effectively allows trucks to enter the terminal after the truck's booked timeslot has passed without applying penalties. For example, Patrick effectively offers a three-hour slot for each VBS booking because its policy is to allow trucks in up to two hours after their booked slot finishes without imposing any penalty.

IPART recognises that grace periods have some implicit operational benefits to the stevedores as well as to road transporters. From the stevedores' point of view, accommodating trucks even if they arrive late ensures that container dwell times are kept low thereby minimising the impact on its yard stack densities, particularly during periods of high terminal throughput. Road transporters, on the other hand benefit from grace periods because disruptions to their container delivery schedules are reduced and possible storage fees and delays inherent in re-booking another VBS slot are avoided.

SPC suggested that there could be agreed business rules on when to apply late arrival penalties as trucks are often late due to factors outside their control.[121] However, Patrick has foreshadowed the need for less leniency on late arrivals once its Rail Mounted Gantries are fully operating on its roadside container movements.[122]

IPART accepts that there will be cases when trucks will not arrive on time due to extenuating circumstance beyond the individual road transporter's control. In such instances, imposition of penalties would certainly unfairly disadvantage the road transporter. However, the flexibility of grace periods comes at a cost to the overall efficiency of the supply chain. Servicing trucks that arrive late invariably affects the

121 Sydney Ports Corporation submission, 24 December 2007, p 5.
122 Patrick submission, 21 December 2007, p 5.

terminal's ability to service those trucks that arrive on time, especially when terminal resources are already at capacity. Grace periods also do not discourage those trucks who could arrive on time but do not, thus holding up other bona fide trucks that are waiting to be served in their booked time. Therefore, although grace periods may help the affected road transporter, the consequences invariably disadvantage all road transporters and impair any efficiency gains derived from orderly truck arrivals through the VBS.

IPART notes that the stevedores have already begun providing road transporters with real-time communications about delays at their terminals. IPART's suggestions for further improvements to real-time communications as discussed earlier will ensure that road transporters receive more practical information. By keeping road transporters better informed about the state of the terminals, these initiatives should help them plan their activities and may help reduce the need for grace periods.

IPART therefore recommends that the stevedores be less lenient with their grace period policies and enforce the penalties for late arrival more rigorously. This will help encourage road transporters to arrive on time, where this is in their control. It does mean that the road transporters may lose some flexibility, but this should be balanced against the benefits of greater certainty about the time that will be spent at the port. In instances where road transporters arrive late due to factors beyond their control, there is a need for the stevedores and the road transporters to develop better rules that can accommodate some penalty exemptions without having too great an impact on each other's operations. However, such exemptions should apply in a limited number of cases. To assist these parties in reaching consensus on how best such exemption rules can apply, IPART considers that SPC can play an important role as an honest broker in trying to achieve both an equitable and a practical outcome.

Recommendation

9 That the stevedores provide less lenient 'grace periods' to the road transporters for late arrival. Sydney Ports Corporation can help to facilitate negotiations between the stevedores and the road transporters for more clearly defined rules on when penalties for late arrival should not apply.

4.6.2 Road transporters ensure that Customs processes have been carried out before arriving at the terminal

Sometimes, import containers cannot be released because the road transporter does not have the necessary details completed, including a receipt showing that the customs duty has been paid.[123] This causes a bottleneck, which DP World suggested could be removed if ACS allowed containers to be released to road transporters if

[123] For example, Port of Felixstowe's 2007 introduction of a VBS is partly to solve delays caused by driver rejections (15 per cent) at the gate for incorrect/incomplete data entered prior to arrival. For more information see http://www.portoffelixstowe.co.uk/vbs

they presented their invoice for duty.[124] IPART notes that this would be in line with standard business practice.

On a related matter, ACS currently operates a day and evening shift to X-ray both random and targeted containers before they are available for collection at its Container Examination Facility (CEF). When congestion occurs at the terminals, a backload of containers to be transported to the CEF can occur. Such a backlog not only causes a bottleneck, it also eats into the free days before storage charges apply. If ACS moved more towards 24/7 operations it would reduce the potential for such bottlenecks.[125]

Recommendation

10 That the NSW Government approach the Australian Government to consider the possibility of the Australian Customs Service making the following changes:

- Releasing containers on presentation of invoice for duty, and
- Extending Container Examination Facility operating hours.

In addition, IPART observes that because of the three-day free storage period, road transporters often book VBS slots in anticipation of the release of containers from Customs. If clearance is delayed, road transporters substitute another container number if possible, and, if necessary then rebook a later VBS slot for the missed container. However, in the past ACS has advised road transporters that:

> … slot times should not be booked in the CTO's [Container Terminal Operator's] vehicle booking systems before the cargo is cleared by Customs" (ACS Notice 2004/33) [126]

The CBFCA and other stakeholders have argued that road transporters are not encouraged to comply with this advice because the three-day free storage period provided by the stevedores starts before the container has been cleared by Customs.[127] Since delays caused by CEF processing are beyond the control of the road transporters, these stakeholders proposed that the stevedores should start the three-day free storage period from the time that containers are finally cleared by ACS (or Quarantine).

IPART recognises that the interposing of a necessary Customs inspection function between the stevedores and the road transporters creates a difficult situation for both parties. From the road transporters' perspective, starting the free storage period when the container returns from the CEF makes sense, because it alleviates any time pressure that the Customs process places on transporters who are trying to avoid storage fees. The ACS recognises the pressures faced by road transporters and

124 DP World submission, 12 June 2007, p 11.
125 DP World submission, 12 June 2007, p 9.
126 Quoted by CBFCA in its submission, 19 December 2007, p 12.
127 Under pressure, operators may engage in speculative and pre-emptive VBS bookings which then incur penalties if the pre-emption is incorrect. CBFCA have tried to minimise time pressures problem by negotiating with the stevedores to allow an extra free day of storage if containers are returned within 24 hours of the last day of free storage (CBFCA submission, 12 June 2007, p 16).

attempts to ensure that containers are handled efficiently by having key performance indicators in its container handling contracts with the stevedores and its transport contractors.[128]

From the stevedores' perspective, containers need to be moved from their terminals as soon as possible and, since Customs delays are not within their control either, starting the free storage period after a container is returned to the terminal by Customs is not desirable, because it will lengthen the average stay of containers at the terminal.

Patrick expressed reluctance to apply three free days of storage from the time a container is returned to the terminal from CEF. It argued that the incidence of extended detention is small and noted that for December quarter 2007, less than 10 per cent of containers were not returned to its terminal from CEF within 24 hours.[129] If the incidence of Customs delay is as low as Patrick has cited, this may not be a major issue unless the terminal is already working close to its feasible capacity.[130]

In addition, as stakeholders acknowledge, both stevedores provide an additional day of free storage for containers returned to the terminal with less than 24 hours of free storage remaining.

Based on the information available to it, IPART has sought to balance the competing interests of road transporters/customs brokers and the stevedores by recommending that the stevedores extend their current practice by providing an additional two days of free storage for containers returned to the terminal with less than 24 hours of free storage remaining.

Where ACS makes late changes to container status so that formerly 'cleared' containers are placed on 'hold', it would seem to be a clear case of force majeure for both road transporters and the stevedore, and the goodwill of both parties will be needed to resolve the matter amicably.

Recommendation

11 That the stevedores grant two extra days of free storage rather than the present practice of granting one extra day for containers that have less than 24 hours of free storage available when they are cleared by the Australian Customs Service.

4.6.3 Road transporters adopt technology to enable the automation of paperwork

Automating paperwork is part of a broader recommendation that the landside operators adopt whatever technologies are necessary to be in real-time communications with the stevedores' terminals, as discussed above in section 4.2.

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128 Australian Customs Notice No.2006/23, available at: http://www.customs.gov.au/webdata/resources/notices/ACN0623.pdf

129 Patrick submission, 21 December 2007, p 12.

130 IPART understands that this is often the case at Patrick but has received no data to support that contention.

Currently, most truck drivers hand the paperwork needed to pickup a container to the stevedore after entering the terminal gate. Some stakeholders suggested that this process adds up to 14 minutes to the TTT.[131] This time could be reduced by fully automating gate processing for trucks.

Automation would require the road transporters to provide electronically the stevedore with all the necessary information, before the truck arrives at the gate. Trucks would also need to be fitted with a transponder (or equivalent) to activate this information on entry.

In responses to the Draft Report, most stakeholders agreed that road transporters should adopt the automated gate processing technology currently available. The CBFCA also suggested that trucks should have electronic tags that can be read at specific points within the port precinct, and that this concept can be extended to monitor stevedore performance beyond the existing 'gate to gate' TTT measurement.[132]

However, ATANSW and CLAG did not fully support the Draft Report's recommendation on this issue, commenting that "there is much more required for the technology solution than simply asking carriers to install transponders for gate automation."[133] They also commented that the current transponder technology is "three generations old."[134] IPART notes that investing in current technology transponders appears to be relatively cheap compared to the time it can save.[135] In this case, greater effort seems to be required from the road transporters side to make use of existing technology to improve their efficiency.

IPART also supports Patrick's plans to integrate the MSIC card's transponder based technology to fully automate its gate processing.[136] IPART notes that container terminals at ports of Los Angeles and Long Beach in California operating through the PierPASS have also made it mandatory for trucks to install "TruckTags" which are similar to the transponder technology available at Port Botany.[137]

131 CLAG submission, 6 June 2007, p 78.
132 CBFCA submission, 19 December 2007, p 12.
133 ATANSW /CLAG submission, 1 January 2008, p 6.
134 ATANSW /CLAG submission, 1 January 2008, p 22.
135 Transponders are used by 25 per cent of the trucks entering the DP World terminal. DP World currently supplies transponder units for $120.50 per unit (see DP World submission 12 June 2007, pp 17-18). At Patrick, only 5 per cent of truck transactions occur through automated gate processing (see Patrick submission, 21 December 2007, p 13).
136 Patrick submission, 21 December 2007, p 13.
137 TruckTag uses RFID (Radio Frequency Identification) technology. These tags are installed on the truck's driver-side rear-view mirror to automatically read at terminal gate entrances using specialized scanning antennas that validate the security clearance of the truck. Trucks without TruckTags are "processed through exception handling, which may include being denied access or processing via a trouble ticket." These tags are supplied free of charge by PierPASS.
See http://www.pierpass.org/trucktag

Recommendation

12 That the road transporters invest in the technology needed to fully automate the gate processing for trucks.

4.6.4 Stevedores undertake housekeeping

Another way to reduce TTT is for the stevedores to use container numbers that are provided early in the booking process to rearrange the stacks before the truck arrives so that these containers are easily accessible.

In responses to the Draft Report, DP World supported undertaking housekeeping, but Patrick expressed concern that late truck arrivals which could nullify housekeeping efforts. Among the road landside participants, only the CBFCA expressed reservations about the whether provision of container numbers should be made mandatory on the grounds that some flexibility is necessary to switch container numbers for any containers that suddenly become subject to a Customs hold.

IPART recognises that providing container numbers in advance will give less operational flexibility to the road transporters. However there is a trade-off between the rigidity resulting from locking in container numbers some time in advance and the benefit of less time spent waiting at the stevedores' premises. Once the stevedore is in possession of a container number, that information can be used by it to facilitate a quicker service to the relevant road transporter. It therefore seems reasonable to request road transporters to provide container numbers at least 24 hours in advance so that the stevedore has adequate opportunity to arrange housekeeping.[138]

Recommendation

13 That the stevedores use whatever container numbers that have been provided 24 hours in advance to do more housekeeping to reduce truck turnaround times.

4.6.5 Need for more effective communication between road transporters and the stevedores

Typically, supply chains require a high degree of co-operation and communication. At Port Botany, there appears to be room for improvement.

During the course of this review, it has become clear that the interactions between the stevedores and the two organisations representing road transporters tend to be adversarial.

[138] As Chapter 7 discusses, IPART's 'firm' VBS slots to which access is guaranteed will *require* container numbers to be provided at least 24 hours in advance so that the stevedore can arrange the terminal to ensure that it meets its firm slot obligations.

The stevedores submitted that there is no effective industry body representing the road transporters in NSW with whom they can work effectively.[139] They noted that the situation is very different in Melbourne, where road transporters are represented the Victorian Road Transport Association (VTA). The NSW Road Transport Association was recently declared insolvent and some of its staff joined the ATANSW. However, the ATANSW sees itself as a peak body that represents truck operators in general. CLAG represents some participants on the road side of the container freight industry, but does not appear to have an effective relationship with the stevedores.

Neither body represents all or even most of road transporters servicing Port Botany. As a result, the issues of concern to the road transporters are not being discussed and prioritised among themselves, so that the most important issues can be taken to the stevedores by their appointed representatives to be discussed and solved. In addition, agreed solutions are not being reported back to and actioned by the road transporters.

IPART considers that it is important that the road transporters work effectively with the stevedores to further the interests of all of them. As a first step, the road transporters need to develop a shorter, prioritised list of the key operational changes to be negotiated with the stevedores. They then need to work with the stevedores in a more cooperative and constructive manner to resolve those specific operational issues.

The key changes that need to be made by stakeholders to improve the efficiency of land and port interface require industry cooperative action. To some extent, the 'goodwill' of all participants will be required. This creates an obvious need or an honest broker that can be relied upon to act in the best interest of the port sector. IPART considers that SPC is well placed within the Port Botany community to be able to facilitate more efficient outcomes through cooperative action.

[139] This was not always the case. For example, DP World submits that the *Carrier Access Arrangements* governing terms and conditions for VBS access to its terminal were originally drafted six years ago in consultation with the (now defunct) NSW Road Transport Association, see DP World submission, 12 June 2007, p 33.

5 Improving the use of rail

Another approach to reducing congestion at the stevedores' terminals and on the roads around Port Botany is to increase the use of rail for transporting containers. Recent analyses of container movements into and out of Port Botany indicate that although a high proportion of full export containers from rural NSW are transported to the port by rail, the majority of empty export containers and import containers – most of which remain within the Sydney metropolitan area – are transported by road.[140] As import containers and empty export containers represent approximately 75 per cent of all container traffic at Port Botany, rail would have to capture a significant share of one or both of these categories to meet the NSW Government's target of 40 per cent of all containers to be moved by rail.

As part of its review, IPART considered what can be done to increase rail's share of container traffic, including considering the impact of pricing on the choice between road and rail. In particular, it examined:

- why rail doesn't presently carry more freight into and out of Port Botany
- what needs to be done to overcome the current impediments to increased rail container traffic, and
- which of these necessary measures requires some form of government intervention.

Stakeholders suggested a range of reasons for rail's failure to capture a larger share of container traffic (see Box 5.1). IPART found that the most important reasons are the poor quality of the service provided by rail, and the inferior cost position of rail. In relation to poor service quality, a range of specific causes has been identified. Most of these causes are addressable and some are already the subject of initiatives by ARTC, RailCorp and the stevedores. However, in many cases, government intervention is necessary, or would help, to ensure timely implementation.

In relation to the inferior cost position of rail, IPART found that several factors contribute to rail's higher costs per comparable container movement, including inefficiencies caused by the service quality issues noted above, additional costs incurred by stevedores, and additional costs related to the fact that rail can't transport containers for their entire journey and so they must be transferred to or from a truck at some stage. In addition, rail is disadvantaged because a series of market failures has resulted in the prices of container movement by both rail and road not reflecting the true costs involved, and this distorts the choice of mode. To

[140] ARTC submission, 13 June 2007, Table 2, p 7.

help identify how best to address these issues, IPART undertook a quantitative assessment of the road-rail cost differential.

The sections below discuss IPART's findings and conclusions in detail. Section 5.1 explores rail's service quality issues, including their causes, potential solutions and whether or not government intervention is needed to facilitate or expedite these solutions. Section 5.2 focuses on rail's cost position: it describes in general terms why the cost of container transport by rail is higher than the cost by road, and then looks at the road-rail cost differential in detail, and what can be done to improve rail's cost position.

Box 5.1 Stakeholder views on reasons for rail's low share of container traffic

Stakeholders suggested two main reasons for rail's failure to capture significant empty export traffic:

- the empty container parks, from which this traffic mostly originates, are located too close to port to make rail cost-competitive with road
- rail is presently insufficiently reliable for the "just-in-time" requirements of empty export logistics.

It may also be that rail is presently unable to deliver sufficient capacity for the empty export logistics task.[141]

For rail's failure to capture significant import container traffic, stakeholders suggested the following reasons:

- poor service quality, including poor reliability and the fact that it is not able to give priority treatment to urgent containers
- an inferior cost position relative to road transport.

Stakeholders also expressed doubts over rail's ability to handle greatly increased volumes.

5.1 Service quality issues

The poor quality of service provided by rail, particularly the poor reliability, is central to shippers' choice of mode. For example, CBFCA observed:

> Our customers are predominantly the importers as well as exporters, but the use of rail is something that we hardly consider because of the uncertainty of a rail moving containers out to a railhead for then a truck to pick it up from there. There is a lack of visibility and a general uncertainty within the importing community about the use of rail.[142]

[141] At the Roundtable, Mr Wright of MCS Cooks River stated, "I don't believe that rail at its current volume can handle the volumes of empties that need to go back to the port for repositioning. We can have ships that come in and take 4,000 [or] 5,000 TEUs, and the only way you can do that is by road, short-haul road" (see transcript, p 25). There was no substantive disagreement with Mr Wright's proposition expressed at the roundtable.

[142] Roundtable transcript, pp 13-14.

In any sequential chain of activity, delays tend to cascade and become amplified when the system is operating near its capacity at some point or points along the chain. The rail service to Port Botany is a classic example of this: a problem at any stage in the chain causes knock-on effects further down the chain which then further exacerbate the problem.

In contrast, the road transport logistics chain involves a higher degree of parallel activity. The atomistic nature of trucks and the multiple road links serving Port Botany mean the road transport service can adapt and bypass potential choke points, making it far more reliable.

It would not be inaccurate to describe the Port Botany rail system as a sequence of bottlenecks. Rail freight capacity is squeezed at the point where freight trains must cross or share suburban passenger lines, at the Botany Yard, and at the stevedores' sidings, particularly the DP World siding. The fact that trains must leave by the same route as they enter means that a train faces not three but five separate bottlenecks on a round-trip journey.

At each of these bottlenecks, a given train is assigned a time-limited window or train path. The stevedoring windows are barely long enough to permit a train to fully unload and reload, assuming everything goes well.[143] There is no slack time between windows to permit the system to recover from a delay. As a consequence, there is a high probability that a delay to a single train will disrupt all further train services to Port Botany that day. The result is that containers inevitably fail to be delivered as promised, trains and their crews spend large amounts of time unproductively employed, and stevedore resources dedicated to serving the rail interface are underutilised.

5.1.1 Specific causes

IPART considers that the specific causes of rail's service quality problem include:

- the inadequate configuration of Botany Yard, which makes it a bottleneck
- the inefficient length of the DP World rail siding, which necessitates extra time-consuming marshalling and shunting associated with the need to split trains
- the slow train strip and reload rates currently achieved by both stevedores, which limits the number of containers that can be handled in a rail window
- coordination problems among the various rail entities involved in the movement of trains leading to unnecessary delays and a failure to capture opportunities for optimisation of rail logistics
- the unavailability of freight paths through the suburban passenger network during peak hours, which creates further bottlenecks.

[143] See for example, RailCorp submission, 26 June 2007, p 13; Independent Group submission, 8 June 2007, pp 9 and 12; and DP World submission, 12 June 2007, p 8.

5.1.2 Potential solutions

Stakeholders expressed a high degree of consensus on the need for a modified configuration of Botany Yard and the extension to DP World's rail sidings. Specific investment plans for these measures have already been agreed by all parties.[144] In the case of Botany Yard, action awaits funding, which ARTC intends to seek from AusLink. In the case of the DP World sidings, action appears to be awaiting finalisation of DP World's lease extension.[145] There is no apparent impediment to that extension being granted.

In relation to the slow train strip and reload rates, IPART considers that these rates at Patrick's terminal will be substantially improved with the commissioning of Rail Mounted Gantries (RMG) that are already physically installed, and progressively being handed over by the manufacturer to Patrick. It is not likely that a similar degree of improvement will be achieved at DP World. However, the planned extension of the rail siding will help increase train strip and reload rates. In addition, DP World has indicated that it plans to acquire additional rail loading equipment (in the form of forklifts and reach stackers) that will also increase its train strip and reload rates.

In relation to coordination problems, stakeholders indicated strong support for the introduction of a Port Botany Rail Logistics Team (PBRLT), modelled on the Hunter Valley Coal Chain Logistics Team (HVCCLT). This issue is discussed in Chapter 6.

In relation to the unavailability of freight paths through the suburban network during peak hours, IPART considers that there is little prospect of addressing this problem in the foreseeable future. While the soon-to-be-completed SSFL will create some dedicated freight access for trains from the southwest of Sydney, it is at best an incomplete solution to the problem. It is a single line railway 36 km in length. The MIST facility is located on the wrong side of the suburban line to access the SSFL without intersecting passenger trains.[146] In fact, there is some danger that demographic pressures may motivate CityRail to attempt to run passenger trains on some lines that are currently dedicated to freight.

However, ARTC noted that the configuration of the SSFL includes spare capacity for future growth. ARTC's operational planning for the SSFL is based on meeting forecast North-South corridor growth to at least 2016 plus other demands in the corridor.[147]

144 See Roundtable transcript for Patrick's agreement at p 6, DP World's at p 7, ARTC and RailCorp's at pp 7 – 10, and the Independent Group's agreement at p 11. In the discussion that followed from p 11, SPC did not disagree with the specific plans on what to build, but raised some additional issues concerning funding, timing, and protocols.

145 DP World submission, 21 December 2007, p 5.

146 RailCorp private communication to IPART, 27 June 2007.

147 ARTC submission, 24 December 2007, p 9.

5.1.3 What interventions are needed to facilitate these solutions?

IPART considered whether government intervention is necessary, or would be helpful, to facilitate the solutions identified above, or whether the market forces will be sufficient. Where it found intervention was required, it considered what form that intervention should take. Its considerations and conclusions are summarised below.

5.1.4 Modifying the configuration of Botany Yard

Based on confidential information provided by RailCorp, access charges and other commercial income from metropolitan rail freight infrastructure barely cover its direct costs and do not appear to generate a positive return on investments.[148] As this infrastructure is a necessary catalyst for improved rail performance, government intervention in the form of grant funding for capital works would be required to meet the rail share target.

NSW Maritime suggested in its submission that SPC should take leasehold over the Enfield to Port Botany railway until ARTC is ready to take control and invest.[149] This suggestion was based on a scenario in which ARTC could not acquire its management of the metropolitan freight network quickly. Subsequently, ARTC submitted that it is well advanced in its planning for various upgrading works on the Botany line (including Botany Yard reconfiguration) as candidate projects for AusLink funding.[150] Given this commitment, IPART agrees with ARTC that the NSW Maritime proposal is not necessary at this stage.

5.1.5 Extending the DP World siding

In its response to the Draft Report, DP World submitted that while it is committed to extending its rail siding, current uncertainty about the renewal of its terminal lease arrangements is holding this up.[151] The incentive for DP World to extend the siding are weakened by the fact that some of the logistical inconvenience of DP World's short sidings is borne by Patrick and the rail operators further supports that interpretation.[152] This may explain why investment in the siding has not been undertaken yet and supports the need for some form of intervention. IPART

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148 RailCorp has advised IPART that a 2006 strategic review of access prices commissioned by RailCorp indicated that access revenue for port related traffic traversing the dedicated Metropolitan Freight Network does not meet the floor test embodied within the NSW Rail Access Undertaking, and that access revenue from the Metropolitan Freight Network (where freight trains are the only users) does not meet the full incremental cost.

149 NSW Maritime submission, 24 December 2007, p 6.

150 ARTC supplementary submission, 30 January 2008, p 4.

151 DP World submission, 21 December 2007, p 5.

152 Rail operators bear the major costs of waiting, excessive shunting, and insufficient loading time that arise from the inefficient track configuration at DP World. Patrick is affected in two ways. First, as most export trains are split between Patrick and DP World, the train cannot be rejoined until both stevedores have finished unloading, so the Patrick half of the train must wait for the DP World half to be finished. Second, longer trains sometimes stick out beyond the end of the short DP World and POTA sidings, blocking the mainline access to Patrick's sidings.

considers SPC should include a lease condition pertaining to the siding length in the lease currently being negotiated with DP world to ensure that the extension is undertaken promptly.

5.1.6 Improving train strip and reload rates

Patrick has invested over $200 million since 2005 in new equipment, including five RMGs.[153] Patrick believes that this investment, together with other investments, will enable it to meet its share of the 40 per cent rail target.[154] It is important to note that Patrick has made this investment on a strictly commercial basis, without the need for government intervention.

While DP World has not adopted the same future operating philosophy, it is consistent with workable competition for competitors to follow different investment strategies. There is no reason ex ante to believe that it would be inefficient for Patrick to specialise in rail while DP World specialised in road, as appears to be happening to some extent.

The current bottleneck caused by slow train strip and reload rates at the stevedore terminals appears therefore to be amenable to market solutions without intervention.

5.1.7 Improving coordination between rail entities

The HVCCLT model emerged in the Hunter Valley spontaneously from commercial discussions between participants without any government direction or interference. There appears to be preparedness among Port Botany rail users and providers to adopt a slightly modified logistics team model. This is considered further in Chapter 6.

5.1.8 Creating more freight paths during the passenger peak

The constraint on freight trains crossing the passenger network during peak hours is government-imposed.[155] There appears to be little prospect of government reducing the priority given to passenger trains. The construction of more freight infrastructure represents the only realistic means of overcoming that bottleneck. As noted earlier, the uncommercial nature of metropolitan freight rail infrastructure means that government intervention through grant funding of capital works is needed.

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153 Patrick submission, 8 June 2007, p 16.

154 See Mr Schultz' statement in the Roundtable transcript, p 28.

155 Freight rail operators seeking access to the Metropolitan Rail Network must apply for network access to RailCorp. RailCorp grants access subject to a number of conditions. The primary condition being "*Passenger Priority*". Under RailCorp's Standard Access Agreement, Passenger Priority is defined as "priority and certainty of access for railway passenger services as provided for in…*Transport Administration Act*. The word "Passenger Priority" is not specifically mentioned *Transport Administration Act 1988,* however section 5(2)(a) in referring to other objectives of RailCorp states that RailCorp is to "…maintain reasonable priority and certainty for access for railway passenger services."

RailCorp suggested that another possible solution to the passenger priority problem is to develop Enfield as a container staging facility—a form of capacity buffer for the port that would enable containers to be held somewhat further out until the passenger peak passes. The NSW Government has since endorsed the use of the Enfield site as an intermodal freight terminal, and planning approval was given in September 2007.[156] In IPART's view, a drawback of the proposal is that it requires double-handling of rail containers at Enfield, imposing a significant cost penalty on rail operators that are already struggling to compete on cost. However, it is likely to ease the strains on the network to some degree.

Recommendation

14 That the NSW Government continues to undertake the following non-price initiatives to overcome impediments to increased use of rail to transport containers to and from Port Botany:

- assist ARTC to secure AusLink funding for necessary improvements to Botany Yard
- require DP World to lengthen its sidings
- press for funding of further dedicated freight access across the Sydney metropolitan rail network (beyond the current Southern Sydney Freight Line).

5.2 Inferior cost position

IPART found that rail struggles to compete with road on cost for a comparable container movement. The service quality and reliability problems discussed above lead directly to longer cycle times for train sets and crew. The consequence is that capital-intensive rolling stock (locomotives and rail wagons) hauls less freight than it could. Train crews spend large parts of their shift waiting for the train to receive permission to move. Expensive assets are underutilised, and the average per container cost of rail freight is higher than it would be under improved reliability.

Rail is further disadvantaged because stevedores incur costs to interface with trains that are additional to the costs they incur with trucks. Under the current operating procedures, both stevedores must make one extra lift and, in the case of DP World, one extra container movement for a rail container compared to a road container. Both stevedores have rail-specific staff rostered on for each shift in which a rail window occurs, and rail-specific equipment is currently required to load and unload trains (forklifts and reach stackers). The stevedores also incur some level of expense in maintaining their rail sidings.

To some extent, the high average costs per container on rail are a product of fixed costs at the stevedoring end. The relatively fixed costs of a dedicated rail gang, dedicated rail loading equipment and the dedicated rail siding would potentially

156 See NSW Department of Planning Notice of Determination MP 05_0147 Intermodal Logistics Centre – Enfield available at http://www.planning.nsw.gov.au/asp/pdf/05_0147_enfield_intermodal_project_approval.pdf

become sources of scale economy under conditions of higher rail throughput. There is an element of 'chicken and egg' here: higher rail volumes would make the average cost of rail cheaper, which would attract still higher rail volumes, which would further reduce the average cost of rail, etc.

The fact that rail is incapable of transporting a container through its entire round-trip journey is another potential source of cost disadvantage. Road transport must be used for at least part of that journey. Split-mode journeys potentially lead to double-handling of containers as they are transferred from train to truck or vice versa. However, it is not clear how significant this road–rail cost differential is. Many intermodal terminals tend to double-handle containers even when they are delivered from port by truck, as they are often transferred to another truck for final delivery.

When comparing the rail cost per container to the road benchmark, it is important to ensure that the latter represents a sustainable and cost-reflective price. There are several reasons to suspect that a benchmark based on currently quoted road freight rates into and out of Port Botany does not.

First, the road transport segment of the freight industry is highly fragmented in Sydney compared to other Australian ports, notably Melbourne.[157] Road freight is known to be highly competitive, particularly among small carriers who are unable to exploit network externalities or provide value-added services that might maintain prices above marginal cost.

Second the intense trucking activity around Port Botany imposes social costs that are incurred by parties other than the road transporters that inflict them. These costs – which include road congestion that affects passenger cars to a greater extent than trucks,[158] pollution, and increased risk of accidents – are not factored into the price of road freight, yet they clearly form part of the cost driven by that activity.

Third, other costs associated with road freight, such as the use of Foreshore Drive as a parking lot for trailers and empty containers, are potentially omitted from the freight rate. This illegal, but prevalent practice gives small trucking companies an inefficient competitive advantage over other trucking firms that incur costs to

[157] The VTA notes in its 16 July submission that the top 25 transport operators in Melbourne wharf cartage have an aggregate market share of containerised trade through the Port of Melbourne of approximately 70 to 80 per cent (p 4). The VTA states, "It is our understanding that this is markedly different to the Sydney market, which is characterised as dissipate and fragmented from a market-share point of view." ATANSW notes in its 12 June submission that there are an estimated 250 operators moving containers to and from Port Botany (including the two stevedores and four rail operators). No single operator has more than a 15 per cent share of the market (ATANSW submission, 12 June submission 2007, pp 3-4).

[158] Mendigorin L, Peachman J and White R, "The collection of classified vehicle counts in an urban area – accuracy issues and results," Transport Data Centre (DIPNR), 2003, tabulates average weekday vehicle counts on a number of urban roads (Table 3, p 14). According to this source, 80.8 per cent of vehicles on Foreshore Rd, Botany were cars. The car proportion was 86.8 per cent for Botany Rd, Botany and 91.2 per cent for General Holmes Dr, Botany. Paper available from: http://www.planning.nsw.gov.au/tpdc/pdfs/ATRF2003_CTS_paper.pdf.

provide their own yards and empty container parks that must pay rent for the land they use for storage.[159]

For these reasons, IPART considers that the cash costs of road container transport do not reflect well the marginal social costs of this mode. Ideally, any cost comparisons between road and rail should be made on a marginal social cost basis, but such a comparison is difficult to perform reliably.

IPART also considers a range of market failures has contributed to the price of both road and rail freight services at Port Botany not reflecting the true costs of those services, on any standard of cost. Some important examples include:

- The stevedores can potentially use their market power to shift costs from themselves to other participants in the landside interface without any corresponding adjustment in prices.[160] On the evidence available, IPART cannot conclude that they do in fact use their market power to do this, but agrees that it is possible.[161]
- The rail window booking fee does not appear to be reflective of the costs of providing a rail window and associated services.[162] The quantum of the rail window booking fee was originally determined on an ad hoc basis, and has not been adjusted to reflect vastly changed circumstances.
- It is likely that shipping lines do not face, through pricing arrangements with importers or exporters, the full cost consequences of their decisions on the location of empty container de-hiring facilities.[163]
- As noted above, road transporters individually do not face, through pricing, the full cost consequences of their decisions. Costs associated with road congestion that is created by the collective decisions of trucking companies are partly borne by other road users, and affect individual truck operators disproportionately to their contribution to the problem.

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159 The inefficiency arises because the users of Foreshore Drive have an incentive to overuse this scarce, but unpriced resource. This 'loophole' in turn makes it more difficult for those truck operators that do pay the full marginal cost for yard facilities to compete, leading to underinvestment in trucking yards, excess demand for daytime VBS slots, and poor night time utilisation of stevedoring resources.

160 The ACCC's *Container stevedoring - Monitoring report no. 8,* November 2006, recognises this possibility in theory: "If the organisation of logistics chains is left to individual firms it is likely that firms in the chain that have relatively greater market power will pursue their own commercial objectives, including greater profitability, which may come at the cost of overall chain efficiency" (p 37).

161 While its claims are not all substantiated and one was shown earlier in this report to be incorrect, CLAG asserts that the stevedores do use market power to shift costs from themselves to other supply chain participants. The assertion is contained in CLAG's 6 June submission at pp 53-54 (the claim that the stevedores are a "duopoly" and that they use the VBS to promote their interests at the expense of the rest of the supply chain), pp 66-68 (linking the duopoly position of stevedores to the ability to impose undesirable hours of operation on other supply chain participants), and p 63 (concerning the desirability of extending the free storage period). It is the CLAG claim regarding the free storage period that is shown to be incorrect in Chapter 3.

162 See the discussion below under the heading "Stevedore rail-specific costs" for the calculations underpinning this observation.

163 CLAG submission, 6 June 2007, pp 52-53.

- Also as noted earlier, transporting containers via road should exhibit economies of scope and scale,[164] yet these economies (if they exist) have so far failed to lead to any significant rationalisation of the road transporters servicing Port Botany and the industry remains highly fragmented.
- There appears to be no price feedback mechanism to RailCorp in its determination of the passenger train schedule.[165] As a result, there is practically no ability to flex the passenger timetable in order to permit even high value freight access at the expense of a passenger service.

5.2.1 The road-rail cost differential

To understand and gauge the significance of the rail cost disadvantage, and help identify potential solutions to it, IPART undertook a quantitative assessment of the road-rail cost differential. The cost estimates presented below were derived substantially from public sources, including reports published by organisations such as the ACCC, BTRE (now known as Bureau of Infrastructure, Transport and Regional Economics,) the Victorian Department of Infrastructure and the Sea Freight Council of NSW (SFC), as well as submissions to this review. In some cases, it was necessary for IPART to estimate costs by inference or by constructing simple cost models. Where that approach was taken the underlying assumptions have been set out.

5.2.2 Road freight

An hourly rate of between $80 and $85 is conventionally applied to cost port-based metropolitan road transport operations.[166] That figure includes the driver's wages, capital and maintenance costs for the prime mover and trailer, and fuel consumed. It does not depend to a great extent on whether the truck is waiting or moving. That unit cost has risen sharply since 2003, when it was closer to $60 per hour.[167]

While it may not be strictly valid to account for variability in the capital costs of the vehicle in this way, converting these costs to an hourly rate is more appropriate than a distance basis, as time is the best proxy for the opportunity cost of that equipment. The lumpiness of capital costs for road vehicles may be ignored because road vehicles are highly fungible, there are active secondary and leasing markets for

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164 This view was implicit in the suggestion of Mr Schultz (transcript, p 76) and Mr Adam (transcript, p 77) that efficiencies could be achieved through a licensing scheme for road transporters serving Port Botany.

165 See RailCorp submission, 26 June 2007: "This anticipated growth in passenger demand with its legislated priority, and growth in domestic freight will increasingly constrain access for port related freight trains on the Sydney urban network" (p 15).

166 Sea Freight Council of NSW, *Sydney's Intermodal System*, June 2007, p 22, notes at footnote 4: "Wharf cartage costs tend to average $80-85 per hour for driver, prime mover and trailer, and container cartage cycle time may vary from 3 to 6 hours".

167 The time trend is presented in Sea Freight Council of NSW, *Sydney's Intermodal System*, June 2007, Figure 4, p 22. The $60/hr rate is applied by Sinclair Knight Merz in its 2003 report for the Victorian Department of Infrastructure, *Melbourne Port Container Origin and Destination Process Mapping;* see Figure 3-1 "Transport related costs".

trucks, and the capacity of a single truck is nearly insignificantly small in relation to the whole road transport industry.

If these simplifying assumptions are reasonable – and they appear to be well accepted within the industry – the resource cost of a road freight movement is roughly proportional to the time it takes. Using this approximation, the SFC has estimated typical road freight costs for a Port Botany-centric container round trip to be around $460-$510. This total includes:

- $400-$450 to deliver a loaded import container to the warehouse and return empty to a container park
- $30 for container park handling of the container, and
- $30 to shuttle the empty container to port for evacuation.[168]

This overall cost estimate is consistent with BTRE's estimate of the road transport charge component of the Sydney port interface costs for ships of $432/TEU January-June 2006, and $435/TEU July-December 2006.[169]

5.2.3 Rail linehaul

Estimating the generic rail linehaul costs is somewhat more complex, given the prevalence of fixed costs in the rail system. These costs tend to be highly influenced by congestion effects, vehicle utilisation, cycle times, and other factors specific to a freight task. For this reason, IPART considered that the one-size-fits-all estimates contained in the SFC report were not helpful for this purpose.

Instead, IPART developed a simple train costing model tailored to the circumstances at Port Botany. It gratefully acknowledges the assistance provided by Patrick PortLink's management in reviewing and suggesting improvements to this model.

The detailed inputs and outputs of the model are confidential. However, speaking generally, the locomotive and wagon lease costs are relatively fixed annual charges, whereas costs for fuel, track access, most rolling stock maintenance charges, and crew costs depend on the number of round trips. The fixed leasing costs create the opportunity for unit cost savings when the same train set can be used to do more round trips per day.

This calculation, while obviously assumption-dependent, serves to make several important points. First, the SFC estimate of rail costs to deliver a TEU from Port Botany to an intermodal terminal of $80 - $100[170] sits within the range of average costs per TEU estimated by the train cost model under different loading scenarios. This similarity of estimates provides some comfort that the two cost bases may be comparable at a high level. Second, the effect on unit costs of the number of daily

[168] Sea Freight Council of NSW, *Sydney's Intermodal System*, June 2007, p 24.
[169] BTRE *Waterline 42*, July 2007, pp 16-17, Tables 6 and 7.
[170] Sea Freight Council of NSW, *Sydney's Intermodal System*, June 2007, p 24.

round trips per train set is profound. The extent of this difference in unit costs demonstrates the potential cost impact of reliability improvements for rail, if these result in a larger number of round trips per train set.

5.2.4 Stevedore rail-specific costs

Under the current operating philosophies of both stevedores, it takes one additional lift per container to put an import container onto a train compared to a truck. At Patrick's terminal, one extra lift by either forklift or reach stacker is required to place a container on a train, compared to the placement of a container on a truck. In both cases, a straddle brings the container out of the stack area to the truck or train loading area. The straddle can load the container directly onto the truck, whereas it cannot directly load the train.

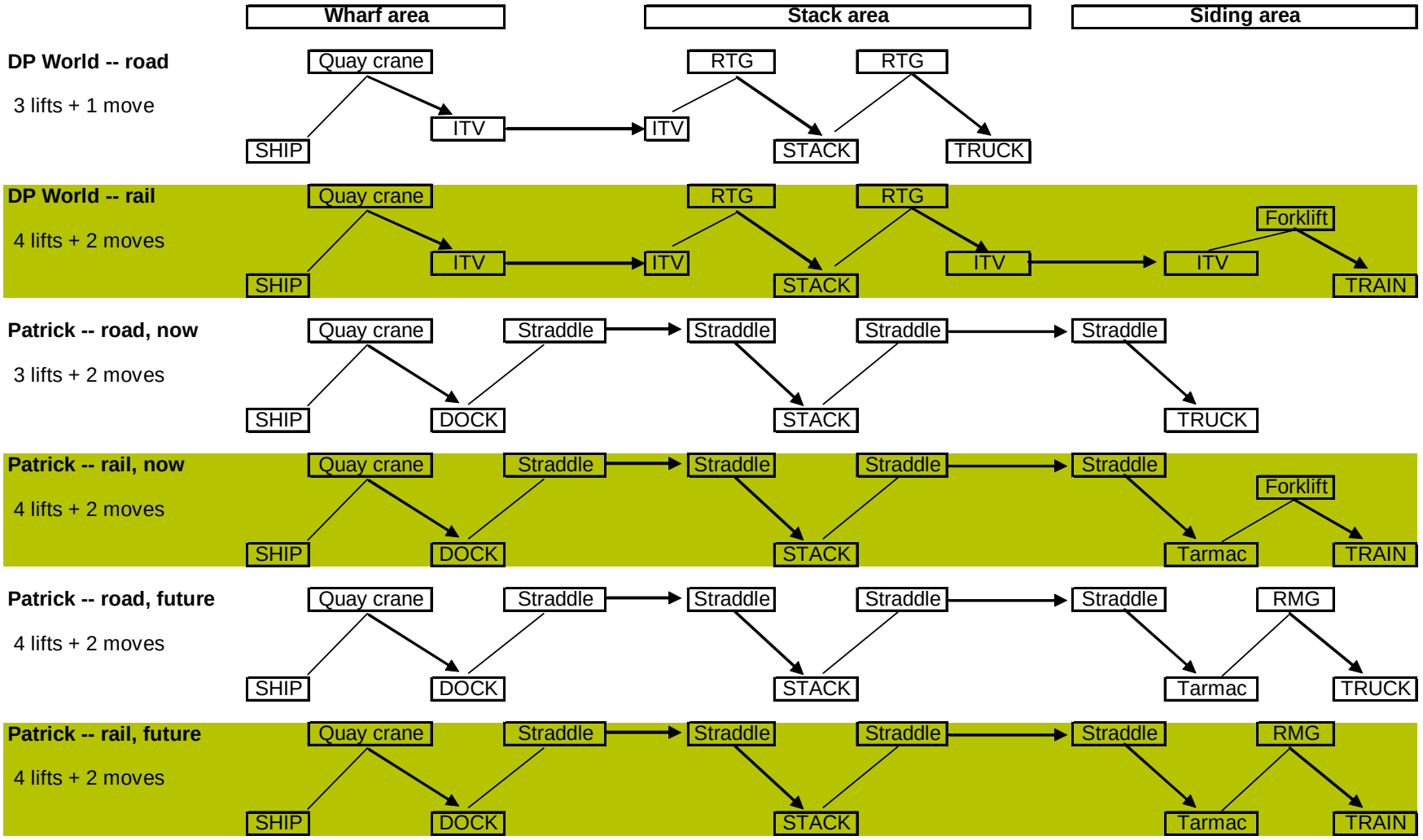
At the DP World terminal, trucks go into the stack area, where they can be loaded directly by the Rubber Tyred Gantries (RTG). Train loading involves an additional move by the Intra Terminal Vehicle (ITV) from the stack to the rail siding, then an additional lift by either forklift or reach stacker onto the train.

When Patrick's RMGs are fully operational though, there will be no difference between the number of container lifts or movements for rail or road freight. Independent Railways of Australia noted this fact in submission, which argued that there should be no differential between road and rail lifting charges at the terminal.[171] IPART expects that as this cost disadvantage to rail is removed, the differential in stevedore lifting charges between road and rail would also be removed. At this stage IPART does not believe government intervention is necessary to ensure that cost savings are passed on, but the situation should be monitored over time.

Figure 5.1 explains the differences in yard operations between the two stevedores under current and future operating modes.

[171] Independent Railways of Australia (and MIST) submission, 21 December 2007, p 2.

Figure 5.1 DP World and Patrick yard operations at Port Botany



IPART did not have access to information on the lift costs faced by the stevedores, as they claimed this information was commercially sensitive (these costs are a significant determinant of their competitive price offers to shipping lines). Therefore, IPART had to estimate lift costs based on public data. The calculation, together with the data relied upon, is presented in Table 5.1. This admittedly rough estimate indicates that the additional cost to Patrick of transporting a container by rail would be the cost of one lift, or $30. For DP World, the additional cost of transporting a container by rail would be double this amount (one lift plus one movement), or $60.

Table 5.1 Estimated Terminal lift costs

Unit cost ($/TEU)			
	2005/06	**Cost ($ million)**	
Other	21.78	31.5	
Levy	7.05	10.2	
Property	9.07	13.1	
Equipment (incl fuel)	25.81	37.3	
Labour	73.77	106.6	
Total	**$137.48**	**$198.72**	

Sydney TEUs exchanged			
	Jul-Dec 2005	**Jan-Jun 2006**	**Total 2005/06**
Full imports	378,451	342,216	720,667
Empty imports	9,929	9,490	19,419
Full exports	171,320	173,932	345,252
Empty exports	191,297	168,830	360,127
Total	**750,997**	**694,468**	**1,445,465**

	No of activities[a] per container		**Proportion of all containers**	
	road	rail	road	rail
Patrick	5	6	0.4	0.1
DP World	4	6	0.4	0.1

Assumptions:
(1) 50% of TEUs are handled by each stevedore
(2) 20% of TEUs moved by rail at each stevedore

Weighted average no. of activities (lifts + moves) per container =	4.8
Average TEU per container[b] =	1.46

Results – estimated average lift cost

	$ per TEU	**$ per container**	**$ per lift or move**
Equipment (incl fuel)	25.81	37.68	7.85
Labour	73.77	107.70	22.44
Total	**$99.58**	**$145.39**	**$30.29**

[a] An activity is a lift or a move. [b] BTRE *Waterline* 42 notes in Table 1, p. 9, that the average number of TEU per truck in Sydney is 1.9, and that the average number of containers per truck in Sydney is 1.3, which leads to the conclusion that the average number of TEU per container is 1.46 (ie, 1.9/1.3).

Data source: ACCC, *Container stevedoring - Monitoring report no. 8*, Nov 2006 Figure 3-iv, and, BTRE *Waterline* 42 July 2007, Table 11.

In IPART's view, Patrick's cost differential is likely to shrink once its RMGs are fully operational. Some cost differential may remain after that point because of an ongoing need for rail-specific terminal staff and the maintenance costs associated with the rail siding.

The Independent Group's submission offers another perspective on the stevedores' rail-specific costs. This submission provides information on actual rail window booking fees paid by its rail operator, Independent Railways of Australia (IR) to the two stevedores in 2005/06.[172]

Table 5.2 contains detailed information provided by IR in response to a request for clarification of the aggregate data presented its submission.

Table 5.2 Rail Window costs for Independent Railways of Australia 2005/06

	Number of containers moved by IR in FY 05/06			
	DP World	**Patrick**	**Total**	**Units**
Export	17,049	18,055	35,104	containers
Import	7,913	9,882	17,795	containers
Total no. containers	24,962	27,937	52,899	containers
Total window charges	549,953	402,858	952,811	$ per annum
Actual charge per container [a]	**22.03**	**14.42**	**18.01**	$ per container

[a] This is an average– ie, total window charges/no. of containers.
Source: Data provided by Independent Railways of Australia, 9 August 2007.

A comparison between these actual rail window booking fees per container for IR and the stevedore lifting costs estimated in Table 5.1 suggests that the rail window booking fees may somewhat under-recover the stevedores' costs for providing the rail service. However, any such conclusion must recognise the crudeness of the cost estimates.

5.2.5 Intermodal terminal costs

IPART received little information on container lifting, storage, and yard handling costs at intermodal terminals through submissions. However, one road transporter who maintains a storage facility away from the port indicated that its handling costs were approximately $25 per lift, based on the capital cost of a state-of-the-art $880,000 forklift capable of stacking either 20ft or 40ft containers four high.

In IPART's view, container storage costs are likely to be related to land rental prices; however, it received very little information on comparative rental prices at different sites around Sydney.

[172] Independent Group submission, 8 June 2007, p 12.

The SFC estimates intermodal terminal handling costs to be between $60 and $80 per container, assuming an average of two lifts through the terminal.[173]

Given the operating procedure at many intermodal terminals, such as MIST, for example, there is effectively no cost differential experienced by the terminal operator between containers that arrive from port via road or rail, with the exception of the costs of maintaining a rail siding at the terminal.

5.2.6 Empty container handling costs

The SFC estimates handling costs at an empty container park to be $30 per container.[174] While storage prices may vary depending on location, information obtained by IPART indicates that $0.75 per day for a 20ft container, and $1.50 per day for a 40ft container is a typical storage rate per empty container in addition to the lift charges that make up the remaining cost.[175]

5.2.7 Summary of road-rail cost differential

Assembling these pieces of information, IPART has estimated the comparative container round-trip costs of all-road and part-rail journeys. The scheme of this comparison is the one used in the SFC's June 2007 report, *Sydney's Intermodal System*, but some amendments to those figures have been made to take into account new information and to remove internal inconsistencies in the SFC report. For each scenario, a minimum and a maximum cost level are shown in Table 5.3.

The table shows that road's cost structure is clearly superior to rail's for road only journeys with no double-handling (ie, when the container is transported from the port directly to the importer). In this case, the cost per TEU round trip by road is $468 and $520, compared with $560 to $710 by rail. However, this superiority is greatly reduced if the road transporter incurs handling costs at an intermodal terminal, as would be the case with night-time and weekend pick-up from port. In this situation, the road-rail differential is much less significant, and is nearly all due to the differences in road and rail access costs incurred by the stevedores. The final two columns in the table illustrate the potential for rail cost reduction if empty container parks were co-located with intermodal terminals at a greater distance from port, permitting rail haulage both ways.

173 Sea Freight Council of NSW, *Sydney's Intermodal System,* June 2007, p 24.
174 Ibid.
175 ATANSW submission, 12 June 2007, Table 3, p 13.

Table 5.3 Road and rail costs per TEU in dollars $

	Road only – no double handling		Road to intermodal terminal		Rail to intermodal terminal		Rail to and from combined intermodal/ empty terminal	
Activity	**min**	**max**	**min**	**max**	**min**	**max**	**min**	**max**
Stevedore loading window—pickup	4	5	4	5	30	60	30	60
Truck to importer premises	400	450	400	450				
Rail to intermodal terminal					80	100	80	100
Handling at intermodal terminal			60	80	60	80	60	80
Truck intermodal terminal-importer-empty park					300	350	100	180
Handling at empty park	30	30	30	30	30	30	30	30
(Road) shuttle from empty park to port	30	30	30	30	30	30		
Rail empty from intermodal to port							80	100
Stevedore loading window--drop off empty	4	5	4	5	30	60	30	60
Total cost ($) per TEU round trip	**468**	**520**	**528**	**600**	**560**	**710**	**410**	**610**

Source: Sea Freight Council of NSW, *Sydney's Intermodal System*, June 2007, p 24, and IPART estimates.

It is important to note that the costs shown in Table 5.3 do not include externalities associated with congestion, pollution, or traffic accidents. The focus here is on cost factors that are taken into account by commercial decision-makers. That is not to deny the importance of externalities. In IPART's view, it is possible that some form of intervention to internalise some of these externalities may be helpful. This issue is taken up further in section 6.2.1.

5.2.8 Potential solutions

In IPART's view, for market solutions to deliver an allocatively efficient supply chain, certain standard conditions must be met, including cost-reflective pricing. The allocation of resources is most efficient, under assumptions of perfect competition, when all prices are set at their marginal costs. However, in industries such as stevedoring and rail transport, prices cannot be set equal to marginal cost—the significant fixed costs of these businesses would fail to be recovered and they would be unsustainable. This particular problem can be addressed through workable competition, or contestability, in which case prices would be sufficient to recover efficient average costs. Fixed costs would be recovered through Ramsey pricing,

which is minimally distorting to consumption decisions.[176] Whether the standard is marginal cost (as it would be under perfect competition) or efficient average cost (as it would be under workable competition), prices must reflect the standard in order to induce efficient behaviour.

IPART's analysis of the road-rail cost differential suggests several potential solutions to reduce rail's cost disadvantage. These solutions, and IPART's view on whether or not government intervention is required to facilitate them, are outlined below. IPART also believes that some of the sources of rail cost disadvantage will be reduced significantly as rail volumes increase, and when Patrick's RMGs are fully operational.

5.2.9 Reducing rail-specific costs at the stevedore terminals

Patrick's investment in RMGs will substantially neutralise the operating cost penalty associated with rail there. For this reason IPART believes that government intervention would be unnecessary to address this specific source of rail cost disadvantage.

5.2.10 Addressing the high fixed costs of rail

Rail freight is characterised by high fixed costs. This feature has the potential to act as a very substantial source of scale economy when rail volumes increase. Consequently, IPART considers that government intervention is not warranted at present to modify this cost structure.

However, IPART recognises that there is something of a 'chicken and egg' situation here, in that it may take a subsidy from the NSW Government to lock in an incremental volume, which over time would justify the subsidy being wound back.

5.2.11 Addressing the cost of split-mode journeys

If it were the case that the majority of import containers were delivered to the customer's premises by the same truck that collected them from the port, then rail would suffer a cost disadvantage of approximately $50 per container, which represents the cost of double-handling at the intermodal terminal (one lift off the train and one onto the delivery truck at $25 each). This figure may overstate the true extent of any such rail disadvantage because double handling at intermodal terminals appears to be very common even for road-only journeys: one truck collects the container from the port, and a different truck delivers the container to the customer. Given the prevalence of this mode of operation, IPART does not see a clear indication that intervention is required to overcome this cost differential—which may not be financially significant on average.

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[176] Ramsey pricing is the practice of recovering fixed costs by charging each customer a mark-up on the marginal cost that is inversely proportion to that customer's price elasticity. It is useful for ensuring recovery of fixed costs when marginal costs are below average costs. Among many possible schemes for recovery of fixed costs, Ramsey pricing is the least distorting of consumption decisions.

5.2.12 Providing specific price support for rail

Given all of the matters discussed above, FIAB's suggestion that a Freight Infrastructure Charge (FIC) be imposed on daytime road transport to tilt the playing field toward rail warrants consideration.[177] Specific price support for rail in the form of a FIC could be justified on externality grounds. The guiding principle would be that the marginal "cash" cost of road transport would be increased by an amount sufficient to equalise the road price to the marginal social cost, including externalities. Congestion-related externalities are potentially greatest during daytime. The marginal cash cost of rail transport would also need to be increased to reflect externalities, but the external costs per TEU would be lower on rail.

Clearly, there are specific causes of rail's present disadvantage that could be addressed by government interventions of various kinds. While the introduction of a FIC would not directly address the reliability problems and may not catalyse the necessary investments, specific price support for rail would mitigate the cost disadvantage that rail currently faces. To the extent that the relative price positions of road and rail were better equalised (taking account of any quality differences), rail's modal share would be likely to grow and the latent scale economies of rail would be able to come into play—as long as capacity constraints at the port, shared passenger network and intermodal terminals can be overcome.

In IPART's view the FIC proposal has significant merit. However, effective implementation of this approach would need to surmount two practical problems. First, government-imposed surcharges of this type may create problems of credible commitment.[178] Second, the success of a FIC in generating a modal shift depends on getting the price right, and in being readily able to adjust the FIC in order to achieve a market clearing.

IPART has proposed an alternative approach that would better equalise the comparative costs of rail and road freight and that overcomes these problems. This approach, which involves pricing of road vehicle access to the stevedores' terminals during the hours of peak demand, is discussed in Chapters 7 and 8.

IPART believes that the NSW Government could also play a useful role in facilitating a two-tier VBS slot system in which a new class of firm VBS slot is sold for a premium price as discussed in Chapters 7 and 8. Correctly designed and implemented, such a scheme would achieve many of the objectives of the FIC, but would do so without invoking the same degree of sovereign risk, and could be structured so as to let market demand determine the premium price level.

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177 Freight Infrastructure Advisory Board *Railing Port Botany's Containers*, July 2005, recommendation 22.

178 The credible commitment problem stems from the fact that what one government imposes by an act of will, another government can remove. One government is not credibly able to commit future governments to maintain the FIC at the initial level. Surcharges of this type create sovereign risk which could tend to discourage commercial players from making the long-term investments that are needed.

6 Improving the coordination of the supply chain

For any supply chain to function well, the activities at each of the functional stages in the chain must be coordinated. In vertically integrated supply chains, the command and control structure imposed by a corporation provides coordination. However, in a vertically separated supply chain like the container freight supply chain at Port Botany, market interactions shape the decisions participants take at each functional stage of the chain. Although something like Adam Smith's famous "invisible hand"[179] may help achieve some coordination through market interactions, this type of coordination can fail, especially when prices don't reflect costs. When coordination does fail, supply chain costs are not minimised, resources are underutilised or lie idle, capacity mismatches at different stages can result in bottlenecks, and there is potential for a mismatch between system capacity and overall demand.

IPART considers that all these symptoms of failed coordination can be observed at Port Botany now, with the possible exception of the mismatch between system capacity and overall demand. However, given the forecast growth in container trade discussed in Chapter 2, such a mismatch is a distinct possibility in the future unless current constraints to growth are alleviated.

IPART considered the coordination issues that currently exist at the rail interface, and at the road interface. In relation to the rail interface, IPART explored in detail the suggestion by stakeholders that a logistics team similar to the successful HVCCLT be established to improve coordination. It found that there are important differences between the Hunter Valley coal chain and the Port Botany container chain, but that a Port Botany Rail Logistic Team (PBRLT) modelled on the HVCCLT and designed to suit the specific circumstances of the rail container chain should be established.

In relation to the road interface, IPART found that the highly fragmented nature of the road transport industry at Port Botany creates coordination challenges. In particular, it imposes external costs in the form of congestion at the stevedores' terminals and transaction costs for stevedores. In addition, the current terminal access arrangements mean that the stevedores have no incentive to mitigate the impact of congestion on road transporters. IPART concluded that changes to the VBS recommended in Chapters 4, 7 and 8 would address these issues. Alternatively, it might be feasible to introduce a system of key performance indicators associated

[179] Adam Smith suggested that an unseen force drives open market economies, so each participant pursuing his or her own private interest theoretically benefits all participants.

with financial rewards and penalties for the stevedores' landside operations, to provide them with incentives to reduce truck waiting times – this is explored in Chapter 9.

The sections below discuss IPART's considerations, conclusions and recommendations on coordination issues in detail. Section 6.1 focuses on the port-rail container chain. It explains the HVCCLT model, the suitability of this model for Port Botany, and sets out what it considers to be the key characteristics of rail-specific PBRLT. Section 6.2 explores the challenges facing the port-road container chain, and the potential approaches for improving the coordination of this supply chain. Section 6.3 discusses the potential role of SPC in improving the coordination of the supply chain.

6.1 Improving coordination of the port-rail container chain

As noted above, several stakeholders suggested that the HVCCLT provides a good model for improving the coordination of the port-rail container chain. At IPART's Roundtable discussion, the prevailing view among stakeholders was that establishing something similar at Port Botany would be beneficial.

The HVCCLT is responsible for coordinating the logistics of moving export coal through the Port of Newcastle. It was established in 2003 and formalised in 2005 with the signing of a Memorandum of Understanding. The HVCCLT is staffed by secondees from its constituent organisations:

- Port Waratah Coal Services (terminal operator)
- Pacific National (train operator)
- Queensland Rail (train operator)
- Australian Rail Track Corporation (rail infrastructure lessee)
- RailCorp (rail infrastructure owner)[180]
- Newcastle Port Corporation.[181]

The new coal terminal, the Newcastle Coal Infrastructure Group, is also expected to join in due course.

A broader group of stakeholders with an interest in the movement of coal (buyers and sellers of coal, miners, and other transporters of coal) participates in the HVCCLT through an Industry Working Group. The group provides feedback and advice to the HVCCLT.

[180] And the previous owner, Rail Infrastructure Corporation.

[181] The Newcastle Port Corporation is a member holding equal status to all other members. In particular, the Newcastle Port Corporation's main contribution to the HVCCLT is in regard to its expertise in the sea-side operations, rather than as a facilitator of land-side logistics issues.

The HVCCLT provides two types of coordination services to the coal chain. First, it manages daily train planning and scheduling, with the aim of maximising system coal throughput. Second, it provides a forum for the Chief Executive Officers of each of its constituent organisations to discuss and commit to capital investments that will maximise the long-term benefit to system users.

To date, no competition issues have arisen concerning the HVCCLT, and no authorisation from the ACCC has been sought in relation to its operations. However, competition concerns may arise in the future. Two of its members – Pacific National and Queensland Rail – are competitors, so both are involved in making decisions about how scarce business inputs (train paths, unloading windows at port, etc) are to be shared between them. Similarly, the involvement of competitors Port Waratah Coal Services and Newcastle Coal Infrastructure Group on the logistics team may create concerns around the sharing of information on capacity expansion plans.

The HVCCLT is generally seen as a successful model.[182] In the view of its members, its success is due to the philosophy that the Hunter Valley coal chain should attempt to mimic the optimisation that would be achievable in a vertically integrated supply chain, notwithstanding the fact that the different functional layers are separately owned. The objectives of the HVCCLT[183] include maximising throughput at minimum total logistics costs, within the constraints of the Hunter Valley coal chain and having regard to the contractual obligations of each member.

However, unlike a vertically integrated system, membership of the HVCCLT is open to any affected party that meets the eligibility criteria[184] and wishes to join, and members have the right to opt out of any HVCCLT initiative or decision they disagree with. The non-compulsory nature of the HVCCLT is seen as essential for ensuring the continuing goodwill of its members. This feature facilitates consensus-based decision-making. With side-payments being at least theoretically possible, this type of organisation should be capable of identifying and implementing Pareto-optimal solutions.[185]

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182 The May 2005 Report to the Prime Minister by the Exports and Infrastructure Taskforce noted that the HVCCLT was one of the success stories of consultative logistics chain operations (p 34), available at http://www.infrastructure.gov.au/

183 As set out in clause 2.3 of its Memorandum of Understanding.

184 The membership eligibility requirements are set out in clause 2.1 of Schedule 2 to the MoU. In addition to the foundation members as listed earlier in the briefing, eligible parties are any rail infrastructure provider, companies that provide logistics for coal movement where that activity is its main business, companies that operate coal terminals and companies that deliver coal by road or rail to export terminals. Related parties of members may not join.

185 The point about Coasian side payments facilitating achievement of a Pareto optimum overlooks a number of potentially important complications, such as asymmetric information, transaction costs, incentive incompatibility, opportunism and associated hold-up risks. Further, some forms of side payment may be illegal (such as transfers between direct competitors) or impractical. The relative performance of command-and-control supply chains (as one has in vertical integration), market-based vertical relationships, and supply chains based on long-term contracts between independent entities has been considered at length in the literature on industrial organisation. A landmark paper, Oliver Williamson, "Comparative Economic Organization: The Analysis of Discrete Structural Alternatives", *Administrative Science Quarterly*, Vol. 36 (1991), pp 269-296, shows that the factors determining the ideal choice of organisational form are the degree of asset specificity to particular transactions, and the frequency of disturbances to demand, costs or trading patterns.

In 2004 and 2005, when shipping queues off Newcastle became an acute problem for the export coal industry, there were concerns over whether the Hunter Valley coal chain embodied sufficient commonality of purpose and resolve to make the capacity investments that were needed to meet the mining companies' growth targets. Since that time, significant investments have been made or committed by ARTC, Port Waratah Coal Services, Pacific National and Queensland Rail under the auspices of the HVCCLT. ARTC has spent $110 million on crossings at Sandgate, train control consolidation, and loops, and has advised IPART that there are significant additional projects due to be delivered in the next three years. Port Waratah Coal Services has committed $148 million for a new storage pad, new stacker and conveyer stream. Pacific National has ordered 9 new locomotives and 328 new wagons.[186]

6.1.1 Is the HVCCLT model suitable for Port Botany?

In IPART's view, there are two main issues to consider in assessing whether the HVCCLT model is suitable for improving the coordination of the port-rail container chain at Port Botany:

1. How similar or different are the circumstances of the Hunter Valley coal chain and the Port Botany container chain?
2. In what ways would the HVCCLT approach differ from what is already being done at Port Botany?

6.1.2 Comparing the circumstances of the Hunter Valley coal chain and the port-rail container chain

Both the Hunter Valley coal chain and the Port Botany rail container chain have a common need to optimise the performance of the system by coordinating the activities of organisations that have a strong degree of vertical separation. Theoretically, they should try to match the performance that a vertically integrated system is capable of achieving, but they need to pursue this aim without the use of compulsion.

However, IPART considers that there is an important difference between the objectives of the HVCCLT and those that would be relevant to a PBRLT. In the Hunter Valley, the paramount aim is to maximise throughput at minimum total logistics cost. In contrast, in Port Botany the primary aim would be to minimise total logistics cost while meeting throughput requirements of importers and exporters.

186 Verbal advice from Denise McMillan-Hall, current Chair of the HVCCLT Steering Committee.

There are also several differences in the characteristics of the Port Botany rail container chain that may be significant for the design of any PBRLT. As well as the obvious point that containerised freight is very different to free-flowing bulk coal, IPART considers that Port Botany has the following features that are not found in the Hunter Valley coal chain:

- highly fragmented road transport as alternative to rail
- a high degree of horizontal separation (for example, two stevedores instead of a single terminal operator, four train operators instead of two), and some supply chain participants that have vertical linkages to other functional stages
- a high degree of interaction between rail freight and passenger services
- numerous and diverse importers and exporters
- both import and export traffic must be accommodated
- AQIS and ACS constraints apply, particularly to imports.

These differences raise six challenges for the design of any PBRLT. First, the tensions between road and rail operators, not to mention within the road transport industry itself, would likely make any logistics team that includes road unworkable. On the other hand, the exclusion of road transporters has the potential to raise competition concerns.

Second, the extent of horizontal competition between participants would likely lead to serious antitrust concerns with a PBRLT. For example, a sharing agreement between four train operators for train paths and terminal windows could well be construed as anticompetitive. These concerns would be heightened by the existence of vertical linkages.[187] ACCC authorisation, if obtainable, may be required to overcome these concerns.

Third, the passenger rail curfew in Sydney is one of the most crippling constraints to Port Botany rail freight, yet the PBRLT would have no realistic prospect of reducing that constraint by influencing the scheduling of suburban passenger services, whether RailCorp was part of the PBRLT or not.

Fourth, the number of importers and exporters using Port Botany is so large that it may not be feasible to replicate the HVCCLT's Industry Reference Group for Port Botany.[188]

Fifth, the logistical complexity of the Port Botany rail interface is heightened considerably by the need to accommodate both import and export traffic and by the dispersed nature of final delivery points for containers. This complexity raises the

187 Salient examples of these linkages are the overlapping ownership between DP World and POTA, and between Patrick stevedores and Patrick PortLink. Allegations have already been made of stevedore favouritism toward affiliated road transporters.

188 In the HVCCLT Memorandum of Understanding, the Industry Reference Group is the venue for export coal mines to have input to the HVCCLT Rules Committee. Membership of the HVCCLT Steering Committee is not open to coal miners.

possibility that the quantitative work needed to underpin near-optimal systemic decisions may prove inordinately difficult. If so, this could result in suboptimal decisions, calling into question the value of the logistics team.

Finally, AQIS and ACS requirements are a particular feature of importing. They certainly complicate the land transport interface, but in ways that are unlikely to be amenable to optimisation by negotiation within the PBRLT, whether or not AQIS and ACS are members of the logistics team.

6.1.3 Comparing the HVCCLT with what is done now at Port Botany

Several coordination forums already exist – including the Joint Working Group (JWG), the Sydney Ports Cargo Facilitations Committee (SPCFC) and the Sydney Ports User Consultative Group (SPUCG) – and most of the prospective operational roles of a PBRLT are currently performed by one of these forums or another. IPART has considered the membership, aims, activities and performance of these existing organisations in order to ensure that a PBRLT would actually add value, and to better understand how it might do so.

The JWG comprises ARTC, Patrick and DP World. It was formed through a Memorandum of Understanding in November 2005 for the purpose of identifying potential improvements in infrastructure and operating practices to optimise the rail interface at Port Botany.

The JWG has examined potential rail infrastructure improvements at Botany Yard, which have been embodied in infrastructure development proposals currently being advanced by ARTC. The JWG is also examining potential improvements to interface coordination practices to apply after ARTC has taken up its lease of the Metropolitan Freight Network.

The JWG is not currently a real-time operational or coordination body. However, ARTC has indicated that the JWG could form the genesis of a broader group along the lines of the HVCCLT (which includes rail operators and other stakeholders) that could perform real-time interface coordination in future.

IPART considers that unquestionably, the JWG fulfils some significant parts of the role intended for a rail focused PBRLT. However, its scope of activity may be too narrow to be effective. For example, JWG's activity is confined to the Botany rail precinct. This narrow geographic scope may not be optimal for rail system coordination. For example, Patrick noted:

> …the coordination of rail paths and operations in the Botany area is one issue and is an important issue, but it's a wider issue than that. It is the paths through the Sydney network that must also be coordinated in order for rail to work more reliably and more effectively.[189]

[189] Roundtable transcript, p 19, lines 12-17.

The responsibility for real-time train control decisions is split between RailCorp and ARTC, which are each the proprietors of complementary pieces of track. Coordination of the various separate parts of a train journey (ie, port access, metropolitan freight line, suburban shared network and regional shared network) currently relies on best efforts by RailCorp, ARTC, train operators and stevedores through a mixture of formal, informal and at times ad hoc channels of communication. IPART has been provided with anecdotal evidence of numerous breakdowns in this communication chain, which have left trains waiting unnecessarily to depart or enter the port.

In relation to the other two forums – SPCFC and SPUCG – there appears to be consensus among stakeholders that these provide a useful venue for information exchange, but are not capable of facilitating logistics coordination across the supply chain. CBFCA summed up the problem as:

> The chairman does a great job of keeping order and keeping us all talking, which is a great thing. Having said that, ultimately Sydney Ports cannot make the decisions. Decisions have to be made between the various parties and links in the chain.[190]

IPART considers that in light of current arrangements for coordination of rail at Port Botany, a rail-focused PBRLT could add value by incorporating train operators into the decision-making process, taking responsibility for real-time train control and prioritisation decisions (or at least for daily train path planning and service disruption protocols, if train control must remain with RailCorp and ARTC). A rail-focused PBRLT could also add value by embracing a more metropolitan-wide approach to train scheduling issues, by including RailCorp in its membership.

6.1.4 The characteristics of a rail-specific Port Botany logistics team solution

In IPART's view, there is a strong case for a greater degree of coordination of rail activities in and around Port Botany, to make rail a credible alternative for the majority of importers and exporters —many of whom do not have it on their radar.[191] However, while greater coordination should improve rail's share of container traffic into and out of the port, it is unlikely that it will be sufficient to meet the NSW Government's 40 per cent share target for rail.[192]

IPART has considered the specific form of coordination that would be most likely to help Port Botany to achieve growth potential at minimum overall cost. In particular, it considered what the objective of a PBRLT should be, whether or not it should have coercive powers, whether it should supplement or replace the JWG, and which organisations should be members. It also considered the likely anti-competitive

190 Roundtable transcript, p 80, lines 33-35.

191 Roundtable transcript, pp 13-14. This point was made at the Roundtable by CBFCA.

192 In response to a direct question from IPART at the roundtable, ARTC emphasised the necessity, in of price initiatives to complement coordination efforts (transcript, p 17). DP World also expressed reservations as to whether coordination alone would suffice to reach the 40 per cent rail target (transcript, p 19).

issues and resource issues it would face, and the need for information disclosure. These considerations are summarised below.

6.1.5 What should be the objective of a PBRLT?

As noted above, the HVCCLT's aim is to maximise throughput while minimising total logistics costs. The emphasis on throughput arose when Port Waratah Coal Services became a bottleneck in 2004 and 2005, when there was a largely unanticipated surge in Chinese demand for Australian coal. Because significant lead times are involved in expanding the capacity of rail and port facilities, there was a period of intense discomfort as shippers were physically unable to push through that bottleneck the amount of coal they were capable of mining and selling. In these circumstances, cost minimisation became secondary to maintaining Newcastle's world market share.

In contrast, the landside interface at Port Botany does not currently appear to be a bottleneck.[193] While there are concerns about Port Botany's ability to meet the projected demand growth, they don't appear to be sufficiently serious to cause participants to eschew cost minimisation. IPART considers that the most likely mission statement for any PBRLT would be to minimise total logistics costs subject to two constraints: that the overall level of container traffic as determined by importers and exporters must be serviced; and that shipper's requirements for quality of service are met.

One of many important differences[194] between Newcastle's coal terminal and Port Botany's container terminal is that there is currently sufficient stevedoring capacity at Botany to serve ships on arrival, whereas this is not the case in Newcastle, thus necessitating a ship queue. One reason for this difference may be that Australia is the world's leading exporter of coal—so customers may be prepared to accept the costs of queuing—but it is not such a globally significant destination for containerised freight—so customers are less prepared to accept queuing costs.

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[193] DP World stated at the Roundtable that, "Under the existing model, without the types of changes we are talking about, the stevedores will continue to operate and incrementally change their current systems which are, at this stage, we believe, adequate and will continue to be adequate;" (transcript, p 78, lines 5-9). Echoing this sentiment, the Prime Minister's taskforce stated, "The taskforce considers that detailed analysis is required to determine whether some of these landside connections to major metropolitan ports will become major constraints to growth over the next ten years", Report to the Prime Minister by the Exports and Infrastructure Taskforce available at http://www.infrastructure.gov.au/ (p 31). By implication, there is no unambiguous evidence of a current bottleneck.

[194] Among the other important differences is the fact that coal ships tend to operate point-to-point shuttle services between coal ports and power stations or steel mills, whereas container ships undertake more circuitous routings, loading and unloading at many ports in a given cycle. The JIT requirements for container freight are much more stringent than for coal, given the significant stockpiles maintained by customers.

6.1.6 Should the PBRLT have coercive powers?

In its first submission, SPC proposed the establishment of a new body – the *Botany Rail Corridor Governance Council* – to plan, schedule and control all train movements in the Botany corridor.[195] It also proposed the establishment of a parallel *Botany Road Container Governance Council*, to develop and enforce operating protocols aimed at ensuring efficiency and equity of access to the terminals, to guide strategic planning, and to recommend new road infrastructure for the precinct.[196] These proposals, especially the Botany Rail Corridor Governance Council, involve the creation of a coordinating body that bears certain similarities to the recommended PBRLT.

More recently, NSW Maritime has proposed the creation of an Independent Gateway Authority (IGA) which would have wide-ranging responsibilities and powers.[197] Among other things, the IGA would have the power to dictate minimum stevedore slot numbers, to set and monitor performance standards for stevedores and road transporters, to arbitrate disputes, and to administer funds raised through the sale of slots.

Where SPC's and NSW Maritime's proposals diverge most significantly from the HVCCLT example is in the coercive powers that would be vested in the SPC's proposed Councils or the IGA. At the Roundtable discussion, SPC explained the motivation for this difference in approach as follows:

> We have looked hard at the Hunter Valley coal model over a number of years. As ARTC mentioned, there are definitely some points to pick up there, but there are also some quite key differences. We do believe, given this is probably a more multi-party arrangement here, it may be that any sort of [governance] structure needs to have a bit more clout than just everyone agreeing. The reality is that not everyone can agree on every point here, but it is a common infrastructure that unless you have a clearly articulated operating plan and stick to it, you won't get the full benefit.[198]

SPC also proposed that it be appointed chair of both road and rail Councils due to its independence in terms of road and rail operations.

At the Roundtable discussion, some stakeholders considered the SPC's proposal to be controversial – particularly the coercive powers of the councils and SPC's chairmanship of them.

195 Sydney Ports Corporation submission, 13 June 2007, recommendation 3.2.2.
196 Sydney Ports Corporation submission, 13 June 2007, recommendation 4.1.
197 NSW Maritime submission, 24 December 2007, Attachement 2.
198 Roundtable transcript, p 21.

ARTC noted:

> [The HVCCLT] is a cooperative planning organisation; an unincorporated joint venture. There is an MOU between the parties, but it is not binding. It is effectively a statement of commitment between the parties. The clear reason it works is that there's a close alignment of commercial interests between all the parties in the coal chain to maximise coal throughput through the port. The logistics team is not an enforcer….At the end of the day, it's actually the track owner and the stevedore who are really the central owners in that. Clearly, rail operators have a key interest, but it is ultimately the asset owners. They're the ones who have got their commercial dollars on the line, their track assets, the port terminal assets or rail assets, so actually the logistics chain is largely about deploying those assets in the most effective manner.[199]

Patrick supported this view:

> We think the Hunter Valley coal chain model has potential for management of the Botany yard as it exists, but we do share ARTC's concern that a modified model with a somewhat more interventionist approach would perhaps not be in the best interests of the efficient working of the rail.[200]

Given the strongly held views of asset owners that they do not wish to grant durable rights of control over their own assets to third parties, IPART considers that the coercive or interventionist approach proposed by SPC and NSW Maritime is not likely to be successful. In IPART's view, granting SPC such a role would represent a marked departure from the HVCCLT approach, as the Newcastle Port Corporation has no corresponding powers.

6.1.7 Is it necessary to go beyond the JWG to a full PBRLT?

Within its intended scope of operation, Port Botany's JWG is perceived by its members to be valuable. However, the fact that at least two of its three members, ARTC and Patrick, see merit in expanding the scope of the group's activities to something approximating the HVCCLT suggests that there is a need to move beyond the JWG. RailCorp was sufficiently impressed with the utility of the HVCCLT model for Port Botany that section 5 of its submission was devoted to a detailed explanation of how a PBRLT might work. Significantly, no stakeholder has spoken against the adoption of a PBRLT or expressed the view that it would duplicate coordination processes that are already in place.

6.1.8 Which organisations should be members of the PBRLT?

If the HVCCLT approach to membership were used, the following organisations would be included in the PBRLT: the stevedores, ARTC and RailCorp, the four train operators, and SPC. IPART supports the inclusion of these organisations.

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199 Roundtable transcript, pp 15 and 17.
200 Roundtable transcript, p 19.

In light of on the responses it received to the Draft Report, IPART has reconsidered its initial view that RailCorp should be excluded. The ARTC and the NSW Ministry of Transport submitted that RailCorp's involvement in the PBRLT is crucial as there will continue to be areas where the freight trains will need to access RailCorp's network.[201] IPART finds this argument in favour of RailCorp's inclusion into the PBRLT compelling.

IPART has also reconsidered its initial view on the inclusion of SPC in the PBRLT. Considering the membership criterion that organisations must have 'skin in the game,' it is the case that SPC's own operating assets are important contributors to outcomes and are influenced by PBRLT decisions. Therefore, it has a legitimate right to be involved and would probably have the expertise to contribute meaningfully.

Concerning the leadership role in the PBRLT that SPC has proposed for itself,[202] it is IPART's view that the proposed form of leadership may cause tensions within the group. Many of the prospective members of the PBRLT have spoken out strongly against any coercive powers being wielded by SPC. IPART would be very concerned if granting SPC the leadership role it seeks turned out to be, in effect, a grant of coercive powers. For this reason, IPART prefers to cast SPC in a role of facilitator for the group, noting that its ability to play a facilitation role may be influenced by any commercial interests it may have. These commercial interests should be plainly declared at the outset of any such issue.

In IPART's view, no other organisations should be included, as a larger group would likely prove unworkable. For example, the inclusion of non-operational or non-rail-oriented organisations would be likely to impede the smooth working of the group, without adding expertise. In particular, IPART considers that road transporters and shippers (meaning importers and exporters, rather than the shipping lines), should be excluded from membership for the following reasons:

- they are too numerous and disparate to facilitate consensus solutions
- they lack rail-oriented expertise
- they are not directly affected by rail's performance, and
- they may be strongly inclined to employ hold-up tactics.[203]

While there might be a case for including these groups' industry peak bodies, IPART does not support the inclusion of peak bodies for two reasons. First, it may prove difficult to identify a peak body that is truly representative of the diverse viewpoints and priorities of road transporters. For example, both ATANSW and CLAG have been strongly criticised for their perceived inability to present a unified industry

[201] See ATRC submission, 24 December 2007, p 3 and Ministry of Transport submission, 11 January 2008, pp 4-5.

[202] Sydney Ports Corporation submission, 24 December 2007, pp 9-10.

[203] Collective decision systems that require unanimity are particularly vulnerable to opportunistic behaviour. The HVCCLT does require unanimity. At the Roundtable, ARTC stressed that a prerequisite for the HVCCLT's success is "a close alignment of the commercial interests between all the parties" (transcript, p 15).

point of view or to work constructively with other supply chain participants.[204] Second, peak bodies are not themselves logistics operators and therefore have no relevant assets or "skin in the game." In other words, the peak bodies themselves have little to lose through any failure of the PBRLT to reach consensus. IPART notes that industry peak bodies would not be eligible to become members of the HVCCLT or the Industry Reference Group.[205]

IPART also considers that AQIS and ACS should be excluded because their own decision processes are exogenous to the performance of the Port Botany rail system. The impediments that organisations such as RailCorp, AQIS and ACS may create include, *inter alia*, injecting irrelevant considerations into the discussion and expanding the number of parties among whom consensus must be reached.

Whilst ACS, AQIS and RailCorp should not be members of the PBRLT, they could participate in an advisory capacity through an equivalent to the HVCCLT Industry Reference Group.

6.1.9 Anti-competitive issues

FIAB's Recommendation 21 recognises the possibility that ACCC authorisation may be required for the establishment of their proposed Logistics Chain Team. In its submission, RailCorp noted that:

> … despite there being precedence for such logistic chain coordination efforts, including the Port of Melbourne and the Hunter Valley Coal Network, the ACCC during its review of the operations of Sydney Ports specifically prevented Sydney Ports Corporation and the Stevedores from exploring such coordination efforts. The success of such a model needs not only the approval of the appropriate regulatory bodies such as the ACCC but their active support of these arrangements.[206]

Proponents of a cooperative joint venture between competitors can seek authorisation from the ACCC. To achieve authorisation, they would need to demonstrate, to the ACCC's satisfaction, that the efficiency benefits of the venture would outweigh the detriments arising from any reduction in competitive vigour.

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[204] Roundtable transcript, p 83.

[205] Schedule 2 to the HVCCLT Memorandum of Understanding sets out membership eligibility requirements in clause 2.1. Clause 9.2 sets out eligibility criteria for the Industry Reference Group. That clause notes that membership is open to any corporate entity that is able to demonstrate a commercial interest in the coal chain with respect to:

- Being a buyer or seller of coal;
- The transport or handling of coal;
- Being a miner of coal;
- Being an agent of any of the above parties.

It appears clear that an industry peak body or lobby group would not meet any of these criteria.

[206] RailCorp submission, 26 June 2007, p 18.

The ACCC has indicated a preparedness to consider applications for authorisation of this type. For example, ACCC in its *Container stevedoring - Monitoring report no. 8* noted:

> It is foreseeable that the organisation of logistics chains may involve discussions amongst potential competitors which may give rise to concerns regarding anti-competitive conduct proscribed by the Trade Practices Act. However, where arrangements or proposals promote supply chain efficiency, they can give rise to public benefits. Where such arrangements generate a benefit to the public which outweighs any public detriment, including from a lessening of competition, they can be authorised by the ACCC under Part VII of the Trade Practices Act.[207]

The relevant precedent material is encouraging. In an analogous case pertaining to the grain industry on 15 April 2005, the ACCC granted authorisation to Export Grain Logistics (EGL). EGL is a joint venture between AWB and GrainCorp, who compete in grain storage and marketing, to coordinate movement of export grain from silo to port.

Although the ACCC may need to scrutinise some arrangements for a group that is set up to coordinate the landside activities at Port Botany, IPART considers that this should not prevent such a group being set up and operating effectively.

6.1.10 Resource issues

Like the HVCCLT, the PBRLT could be staffed from secondees of the member organisations. This approach is practical because the decision-makers have both relevant expertise and the confidence of their organisations. It is important that management of the PBRLT remain independent of any one member organisation.

6.1.11 Information disclosure

The HVCCLT maintains a website on which it publishes a range of public information about its charter, history, membership and current operations.[208] An important element of that information is a collection of high-level KPIs for coal chain system performance. Publication of this information is helpful to other parties with interests in the supply chain. It aids transparency and confidence in the decision-making process. IPART considers that a PBRLT should emulate this example.

[207] ACCC, *Container stevedoring - Monitoring report no. 8*, November 2006, p 37.
[208] See www.hvcclt.com.au

Recommendation

15 That a Port Botany Rail Logistics Team (PBRLT), modelled on the successful Hunter Valley Coal Chain Logistics Team (HVCCLT), should be adopted to improve rail system performance at Port Botany relative to current arrangements. Given the distinctive differences between the Port Botany container chain and the Hunter Valley coal chain, a successful PBRLT would need to embody the following design characteristics:

- the objective should be to minimise total supply chain costs while meeting shipper demands for overall throughput and quality of service
- members' adherence to PBRLT decisions on investment should be voluntary, and the PBRLT should have no power to compel members to do anything
- members should include stevedores DP World and Patrick, track proprietor ARTC, RailCorp, Sydney Ports Corporation, and any of the train operators that wish to join
- Sydney Ports Corporation should act as a facilitator, declaring any interests in matters in which it has a commercial stake
- membership should not be available to road transport operators, freight forwarders, importers or exporters, but their views could be taken into account through the equivalent of the HVCCLT Industry Reference Group
- industry peak bodies should not be represented, either on the Steering Committee or the Industry Reference Group
- Australian Quarantine Inspection Service, and Australian Customs Service should not be represented, but could be part of the Industry Reference Group
- as many members compete with each other, ACCC authorisation should be sought as soon as the constitution is established
- the PBRLT should be staffed by secondees of member organisations, and the management of the team should be independent of all members
- system performance KPIs should be established, monitored regularly, and high level summaries reported publicly.

6.2 Challenges related to coordinating the port-road container chain

The road transport industry at Port Botany includes more than 200 separate firms. IPART does not have detailed information about the size distribution of these firms, but ATANSW submitted that the largest has only 15 per cent market share.[209] According to the VTA, the road transport industry at Port Botany is "dissipate and fragmented".[210] In addition, the barriers to entry to this industry are currently very low.

These structural characteristics suggest that the industry is highly competitive, and that road transport prices may be at or near marginal costs. But this does not

[209] ATANSW submission, 12 June 2007, pp 3-4.
[210] VTA submission, 16 July 2007, p 4.

necessarily mean that the port-road container chain operates at minimum possible cost. In particular, the highly fragmented character of the industry suggests that any available scale economies are not being captured. This means that, as a result of coordination failure, the overall costs of the supply chain are unlikely to be minimised. The highly fragmented character of the industry also imposes external costs, which can be another symptom of coordination failure.

The following sections discuss these external costs, and the failure to capture scale economies in more detail. The subsequent section discusses the potential approaches for improving coordination of the port-road container chain.

6.2.1 External costs

External costs are a manifestation of coordination failure. They arise essentially because those that bear these costs are external to the transaction that gives rise to them and so have limited ability to influence them. The failure lies in the lack of coordination between the parties inflicting the cost and those bearing it.

One external cost imposed by the fragmented character of the road transport industry at Port Botany is congestion – evidenced by the truck queues that form at the stevedore terminals when the stevedore is unable to meet the planned VBS slots (discussed in Chapter 3) and in the clogged roads around Port Botany due to the high number of trucks entering and leaving the port. This congestion is exacerbated by the random arrival character of truck movements, which would likely be less pronounced if there were fewer road transporters, each capable of orchestrating movements within their own fleets. While the VBS does mitigate the random arrival problem at the stevedore's gate, it does not do so when the stevedores cannot keep up with the planned slots, and it does not do so for road congestion.

Further, it seems likely that it is in the stevedores' commercial interests, narrowly construed, to have a queue of trucks at the gate. The truck queue guarantees that an import container can be moved off the terminal with minimum delay to the stevedore when the stevedore is ready to deploy its own resources for that task. As the truck queuing costs are mostly not borne by the stevedore, there is little incentive for the stevedore to alter this arrangement. In other words, the queuing costs are external to the stevedore. Some form of commercial relationship between stevedores and road transporters would alter that dynamic—in a sense making the truck queue the stevedore's problem too, and internalising that cost.

Another external cost caused by the fragmented character of the road transport industry is the transaction costs faced by stevedores. While these costs are difficult to quantify, it is clear that the stevedores devote significant management time to liaising with the more than 200 road transporters about late arrivals and no-shows, the consequent penalties and arguments over the waiver of penalties. Potentially, many of these inefficiencies could be mitigated if, through some coordination mechanism, the externalities could be internalised.

6.2.2 Scale economies

One of the benefits of coordination within a supply chain is that it enables a group of separate agents to act in a manner that permits them to capture and enjoy scale economies. However, the extent of this benefit depends on the potential for scale economies to be realised in the particular supply chain.

In the road container supply chain at Port Botany, scale economies might arise in several ways. First, the fixed administrative costs of running the business can be spread over a larger volume of traffic as the road transporter's scale increases. However, this effect may not be very pronounced, given the relatively simple administrative requirements of this type of business.

Second, a road transporter with a larger customer base is more likely to be able to match an inbound container movement with an outbound one so that the truck can be loaded in both directions. When such a dual run can be achieved, there is potentially a significant improvement to the importers' and exporters' economics. However, it is important not to overstate the gains that are potentially achievable through this mechanism. If a freight forwarder does the matching, then the size of the road transporter is not necessarily important to achieving the economic benefits of dual runs.

Third, a road transporter with a larger fleet has a degree of schedule flexibility that a small road transporter with one or two trucks does not. This flexibility means that the large road transporter does not have to turn down work as often due to vehicle unavailability. The larger road transporter can better match the truck type to the nature of the journey or task. It can redeploy trucks more easily to the DP World terminal when the queue is long at Patrick and vice versa. The importance of this type of flexibility is undeniable, but it is difficult to quantify. The value of flexibility depends on the specific circumstances prevailing each day.

Given the above, an important question arises: if scale economies are important in the road container supply chain, why doesn't the industry simply rationalise itself? In other words, why don't the larger road transporters exploit their scale advantages to out-compete the smaller ones and gradually displace them? The answer to this question is not readily apparent, even to the industry participants themselves, but IPART considers there are two possibilities:

- First, the extent of the scale economies available to road transporters may not be great, so the scale effect may be weak.
- Second, trucks and their drivers spend a great deal of time waiting to load and unload containers at Port Botany, even when they use the VBS. This waiting time translates into reduced profitability for the road transporter. An owner-driver or a driver in a family business may absorb this loss as an effective reduction in his or her hourly wage. In contrast, a larger scale road transporter that must pay drivers wages and vehicle leasing costs cannot tolerate these long unproductive hours every week.

Therefore, it seems that the case for better coordination between road transporters to capture scale economies is not compelling. Instead, focusing on coordination between road transporters and other parts of the supply chain, particularly the stevedores, should be the priority. There are undoubtedly inefficiencies associated with the fact the road transport industry is fragmented, but this fragmentation does not reflect any market failure and so it is not the role of this review to solve those particular problems. Instead, IPART focuses on those coordination problems that can be addressed through market mechanisms.

6.2.3 Potential coordination approaches for road

SPC submitted that consideration be given to a multi-party Logistics Team for road operations.[211] In IPART's view, several discussion forums involving road transporters and other port players have already been established to facilitate better coordination (see Appendix J). However, the fact that coordination problems continue to exist suggests these forums are not a sufficient response to the problem, however useful they may be for disseminating information and maintaining relationships between the players.

The VBS was introduced as a tool for improving coordination. It provides a mechanism whereby road transporters and stevedores can bring resources to bear simultaneously to effect an efficient transfer of containers from wharf to truck or vice versa, and do so with sufficient lead-time to allow both parties to plan for resource availability. But while the VBS has undoubtedly improved the level of coordination, there is clearly scope to improve its effectiveness.

As section 6.1.8 discussed, IPART does not consider it appropriate for road transporters to be included in the PBRLT recommended for improving the coordination of the rail container supply chain. Establishing a similar organisation would not work for the road interface at Port Botany. The necessary alignment of interests and cooperative spirit between all the parties is evidently absent. The antagonistic atmosphere surrounding CLAG's complaint to the ACCC about the VBS, and the stark differences in view between the ATANSW and its Victorian counterpart provide evidence of this misalignment of interests.[212]

The number of participants in the Port Botany road transport industry and the fact that peak organisations such as the ATANSW and CLAG do not speak for the entire industry[213] make the prospects of coordination by agreement or committee appear bleak. Road transporters frequently lament their perceived inability to participate in a consultative process or to be better informed about stevedore decisions that directly

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211 Sydney Ports Corporation submission, 24 December 2007, p 1.

212 See Roundtable transcript, pp 82-83, for an indication of the depth of frustration felt by the VTA towards its NSW counterpart.

213 Sydney Ports Corporation noted at the Roundtable, "Going along with this and to be balanced in it, we do also need to recognise that the trucking industry in recent years has not been particularly coherent in what it wants out of the system and therefore, the net result was you had a boxing match rather than a collaborative way forward" (transcript, p 56).

affect them. However, it is difficult to see how such consultation could be achieved in any practical sense with a large, disparate group of road transporters who lack a single representative peak body.

If a logistics team approach like the HVCCLT is not a realistic option for better coordinating the road interface, what approaches are feasible? IPART has considered three possibilities suggested by stakeholders:

- restricting the number of road transporters at Port Botany through licensing
- modifying the VBS allocation system
- creating incentives for the stevedores to reduce truck waiting times.

Each of these options and IPART's conclusions are discussed below.

6.2.4 Restricting the number of road transporters through licensing

Some stakeholders suggested that road transporters could be required to hold some form of license to operate at Port Botany. This approach could improve coordination because, as noted earlier in this chapter, it seems likely that some of the road transporters at Port Botany are too small to realise the available scale economies and that the fragmentation of the industry leads to excessive external costs. Therefore restricting the number of road transporters via licensing might assist in the minimisation of overall supply chain costs.

The stevedores suggested the possibility of a port-wide licensing scheme for road transporters that imposes some form of minimum service requirements on them, and that some efficiency advantages might be obtained by restricting the number of licenses available.[214]

Similarly, ATANSW and CLAG proposed instituting a licensing scheme where accreditation standards for vehicle roadworthiness and other transport industry OH&S statutory requirements would create a binding agreement between the road transporter and SPC.[215] Under this proposal, successful accreditation would result in vehicles operated by the road transporter in the port precinct being fitted with 'current generation' transponders and only vehicles with valid transponders would operate in the port area.

[214] At the Roundtable, Mr Adam of DP World discussed the possibility of a port license arrangement (transcript, p 77). Mr Schultz of Patrick also discussed it (transcript, p 76).
[215] ATANSW/CLAG submission, 1 January 2008, pp 22-23.

In IPART's view, the licensing proposals go beyond the terms of reference of this review. Further, IPART considers that a significant reduction in the number of road transporters is not likely to have any practical effect on the level of competition in the industry.[216] In addition, it is not clear precisely what number of road transporters would be ideal.

More importantly, legal precedent suggests that any attempt to impose an artificial restriction on the number of road transporters at Port Botany is likely to be challenged on competition grounds. For example, the Australian Competition Tribunal (ACT) recently heard a case concerning ramp handlers at Sydney Airport that has some parallels to the situation with road transport operators and Port Botany (see Box 6.1).

The clear implication of this case is that any attempt by the stevedores to impose an artificial restriction on the number of road transporters at Port Botany would leave them open to challenge on competition grounds—potentially inviting a Part IIIA declaration of the container terminals under the Trade Practices Act. If market forces are not rationalising the road transport industry, it may be because there are subtle efficiency benefits associated with the current structure at Port Botany. The ability of small firms to fill particular niches based on specialised services, particular bundles of services, or levels of customer care may be part of the reason that rationalisation has not occurred so far.

On the other hand, if the lack of progress on ostensibly efficient rationalisation is the result of market failure, then that failure should be addressed directly at its root cause—not through a licensed quota system for road transporters. In either case, IPART believes that the strategy of limiting the number of road transporter licenses appears destined to fail on competition grounds, and possibly also on efficiency grounds.

[216] Oligopoly power in an industry such as trucking (with low barriers to entry) is unlikely to be any more of a problem when there are, for example, 20 fairly equal-sized players, than when there are 200.

Box 6.1 Artificial restrictions on competition: Sydney Airport case study

Recently, Sydney Airport Corporation Limited (SACL) applied unsuccessfully to the ACT to reverse a ministerial decision to declare certain services provided through the use of the freight aprons and hard stands to load and unload international aircraft at Sydney International Airport, and through the use of an area at the airport to store equipment used to load and unload aircraft.

The origin of the declaration was an application from Australian Cargo Terminal Operators Pty Ltd (ACTO) to the National Competition Council. ACTO made this application after it unsuccessfully tendered to become one of the four licensed ramp handlers at Sydney Airport. Sydney Airport's strategy had been to exercise control over the cargo terminal operators and ramp handlers by contract rather than regulation. The contractual mechanism was established by limiting the number of permitted operators, calling for tenders, and having successful tenderers enter into a license agreement that imposes performance conditions.

Sydney Airport's defence of its exclusion of ACTO was that ACTO was unsuccessful in a legitimate tender process. In the end, that defence did not prevent the ACT from declaring the Sydney Airport—effectively giving access seekers a right to negotiate over access with the facility owner and to seek binding arbitration by the ACCC in the event that access terms were unsatisfactory or agreement could not be reached.

One of the most important points made by the ACT in its judgment was that the market, and not Sydney Airport, should decide how many ramp handlers served the airport:

> SACL relies on the evidence that the market will only support four operators at the most for the proposition that increased access to the services will not promote competition. It submitted that with four incumbents no other operator will be able to survive. The Tribunal does not accept this proposition, having regard to the manner in which it has approached the concept of the promotion of competition. The Tribunal considers that the determination of whether any more than four operators can survive should be worked out by market forces and not by edict of SACL. In particular, the Tribunal considers that the determination of the nature and number of ramp handlers should be not be insulated from the airlines. (Sydney International Airport [2000] ACompT 1.)[217]

6.2.5 Modifying the VBS slot allocation system

As noted above, the VBS was introduced as a tool to improve coordination between the stevedores and the road transporters. However, IPART considers that it has two main faults that limit its effectiveness:

- it allocates slots on a basis that takes no account of the value placed on them by the road transporters or their customers (ie, the importers or exporters)
- it fails to prevent excessive queuing and truck idle time when the stevedore is unable to meet the planned slots.

[217] http://www.austlii.edu.au/cgi-bin/sinodisp/au/cases/cth/ACompT/2000/1.html?query=Sydney%20Airport

IPART considers that the problems associated with poor coordination of the port-road container chain, and the general efficiency of the landside task, could be addressed by changing the VBS so the stevedores offer some slots to road transporters at a price that reflects their value to the transporters. This would effectively create a commercial relationship between the two parties, and thus create incentives for the stevedores to improve their quality of service. This approach is discussed in detail in Chapters 7 and 8.

The introduction of the VBS has led to marked reductions in truck queues at the port, but there are still times when one or both of the stevedores is unable to service the landside quickly enough to prevent long truck queues from forming. For example, these delays may be caused by equipment breakdowns, unusually high demand for shipside activity, or high container density in the yard, necessitating additional housekeeping moves to get to the right container. Potential solutions to this problem have been considered in Chapter 4.

6.2.6 Creating incentives for stevedores to reduce truck waiting times

As section 6.2.1 noted, the stevedores are currently insulated from the cost consequences of long truck queues, which means they have no commercial incentive to mitigate the impact of queues on road transporters. Chapter 4 recommended that stakeholders consider establishing a set of rules that the stevedores will use to adjust the VBS when delays occur. IPART considers that this approach will be effective in mitigating this impact. Alternatively, it may be feasible to create some commercial incentive for the stevedore to be more active in reducing queue lengths.

The policy options range from "carrots to sticks", but before rewards or punishments can be seriously considered, IPART believes it is necessary to establish the basis on which the stevedores' landside performance would be judged. There is clearly scope to introduce landside Key Performance Indicators (KPIs) for the stevedores upon which financial rewards and punishments could be based. This is discussed further in Chapter 9.

The detailed design of any KPIs should involve the stevedores and road transporters, as well as the importers and exporters whose logistical performance is affected. It is particularly important that the KPIs established are output-based measures. IPART has received suggestions, notably from the road transport industry, that extremely detailed input-based KPIs be applied. However, IPART considers that such KPIs would be inefficient, as they would involve second-guessing the stevedores' commercial decisions potentially by parties that are not knowledgeable about the efficient running of a stevedoring operation. After further consultation with stakeholders, IPART has suggested some appropriate KPIs in chapter 9.

There may be merit in having a phase-in period during which KPIs are measured and reported but no financial penalties or rewards are paid. This would permit problems to be identified and resolved before they invoke financial consequences.

Some care is necessary in the design of these KPIs since, as Chapter 4 noted, the failure of a truck to meet a VBS timeslot may be due either to problems at the stevedore or the road transporter. Any penalties should reflect fault, so there cannot be any ambiguity over the question of fault.

SPC can play a valuable role in establishing and monitoring these KPIs. SPC's unique whole-of-port perspective and intimate knowledge of the landside interface issues at Port Botany mean it is well placed to undertake this important task. The role of SPC is discussed further in the section below.

Ultimately, it must be recognised that unless they are adequately compensated, the stevedores are likely to oppose the introduction of a system involving greater accountability on their own part. IPART's recommended two-tiered VBS approach aims to provide the necessary incentives to the stevedores through a voluntary approach without the need for intrusive governmental regulation. If this approach fails, then legislative powers may need to be invoked to overcome that failure. The potential use of regulation to effect greater accountability is discussed in Chapter 9.

6.3 The role of Sydney Ports Corporation

Given SPC's prominence in the port community, and the suggestions from many stakeholders that it assume an expanded role relating to landside congestion issues, IPART sought comments on the role of SPC in its Issues Paper. Comments received were mixed. Some stakeholders suggested that SPC take a leadership role in facilitating communication and resolving operational issues.[218] However, other industry representative bodies were sceptical about this proposal.[219] ATANSW also submitted that SPC's involvement in trying to resolve the road transport industry's dispute with the stevedores has not been productive.[220]

The current coordination and consultation groups at Port Botany have arisen because SPC took the initiative in leading discussions on improving efficiency, particularly at the operational level through facilitating discussion among members of the SPCFC. While most supply chain participants appear to agree that these groups have provided a useful venue for information exchange, the groups were not seen as being capable of facilitating logistics coordination across the whole supply chain (as noted above in 6.1.3). A key defect appears to be that there is no decision-making body or mechanism within these groups that can be implemented at both the strategic and an operational level of coordination. For example, meeting minutes for the SPCFC indicate that issues are identified and noted by members but there is limited scope of securing any consensus and implementing long-term changes in a collaborative way.

[218] CBFCA submission, 12 June 2007, p 7.
[219] For example, see ATANSW submission, 12 June 2007, pp 14-15.
[220] ATANSW submission, 12 June 2007, p 39.

Despite goodwill and genuine intentions among members, ultimately, individual commercial interests minimise scope for altering inefficient practices in the longer term. Without the ability to mandate any formal commitment from participants in improving operational efficiency, any involvement by SPC must be solely based on cooperative working relationships between participants.

As discussed in 6.1.6, SPC has proposed in its submission that it establish and chair two 'Governance Councils' to co-ordinate and manage the supply chain similar in structure and coordination framework to the HVCCLT. As noted in that section, IPART believes that the interventionist approach proposed by SPC is likely to be unsuccessful because of the unwillingness of the asset owners to grant durable rights of control over their own assets to third parties. IPART does not support a coercive role for SPC in the operational aspects of port activities, but SPC can and should play a more facilitative role.

IPART concurs with the view expressed in the ACCC's *Container stevedoring - Monitoring report no. 8*, that port managers may need "… a more proactive approach to the management of certain land-side logistics arrangements to ensure that the port-land side interface does not emerge as a transport bottleneck" and that "[t]he role of port managers in managing land-side connections would appear to be important in achieving efficient logistics chains."[221] That SPC has started to address the emerging limits at Port Botany by its initiatives at Enfield is praiseworthy.

IPART recognises that SPC to date has played an important role as a honest broker in trying to achieve equitable outcomes where there have differences of opinion between supply chain participants. For example, SPC has made considerable efforts to address improvements in landside efficiency by playing a key role in facilitating the activities of the SPCFC, the annual Transport workshops and chairing of the Botany Rail Steering Group.

As noted earlier, the key changes needed to improve the efficiency of land and port interface requires industry cooperative action. IPART considers that SPC is well placed within the Port Botany community to be able to encourage more efficient outcomes through engendering greater industry involvement.

IPART also notes that there is a further significant role for SPC in development of the Enfield Intermodal Logistics Centre and the construction of the third terminal connected to the long-term development of Port Botany, including setting strategies for moving more volume from road to rail. (SPC's current role is described in more detail in Appendix J.) IPART supports SPC's role in strategic initiatives for this publicly owned scarce resource that requires development. SPC should implement public policy initiatives that have been set by the NSW Government.

221 ACCC, *Container stevedoring - Monitoring report no. 8*, November 2006, pp 37- 38.

7 Using a price mechanism to allocate VBS slots

As Chapter 3 discussed, IPART has identified a range of inefficiencies associated the current landside arrangements at Port Botany, many of which relate to the provision of road access to the stevedores' terminals via their vehicle booking systems. In particular, there is often excess demand for the available VBS slots, especially during weekday daylight hours. In addition, VBS slots are allocated to road transporters without regard to their value to those transporters, which means they don't necessarily go to those who value them most. Further, there is no commercial relationship between the stevedores and the road transporters, which means the stevedores have little incentive to minimise the congestion costs faced by the road transporters.

Although the recommendations discussed in the previous chapters will go some way to reducing some of these inefficiencies in the short term, IPART believes that further change is necessary if Port Botany is to cope efficiently with the significant growth in containerised freight trade forecast for the next two decades. Specifically, IPART considers that:

- The existing approach to allocating VBS slots needs fundamental change.
- A price mechanism is the preferred approach for allocating VBS slots, as it will lead to the most allocatively efficient outcomes.
- VBS slots would need to be guaranteed if they were to be sold on the market.
- A two-tier VBS – that includes guaranteed or 'firm' slots to be sold on the market, and unguaranteed or 'interruptible' slots that continue to be allocated on the same basis as all current VBS slots – is needed to ensure that stevedores can manage the risks associated with offering firm slots without constraining the total number of slots offered, and that road transporters are offered more choice between certainty and flexibility.
- The most efficient price mechanism for firm slots is an auction. While maximum price limits could be imposed in the transitional phase, such limits are probably unnecessary and certainly undesirable in the long term. In contrast, a minimum price would help to ensure against any under recovery of the stevedores' incremental costs in providing firm slots.
- The stevedores should be allowed to retain some of the revenue raised by the sale of firm VBS slots – sufficient to cover their incremental costs in establishing and operating the system plus a market rate of return, and to maintain service standards. Any additional revenue should be used to fund improvements to road and rail operations that will further the NSW Government's policy objective of ensuring the efficient flow of container traffic at Port Botany.

IPART considers that this approach would both ration demand for peak VBS slots and provide funding for increased provision of peak slots. This rationing would be based on the value each road transporter or its customer places on a slot, which means that the most urgent freight would get priority. Road transporters and their customers would be able to choose to obtain priority access where it is commercially justified or off-peak access where it is not. In all these respects, this approach would substantially improve on the current arrangements for road access, to the benefit of road transporters, their customers, and all other participants in the supply chain.

IPART acknowledges that many stakeholders expressed some reservations about the use of an auction to price VBS slots.[222] However, there was also some support. NSW Maritime supported an auction approach (although it also suggested some variations on IPART's proposed approach).[223] Each stevedore expressed a willingness to support continued investigation of an auction approach and, in the case of Patrick at least, to work on the detailed design issues collaboratively with stakeholders to implement a system that has the greatest possible chance of success.[224]

But despite the reservations in some quarters, IPART remains convinced that the potential efficiency benefits of this pricing mechanism are sufficiently great to justify a fuller exploration of the possibility. It seems likely that many of the concerns expressed about this mechanism could be dealt with through careful design of the auction.

In this regard, IPART also notes that the CBFCA's December 2007 submission to this review expressed support for a price-based method of allocating slots. CBFCA's preference was for a fixed peak pricing regime that provides a financial incentive by way of a rebate for containers transported to and from the stevedores, by road, during designated off-peak hours. A similar rebate was also supported for all rail movements. The CBFCA stated:

> The aim is surely to assist stevedores to even out peak demands and as a result, maximise the efficiency of equipment and labour. This in turn would provide an overall increase in infrastructure utilisation and operational efficiencies and thus cost savings, which would be welcomed by the trading sector.[225]

Sections 7.1 to 7.6 below discuss IPART's general proposal to use a price mechanism to allocate VBS slots in detail. Section 7.7 focuses on the variations to this proposal suggested by NSW Maritime, and explains why IPART still prefers its two-tiered VBS approach. Chapter 8 outlines IPART's more specific proposal on pricing road access.

222 For example, see CBFCA submission, 19 December 2007, pp 14-15.
223 NSW Maritime submission, 24 December 2007, pp 4-5.
224 DP World submission, 21 December 2007, p 2; Patrick submission, 21 December 2007, p 2.
225 CBFCA submission, 19 December 2007, p 17.

7.1 The existing approach to allocating VBS slots needs fundamental change

Nearly all the stakeholders who participated in this review identified problems with the current system for allocating road access to the stevedores' terminals. The road transport peak bodies, ATANSW and CLAG, claimed that the existing VBS has a large number of deficiencies.[226] For example, ATANSW put the view that:

> …the fact that operators engage in a free for all to get time slots is a blunt and obstructive process.[227]

The CBFCA also identified weaknesses in the VBS and the processes that surround it.[228] For their part, the stevedores noted that truck queuing was worse before the introduction of the VBS, but acknowledged that there is room for improvement.[229]

It is undoubtedly true that the introduction of the VBS improved efficiency at Port Botany by replacing the physical queue that regularly arose when trucks arrived randomly at the port with a 'virtual queue' of internet bookings. A great deal of fuel, truck driver time, and vehicle availability has been saved by this move. Knock-on problems caused when the truck queue extended onto public roads around the port (often blocking the entrances to other industrial premises) have also been substantially mitigated. The VBS created the opportunity (admittedly not always fully exploited) for the stevedores to plan resources to meet demand on the landside and to shift the pre-booked containers to the top of the stacks to facilitate efficient truck loading.

Nevertheless, road transporters still frequently make two types of complaints about the operation of the VBS:

- First, they find it very difficult to get the most desirable daytime weekday slots, as demand for these premium slots far outstrips supply.
- Second, the stevedores are sometimes unable to service trucks within their booked timeslots, due to congestion in the terminal or to some other unexpected disruption to normal service (ie, non-recurrent congestion).[230] When these delays occur, actual truck queues can become inordinately long and total truck waiting times can soar to levels that are plainly inefficient.[231]

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226 See, for example, CLAG submission, 6 June 2007, p 7, and Roundtable transcript, p 31.

227 ATANSW submission, 12 June 2007, p 26.

228 See CBFCA submission, 12 June 2007: "The CBFCA concerns in relation to the VBS applications are not so much in relation to the technical architecture but in the underlying pricing policies and associated business rules" (p 18).

229 See Roundtable transcript, pp 37-42 (DP World) and pp 42-47 (Patrick).

230 The issue of congestion is introduced in section 2.6.2 of this report, where a distinction is made between predictable, or "recurrent congestion," and unpredictable "non-recurrent congestion."

231 A third complaint, about historical anticompetitive stevedore self-favouritism, is being investigated separately by the ACCC and will not be canvassed in this report, except to say that IPART has been provided with no concrete evidence that such favouritism occurs.

IPART considers that these problems are closely linked to the approach currently used to allocate VBS slots. The first is symptomatic of any situation where a scarce commodity is allocated among competing acquirers in a way that does not reflect the importance or value that each acquirer places on that commodity.

As Chapter 3 described, the present VBS is a first-come-first-served system, and obtaining the slots you want involves quite an element of luck. Anecdotally, it is the road transporters with the most vigilant clerical staff or the fastest typists that win the race for the most desired slots. Superimposed on this system is a quota. Individual road transporters are prevented from acquiring more than a set number of VBS slots in a given peak time period when they are first made available.

The second problem is, to some degree, inevitable due to the highly complex nature of stevedoring activities. However, it also symptomatic of the fact that there is limited contractual and no commercial relationship between the stevedores and the road transporters. As Chapter 3 identified, the current carrier access agreements entitle road transporters to access to the VBS – but booking a timeslot through this system does not provide an entitlement to access to the terminal within that timeslot. In addition, the small fees associated with the VBS cover only the costs of operating the booking systems themselves – they do not relate to access to the terminal, which is provided at no charge. This means that the stevedores have little incentive to minimise the impact of delays at the terminal on road transporters, and the road transporters have no right to seek redress for this impact.

IPART considers that the approach for allocating VBS slots needs a fundamental change to overcome these problems and achieve long-term improvements in efficiency levels at the port.

7.2 A price mechanism is the preferred approach for allocating VBS slots

There is a range of options for allocating a scarce commodity, such as the available VBS slots at Port Botany, among those parties that wish to acquire it. Economic theory and experience in other industries, including network industries, suggest that a price-based system would perform more efficiently than the current approach. However, it might also be possible to share the commodity by equal division, or to limit the class of parties who are eligible to acquire the commodity. Or it might make sense to retain the current approach, under which VBS slots are allocated on a first-come-first-served basis.

IPART considered each of these options and concluded that a pricing mechanism is the preferred option for allocating VBS slots, because it is both more efficient and more practical than the alternatives. In particular, sharing by equal division is not practical in the circumstances at Port Botany, where there are more than 200 road transporters of unequal size. Any rule that allocated an equal number of slots to each road transporter would inefficiently disadvantage the larger firms, and would

strongly discourage efficient amalgamations of road transporters. However, any rule that allocated slots in proportion to the current size of each road transporter would also be inefficient. It would serve to entrench current business sizes irrespective of their efficiency. In effect, it would retard the process by which more efficient businesses displace less efficient ones.

Limiting the class of parties who would be eligible to acquire VBS slots would also be highly problematic. As section 6.2.4 highlighted, any attempt by the stevedores or SPC to artificially restrict the class of persons eligible to acquire road access to Port Botany may not comply with Australia's competition laws. The power to make economic foreclosure decisions of this type should not rest with private firms or government businesses. Furthermore, it is undesirable to place such decisions in the hands of parties that do not possess a deep understanding of the competitive dynamics of the road freight industry.

Allocating VBS slots on a first-come-first-served basis, as is currently the case, has some characteristics of a lottery. It does not suffer from the competition law problems that arise with exclusionary schemes. Arguably, though, it does not perform much better than an equal division scheme. In effect, the current system is a statistically based equal division scheme in which the slots are allocated, on average, in proportion to the number of containers each road transporter needs to move. That basis of division is better than current firm size because it takes account of each road transporter's ability to attract the business of importers and exporters. This ability may be a better indicator of relative efficiency than the firm's size.

However, a significant flaw in the first-come-first-served approach is that it does not allocate the scarce objects to those parties that value them most highly. In that sense it is not allocatively efficient.[232] In fact, once the allocation is concluded, it would be possible for both winners and losers to make themselves better off by trading. Road transporters will place different values on a slot (eg, based on the urgency of their clients' need for delivery). Therefore, there is likely to be some price between its (relatively low) value to a winner and its (relatively high) value to a loser at which both would be happy to trade.

After all trades that are possible have been made, the allocation of slots is likely to be similar to the allocation that would have resulted from an auction, and thus be as allocatively efficient as an auction. However, it is a much slower and less certain way to obtain that result. In addition, the original seller would have received none of the value that was created, and the winners in the allocation would have received a windfall either by reselling, or by obtaining the ability to use a valuable slot at no cost.

[232] In Chapter 2 (section 2.6.3) the various types of efficiency are distinguished, viz: allocative, productive, and dynamic.

In summary, once the exclusion and arbitrary division approaches are ruled out, the main alternative allocation methods are a price mechanism or allocation on a first-come-first-served basis. A pure random allocation in which resale is prohibited would be allocatively inefficient, since the scarce objects would not generally be allocated to their highest-valued end-uses. If resale were allowed, then the allocation process would take on characteristics of a price mechanism, thus tending to overcome the allocative inefficiency problem. However, if a price mechanism is chosen for reasons of allocative efficiency, then the most efficient price mechanism should be preferred. Some form of auction would be more productively efficient than allocation on a first-come-first-served basis that is followed by (possibly covert) bilateral trading, and more likely to result in an efficient allocation.

7.3 VBS slots need to be guaranteed if they are to be sold on the market

To sell a good or service for a non-trivial price, the product characteristics must be clearly specified. In addition, when there is a time delay between the sale transaction and fulfilment, the buyer must have confidence that the product will be delivered and will meet the specification. Contracts that specify the rights of the customer against the supplier in the event of non-delivery or inadequate delivery are commonly used to provide this confidence.

It is important to understand that the currently available VBS slots do not meet these minimum requirements. As Chapter 3 discussed, the fees associated with the VBS are for access to the booking system only, and do not entitle the holder of a booking to access to the stevedore's terminal in the booked timeslot. In the relatively common event of disruption to service at the terminal, some VBS slots may not be delivered to the road transporter that booked them at the appointed time. When this non-delivery occurs, the road transporter has no recourse against the stevedore.[233] Current VBS slots are provided on a reasonable endeavours basis.[234] Documents provided to IPART by the ATANSW show that the road transporters are well aware of this fact.[235]

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[233] Patrick's *Vehicle Booking System Conditions of Access* notes under section 5 "Limitation of Liability" that "Patrick shall not be liable for any claim, demand, liability, or consequential losses under any circumstances, howsoever arising or howsoever caused," available at http://1-stop.biz/patrickvbs.htm

[234] DP World's *2007-08 Carrier Access Arrangements Port Botany Terminal* notes under heading 15 "Cancellations" that "DP World Sydney reserves the right to cancel a time zone as a result of unforeseen circumstances. This will be generally done with at least an hour's notice where possible. DP World Sydney will endeavour to assist carriers with replacement timeslots" (document attached to DP World submission, 12 June 2007.) The document notes further that B class carriers may be entitled to lodge claims for some limited compensation for out of pocket costs in the event of delays of more than 2 hours (see section B4).

[235] A memorandum to the container section of the NSWRTA dated 23 April 2001 was provided to IPART by ATANSW as an attachment to its 12 June 2007 submission. It notes, among other points that: "There is no guarantee of service or slots being available when required by carriers.", and "They will consider reimbursing Major carriers only if the terminal detains them more than two hours. However, they retain the right to cancel slots if something goes wrong at the terminal which would cancel out their obligation."

CLAG expressed the view that stevedores should be accountable for delivery of VBS slots, and that slot holders should have recourse against the stevedores when booked slots were not met.[236] If there were a formal customer-supplier relationship between road transporters and a stevedore, then these expectations might be reasonable. However there is no such customer-supplier relationship at present. Road transporters do not pay for the slots (they pay for access to the VBS), the terms on which slots are offered explicitly preclude recourse against the stevedore, and no assurance of service is provided. It would not be reasonable to move from the status quo to impose accountability and recourse upon the stevedores without introducing some commercial relationship involving payment for slots.

It is worth noting that the relationship between stevedores and shipping lines is quite different. The shipping lines have formal contracts with the stevedores, which impose a range of obligations on them, including performance monitoring regimes, and contractual payments by the shipping lines depend on them meeting specified performance standards.

If a price mechanism for VBS slots were introduced, two changes from the status quo would be necessary. First, the slot itself would need to be priced separately to any booking fee or related service charge. Second, delivery of the slot by the stevedore would need to be guaranteed, and there would need to be financial penalties associated with non-delivery or inadequate delivery. IPART considers that a simple rule of thumb, such as a refund plus payment of a reasonable pre-estimate of inconvenience costs to the slot holder in case of non-delivery, would provide the correct incentives for stevedores.

7.4 A two-tiered VBS is needed

The introduction of a price mechanism for VBS slots that are guaranteed would impose, for the first time, a commercial relationship of customer-supplier between the slot owner and the stevedore. This commercial relationship would greatly strengthen the degree of mutual obligation between stevedore and road transport operator that is needed to make the landside interface work efficiently. However, it would also create new risks and liabilities for the stevedores.

To manage these risks, it seems likely that the stevedore would prefer to offer fewer guaranteed slots in a given hour than the number of current (non-guaranteed) VBS slots that might normally be offered. For example, while 60 slots per hour may be deliverable with reasonable certainty, only 40 slots per hour could be provided with a sufficient safety margin to justify the guarantee in light of the possibility of unexpected developments at the terminal. At any rate, it seems unlikely that stevedores would be able to offer the same number of guaranteed slots each hour as current VBS slots without incurring considerable extra expense in the form of overmanning, opportunity cost, or penalty payouts. This observation does not imply, as some submissions in response to the Draft Report suggested, that the

[236] Roundtable transcript, pp 30-31.

introduction of firm slots would necessarily reduce the total number of slots offered by stevedores in any given hour.

Any restriction on the total number of slots available to road transporters is not desirable, as it would likely reduce the total number of truck entries per day. Therefore, some non-guaranteed slots must be allocated outside the price mechanism. IPART expects that the sum of firm and non-guaranteed slots offered in any given hour would be no smaller than the number of slots that would have been offered under the current system. The question of how the number of firm slots should be determined is analysed in detail in Chapter 8. But it is important to note that there will be an optimally efficient number of firm slots, and the proposed auction system will help identify *that* efficient number over time.

IPART considers that an efficient pattern of slot offerings across the day and week can best be achieved by establishing a *two-tiered VBS system*. The guaranteed slots represent the upper tier, and these would be sold on the market. The non-guaranteed slots represent the lower tier, and these would be allocated on the same basis as all VBS slots are currently allocated—on a first-come-first-served basis. IPART has adopted the terminology 'firm slots' for guaranteed slots, and 'interruptible slots' for non-guaranteed slots. This terminology has its origins in energy markets, particularly gas, where firm contracts must be honoured no matter what, but delivery may be interrupted in certain circumstances under interruptible contracts.

This two-tiered system has the attractive property that demand will be strong and prices high for firm slots during peak hours, whereas demand will be weaker and prices lower for firm slots during off-peak hours. Interruptible slots would continue to attract only a nominal booking fee, and would remain inexpensive when they are available. A peak pricing mechanism will evolve spontaneously from these foundations. Through the operation of market forces and the design of the two-tiered system, VBS access will be more expensive, on average, during peak hours than off-peak hours.

Continuing with current practice, a VBS slot is associated with either the delivery or receival by road of a single container, rather than a single truck (which may carry multiple containers).

To encourage more efficient dual runs, in which a truck delivers an export container and receives an import container in a single visit to the terminal, some slots of longer duration (dual slots) should be offered. Indeed, IPART considers it desirable to make all firm slots long enough to serve as dual slots. This would mean that a road transporter buying a firm slot would have the option of doing a single run (only delivering or receiving one container per visit), or a dual run. The single run would take slightly less time and so free the stevedore to service other trucks sooner. However, a dual run would enable the road transporter to derive more value from that slot, and those that intend to do a dual run could be expected to bid higher than those doing a single run.

To encourage more efficient utilisation of firm slots, it would also be desirable for multi-container trucks to be able to pick up (or deliver) multiple containers without having to book multiple slots. At present, a road transporter with two import containers to pick up must book two slots in the same time zone. Under the proposed two-tier VBS, the same road transporter can only be certain of getting both containers if he bids (and wins) two firm slots. This is a disincentive to the use of larger trucks which IPART would like the stakeholders to consider how best to overcome in the near future.

The precise operational specification of a slot, in terms of time measurement, communication, reciprocal obligation, and penalties for non-compliance may be quite detailed. IPART has not attempted to explore this specification, as this is a matter for the stevedores and road transporters. However, in its view, the stevedore's obligations should be considered fulfilled if the road transporter enters the terminal gate within the specified time for the firm slot and leaves the terminal premises within a certain specified time. That length of time may vary depending on the number of containers a truck is delivering and collecting. The issue of performance targets and KPIs for the stevedores' road and rail operations is discussed in Chapter 9.

Some complexity may be involved in establishing penalties against a road transporter that appears late for a firm slot. In the case of complete non-appearance, the firm slot price would be forfeited by the slot owner. Slots would be sold on a 'take-or-pay' basis. In the case of late arrival, it may be preferable to link any penalty to the market value of the firm slot at the time the truck actually arrives. That type of approach would remove any incentive to book a firm slot at an inexpensive time then arrive later, during a much more expensive time period. In any case, the detailed implementation of such rules should be left to the direct participants.

The question of how to treat a road transporter that arrives late for a firm VBS slot entails a number of important issues. Part of the value of a firm slot may be the ability to transform it into an interruptible slot in the event of late arrival by the road transporter. While this treatment of late arrivals may weaken the 'take or pay' character of a firm slot somewhat, it recognises the practical reality that the stevedore needs to move that container. It would not be efficient if the penalty for a late-arriving road transporter led to increased congestion in the terminal.

Road transporters should be obliged to provide the relevant container number within a certain period before the start of the slot to enable the stevedore to do appropriate housekeeping. IPART considers that road transporters should be required to confirm container numbers at least 24 hours before their booked slot to provide the stevedore with sufficient certainty for it to plan and undertake appropriate housekeeping to meet its firm slot obligations. While container numbers could be changed subsequently, there could be a penalty for doing this. For example, the firm slot could be converted to an interruptible one if advice of the changed container number was received inconveniently late.

Finally, it is important to emphasise that IPART is proposing that only firm VBS slots will be fully priced. IPART is not advocating a charge for access to the port facilities, which would still be available at little or no charge through interruptible VBS slots.

7.5 The most efficient choice of price mechanism for firm slots is an auction

If a price mechanism is to be employed to allocate firm VBS slots, a particular price mechanism must be chosen. IPART considers that an auction is the most immediate and flexible price mechanism. However, the consultation process identified some nervousness within the port user community about how the auction would work in practice, and concern about opportunities for exploitation of parties that are unfamiliar with auction processes.

In light of these concerns, IPART has also considered some alternatives to the auction approach – including pricing by administrative decision, adjustable posted prices, and auction subject to price limits. Each of the alternatives and IPART's considerations and conclusions are outlined below.

7.5.1 Pricing by administrative decision

Pricing by administrative decision would involve the NSW Government setting a price (or a set of prices for different times of day) for VBS slots. Two possible examples of pricing by administrative decision are the FIC proposed in the FIAB report and the PierPASS system employed at the ports of Los Angeles and Long Beach. [237] Each of these systems were commended (and preferred to an auction) by many parties making submissions to the Draft Report. Government involvement in the determination of the level of the price would be necessary since this type of pricing by a private firm would likely run counter to the Trade Practices Act.

The administrative pricing of firm slots could be made in such a way that two fixed prices applied – one for firm slots offered in peak periods and one for firm slots offered in off-peak periods. The higher fixed price would apply to each firm slot offered during peak periods. Under such a system, road transporters could have certainty of access at prices which also encourage them to move to off-peak periods. (Of course, transporters who value flexibility and lower cost could continue to gain access via interruptible slots.)

Table 7.1 compares some of the features of an auction of firm slots with a fixed price system for firm slots. The attraction to the fixed-price system is that the price, once set, is known with certainty. It is also likely to be relatively inexpensive to

[237] The PierPASS traffic mitigation fee, payable by the freight owner, is currently $US50 and applies to *all* containers moved from 3am to 6pm Monday to Saturday except for empty, transhipment or rail containers. For Port Botany, Shipping Australia suggested, without supporting detail, a price of $80 per container moved between 7am and 5pm with rebates of $30-40 for containers moved outside these hours.

implement and maintain. Its drawback is that slot allocations are quotas determined by some agreed method other than price, and therefore produce a sub-optimal allocation.

Table 7.1 Key features of an auction system and a fixed-price system for firm slots

Feature	Auction	Fixed price
Price is known with certainty when freight contract is finalised	No	Yes
Price is set administratively	No	Yes
Delays are avoided	Yes	Yes
Length of delays uncertain	No	No
Slot allocation optimal	Yes	No
Slot allocation done administratively	No	Yes
Cost of implementation	Unknown	Low
Ongoing operating costs	Unknown	Low

Like the auction system, a fixed price system would not directly increase the number of slots available. Rather, the higher peak fixed price would induce road transporters to move off-peak.

Unlike an auction system, however, a fixed price system could cause a bunching of demand at the changeover times between peak and off-peak. For example, in the PierPASS system in California, the stevedores' terminals become very congested around 6pm.[238] Such behaviour is to be expected, given the price incentive.

SPC offered two variants of an alternative road access model for IPART to consider, one with pricing one without.[239]

In the SPC model, an independent group would run the VBS (whether one or two VBS is not explicit). It would have a detailed register of road transporters that need port access. The stevedores would provide the number of slots per hour on offer. The stevedores would "ensure" that sufficient slots are available to "handle the road task based on forecasts for the number of containers to be processed over that three to five day out period". The system would allocate slots according to the business rules as set by a "relevant body of industry representatives". The system would operate with KPIs and penalties based on the cost of delay to road transporter and stevedore alike and their application would follow set business rules.

[238] The fee applies to containers moved between 3am to 6pm: Sydney Ports Corporation submission, 24 December 2007, p 26.

[239] Sydney Ports Corporation submission, 24 December 2007, pp 15-18.

SPC suggests that the SPC-allocation system could be operated with adjustable prices, where the price could be altered for the same time spot in the following week to reflect excess demand or oversupply in the present week, as the case may be.[240]

SPC expects the price for a particular time slot to stabilise over time (as did the Draft Report, p 130) but this is not an obvious outcome because historical divergences between supply and demand are likely to be an ongoing feature of the system.

SPC's alternative without pricing is a little different from the current system in that the stevedores determine the number and timing of slots. Further, the allocation method is unstated and to get agreement it may have to be related to 'size' of the road transporter (as at Patrick's at present) or to the road transporter's willingness to pay (as at DP World at present).

IPART has already indicated that a set of KPIs and a comprehensive penalty regime is a desirable feature of the landside. The key weakness of the non-price SPC alternative is that it is effectively the present system with assumed agreement on matters on which there is currently no agreement, except perhaps at the level of principle.

The Government's response to the FIAB report was to defer any introduction of a freight infrastructure charge (FIC) on containers on the grounds that the rail infrastructure should first be developed that could cope with any FIC-induced switch of container movements by rail. The same consideration would apply to pricing of peak-period VBS slots, whether by auction or fixed pricing.

In summary, an administered pricing system for firm slots would improve on current arrangements. However, there are a number of problems with it, especially compared to the auction approach. The first and most serious problem is that the administratively set price will almost never equal the market price. That means the market for firm slots will not clear at the prevailing price. There will necessarily be one of two adverse consequences. In one case (fixed price higher than market price), some firm slots will go unsold which could have been sold at a somewhat lower price. The opportunity to provide some road operators a guaranteed slot that they were willing to pay for would be lost. That opportunity would not have been lost in an auction system.

In the other case (fixed price lower than market price) there will continue to be excess demand for firm slots. The fixed price system will not solve the problem that the price mechanism was designed to address—excess demand at certain times of the day and week. The current unworkable first come first served system would need to be applied even to road operators that are prepared to pay a non-trivial price for

[240] The examples in Sydney Ports Corporation's submission do not deal with a road transporter whose bids for Monday 8am are successful so that he wants to withdraw all or some of his bids for Monday 9am. This can be overcome by allowing no bids for Monday 9am to be entered until immediately after the Monday 8am allocation has been decided. But such sequencing may slow the allocation process significantly, making the ability to withdraw (or add to) bids important. Even that, however, would take time.

certainty of access. In other words, while road transporters are willing to pay substantially more for certainty of access, only those who receive a firm slot would get it.

An administratively set price will not be able to reflect the dynamics of the underlying market price which varies with time of day, with day of week, and from week to week for the same time of day and day of week. The subtlety and volatility of this market price cannot possibly be captured by an administered price. In other words, even if the fixed price is set correctly on average (and that outcome seems unlikely), it will be set incorrectly for most times of day and days of the week. Given fluctuations in demand, the market clearing price for 8am this Monday may be quite different to the market clearing price at 8am next Monday. But once set, it would be difficult and time consuming to alter an administratively determined price to reflect the change in demand, and therefore find the equilibrium point between supply and demand that would clear the market. The price review process would probably resemble the process for altering regulations. This price stickiness presents a further problem, as demand for firm VBS slots is likely to increase over time, given the forecast growth in containerised trade. A rigid price would not be sufficiently adaptable or responsive to shifting market conditions to serve its purpose.

These problems would all be overcome with a market pricing system, such as the proposed auction.

7.5.2 Adjustable posted prices

If fixed pricing by administrative direction is rejected, an adjustable posted price may provide a desired level of flexibility without the potential for wild price fluctuations that are inherent in an auction. The market-clearing price level for a firm VBS slot at a particular time on a particular day could be determined by trial and error through posted prices that are gradually modified over a period of weeks or months until the market clears. Such a process can be thought of as a 'slow-motion auction'.

When the posted price is set above the true market clearing price for a given hour and day, then not all the available firm slots will be sold. When the posted price is set below the market clearing price then the available firm slots will be oversubscribed, and they will have to be allocated among subscribers through a non-price mechanism such as a lottery. Whenever the posted price is set incorrectly there will be inefficiencies (either unserved demand or some allocation by lottery), but over time the extent of these inefficiencies will diminish as the posted price more closely approximates the clearing price.

The price discovery benefits of this process could be enhanced by maintaining a waiting list of unsuccessful bidders, or even a bid stack of the type maintained by the Australian Stock Exchange as part of its market depth information. By reviewing such a bid stack it would be possible to evaluate what the market clearing price would have been—information that would be useful for adjusting the posted price in the next iteration.

7.5.3 Auction subject to price limits

If the main concern about an auction is the possibility of extreme price volatility, then it may be prudent to impose minimum and maximum prices on the auction—at least for an introductory period until experience is gained with the auction format. Some well-known auctions, like the National Electricity Market (NEM) pool, operate with an absolute price cap.[241] The maximum price could be set initially at a relatively low level, and subsequently relaxed as confidence in the system grows. The NEM price cap has been relaxed in this fashion.

7.5.4 Pure auction

In a pure auction (ie, one not subject to minimum and maximum price limits), the market will clear, but the price at which it does so may be perceived to be extreme. It may also vary considerably from day to day. If the price volatility reflects dynamic demand factors, then it may be entirely appropriate for prices to be volatile. On the other hand, if volatility is due to the auction design or strategic bidding by some parties, then it will be a problem.

The benefit of refusing to put limits on the price range is that allocation by lottery should never be necessary for firm VBS slots. An unlimited auction should be the most allocatively efficient pricing system, as long as bidders don't "game" the system. The firm slot price would not be likely to exhibit the extremes of, say, the NEM pool price because the availability of an alternative (such as interruptible slots) will act as a natural limit. While road transporters may prefer not to operate at night or on weekends, the extra cost of doing so would not be hundreds of dollars per container, so an extreme auction price would not be sustainable. Similarly, a road transporter or an importer is unlikely to pay a firm slot price that exceeds the stevedore's daily storage charge, except in rare circumstances.

Overall, while there are alternative pricing mechanisms to an auction, IPART considers that an unlimited price auction would be the most allocatively efficient one, barring manipulation by bidders. If there are concerns about price volatility under an auction scheme, then price limits could be imposed during an introductory period to help establish confidence. If even a price-capped auction is still perceived as too risky or experimental, then an adjustable posted price system with bid stack would permit progress to be made toward market clearing prices, while testing the auction process 'off-line'.[242]

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241 The maximum pool price is referred to as the "Value of Lost Load" or VOLL. It is presently set at $10,000/MWh. It was previously set at $5,000/MWh, then relaxed.

242 The idea of the bid stack is that although the firm slots would be sold for an announced price, bidders would be asked to submit a range of bids indicating their level of interest in obtaining the slot at a range of prices above and below the announced price. By compiling these individual responses into a bid stack, it would be possible to determine, after the fact, what the market clearing price would have been. This process is essentially the process used by the NEM to establish the pool price.

7.6 Use of the revenue raised by the sale of firm VBS slots

The on-market sale of guaranteed VBS slots may raise significant revenues. For example, if the cost differentials noted in Chapter 5 between peak and off-peak road transport (comprising mostly the cost of handling off-peak deliveries at an intermodal terminal) are representative, and if these differentials approximate the value of a peak VBS slot, then peak firm slot prices could well fetch between $60 - $80 each. Applying this price range to eight peak hours per weekday for fifty weeks of the year, and assuming 40 guaranteed slots per hour at each stevedore's premises, the market sale process might be expected to raise in excess of $10 million per annum across both stevedores combined. Of course, the actual sales proceeds could differ markedly from this range, depending on the number of guaranteed slots offered and changes to the factors that make them valuable to bidders.

Equating one VBS slot with one container, this hypothetical $60 – $80 range for guaranteed slots would represent more than a 100 per cent increase in the current level of 'other revenue' per TEU achieved by the stevedores.[243] It seems likely that sales proceeds of this magnitude would also exceed the additional costs that stevedores would incur in providing guaranteed slots.[244] This excess value or profit on a slot reflects its scarcity value and is in effect a 'monopoly rent'. To the extent that this simplified analysis is correct, there is likely to be money left over from the sales process after all stevedore costs of providing guaranteed slots are covered.

How should this left over money be distributed? In IPART's view, it would be inappropriate to permit the stevedores to retain it. The sale of firm VBS should not become a profit centre for the stevedores. However, they should be able to earn adequate revenue to recover the incremental costs they incur in putting the two-tiered VBS in place, including a market rate of return on any capital costs they incur in facilitating the system. A minimum auction price would help to insure against under-recovery of these incremental costs. This revenue should also cover expenditures necessary to maintain the service standards required for the firm slots and provide sufficient profit to create an adequate incentive for them to provide as many firm slots as possible.

[243] See ACCC, *Container stevedoring - Monitoring report no.8*, November 2006, p 15. Applying an average rate of 1.5 TEU/container (consistent with figures for Sydney Port in BTRE's *Waterline* 42), the given hypothetical range of VBS firm slot prices corresponds to $40 – $53/TEU, which is significantly greater than the $27.94/TEU in other revenue earned by the stevedores in 2005-06.

[244] While it is difficult to make such an assessment without a detailed understanding of the stevedores' cost drivers, the new revenue from each slot auction may represent a significant portion of the stevedore's current costs on a TEU basis. The ACCC, *Container stevedoring - Monitoring report no.8*, notes that stevedore unit costs were $137.49/TEU in 2005-06 (p 11). The given hypothetical range of VBS firm slot prices represents between 29 per cent and 39 per cent of this cost.

To best promote the policy objective of relieving the anticipated congestion at Port Botany, including by promoting the greater use of rail, it would be desirable to use part of the sales proceeds to fund road and rail infrastructure investments that:

- would not otherwise be made on a commercial basis, or
- might be made commercially, but on an excessively slow timescale, and
- would act as a catalyst for further moves toward use of intermodal terminals, inland ports, and rail transport to and from the port.

Some part of the proceeds could also be used to encourage off-peak road access to Port Botany through payments to road transporters as an inducement, or perhaps to compensate for additional costs incurred in adopting that mode of operation. Such payments will encourage road transporters to work at off-peak times when there is a lower level of congestion not only at Port Botany but in Sydney more generally. The subsidy will help to address these congestion problems.

However, IPART has some reservations about the use of such a subsidy, and its benefits would needs to be balanced against these. IPART considers that the sales process itself will create a significant peak/off-peak price differential for firm VBS slots that will create incentives for road transporters to move to off-peak operation and to use rail. It is not clear that any further inducement would be needed to drive a spreading of the peak and a subsidy to off-peak road transport would reduce the incentive to move to rail.

There are other possibilities for the use of the sales proceeds, including the establishment and operational needs of coordination bodies for road and rail, and research projects that may be of genuine benefit to the port community. Potentially SPC could play a useful role in this process. In conjunction with stakeholders, SPC would be well placed to determine the broad priorities for infrastructure funding. After the stevedore's costs of meeting the firm VBS slots were met, a proportion of the remaining sales proceeds would be dedicated to improving road and rail operations, to the road transporters prepared to use off-peak slots, to coordination and to research. Within that broad framework, and according to an objective set of allocation principles that were widely agreed in advance by the members of the port community, SPC could determine the actual projects to which the funding would be directed from year to year.

7.7 Analysis of NSW Maritime's suggested alternative to the two-tiered VBS approach

As discussed above, several submissions in response to the Draft Report proposed alternative approaches to the two-tiered VBS and auction approach outlined in this chapter. Proposals to adopt a 'FIC' or 'PierPASS' style of administrative pricing for firm slots instead of an auction have been discussed above in section 7.5. This section considers NSW Maritime's proposed alternative.

In several areas, NSW Maritime supported IPART's draft recommendations. Significantly, NSW Maritime agreed with the adoption of an auction to determine the price of VBS slots. It noted:

> In response to industry concern about the uncertainty in costs it will confront with an auction arrangement, it is necessary to be aware the cost of uncertainty in costs is already being factored by the industry at the moment. The auction system will simply introduce a transparent and manageable cost in the auction price to replace a hidden and less manageable cost already experienced by the landside industry.[245]

However, NSW Maritime proposed a different approach for two critical elements of IPART's approach. First, instead of the stevedores determining the number of VBS slots to be offered in an hourly period, a new governmental body, the Independent Gateway Authority (IGA), would take on this role. NSW Maritime submitted that:

> … stevedores should not determine the number of slots available because they would be commercially driven to focus solely on optimising their own operational efficiency … The number of slots should be determined by an independent authority with directions to maximise the number of slots available. In doing so, the authority would ensure there is not an oversupply of slots during each period that could lead to inefficient use of resources at the stevedore terminals. The authority can achieve this balance utilising forecasting tools, requests for slots through the VBS, and consultation with the stevedores and other stakeholders. This would allow the authority to set hourly/daily minimum slot numbers and to forecast short and long term needs of the industry.[246]

Second, instead of some 'firm' slots to be sold by auction, and some 'interruptible' slots to be allocated on a first-come-first-served basis, NSW Maritime proposed that all slots be firm. It submitted that:

> … there should be no interruptible slots and all slots be allocated as firm slots through the on-line auction system. Even when the auction price drops to zero (which should be common) it is reasonable for carriers and stevedores to require a degree of certainty on pick up/drop off times. Certainty benefits everybody in the chain and even if the slot is sold for a zero price, the performance standards for both the carrier and the stevedore should apply, with penalties.[247]

IPART has carefully considered NSW Maritime's proposal, including undertaking further analysis to assess its feasibility. On balance, it concludes that taking responsibility for determining the number of firm slots from the stevedores and abolishing all interruptible slots would reduce the effectiveness of the proposed approach.

IPART is not convinced that the proposed IGA would be able to forecast the size of the landside task with sufficient accuracy to determine the optimum efficient number of VBS slots to be offered in any hour. Nor is it convinced that offering only firm slots will lead to improved efficiency in the port-road interface. On the contrary, in IPART's view this approach would lead to underutilisation of the most expensive

245 NSW Maritime submission, 24 December 2007, pp 4-5.
246 NSW Maritime submission, 24 December 2007, p 3.
247 NSW Maritime submission, 24 December 2007, p 4.

capital items in the supply chain – the wharf cranes, straddles and gantries – which would increase the costs of supply chain overall.

IPART's analysis and conclusions are discussed in more detail below.

7.7.1 IGA would not be able to forecast size of landside task with sufficient accuracy

The effectiveness of NSW Maritime's proposal depends on the ability of an independent body's to determine the most efficient number of slots required more accurately than the stevedores. In turn, this depends on the effectiveness and accuracy of the forecasting tools, and consultation processes it uses. Based on the information IPART was able to obtain over the course of this inquiry, and the extensive analysis it undertook, IPART is not confident that this is possible.

NSW Maritime notes that the proposed IGA will need to develop and implement a transparent and flexible model that can determine the number of slots that should be offered each hour of each day.[248] The factors to be taken into account in that forecasting effort could be historical data on slot demand and container throughput, growth forecasts, efficiency gains in terminal operations, truck bay capacity and city congestion.[249]

Any forecasting enterprise must meet two challenges: developing a model that is appropriate to the task, and obtaining data that is current and accurate. Even if the IGA can develop a robust model for forecasting the optimal supply of slots (which will be pose significant difficulties in itself) there are likely to be two data problems that a governmental organisation such as the proposed IGA would find extremely difficult to surmount. The first is the unpredictability of the size of the landside task on any day. The second is gaining access to commercially sensitive cost data on stevedore operations.

Unpredictability of the size of the landside task

In its submission, NSW Maritime recognised that the unpredictability of ship arrivals influenced IPART's conclusions on the need for stevedores to determine their own slot availability. However, it argued that it is possible to obtain a degree of certainty in predicting the landside task:

> The shipping industry has indicated the arrival of ships is very predictable. This predictability is reliable even when ships arrive late or out of sequence. This predictability can be confirmed by the Sydney Ports Corporation's SHIPs system and shipping industry representatives Shipping Australia.[250]

248 NSW Maritime submission, 24 December 2007, p 6.
249 NSW Maritime submission, 24 December 2007, p 6.
250 NSW Maritime submission, 24 December 2007, p 2.

However, the key question is whether it is possible to predict the size of the landside task with ***sufficient certainty*** to make timely decisions about stevedore staffing and yard management. Data provided by SPC strongly suggests that whatever certainty is available, it is not sufficient to avoid routine disruptions to stevedore plans.

For example, one prerequisite for a predictable landside task is predictable ship arrivals. The evidence suggests that a ship's arrival time is not always able to be predicted accurately, even within 24 hours of its expected arrival time:

- in the September quarter 2006, only 40 per cent of vessels arrived within an hour of the time specified by the shipping line 24 hours out of port
- in the December quarter only 33 per cent did so.[251]

Data on ship arrival times in 2007 shows similar unpredictability. Table 7.2 shows the average difference between the vessel arrival time indicated when the ship is first booked into Port Botany and its actual arrival time. In general, the size of this difference varied widely – from around 16 days late to less than one hour early. The average size of the difference was 8.8 hours at DP World and 28.4 hours at Patrick.

[251] BTRE *Waterline 42* July 2007, Table 12, p 21.

Table 7.2 Time between first booking time and actual vessel berthing in 2007

Stevedore	Berth	Data	Total Hours	Total Days
DP World	Brotherson Dock 4	Maximum	174.18	7.26
		Minimum	-24.18	-1.01
		Average	8.46	0.35
	Brotherson Dock 5	Maximum	123.42	5.14
		Minimum	-53.62	-2.23
		Average	6.34	0.26
	Brotherson Dock 5A	Maximum	85.42	3.56
		Minimum	-48.93	-2.04
		Average	6.14	0.26
	Brotherson Dock 6	Maximum	326.32	13.60
		Minimum	-56.63	-2.36
		Average	13.03	0.54
Total Maximum			326.32	13.60
Total Minimum			-56.63	-2.36
Total Average			8.80	0.37
Patrick	Brotherson Dock 1	Maximum	169.82	7.08
		Minimum	-94.67	-3.94
		Average	23.48	0.98
	Brotherson Dock 1A	Maximum	384.22	16.01
		Minimum	-10.72	-0.45
		Average	38.51	1.60
	Brotherson Dock 2	Maximum	150.65	6.28
		Minimum	-43.83	-1.83
		Average	22.11	0.92
	Brotherson Dock 2A	Maximum	302.07	12.59
		Minimum	-36.28	-1.51
		Average	28.16	1.17
	Brotherson Dock 3	Maximum	315.00	13.13
		Minimum	-229.17	-9.55
		Average	36.21	1.51
Total Maximum			384.22	16.01
Total Minimum			-229.17	-9.55
Total Average			28.41	1.18

Source: Data provided by Sydney Ports Corporation to IPART, 9 January 2008.

Table 7.3 shows the average number of times the estimated time of vessel arrival (ETA) changed between first being booked and berthing. On average, there were three changes for DP World and over four for Patrick. This uncertainty over vessel arrival times complicates the stevedores' planning tasks and makes it more difficult

for stevedores to commit resources to the landside at the time VBS slots must be allocated to road transporters.[252]

Table 7.3 Average number of changes in ETA per vessel in 2007

Stevedore	Berth	Total
DP World-Botany	Brotherson Dock 4	3.0
	Brotherson Dock 5	3.3
	Brotherson Dock 5A	2.6
	Brotherson Dock 6	3.1
DP World-Botany Total		3.1
Patrick Botany	Brotherson Dock 1	4.6
	Brotherson Dock 1A	5.0
	Brotherson Dock 2	4.1
	Brotherson Dock 2A	4.3
	Brotherson Dock 3	4.4
Patrick Botany Total		4.4
Grand Total		**3.9**

Source: Data provided by Sydney Ports Corporation to IPART, 9 January 2008.

IPART considers that the above evidence indicates that ship arrivals are not predictable sufficiently far in advance of landside resource allocation decisions.

In addition, IPART's analysis – which is described in detail in Chapter 3 and related appendices – indicates even if an independent body could predict ship arrivals sufficiently accurately, this information would not enable it to accurately forecast the required number of truck entries in a particular hour because:

1. The relationship between truck entries and the inflow of import containers over the previous seven days refers only to daily truck entries rather than hourly requirements.
2. VBS slots on a particular day are offered to road transporters three days in advance of collection. At the time the forecast would need to be done, some of the ships carrying containers to be collected in those slots will not yet have berthed. This means that the forecast will need to rely on estimates of the number of import containers to be collected, which will reduce its accuracy.

Finally, even if no expertise unique to the stevedores were required to determine the number and timing of slots to be made available, their knowledge of their own costs is an essential element of any calculation of cost-minimising slot numbers across the supply chain. This leads to the second data problem that a governmental organisation such as the proposed IGA would face in determining the most efficient

[252] One of the stevedores has likened the matching of vessels to berths to a game of Tetris because vessels of different lengths approach Sydney at varying speeds from different ports and they all have to be docked so as to minimise vacant berth space. At times, the stevedore will suggest that a ship slow its speed at sea in order to be berthed on arrival.

number of firm VBS slots to offer: gaining access to commercially sensitive cost data on stevedore operations.

Difficulties of gaining access to commercially sensitive cost data

The purpose of having an independent body such as the proposed IGA is to minimise supply chain costs. NSW Maritime proposes that to achieve that purpose, the IGA be granted unusual powers to determine the services provided by private firms. However, the IGA will not be able to achieve cost minimisation if the costs are not known. The cost structures of the two stevedores are confidential and quite different from each other. One stevedore has a straddle operation, while the other has a gantry operation. They have different contracts with their workforces. In short, no simple, generic cost model would be applicable to both stevedores.

Significantly, a detailed knowledge of each stevedore's cost functions is commercially sensitive. Cost is a key aspect of the competition between stevedores for the business of shipping lines. Not even the ACCC has detailed information on these cost structures. If the stevedores placed this detailed cost information in the hands of a body such as the IGA—which would require them to succeed in minimising supply chain costs— it would create grave risks of collusion or other forms of anticompetitive conduct. Disconcertingly, the IGA itself could be implicated in any trade practices litigation that might ensue.

It is likely that any attempt by the IGA to obtain this information, which is necessary for it to achieve its purpose, would be vigorously opposed by the stevedores, the shipping lines, and potentially the competition authorities as well.

Furthermore, the incentives for the IGA may not facilitate the minimisation of total supply chain costs. If it specified that a larger number of VBS slots be supplied, it may reduce the risks of excess demand for slots and congestion on the roads outside the terminals. But, unlike the stevedores, the IGA will not bear directly the costs of the additional resources required to supply these slots. Indeed it may not be fully aware of these costs. This may result in the IGA specifying a higher number of slots than is optimal and the additional costs of this would have to be borne by the supply chain.

7.7.2 Requiring all VBS slots to be 'firm' in peak periods will not lead to improved efficiency, and may impair it

In proposing a single-tier, firm-slot-only system, NSW Maritime appeared to be motivated by concern in the landside industry about the length and variability of waiting times for trucks. NSW Maritime noted that, "improved truck and railing times will lead to better capital utilisation and therefore lower costs."[253]

[253] NSW Maritime submission, 24 December 2007, p 4.

The NSW Maritime proposed that stevedores face financial penalties for non-delivery of firm slots that were dictated by the IGA, even when these were sold for a price of zero.

There may be some merit in making all slots firm when the demand for access is relatively low, as it currently is at night and on weekends. During those periods, terminal resources may be used to provide access without delays and therefore without incurring the penalties attached to non-performance of firm slot guarantees. The consequence is that road transporters can be certain of obtaining access at possibly little or no extra cost to the stevedores. The stevedores may also gain by better utilising their resources in off-peak periods.

During peak times, when stevedore resources are fully used, the consequences of making all slots firm are that:

- the stevedore will make less slots available so as to minimise the risk of not meeting the performance guarantees required with firm slots, and/or
- the stevedore will employ additional labour and capital equipment in order to avoid the penalties of not meeting those performance guarantees, but with the risk that at other times in the shift those resources would be idle.

Thus, the desire to improve truck capital utilisation would lead to worsened utilisation of wharf cranes, straddles, and gantries. It is difficult to see how this trade-off could possibly lead to minimisation of supply chain costs overall—the most expensive capital items would be underutilised so that the least expensive capital items—the prime movers and trailers—can be utilised more highly.

8 More detailed proposal for pricing road access

Chapter 7 set out, in fairly general terms, the features of IPART's proposed two-tiered VBS in which firm slots would be sold by auction, and interruptible slots would be allocated on a first-come-first-served basis (as all VBS slots currently are). Although it was not feasible or appropriate for IPART to set out all aspects of this proposed system in detail, it has looked more closely at some aspects. In particular, it considers that other essential features (in addition to those discussed in Chapter 7) would need to be incorporated if the proposed approach is to be effective:

1. the number of firm slots to be offered must be determined by the stevedores
2. empty stack runs should be arranged outside the VBS
3. there should be an unrestricted secondary market for firm VBS slots
4. there should be no restrictions on the number of firm slots any one party can purchase through the auction
5. the entire system should be computerised and based on clear rules, and compliance with those rules should be independently audited on a regular basis.

IPART has also considered the auction design and the approach for allocating interruptible slots, to help stakeholders understand how the system might work. It concludes that a descending bid Dutch auction format is the most suitable, but the specific auction design would need to be carefully considered.

The interruptible slot allocation process should resemble the current VBS slot allocation process, but existing means of giving some road transporters priority in this process (such as DP World's subscription scheme, including the B Class carrier status) would need to be abolished.

To implement the proposed system, a range of issues would need to be discussed and negotiated between the direct participants. These issues include who can participate, what should happen in relation to other existing means of access to the terminals (such as stack runs and standby queues), penalties for road transporters who arrive late or don't show up at all, and Trade Practices Act issues.

Each of these eight matters is discussed in the sections below. The final section 8.9 in this chapter discusses whether the two-tiered VBS with auction approach is likely to lead to a greater number of peak VBS slots.

8.1 The number of firm slots offered must be determined by the stevedores

As discussed in Chapter 7, the stevedores should determine how many firm VBS slots to offer in each one-hour time period, as no other party has the detailed knowledge of the commercial tradeoffs required to make efficient decisions. The stevedore alone bears the consequences and has the ability to manage the associated risks, so is likely to be the most efficient decision-maker. It would be very difficult for any other party to determine the optimal number of slots to be provided.

IPART expects that it may take some time for the number of firm slots offered to reach optimal levels. Given that guarantees have never been provided by the stevedores in the past, and that they will be penalised for not meeting the set standards, the stevedores will face uncertainties in making decisions about the number of slots to be made available in each hour of the day. The stevedores are likely to apply a form of 'adaptive management', which is frequently used in natural resource management where decisions must be made and systems managed while information is still being collected. The stevedores should be informed by past experience and adapt their strategy accordingly.

During this review, some stakeholders argued that the stevedores would not voluntarily make available the number of peak VBS slots that they are capable of serving unless the NSW Government compelled them to. For example, NSW Maritime made this point in its submission in response to the Draft Report, discussed in Chapter 7.

Although IPART recognises these concerns, it is convinced that the stevedores already have strong incentives to make available sufficient total VBS slots, because they need to shift containers out of their terminals within a few days to make room for more containers. (This point is discussed in detail in Chapter 3 and Appendix H of this report.)

Nevertheless, IPART also recognises without further incentives, it is possible that the stevedores might not voluntarily make available the number of *peak VBS slots* that they are capable of serving. For this reason, IPART's recommended two-tier VBS with auction addresses this issue. The financial incentives associated with the proposed system should stimulate the release of more firm VBS slots, all else being equal.

If these financial incentives do not lead to the stevedores offering a number of firm VBS slots during peak hours that are considered reasonable (noting that a basis of judging reasonableness would need to be established), the minimum number or percentage of firm slots to be offered over some time period could be established by regulation.

However, great care would need to be exercised in establishing such a minimum, because of the difficulties in forecasting overall demand (discussed in Chapter 3), and many of the factors that influence demand for VBS slots and stevedores' capacity to service that demand are outside the stevedores' control (also discussed in Chapter 3). For example, these factors include ship arrival times, the varying size of ships, weather conditions such as fog and wind, and the density of containers in the stacks. The inherent variability of all of these factors leads to the need for flexibility, which tough minimum VBS slot requirements would impede. The need for regulation in general is discussed further in Chapter 9.

It is IPART's considered view that only the stevedores can make efficient decisions as to the number of firm slots they should offer in any time period, with or without additional constraints around the meeting of KPIs or minimum slot offerings. It necessarily follows that there is no logical role for an independent authority to determine the number of firm slots to be sold on the stevedores' behalf.

8.2 Empty stack runs should be arranged outside the VBS

In the Draft Report, IPART recommended that all commercial port access be allocated through the VBS as either a firm or interruptible slot in order to create transparency over the allocation of access, and to prevent the stevedores from exercising any discretion in providing access.

IPART has subsequently become aware that the practice of performing empty stack runs into the stevedore terminals is relatively common in weekday day shifts. To the extent that this practice is necessary for the orderly functioning of the terminal and for meeting the shipping lines' expectations, IPART now considers that its draft recommendation – that empty stack runs be performed in slots purchased at auction – may impose new costs and operational difficulties on both stevedores and shipping lines. On the other hand, if stevedores do not face any price penalty for doing empty stack runs during peak times, then their commercial incentive would be to continue the practice, even when doing so causes inordinate delays and costs to road operators.

IPART has given further consideration to this issue, and concludes that there appears to be no reason to insist that empty stack runs into the terminal be booked through the VBS. It has also considered the discussion among stakeholders about the necessity or otherwise for Customs-related container movements to go through the VBS. It concludes that these movements should also be exempt from the VBS.

IPART's further analysis and considerations on empty stack runs are summarised below.

8.2.1 Analysis on stack runs

A stack run is a procedure for rapidly transporting a large number of (usually empty) containers from a single source to the stevedore terminal by road. Typically, a single road carrier will deploy several trucks which will shuttle between a (usually nearby) empty container park and the terminal until the designated containers have all been assembled at the terminal (for export). This type of operation is relatively inexpensive, as the runs are short and the truck operator can achieve high vehicle utilisation by avoiding having to book VBS slots and waiting in line.

Both the stevedores informed IPART that empty stack run-ins are essential to the efficient use of terminal space while meeting shipping line demands for empty loading at minimum cost. Shipping Australia Limited confirmed that view.[254] The empty container has no revenue stream associated with it from the shipping lines' perspective. The stevedores value the 'just in time' feature of empty stack runs.

IPART met with representatives of four shipping lines, hosted by Shipping Australia Limited, and separately with each stevedore to discuss this issue. It became apparent that the timing of empty container arrival at the terminal is contentious between the lines and the stevedores. The shipping lines prefer to have the empty containers staged at port for maximum ship loading convenience. The stevedores prefer to hold the empty containers off-port until the last possible moment to avoid yard congestion.

The shipping lines made the point strongly that they did not wish to incur any additional expense relative to the status quo for the movement of empty containers, which was an unremunerated activity from their standpoint.

Stevedores determine the timing of empty stack runs, so any price signal must be focused on them. Essentially, the trade-off involved is between facing a VBS-associated cost for doing empty stack runs in busy periods on one hand, and suffering yard congestion as a result of earlier delivery of empties on the other. Information provided by Patrick on the time of day and day of week pattern of empty stack runs for FY2007 suggests the following:

- Nearly all truck entries on Saturday night and Sundays were stack runs.
- On weekdays at 5am, stack runs represented about 10 per cent of truck entries, growing to about 30 per cent over the remainder of the day and evening shifts.
- About half of the truck entries on weekday night shift were stack runs.

This information supports the view that Patrick already tailors empty stack runs to avoid the busiest times at its terminal, and is making as much use as possible of Sunday and Saturday nights.

[254] Shipping Australia Ltd submission, 18 December 2007, p 8.

DP World provided day of week numbers for empty containers moved in by stack runs, but not a time of day breakdown. This data showed the number of empty stack runs in at DP World were roughly equal every day except Sunday, which was substantially lower.

Late in the investigation of this issue, it came to IPART's attention that there may not be significant resource contention at the stevedore terminals between servicing of empty export containers versus other container types.

IPART understands that DP World has sought permission from SPC to utilise the Charlotte Road entrance for empty stack runs in. DP World handles empties in a separate part of the terminal from full containers and utilises a low-powered forklift that is incapable of lifting a full container (3 tonne load limit). Patrick, on the other hand, uses straddles to move all containers, so there may be some degree of resource contention at its terminal.

Patrick has a separate terminal entrance for empty stack runs from affiliated Cargolink. Because Patrick uses straddles for both full and empty containers, and because at Patrick's terminal fulls and empties are often stacked in the same rows, it is less clear that empty stack runs involve no resource contention there. However it is noteworthy that the time of day pattern of stack runs at Patrick indicates a tendency to steer stack runs away from the busiest landside periods.

In light of information received since the Draft Report, it is IPART's view that the draft recommendation on the two-tiered VBS should be modified to permit an exemption for empty stack runs. Strictly speaking, that exemption should apply to those empty stack runs that are conducted through an entrance at each terminal that is separate to the entrance used for full containers (and non-stack run empties) but requiring entry via the VBS for 'same entrance' empty stack runs may be operationally difficult. All empty stack runs would need to be adequately identified in the audit trail so that any misuse of the exemption would be observed.

However, full stack runs, if any, should be allocated through the VBS.

8.3 There should be an unrestricted secondary market for firm VBS slots

IPART considers that firm slots should be freely tradeable, and there must be no restrictions on the prices that may be charged on resale. Changes in operational requirements (and mistakes) by the road transporters are inevitable, and can be corrected by the secondary market. The secondary market will give the road transporters flexibility to change their plans to meet their clients' priorities.

However, conceivably, some participants may be concerned that unrestricted resale of firm slots could lead to profiteering or scalping, so IPART has considered whether this is likely to be the case. It has also considered how the secondary market should operate. While the exact design of this market is yet to be determined, IPART considers that it is important not to constrain the operation of the secondary market by imposing unnecessary or arbitrary rules.

Each of these matters is discussed in more detail below.

8.3.1 Speculative behaviour considered to be unlikely

In IPART's view, since the initial price of a firm slot is established by auction, there is no opportunity, on average, to make profits in the secondary market. This conclusion depends on the auction functioning properly in the sense that the parties placing the highest value on a slot win the auction at a price reflecting their valuation.

Hypothetically, wealthier firms have the capability to spend more on firm slots, but it is doubtful whether it would be rational for them to engage in such speculative behaviour. Since firm slots need to be purchased at auction, a wealthier firm would need to out bid other parties seeking access. Assuming all parties act rationally, parties that were unable to successfully bid and acquire slots initially (due to limits on their willingness to pay), are unlikely to pay higher prices in the secondary market, as they have already revealed their reservation price at auction.

It stands to reason then that it is unlikely that firm slots could be resold at higher prices through a secondary market. If wealthier firms pay more than the slot is worth then they will lose money, irrespective of their initial wealth position.

Of course, a road transporter's circumstances may change between the time when a slot is auctioned and when it is used. There will probably be some instances where the slot becomes more valuable after the auction closes, and the holder of the slot could resell for a profit. But it is likely that more often there will be instances where the slot values do not change or become less valuable after the auction closes and the holder of the slot would lose money by reselling. Box 8.1 provides a hypothetical example to illustrate this point.

Box 8.1 A hypothetical auction example

Consider a hypothetical auction for, say, three firm slots where the bids are as follow:

1. road transporter bid, $100 – successful
2. road transporter bid, $90 – successful
3. speculator, $80 – successful
4. road transporter prepared to bid, $70 – unsuccessful
5. road transporter prepared to bid, $60 – unsuccessful

In the above auction, a speculator places a successful bid for a slot at $80. Under this scenario, due to the finite nature of the slot, the speculator must resell the slot before its day of use or lose its entire value (as the firm slot would expire and the stevedore's services would be allocated to other road transporters that have access to an interruptible slot).

Following the auction, if demand for the slot increases, then the speculator may profit by reselling the slot to either a successful or unsuccessful bidder who values the slot at price above the $80 it sold for.

However, if demand decreases or remains the same, the speculator must still sell the slot but to do so will need to discount its value to find a buyer. Where demand remains the same, the speculator cannot make a profit and must resell the slot to the next highest bid of $70, at a net loss of $10. Where demand decreases, the speculator will have to discount the value further, particularly if another successful bidder also attempts to sell their slot. Under such circumstances, a $10 loss (best case scenario) or greater is expected.

On this basis, assuming that it is equally likely that demand will rise, fall or remain the same, on average speculation will not be profitable and the speculator will lose money. Facing this outcome, speculation is considered unlikely.

8.3.2 Operation of secondary market should not be constrained

It is important not to constrain the operation of the secondary market by imposing what are unavoidably, arbitrary rules. These rules would do more harm to efficiency than the problems they are designed to solve. It is also important to recognise that transactions in a secondary market are generally invisible to third parties, so restrictions on that market would be unenforceable in a practical sense anyway.

The degree of formality and sophistication of the secondary market is yet to be determined. IPART has no strong views at this early stage. At its simplest, it could be a bulletin board maintained by an interested party, a user organisation, or even an entrepreneur that would permit parties to lodge expressions of interest in acquiring or selling firm (or interruptible) VBS slots, and to match them.

More formal and complex alternatives might include a trading platform of some kind. A centralised platform would form an efficient locus for the secondary market, but it may be best to let entrepreneurs and interested parties experiment until the

most suitable method of exchange is found. If problems emerge with the secondary market—either the lack of a market maker, or undesired patterns of trading—then it may be appropriate for SPC to take an active role.

Finally, it would be important that when firm or interruptible VBS slots are exchanged on the secondary market, the stevedore is informed of the change in ownership, so that any changes to the container number associated with a slot can be duly registered and used to facilitate efficient stack management.

8.4 There should be no restrictions on the number of firm slots any one party is entitled to acquire through the auction

Currently, there are restrictions on the number of VBS slots that one road transporter may acquire in any time period when they are first offered. The presence of a price mechanism for allocation would remove the need for this quota. In fact, such a quota would distort the auction results—in some circumstances it would prevent the firm slot going to the highest value end-use.

The allocation of interruptible VBS slots should preserve the quota system that is presently in place. As interruptible slots would be allocated on a first-come-first-served basis, the price rationing mechanism would not be available.

8.5 The two-tiered VBS should be computerised and based on clear rules

The system for auctioning firm VBS slots and allocating interruptible slots should be computerised, and the operation of this system should be based on clear rules. In addition, all relevant details of the decisions made by this system should be recorded. And there should be regular independent third party audits of the allocation decision to ensure that the stated system rules were followed. IPART considers that this independent audit function is necessary to instil and maintain confidence in the fairness of the system. It will also address the longstanding complaints of road transporters about the fairness of slot allocation.

8.6 Descending bid Dutch auction format is most suitable auction design

There are many possible auction designs to choose from, but it would be important to select one that can be conducted quickly and repeatedly. After all, the firm slots in each of 24 one-hour periods must be auctioned each and every day. If the auction for firm slots in a given hour takes more than 10 minutes, then a minimum of four hours per day would be consumed conducting the auctions. Potentially, representatives of every road transporter and any other bidder would need to be online or otherwise engaged with the auction process over that timeframe. It is a significant consumption of resources, so the time needed to conduct the auction must be minimised.

With this consideration in mind, IPART proposes a descending bid Dutch auction format, pending more detailed investigation into the design. In such an auction, the offer price begins at a high level (say $200 per firm slot) and then descends in fixed increments every five seconds (or other time increment). Bidders may respond at any point by bidding for one or more slots at the current price level. The auction stops when one of the following events occurs:

1. the number of firm slots bid for at the current price exactly equals the number offered for that hour
2. the number of firm slots bid for at the current price exceeds the number offered for the first time, or
3. the current price has reached the reserve price.

In the case of event 1, those bidders receive the firm slots they have bid for, and each pays the current price, even if they had previously bid at a higher price. In the case of event 2, all bidders who had bid at the prior (higher) price receive the firm slots they have bid for, and the remaining firm slots are shared between the bidders who first bid at the final price proportionally, if possible, and otherwise by random lottery. All bidders receiving firm slots pay the current price, even if they had previously bid at a higher price. In the case of event 3, all bidders at the reserve price receive the firm slots they have bid for at the reserve price. All unsold firm slots at the reserve price are converted to interruptible VBS slots and allocated accordingly.

A reserve price is necessary to prevent the auction from delivering a price for a firm slot that is beneath the booking fee for an interruptible slot. Ideally the reserve would be slightly greater than the interruptible booking fee and would reflect the extra costs and risks to the stevedores of guaranteeing a firm slot. Reserve prices that were substantially higher than this benchmark would not be desirable because they may tend to create an artificial scarcity at times, such as the off-peak hours, when firm slots are not in high demand. A high reserve would tend to counteract the peak pricing effect that is intended to be a by-product of the auction.

There is a need, in designing the auction, to determine the price decrement to be applied between rounds of the auction. The optimal decrement should be large enough that the auction does not consume too much time, but small enough that the precise clearing price can be clearly established. It may be necessary to fine-tune the decrement after experience in running the auction has been gained.

When firm slots are not sold at auction (because there is insufficient demand at the reserve price), they should be converted to interruptible slots and allocated using the interruptible slot system. This conversion would make them somewhat less valuable since they would no longer be capable of use in dual runs, and they would not carry any guarantee of delivery. This rule also makes it more difficult for the stevedore to increase the price of firm slots—unsold slots do not disappear, they are simply converted to a slightly less valuable item.

The auction literature identifies some risks of collusive bidding in uniform price auctions, such as the form of Dutch auction discussed here. To give an example of this risk, where a small number of bidders collectively account for a majority of demand for an auctioned good, there is a theoretical possibility that they could collusively agree to withhold their bids and thereby prevent the market from clearing until the price has fallen to a level that is lower than the fair market value. Under this scenario, the colluders would profit from this behaviour either by gaining and enjoying a valuable good at a depressed price, or by reselling on the secondary market for a price that more closely approximates the fair market value.

There are two reasons to believe that this type of collusion scenario may not pose a serious risk in the case of an auction for firm VBS slots. First, there are a high number of road transporters serving Port Botany and they are all relatively small. The largest single transporter has less than 15 per cent market share.[255] Under these highly fragmented conditions it does not appear likely that a bidding cartel would be able to organise or remain stable. Second, demand for peak VBS slots appears to far outstrip supply. Under this excess demand condition, it is difficult to believe that any cartel of bidders would succeed in preventing the market from clearing by withholding their bids.

Nevertheless, auction design is a subtle art, and before any particular design is accepted, a rigorous process of examination of alternative designs should be undertaken. Risks of collusion should not be underestimated. There is a wealth of recent experience with auction design from which valuable lessons could be drawn.

8.7 The allocation process for interruptible slots should resemble the current VBS allocation process

Interruptible slots are very similar to the existing VBS slots, and the arrangements for allocating them should resemble the current VBS allocation process. In particular, these slots should continue to be allocated using a first-come-first-served approach, and offered on 'reasonable endeavours' basis with no penalty for non-delivery by the stevedore. The stevedores would determine how many slots they will offer at each point in time, and these slots would be transferable. Interruptible slots would be priced minimally, to reflect their lesser value, but sufficiently to recover the costs of the stevedores in setting up a system to process bookings.

While the interruptible slot would resemble current VBS slots in most respects, there would be some important differences. It is essential that existing priority slot schemes such as the DP World B-Class carrier scheme be abolished because these would conflict with the firm slot allocation approach. It is expected that, over time and with greater experience with the new pricing mechanism, there would be no need to maintain quotas that limit the number of interruptible slots any one road transporter could acquire in any time period. To improve the value proposition for

[255] ATANSW submission, 12 June 2007, p 4.

interruptible slots as compared to current VBS slots, explicit provision should be made for communication and protocols in the event of terminal delays, as set out in Chapter 4.

Other features of the current VBS slots, such as wrong zone and no show penalties would be maintained for interruptible VBS slots. The allocation of interruptible slots would need to take place after the auction for firm slots in the same time period had taken place so that the number of interruptible slots available is known.

8.8 A range of implementation issues would need to be addressed

Many issues would need to be discussed and negotiated between the parties before the proposed two-tier VBS with auction could be implemented. IPART has considered some of the key issues and its views are outlined below.

8.8.1 Who should be able to participate in the system?

The current VBS is available only to bona fide road transporters. While the proposed two-tier VBS with auction would also be available to bona fide road transporters, IPART sees merit in widening the class of organisations that are eligible to bid for firm or interruptible slots. Given the likelihood that at least some firm slots would be sold for significant prices, one can anticipate that importers, exporters, or freight forwarders may wish to play a more active role in the bidding process. There does not appear to be any efficiency or fairness rationale from excluding this type of interested party from the bidding process. Other logistics providers and shipping lines may also wish to participate.

IPART considers the active participation of importers, exporters and freight forwarders in the VBS are desirable. It will make these participants aware of the prices of firm slots and their 'guarantee' characteristics. Also, by making the full costs of congestion more transparent the slot auction may enable end users to put more competitive pressure on the stevedores.

IPART does not have a view on whether further additional organisations should be permitted to participate in the auction or interruptible slot allocation processes. On one hand, the potential involvement of merchant banks and financial intermediaries may cause alarm in some quarters, but on the other hand, fuller participation in the auction would improve the price discovery process.

If the class of VBS participants is to be widened, it may be advisable to consider managing the transition in stages, in order to minimise the industry discomfort associated with this change. Such a scenario might see the auction system introduced to existing road transporters and owners of freight with the range of participants expanded over time.

IPART envisages three stages beyond the status quo for a phased approach to auction participation:

- status quo (ie, registered carriers only, perhaps with a suitable vetting of their current bona fides)
- as above plus other direct landside participants (eg, importers, exporters and freight forwarders)
- as above plus shipside participants (eg, the shipping lines), and
- unrestricted access.

In the initial phase, it may be wise to limit the auction participants to the current VBS participants on the grounds of familiarity and custom. Beyond the initial stage, wider participation from all segments of the supply chain is preferable and unrestricted access is seen as a suitable end-goal. That said, a staged roll-out may ensure minimal industry discomfort as all parties become used to the system. For illustrative purposes only (especially in regard to duration), a three-stage roll-out is suggested:

- Stage 1: Initial 13 weeks – registered carriers
- Stage 2: Next 13 weeks – registered carriers and other landside and shipside participants
- Stage 3: After half a year – unrestricted participation.

Unrestricted auction participation has several benefits:

- Its simplicity – it eliminates the need to decipher the precise role of parties in the supply chain.
- It broadcasts widely what a firm slot costs – which increases the likelihood that freight owners will accept and bear purchase costs so that there will be a greater, if not full, cost pass through. The issue of who bears slot purchase costs is discussed in the next section.
- It reduces the likelihood of rorting – because it potentially adds to the number of market participants, thus deepening the market's liquidity.
- It further restricts whatever is the limited ability to collude – because the greater number of possible participants makes it more difficult to coordinate and maintain bid rigging.

8.8.2 Who will ultimately bear the cost of firm slots?

IPART expects that freight owners will ultimately pay for firm slots. For practical reasons, road transporters may be the usual bidders at the firm slot auctions. If a road transporter purchases a slot at auction on behalf of a freight owner, it is only reasonable for the road transporter to pass that cost on to the freight own.

IPART acknowledges the road transport industry's view that currently, some costs of congestion are, for whatever reason, not passed on. However, it understands that many charges (such as VBS fees) and costs incurred by road transporters (relating to delays at the port) are passed through to their clients. ATANSW states:

> VBS fees are passed onto importers and exporters. Penalty charges are passed onto importers or exporters, providing it is clear the fault lies with those companies. Otherwise the penalty costs would be borne by the customs broker, freight forwarder or the operator.[256]

Currently, many of the costs of congestion in delays and downtime for road transporters are not transparent, making it harder for road operators to claim the costs. In contrast, the costs of the firm slots will be easily known and verified. This should strengthen the ability of road transporters to recover actual costs incurred.

IPART has considered the possibility that a road transporter may be unable to receive reimbursement from the freight owner, to understand whether Government action would be needed to protect the road transporter. Most costs borne by road transporters on behalf of their customers would be recouped through normal commercial processes, and covered by haulage contracts.

The one novel feature of the firm slot auction price, as compared to other costs recouped by road operators from their customers, is that the auction price is unknown at the time the haulage contract is struck. It may not be feasible to structure a haulage contract to permit the haulier to recover the auction price regardless of its magnitude. Imposing legislation to oblige the freight owner to reimburse the auction cost regardless of magnitude would not solve the problem, as such a rule would simply make haulage contracts involving full recoupment too risky for the importer.

In IPART's view, a more practical approach to the issue that would limit each party's risk is to establish an 'authority to bid' agreement between the freight owner and the road operator. Such an agreement could be based on a simple standard template. It would set out the maximum price that the road operator is entitled to bid for a firm slot on behalf of a particular freight owner. It would also constitute a contractually binding agreement that the freight owner will pay the auction price so long as the conditions of the authority to bid form are met (ie, the bidder hasn't exceeded its authority).

An authority to bid form could be a standing agreement lasting for a period of time ranging from days to months. It could specify separate maximum bids for business hour slots, evening slots, and weekend slots. Alternatively it could be a once-off agreement.

256 ATANSW submission, 12 June 2007, p 38.

This sort of contractual approach would minimised the uncertainty for each party, and would provide sufficient certainty that when a road operator purchases a firm slot on behalf of a freight owner within pre-agreed parameters, the road operator will be reimbursed for its costs.

8.8.3 What should happen to existing means of access when the two-tier system with auction is introduced?

IPART is conscious that the proposed two-tier VBS with auction would not be introduced in a vacuum. In addition to the current VBS, which would be substantially amended by the new scheme, there are several alternative means of obtaining road access to the stevedores' terminals, including the B-Class carrier subscription category at DP World, standby queues, stack runs, and special access for customs and quarantine purposes.

If the two-tier VBS is introduced, then slot priority schemes that conflict with the firm slots would need to be dismantled. The A and B-Class carrier subscription schemes at DP World would need to be stopped, as their continued presence would render the firm slot auction process too complex and impractical to work.

The complete elimination of standby queues may not be strictly necessary, as they may provide a useful safety valve. However, it would be preferable to convert standby access to booked slot access. Nevertheless, there may be a role for a bureau facility to deal with the needs of genuine irregular users of the port.[257] That bureau might permit even 'standby' users to go through booked VBS slots.

In their joint submission in response to the Draft Report, ATANSW/CLAG suggested that there would be physical limitations on the stevedores introducing two physical queues to cater for the proposed firm and interruptible slots.[258] SPC also drew attention to the logistical challenges.[259] However, from discussions with the stevedores, IPART believes that there are ways of adequately separating the vehicles that have booked under the two categories.

Special access for customs, quarantine, and other government regulatory purposes should remain outside the two-tier VBS, as it is not driven by commercial considerations and therefore would not be responsive to price signals.

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257 ATANSW/CLAG state, "Many carriers do not use the online VBS. They make telephone bookings or queue in the random rank" (ATANSW/CLAG submission, 1 January 2008, p 14).

258 ATANSW/CLAG submission, 1 January 2008, p 11.

259 Sydney Ports Corporation submission, 24 December 2007, p 14.

8.8.4 How should road transporters be penalised for late arrival or no-shows?

There are currently some differences in practice between the stevedores as to penalty charges for road transporters that arrive late or fail to arrive for booked VBS slots. The financial penalties applied in these cases are often waived at the stevedore's discretion.

The detailed arrangements for such penalties in when a two-tier VBS with auction is established are a matter for each stevedore to determine separately, in consultation with the road transporters who would be their customers.

IPART is not well placed to determine what these penalties should be, but the following general observations are pertinent. First, it is desirable to remove as much discretion as possible from any penalty scheme. The practice of waiving penalties only invites road transporters to seek and argue for such waivers, which is an inefficient use of time. Clear rules that are consistently and universally enforced will best encourage compliant behaviour and confidence in the system. Public confidence would be more important in a guaranteed slot world than in the current best-endeavours world.

Second, the existence of a price mechanism for allocating firm slots provides a new and potentially powerful tool in the calibration of penalty schemes. For example, once it is established what the market price of a 10am firm slot on Wednesday is, it would become possible to link penalties for late arrival to the market value of the slot. Low penalties could be applied for late arrival during periods when slots are not in high demand, but high penalties could be applied when late arrival causes greater disruption and has higher opportunity costs for others.

Third, it may be desirable and necessary to have different penalties for late arrival for a firm slot, and for late arrival for an interruptible slot.

8.8.5 Illustration of a possible approach to missed firm slot

The following worked example is offered simply as an illustration of an approach that could be taken to a situation in which the road operator fails to arrive in time for a firm slot. It is IPART's intention that the actual procedure be worked out between the stevedores and road operators. SPC could convene that discussion. This example is presented simply to demonstrate that workable solutions are readily available.

For firm slots, the stevedores undertake to provide timely access for a nominated container. Firm slots could operate in a similar manner to current 'interruptible' slots inasmuch as on-time entry occurs within a given period, say 59 minutes, beginning at the specified start time. For example, an 8:00AM firm slot would offer a guaranteed window for entry between 8:00AM and 8:59AM. Again, the actual timing would need to be resolved in discussion between the parties.

Conceivably, a guaranteed 59 minute entry window for the firm slot holder is a fair and reasonable starting point because:

- penalties will apply (see later) when the stevedores' entry guarantee is not met
- more precise timeframes may be too stringent and limit the number of firm slots offered
- it is consistent with the current VBS arrangements.

To exercise the right to 'firm' access, carriers would be required to present "on time" at the terminal gate - or in the SPC marshalling area should there be one. In either case, the stevedore will require a way of measuring the arrival of the truck at the port precinct (similar to NSW Maritime's idea of a "checkpoint #1"). As an example, on-time for an 8am firm slot could be deemed to have occurred if the truck is recorded as arriving at checkpoint #1 before or during the period 8:00am to 8:30am. Under such arrangements, the stevedore would be freed from the firm slot obligations if the carrier arrives late - ie, beyond 8:30am at checkpoint #1.

The exception to these rules is a tightly defined *force majeure* event. A *force majeure* event may be defined by its characteristics (unforeseeable, beyond the control of the late party and so on) or by listing all events. It may be a difficult matter to decide if *force majeure* applies in a particular circumstance and approval of an independent 'umpire' such as the SPC may be required as part of the scheme.[260] Rules to apply when *force majeure* has been confirmed will have to be worked out by the parties.

Force majeure aside, if the carrier arrives late, the firm slot would be converted into an interruptible slot. The loss of firm status should act as sufficient incentive towards timely arrival but the conversion to interruptible status still facilitates container movement, which is in the best interest of both parties. Where the carrier arrives late, the following practices could conceivably apply.

Late by less than 10 minutes

Carriers forfeit the right to 'firm' service when they arrive late at checkpoint #1. If the road transporter misses the start time by less than 10 minutes it seems reasonable to assume that the stevedore still has the container readily available and so it would be in the interest of both parties to continue with delivery of the container, but as an interruptible slot. Presumably the lateness of the firm slot carrier has meant that the stevedore was able to serve another carrier earlier than expected, thereby releasing some time, hopefully within the 30-minute firm slot window, to serve the late firm slot carrier who has now become an interruptible slot holder.

[260] There is no recognised legal meaning of force majeure. Commonly, events such as war, terrorism, labour disputes, and fire, flood and storm (but not just bad weather) are included. Sometimes force majeure can extend to the breakdown of machinery, failure of computer equipment and default of suppliers or sub-contractors. At Port Botany, a major accident on the F5 or some other wider road network congestion might be at least considered.

Late by between 10 minutes to one half hour

In the situation where the carrier reaches checkpoint #1 between 10 minutes and half an hour late, the carrier would be served at the discretion of the stevedore in whatever order the carrier arrived to join the interruptible queue. Since the carrier has reached checkpoint #1, penalties for 'no show' or 'wrong zone' would not apply.

However, if it is apparent that the stevedore is experiencing congestion in his landside service, he may refuse to service the ex-firm slot holder who would then book another VBS timeslot for access.

Late by over half an hour

If the firm slot is missed by over half an hour, the firm slot is void. It would not convert into an interruptible. A rule of this type would limit the discretion of the stevedores and heighten the efforts of the carriers to meet a booked slot. No one should miss a booked firm slot thinking that they will be served anyway.

Under this rule, the stevedore would be entitled to payment for the firm slot booked and the carrier would forfeit the amount paid at auction.

8.8.6 Consequences of stevedore non-delivery of firm slots

Recognising that the stevedore's guarantee to deliver a firm slot as promised would be meaningless without some type of financial consequence for non-delivery, the Draft Report suggested a simple approach such as a 'double your money back' penalty paid to a carrier if the stevedore failed to fulfil its firm-slot service obligations. However, stakeholders put the view that unless this simple approach can be shown to amount to a genuine pre-estimate of loss rather than a punitive impost, it may not be legally enforceable.

IPART understands that compensation for loss is the standard remedy when contractual provisions are not met. Clearly it would become unworkable if each instance of a non-delivered firm slot led to a detailed examination of the circumstances and a bespoke estimate of the loss suffered by the firm slot holder. The cost of any such investigation would easily exceed the likely price of a slot.

Instead, the remedy for non-delivery of a firm slot could potentially be based on a reasonable, and agreed pre-estimate of the dollar value of any loss a firm slot holder would be likely to suffer in typical circumstances. Commercial pragmatism suggests that this approach is the only feasible alternative.

Bearing this in mind, it is IPART's view that the stevedore's liability for a non-delivered firm slot should be a refund to the slot holder of the amount paid for it, plus an amount equal to the reasonable pre-estimate of loss in typical circumstances. Clearly further work will be required to establish a reasonable pre-estimate of loss. The parties are best placed to work towards agreement on that point. It may be that

'double your money back' ultimately produces a result consistent with or equivalent to a reasonable pre-estimate of loss.

A known quantum of liability for non-delivery would reduce the stevedore's risk and uncertainty associated with the offer of firm slots. All things being equal, this certainty should tend to increase the number of firm slots offered at any particular time.

8.8.7 Are there likely to be Trade Practices Act issues?

The duopolistic nature of container stevedoring in Australia has attracted a great deal of anti-trust attention over the past few years, to the extent that any mention of a pricing scheme that embraces both stevedores inevitably invites questions about Trade Practices Act issues. For this reason, the Trade Practices Act dimension of the proposed two-tier VBS should be given special attention.

Clearly, implementation of IPART's broad recommendation should be done in a way that does not produce an anti-competitive outcome that would breach the Trade Practices Act. The objective purpose of the proposal as set out above is to promote an efficient, fair and transparent allocation of access to the port facilities that will improve competition. IPART is of the view that, with care, all potential breaches could be avoided, particularly as separate allocations of slots and separate auction processes would minimise the opportunity for collusion between stevedores on prices, availability of slots, terms and conditions.

Once there is a firmer, detailed proposal, participants to the proposed system may wish to consider whether ACCC authorisation would be required. That would be a matter to be determined by the participants. Obviously, the ACCC makes its assessment on a case-by-case basis and IPART cannot predict the approach that the ACCC might adopt. However, some commentary on this area suggests that the ACCC has generally considered, inter alia, the following criteria in its assessments:

- fostering business efficiency … in supply and distribution … , particularly where it enables businesses to compete more effectively with imports in the domestic market and with exports on world markets, that is to achieve international competitiveness;
- industry rationalisation providing for more efficient allocation of resources and lower unit production costs.[261]

As discussed above, IPART considers that for the proposed two-tier system to be effective, each stevedore should be free to make its own decisions as to pricing and the number of slots offered—there should be no collusion. While the full benefits of the two-tier VBS will be enjoyed through the development of a joint VBS auction platform (for example, online), it would be preferable to confine any arrangement or understanding between them only to elements where coordination is required for the VBS to be effective.

[261] Butterworths, *Annotated Trade Practices Act 1974* (2007 ed) at 11,855.29, p 639.

The presumption here is that the auction for firm slots at Patrick would be conducted entirely separately from the auction at DP World. This separation appears desirable from a competition law perspective. However, it may be that there is value in road transporters being able to match up an inbound slot at Patrick with an outbound slot at DP World. If so, it may prove difficult to match slots if the two stevedores conduct separate auctions. At this stage in the design process it is premature to attempt to settle this question, but these issues deserve further consideration during the implementation phase.

There is no necessary connection between the pricing of firm or interruptible slots at one stevedore terminal and those at the other. There is no particular requirement that booking fees for interruptible VBS slots be the same between stevedores. There is no particular need for penalties to be uniform between the stevedores for late arrival, no show, or container storage. Negotiations with the NSW Government over how much of the auction proceeds may be retained would be conducted separately for each stevedore.

8.8.8 Who should run the auctions?

The Draft Report did not clearly set out who should run the firm slot auctions, although it was perhaps implicit that each stevedore would auction its own slots. IPART's views at that time were influenced by the following factors. First, concern about trade practices issues led IPART to the belief that separate auctions were preferable. Second, it seemed most administratively convenient if the stevedores, who must determine the number of firm slots to be offered, were also the auctioneers. Third, it was anticipated that the costs of developing and implementing an automated system to support the auctions would be borne most efficiently by the stevedores, who could access some of the auction proceeds to fund this system development.

Subsequent to the Draft Report, the magnitude of the potential development cost savings through the use of a common auction platform has become apparent. The likely size of these costs argues strongly for a common platform on efficiency grounds. To the extent that trade practices issues may prevent full collaboration between the stevedores in this enterprise, they are likely to be able to be addressed through a well-structured commercial arrangement between the platform developer and the ultimate platform users.

With a common auction platform, the necessity for the stevedores to conduct the auctions themselves disappears, and the arguments in favour of an independent auctioneer are strengthened. Of course, the auctioneer would not determine the number of firm slots to be auctioned. That decision would remain the sole province of the stevedores.

8.8.9 How should the auction proceeds be collected, held and distributed?

In broad terms, IPART considers it would be most appropriate for SPC to administer the funds in a trustee capacity having secured the cooperation of all interested parties. The dispersal of the funds should be in accordance with a set of rules that are established in advance of the operation of the system. How this is achieved will require careful consideration of all implications, including the possible consequences of exacting the auction proceeds by government regulation. IPART's analysis to date of the options and the preferred alternatives follow. Further work would be required to resolve a range of legal, institutional, and governance issues.

How the auction proceeds should be held?

It has been universally submitted that revenues derived from the proposed auction should only be spent on functions that directly benefit the containerised freight supply chain at Port Botany. This will assist the supply chain in dealing effectively with the significant increases in volume that are expected.

To achieve this purpose (the separation and 'hypothecation' of the funds raised), IPART proposes that the auction proceeds are held in a dedicated Statutory Fund, which is established and preserved for the specific purpose.

The Statutory Fund should have a constitution and formal documented procedures for how the funds should be disbursed. For example, it may need to be given the power to acquire land, commission research and make funds available for capital and other projects, and to allocate a portion of the funds to provide the personnel and other resources to administer the Fund.

The provisions that establish the Statutory Fund would cover the role of SPC, and potentially also NSW Maritime, including who would administer it in accordance with the policy that has been set.

Who should collect the auction proceeds?

Both SPC and DP World have informally indicated they would prefer not to have the administrative burden of managing the auction and collecting the funds (that will be held in the Statutory Fund). SPC noted that debt collection would be difficult for it and DP World preferred not to collect money on behalf of third parties.

IPART had considered that this should be SPC's role, but commercial firms with relevant expertise could potentially fill it instead. IPART is of the view that a number of commercial firms may have specialised expertise and experience in electronic messaging, debt administration and collection. Such firms may be good alternatives to the extent that they understand the containerised freight supply chain. Some are also independent of the stevedores.

While a commercial organisation may be in a position to collect the auction proceeds, the proceeds themselves should be placed in the Statutory Fund, which would not be administered by that commercial organisation.

8.8.10 Stevedore remuneration for firm slots

It is important to consider the incentives facing a stevedore as it makes decisions about slot numbers. Generally speaking, if the stevedore retains part of the auction proceeds from selling firm slots, it will have an incentive to offer more firm slots. However, the structure of the stevedore's remuneration should not create incentives for the stevedore to create artificial scarcity of firm slots and cause the price to spike. A remuneration scheme which gave the stevedore a fixed share of the auction proceeds might create such a perverse incentive. It may be preferable to give the stevedore a fixed financial payment for every firm slot that is sold (making the remuneration independent of the sale price). That type of remuneration scheme would encourage the stevedore to offer as many firm slots as possible.

Four possible options for the reimbursement of the stevedores' costs were considered:

1. Payment of a flat fee per firm slot irrespective of time or value.
2. Payment of a pre-determined fee per firm slot that varies between peak and off-peak periods.
3. Payment of fixed share of the slot auction price in each period.
4. Payment of the lower of a share of auction price or a capped amount.

These options can be assessed in terms of their transparency, financial risks, administrative feasibility and incentives to increase the number of slots provided.

Each option can include a balancing mechanism that ensures an exact matching of revenues to estimated additional costs over time. If this is the case, each option is neutral in terms of the incentives created for the supply of slots and the financial risks. In this case, it can be argued that Options 1 and 2 are more transparent than Options 3 and 4 in that the fees are known in advance. Both these options are easier to implement than Option 4 which requires a forecast of the auction outcomes. Option 1 is slightly easier to implement than option 2 as it requires only a forecast of the number of slots supplied over the year, whereas Option 2 requires a disaggregation by peak and off-peak periods.

If a primary concern is to provide an incentive for stevedores to offer more slots in peak periods this requires that the stevedores bear some financial risk. The prices can be set ex ante so that the expected revenues equal expected costs but an ex post balancing would negate these incentives. In the absence of an ex post balancing mechanism:

- Option 3 provides the strongest incentives to manage the number of slots but may encourage strategic withholding. It also carries the greatest financial risk especially if the fixed share is set prior to experience with the auction.
- Option 1 has the lowest financial risk but does not provide an incentive to increase the supply of slots when they are needed most.
- Option 2 provides a better targeting of the incentives on the peak periods but requires a prior administrative determination of when the peak periods will occur.
- Option 4 is likely to provide a higher peak price than option 2 and allows the market to determine when the peak period occurs. It will be more difficult to implement, especially in the initial period of market operation, due to the requirement to forecast market outcomes to set the capped price.

On balance, IPART prefers Option 2, given its flexibility, certainty, and simplicity. Under this option, stevedore remuneration for a firm slot would be a pre-determined fee per firm slot that varies between peak and off-peak periods.

8.9 Will IPART's recommended approach result in a higher number of peak slots offered?

During consultation on the Draft Report, some stakeholders questioned whether the two-tier slot auction proposal will increase the number of peak road access slots offered by the stevedores. These stakeholders seemed to believe that the problem of congestion should be solved from the supply side, and that responsibility for determining the number and timing of slots should rest with an independent authority. In contrast, IPART's recommended two-tiered VBS with auction approach is aimed at improving incentives for stevedores to increase the number of peak VBS slots, to the extent that this is efficient.

Given this stakeholder concern, IPART has considered whether it is likely that its recommended approach will increase the total number of firm VBS slots offered. It concluded that this is very difficult to predict with certainty, but clearly the stevedores will have incentives to offer more firm peak hour slots: presently they offer none. As long as the compensation per firm slot continues to exceed the stevedores' incremental costs of offering the firm slot, it will be commercially advantageous to the stevedores to continue to expand the firm slot offering.

In addition, given the proposed tightening of mutual obligations between road transport operators and stevedores, the system will be more operationally efficient.

Truck turnaround times will be lower than they otherwise would have been so that more trucks can be served in an hour. Furthermore, the proposed two tier VBS with auction will generate the most efficient number of slots in each time period. The test should not be whether the number of daytime slots meets the preferences of any one interest group, but rather whether that number is efficient given the entire supply chain costs of moving containers at alternative times. IPART considers that its recommended approach is the most likely of the options it considered, including those proposed by stakeholders, to meet this test.

The *main* purpose of IPART's proposed system is to value a scarce resource correctly and its main effects will be to allocate daytime VBS slots to those who value them the most, to reduce the overall demand for daytime slots, and to encourage a shift of demand to rail. In responses to the Draft Report, stakeholders generally recognised that the main effect of the draft recommendation on the two-tiered VBS would be to shift some demand into the off-peak periods. Such a shift may be sizeable if firm slot prices are high enough to more than offset the cost disadvantage of overnight storage.

That cost disadvantage varies with the number of days in storage. Based on data provided by stakeholders in their original submissions to IPART, the cost of the first night's off-port storage was estimated at around $187 and $225 for 20 and 40 foot containers respectively. These costs were between $44 to $74 higher than for one night of on-port storage after the expiry of the three free-day period.[262]

Auction prices for firm slots above these figures would remove the cost disadvantage of the first night of off-port storage and create an incentive to switch demand towards slots that are offered outside the hours of peak VBS demand.

The actual prices of firm slots will depend on a number of factors, one of which is the difference between on-port and off-port storage. Other factors in the pricing of firm slots will include:

- road transporters' willingness to avoid the risk of incurring fees for 'no shows' and 'wrong zones' that attend interruptible slots, and
- the ability to take advantage of the firm slot provision for dual runs and the road transporters' assessment of the value of that provision.[263]

[262] The differences are:

	Differences in cost ($)			
	Off-port Patrick		Off-port DP World	
No. of days	20ft container	40ft container	20ft container	40ft container
1	59	44	74	63
2	14	-47	33	-18
3	-108	-289	-8	-99

[263] ARTC doubts that the auction process would create prices high enough to induce a significant modal shift to rail. It argues that any road pricing mechanism specifically aimed at increasing the rail share should reflect the difference between the externality costs of road and rail transport (ARTC submission, 24 December 2007, pp 4-5).

As Chapter 4 discussed, the creation of more peak-time slots will not adequately address the growth projected for the port to 2025. Also, importantly, IPART's Terms of Reference for this review highlight the Competition and Infrastructure Reform Agreement with its emphasis on commercial outcomes in preference to economic regulation. In particular, clause 4.1 (b)(ii) says:

> 4.1. The Parties agree that: … b) where a Party decides that economic regulation of significant ports is warranted, it should conform to a consistent national approach based on the following principles: …
>
> (ii) where possible, commercial outcomes should be promoted by establishing competitive market frameworks that allow competition in and entry to port and related infrastructure services, including stevedoring, in preference to economic regulation …

In addition, IPART recognises that the supply chain participants are privately owned businesses and that it would be more appropriate to employ market-based tools of reform and to avoid imposing regulatory requirements on them where this is possible.

Recommendation

16 That the Minister request Sydney Ports Corporation to facilitate and each of the stevedores to independently implement a two-tiered system for booking access to each of the stevedores' facilities, as set out in Chapters 7 and 8. Essential features of this system would be:

- each firm slot would carry with it a guaranteed service level relating to time of entry to and time of exit from the terminal
- each firm slot would carry the right to a dual run
- the interruptible slots would have the same features as currently exist, including the booking system, prices, and penalties (subject to changes to be implemented in response to the other recommendations in this report)
- each stevedore would determine the number of firm and interruptible slots it issues in each hour of each day
- all slots except those for empty stack runs in and for Customs purposes would go through the vehicle booking system (for each stevedore), which will be computerised, and there would be clearly stated rules about when and how slots were made available. Data on empty stack runs in would be maintained for auditing purposes.
- each VBS and empty stack runs would be independently audited along the same lines as detailed in recommendation 6
- prices for firm slots would be set through descending bid auctions separately for each stevedore
- there would be penalties on both the stevedores and the road transporters for not meeting firm slot requirements, linked to the costs of delay
- there would be an unrestricted secondary market for the firm slots

- there would be no restriction on the number of firm slots any one party is entitled to acquire through the auction
- each stevedore would receive a pre-determined fee per firm slot that varies between peak and off-peak periods, to cover the costs incurred in offering firm slots plus an appropriate profit.

The issues to be considered for implementation of the proposed two-tiered system would include, but not be limited to:

- the precise service levels attached to the firm slots
- how a missed firm slot might be converted into an interruptible slot
- the precise number of containers that may be picked up (or delivered) per firm slot
- the precise penalties imposed on both the stevedores and the road transporters for not meeting firm slot requirements
- the timing requirements for providing container numbers for firm and interruptible slots, and the incentives for not changing them (or the penalties for changing them)
- who would participate in the auctions for firm slots
- who would conduct the auction
- the dismantling of existing priority schemes
- the mechanics of how the auction would run – in what order slots would be auctioned, how far ahead they would be auctioned, what would happen to unsold firm slots, and the starting price and bid increments
- the amount to be paid to the stevedores, and the allocation of proceeds in excess of those paid to the stevedores
- how the auction proceeds should be collected, held and distributed.

The various aspects of the two-tiered VBS noted above and all ten issues to be considered for implementation are to be worked out by the parties, facilitated by the SPC.

9 Improving efficiency if the voluntary approach fails

In general, the supply chain participants affected by this review are privately owned businesses that have profit maximising goals and incentives to continuously improve the range, quality and cost of their services. Therefore, IPART believes that market-based tools are more appropriate in providing the right incentives for the required structural changes to occur and, as far as possible, imposing requirements on participants in the supply chain should be avoided. Experience suggests that it is far more effective to encourage privately owned business to achieve the desired outcomes on a voluntary basis rather than with coercion from government.

The previous chapters have recommended a range of price-based and non-price-based initiatives, some of which need to be implemented or facilitated by the NSW Government, and others that need to be implemented by the supply chain participants themselves. IPART believes that, if implemented, these initiatives will be sufficient to provide the necessary incentives to improve the efficiency of the landside arrangements at Port Botany, including increasing the use of rail, both now and in the future.

As discussed in Chapter 7, IPART does not consider it necessary to establish the NSW Maritime's proposed Independent Gateway Authority (IGA) – which would involve extensive regulatory intervention. IPART firmly believes that its recommended market-based approach will work. The proposed two tiered VBS will make both the costs of congestion and the benefits of off-peak activity more transparent, and provide appropriate commercial incentives to induce the stevedores to respond to the needs of the carriers and freight owners, rather coercing them through intervention into their operations. The recommended establishment of a voluntary Port Botany Rail Logistics Team will also lead to improvements in the rail performance.

IPART believes that if the supply chain participants can be convinced that these initiatives will result in an efficiently operating supply chain, and that this is in the best interests of all participants, they will implement them voluntarily without the need for any intrusive regulatory intervention.

In IPART's view, regulatory intervention should only be pursued if it becomes clear, after having given it a reasonable opportunity to work, that the market-based, cooperative approach cannot achieve the desired result. However, IPART also recognises that there is a risk that its proposed voluntary approach may fail to achieve the desired outcomes. Therefore, it has considered the mechanisms available

to encourage and enforce implementation of the recommendations should this occur, and the circumstances in which such mechanisms should be used.

IPART concludes that:

- It will be more effective to introduce a *light-handed* form of regulation that requires the stevedores to collect and provide data about their outputs and some inputs in servicing the landside task. Initially, this data can be used to monitor the performance of and investment in landside activities at Port Botany. Eventually, it can be used to establish a regime that imposes penalties on the stevedores if they fail to meet specified KPIs.
- It may be necessary to consider a more prescriptive form of economic regulation, but only if it can be clearly established that the proposed regulation:
  - can promote a material increase in competition in at least one market (other than the market for port facilities), and
  - it is not contrary to the public interest.
- If both these tests are met, the preferred form of regulation should be incentive-based regulation that can allow the regulated businesses some flexibility in balancing the requirements of productivity, service quality and financial viability that ultimately encourages them to pursue efficiency gains.
- It is possible to impose obligations on the stevedores via their leases with SPC. However, for practical reasons this is not likely to be an effective tool for improving the efficiency of landside activities at Port Botany in the short term.

IPART's considerations in relation to the regulatory and lease options are discussed in more detail below.

9.1 Regulatory options

The regulatory options available to the NSW Government range from light-handed options such as requiring information disclosure and performance monitoring, to more heavy-handed and intrusive regulation that includes setting prices and precise terms of access to the stevedores' facilities such as that embodied in the NSW Maritime IGA proposal.

IPART acknowledges that a light-handed form of regulation may assist participants in Port Botany's containerised freight supply chain to better understand performance and investment by the stevedores. IPART also acknowledges that there may be a need in the future for more prescriptive regulatory intervention if the required structural changes do not occur as a result of changed market incentives – in other words, if there continues to be 'market failure' that results in congestion.

IPART defines regulation to include any NSW laws or other NSW Government 'rules' which directly influence or control the way people and businesses behave, being instruments that impose *mandatory* requirements upon business and the

community.[264] Further, IPART notes that to deliver the social, environmental and economic goals of the community, regulation must be well designed and targeted. Regulation also imposes administrative and compliance burdens on business, consumers, government and the wider community. Therefore, regulation should only be considered when it is clearly targeted at specific, defined problems, and when the advantages of imposing it exceed the costs.

Good regulation would require compliance with the following best-practice principles:

- the need for government action should be established
- the objective of the action should be made clear
- the costs and benefits of a range of options should be considered, including non-regulatory options
- government action should be effective and proportional
- business and community consultation should inform regulatory decisions
- the simplification, repeal, reform, or consolidation of existing regulation should be considered, and
- regulation should be periodically reviewed and, if necessary, reformed to ensure its continued efficiency and effectiveness.[265]

With this definition and set of principles in mind, IPART has considered what light-handed regulatory approaches would be effective at Port Botany, the circumstances in which more prescriptive economic regulation will be needed, and what type of economic regulation should be implemented in these circumstances.

9.1.1 Light-handed regulatory approach for Port Botany

IPART proposes a relatively unobtrusive, but potentially effective, form of regulatory intervention that requires each stevedore to provide certain information about its road, rail and shipside performance to SPC.

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[264] This definition excludes voluntary codes and advisory instruments for which there is a reasonable expectation of widespread compliance, such as codes of practice or conduct, standards and accreditation or rating schemes. IPART notes that voluntary instruments are included in the definition of regulation adopted in the Council of Australian Governments' Principles and Guidelines for National Standard Setting and Regulatory Action by Ministerial Councils and Standard Setting Bodies, amended by the Council of Australian Governments (COAG) June 2004, available at: http://www.coag.gov.au, and quoted in the January 2006 Issues Paper for IPART's Investigation into the burden of regulation in NSW and improving regulatory efficiency, p 4. They are excluded in this chapter as it is focused on compulsory requirements rather than voluntary requests.

[265] These are the best practice principles published by the NSW Government's Better Regulation Office, available at http://www.dpc.nsw.gov.au/about_the_department/our_structure/better_regulation_office. The principles are consistent with the October 2006 final report of IPART's *Investigation into the burden of regulation in NSW and improving regulatory efficiency*, p 43, available at IPART's website: www.ipart.nsw.gov.au

The information obtained will be effective in monitoring the performance of landside activities at the port. This information can then be used by SPC to inform the supply chain participants of various performance aspects of the stevedores' operations.

Following further consultation with stakeholders, IPART recommends that each of the stevedores should provide the following indicators on its terminal's daily roadside performance:

- Number of road containers/TEUs exchanged
- Number of trucks served
- Truck turnaround times (TTTs):
  - 'gate to transaction complete' average TTTs
  - 'gate to gate' average TTTs
  - number of single exchange and multiple exchange trucks serviced with their TTTs
- Number of slots offered for each shift for each day (separated into firm and interruptible slots)
- Number of VBS slots allocated for each shift for each day (separated into firm and interruptible slots and showing the proportions of each type)
- Instances where penalties for late arrivals and non-arrivals were imposed on road transporters (separated into instances related to firm and interruptible slots):
  - number and proportion of VBS slots that were 'no shows'
  - number and proportion of VBS slots that were 'late shows' (separated into instances related to firm and interruptible slots)
  - number and proportion of VBS slots where penalties for late arrivals and non-arrivals were imposed
- Proportion of firm slots for each shift where the stevedore paid a penalty for not meeting obligations related to firm slots
- Number and proportion of empty stack run containers /TEUs
- Outside gate queuing time
- Number of Customs inspected containers
- Proportion of VBS slots with two-way loading (tagging)
- Proportion of multiple containers handled
- Age profile of containers that are accruing storage.

On the rail side, IPART recommends the stevedores provide the following daily information:

- Maximum number of container lifts per rail window
- Number of container lifts achieved per rail window
- Number of rail window hours allocated
- Number and proportion of rail window hours used
- Average lifts per hour for each train/window
- Proportion of rail windows where trains not worked
- Proportion of on-time arrival of trains at the stevedore's rail sidings
- Proportion of on-time departures from stevedore's rail sidings
- Proportion of rail unloading task left incomplete by time of train departure
- Proportion of rail loading task left incomplete by time of train departure.

IPART further recommends that the following data be supplied by the stevedores on its daily shipside task:

- Number of ship import containers/TEUs unloaded
- Number of ship export containers/TEUs loaded
- Number of transhipment container/TEUs
- Proportion of ships arriving on-time
- Proportion of ships departing on-time from stevedore
- Crane rate
- Ship rate.

The precise format in which the data listed above should be presented and disseminated to relevant industry participants is best determined through discussions between SPC and the stevedores. Ideally, the data and the way it is measured should be consistent for both stevedores, so their performance can be compared. In addition, it is important that the data for each stevedore is publicly available so that it can be monitored over time, and that each stevedore reports on and measures that data consistently over time, advising SPC of any necessary (and enhancing) changes to measurements.

IPART notes that the process of road and rail landside data collection has already commenced around Australia with the initiatives of the BITRE and the stevedores.[266] This recommendation is, in effect, an extension of that process with particular applicability to Port Botany.

[266] For example, see chapter 1, Bureau of Infrastructure, Transport and Regional Economics, *Waterline, January 2008*, Issue no. 43, BITRE, Canberra ATC.

The collection and dissemination of such information will not only prove valuable to SPC as it seeks to monitor landside developments at the port, but also achieve two more fundamental objectives that are not currently met. First, it will ensure that all supply chain participants perform to an adequate level and fulfil their obligations in improving landside efficiency and highlight any performance issues in the logistics chain. Second, it will allow Port Botany's road transporters and rail operators to better understand the dynamics and variability of the stevedore's the landside operations at the terminals. This will also help the industry to develop broader, evidentiary based viewpoints.

IPART recognises that once such a comprehensive list of data on the stevedore's terminal performance becomes available, there is potential for third parties to interfere in the day-to-day operational management decisions made by the stevedores. There is a complex interplay between inputs, outputs, service quality, and financial viability of each stevedore and the data collected should focus on results rather than the way stevedores seek to obtain those results.

IPART believes that this light-handed form of regulation meets the definition and principles good regulation as discussed above. It is simple and to a large degree relies on data that is already kept by the stevedores. It also minimises intrusion on the stevedores' commercial interests, and has the benefit of informing the industry participants of relevant the aspects of the stevedores' performance.

If the stevedores do not agree to provide this information voluntarily, the introduction of a reporting requirement will require legislative action of some kind. While ultimately the manner in which a reporting requirement might be implemented is one for the NSW Government to decide, a starting point is to consider an amendment to existing legislation such as the *Ports and Maritime Administration Act 1995*. In particular, consideration should be given to an appropriately drafted amendment that extended the functions of SPC or NSW Maritime to expressly include the collection and publication of the relevant information together with the ability to require its production.

Once performance has been measured for a sufficient period of time, and appropriate and achievable goals for improvement can be determined, it may then be appropriate to introduce further regulation that establishes KPIs for the stevedores and imposes penalties on those found to have not met these KPIs.

However, implementing a regime that imposed penalties on landside participants for failures to meet KPIs is a significantly more complex proposition than just introducing a reporting requirement as discussed above. Matters such as the determination of appropriate penalties, the circumstances in which they are imposed, and by whom all present difficulties that are not easily resolved. Care will be needed to ensure that any such penalties imposed by regulation do not over-ride the market-based incentives that should exist, and would exist if the proposals are implemented.

One approach would be to consider introducing a licensing regime under which the stevedores would be required to hold a licence to conduct their activities. The licence conditions could then include complying with the KPIs referred to above. Such a regime would need to be created through legislation, the form of which would be a matter for the NSW Government, and would be in addition to any existing licence requirements already imposed on the stevedores.

Recommendation

17 That the Minister legislate to enable Sydney Ports Corporation to collect information for the purposes of monitoring performance and investment in landside activities at the port. The data should be disaggregated by stevedore and published regularly.

9.1.2 The circumstances in which more prescriptive economic regulation may be needed

The land at Port Botany is publicly owned but the stevedoring facilities are privately owned and managed by the stevedores. Given the significance of Port Botany to the NSW economy, the NSW Government has a responsibility to ensure that it is used in the public's best interests.

One rationale for introducing more prescriptive economic regulation is to correct 'market failure'. It could be argued that in the absence of such regulation, the 'market' would fail to produce behaviour or results in accordance with the public interest. In this instance, market failure in an unregulated market may produce excessive prices, inequity, and insufficient supply.

However, the fact that there is a market failure does not in itself indicate that there should be regulation in that industry. Rather, the benefits of correcting (or attempting to correct) market failure via regulation should be greater than the costs of this corrective mechanism.

At present, the Port Botany containerised supply chain is driven by market forces, and there is some degree of market failure. However, it is very difficult to determine what degree of market failure should occur in this supply chain before regulation is needed. Rather than looking for a trigger point at which regulation should be imposed, IPART's preference is to establish clear tests for determining whether the port facilities should be regulated (and what form that regulation should take).

In particularly, IPART considers that more prescriptive economic regulation of Port Botany's road and rail access should be imposed only if it can be clearly established that the benefits from a more intrusive regulatory intervention is greater than the costs. Given the importance of the infrastructure that might be regulated in this way, any assessment of the costs and benefits would need to be rigorous, with public input to the process and public scrutiny of the reasons for the conclusion.

The February 2006 Competition and Infrastructure Reform Agreement of the Council of Australian Governments addresses economic regulation of significant infrastructure. It requires that, wherever possible, third-party access to services provided by means of significant infrastructure facilities should be on the basis of terms and conditions commercially agreed in negotiations between the access seeker and the operator of the infrastructure (see Appendix A.3). IPART is aware that a review of this agreement in relation to NSW ports industry is currently being undertaken through NSW Maritime.[267]

9.1.3 The type of economic regulation that should be implemented

As noted earlier in this chapter, IPART expects that the market-based solution to congestion at Port Botany that is set out in Chapters 7 and 8 will work, and that there will be no need for intrusive regulation. IPART believes that market-based solutions are preferable to heavy-handed economic regulation, but also recognises that it may be necessary if market-based solutions fail to work.

As set out in Chapter 2, the players in the Port Botany containerised freight supply chain are motivated by profits, which in turn implies that they are concerned about increasing revenues and reducing costs. Such enterprises are "more easily regulated than public operators because it is possible to design regulatory instruments that make it financially attractive for a company to act in the interests of consumers."[268] The performance of a business is a function of three factors: its productivity (which in turn is a function of how it converts inputs into a volume of output); its service quality; and its financial viability. These factors are equally important, and are inter-related to the extent that a change in one will affect the others to varying degrees.

Some stakeholders have suggested there should not be any intervention that might see the Government intervening in private, commercial arrangements. Other stakeholders put the view that Government intervention for economic regulation is justified since the "current duopoly" will prevent a voluntary approach from achieving the desired objectives.

The most detailed proposal for greater regulation came from NSW Maritime which is considered in detail in Chapter 7. IPART does not believe this regulatory approach is the most effective way to achieving improved landside efficiency. The concept of the IGA places at the centre of Port Botany a regulator with limited operational information to make the booking systems work. The regulator is unlikely to be able to persuade the stevedores to undertake appropriate investment in equipment and labour when the stevedores are not free to use those resources in ways which each

[267] Further information is available at http://www.maritime.nsw.gov.au/wh/issues_paper.html

[268] Vivien Foster, 2005, "Ten Years of Water Service Reform in Latin America: Toward an Anglo-French Model," Water Supply and Sanitation Discussion Paper Series 3, World Bank, Washington, DC, p 5; available at www.worldbank.org/watsan, quoted in Brown, A, Stern, J, Tenenbaum, B & Gencer, D (2006). A Handbook for Evaluating Infrastructure Regulatory Systems, World Bank, Washington, D.C. p 21, available at http://rru.worldbank.org/Documents/Toolkits/infra_regulation/fulltoolkit.pdf

judges to be in its own best commercial interest. As a result, the regulator may well be held responsible for outcomes it cannot control.

In a competitive environment, the market will sort out the point of equilibrium between productivity, service quality, and financial viability. In a regulated environment, the regulator must accept that changing one will inevitably have an impact on the others – and particularly that imposing a quota on one will affect the others – and therefore it must weigh up the consequences in determining the appropriate regulatory requirements.

Incentive-based regulation allows the regulated business some degree of flexibility in balancing the requirements of productivity, service quality, and financial viability. It also encourages the business to pursue efficiency gains in order to outperform the regulatory requirements so it can keep the benefits.

The stevedores at Port Botany have existing contractual obligations regarding their outputs on the shipside. They must still meet these contractual obligations regardless of what regulation is imposed on the landside. Any regulation imposed on the landside would need to take account of the effect on the shipside, as well as the impact on productivity, service quality and financial viability.

Over the last two decades, governments around the world have recognised the importance of incentives in the effective functioning of the economic system and have introduced commercial objectives into the charters of government owned monopoly infrastructure operators. Regulators around Australia apply incentive-based regulation to water, electricity and gas networks.

IPART's view is that incentives, rather than the imposition by government of controls over simply one aspect of a regulated organisation's performance, should also be the key feature of any regulation introduced into the Port Botany containerised freight supply chain.

Section 9.1.1 sets out a form of light-handed regulation that would assist in monitoring stevedore performance as it affects downstream landside players. If a more intrusive form of economic regulation has to be implemented, it should involve a combination of setting, monitoring, and enforcing maximum tariffs (set to recover efficient operating and capital costs) and of minimum service standards. It may also involve access conditions, and investment obligations.

IPART notes that in the case of the electricity supply chain, the distribution network service providers (DNSPs) are required to meet service standards imposed by license agreements. These standards force DNSPs to invest in the capital necessary to ensure targets are met. However, to assist in this task, the use of peak period pricing aids DNSPs by signalling the scarcity value of electricity consumption in peak periods (to achieve peak-demand reduction and peak spreading, which limits the capital investment required in the distribution network). This form of regulation recognises the inter-relatedness of inputs, outputs, service standard requirements, and the need

for financial viability. The complexity of the interplay between those factors must be taken into account in imposing any regulation.

Continuing the analogy with the electricity supply chain, if the service levels road transporters received were to be deemed inadequate, applying electricity-like service standards would force the stevedores to allocate capital and labour to meet the targets established by the service standards. However, this comparison needs to be considered within the context of electricity being an essential service. This is important as some peak periods of electricity demand cannot be shifted (for example, electricity for heating/cooling in extreme weather) and failure or delay of supply is not an option. On the other hand, IPART's view is that there is no reason why some demand for stevedore operations in peak periods cannot be shifted, especially since no price rationing mechanism (such as the proposed auction system) is in use at present.

Recommendation

18 That further economic regulation of the Port Botany containerised freight supply chain only be considered if

- voluntary cooperation has been insufficient to achieve the expected improvement in performance, and
- the benefits from more intrusive regulatory intervention are greater than the costs, a conclusion that should be supported by a rigorous assessment of the costs and benefits, with public input to the process and public scrutiny of the reasons for the conclusion, and
- if this more stringent regulation is imposed, it is consistent with the key principles of good regulation and is incentive-based, taking into account the commercial interests of the regulated entities.

9.2 Lease options

As landlord of the port precinct, SPC provides suitably equipped land to the stevedores in return for rent, with annual rent increments tied to container throughput. The leases require the stevedores to provide information relating to throughput to enable calculation of the rent.

Patrick's current lease expires in 2017 and DP World's current lease expires in 2008 but is expected to be renegotiated shortly.

IPART considers that these leases should be used to address landside issues to a greater degree than is currently the case. For example, there would be benefits if the leases included general requirements for the stevedores to offer both road and rail access on the fundamental principles of transparency, fair and equitable outcomes, efficient operation and competitive advantage (no discrimination for access), while still leaving the stevedores with sufficient power to determine how that is to be achieved. There would also be benefits if the leases required the stevedores to

engage with the road transporters over access conditions, and with rail operators in ensuring rail windows allocated align with rail paths.

However, given the period of time that the leases run, and the need for flexibility in changing requirements on the stevedores from time to time to reflect changed operating conditions, IPART considers that the leases could only contain relatively general statements about the need for stevedores to provide efficient, fair and equitable use of the port facilities. Therefore, the leases are unlikely to be an effective tool for quickly improving the efficiency of the port.

Further, obligations could only be placed on the stevedores and not on other participants in the supply chain, which would reduce the effectiveness of such mandated requirements.

Appendices

A Terms of Reference

Reference to the Tribunal

The Independent Pricing and Regulatory Tribunal of NSW (IPART) is requested under Section 9 of the *Independent Pricing and Regulatory Tribunal Act 1992* to undertake a review of the interface between the road transport industry, rail operators and the stevedores at Port Botany. Key background information for the Review is outlined at Appendix 1.

Matters for consideration

With the commencement of the Port Botany Expansion, the volume of containers handled at Port Botany will triple by the year 2025 to 3.9M TEU. At least 60 per cent of this freight task will be handled by road. It is therefore imperative the issue of truck congestion and road transport efficiency is addressed.

IPART is requested to review the interface between the land transport industries and the Port Botany stevedores, including the vehicle booking system, rail access arrangements and the provision of any other services to industry by or in connection with the stevedore's business.

In advising on the above, IPART is requested to examine the following matters, and to develop and make recommendations on options available for addressing any issues which it considers materially impact on the efficiency of the port-land transport interface:

- an assessment of the cost base underpinning the provision of the vehicle booking system and services referred to above
- structure and framework of charges and penalties (however described) payable by participants in the road transport industry and or rail operators
- impact of the vehicle booking system, and the manner of the provision of the services referred to above, on road transport movements
- impact of road and rail pricing on the choice of mode by which containers are transported to and from the port
- efficiency of the landside logistics chain at Port Botany, noting the work already done by FIAB.

The report should consider:

- whether charges and penalties are efficient
- whether charges and penalties are fair to all users
- whether the efficient allocation of space and movement of trucks to and from the Port is affected
- arrangements which would help ensure that the stevedores provide a transparent and fair allocation of access and provision of services in connection with the terminal
- any road and rail issues raised in addition to those considered by FIAB which are specifically related to the efficiency of the interface between the stevedores and land transport operators at Port Botany, and
- whether institutional changes can be made to improve the efficiency of the landside logistics chain.

Other matters

- IPART should consult with stakeholders and accept public submissions within the timetable for the investigation and report.
- IPART should have regard to the port competition and regulation principles set out in Clause 4.1 and Clause 4.2 of the Competition and Infrastructure Reform Agreement signed by COAG on 10 February 2006.
- IPART should take into account any relevant studies and practices undertaken both in NSW or other jurisdictions. A list of relevant NSW Government and industry reports is at Appendix A2.

Timing

IPART is to investigate and provide a draft report to the Minister for Ports and Waterways within six months of commencement and a final report to the Minister after a further three months.

A.1 Industry background

The majority of containers at Port Botany (80 per cent) are transported by road. The two stevedores, DP World (formerly P&O Ports) and Patrick, operate independent vehicle booking systems to manage the road movement of containers in and out of the port. Access to the terminals is arranged via subscription with each stevedore for truck slots per hour. The system also provides for penalties to discourage no shows or cancellations. Prior to the establishment of the VBSs long truck queues commonly occurred as drivers simply waited in turn for access to the terminal.

Rail access charges to Port Botany are applied by the stevedores in part to recover the cost of servicing rail operations at the terminals. The access charges are applied on the basis of volume (per container) transported to and from the terminals. The magnitude of charges applied to individual rail operators is anecdotally high in comparison road transport. Consideration of the relative access charge per TEU would provide a meaningful comparison of the relative costs.

The stevedoring industry (generally) is currently under annual monitoring by the Australian Competition and Consumer Commission (ACCC). The ACCC's container stevedoring monitoring program is undertaken at the direction of the Federal Treasurer under Part VIIA of the *Commonwealth Trade Practices Act 1974* to monitor prices, costs and profits of container terminal operator companies at the ports of Adelaide, Brisbane, Burnie, Fremantle, Melbourne and Sydney. This is on the basis that stevedoring in Australia is dominated by the strong duopoly of Patrick and DP World. A report is prepared annually that monitors trends in container operator's costs, revenues and profits.

The ACCC reports the proportion of revenues earned from activities other than stevedoring has increased from 11 per cent in 2001-02 to 15 per cent in 2004-2005. In that period revenues from 'non-stevedoring' activities have doubled to $112.5 million.

In its *Container Stevedoring Monitoring Report No. 8* for 2005-06 released in November 2006, the ACCC states "a proactive approach by port managers to managing certain landside logistics arrangements may be necessary to ensure that the landside interface does not emerge as a transport bottleneck". The ACCC considers the current landside interface arrangements for container stevedoring services needs further assessment.

The vehicle booking system (VBS) and rail access arrangements are part of the landside interface between the port and connecting transport modes. Under the current arrangements, Patrick and P&O have a major role in managing the landside interface. Both companies also provide road and rail transport services.

In a July 2005 report to the NSW Government on ways to manage the movement of increasing numbers of containers at Port Botany, the Freight Industry Advisory Board (FIAB) recommended the establishment of a Port Botany Logistics Chain Team to manage the logistics task, optimise the efficiency of the port-rail-road interface and enhance capacity on the infrastructure network.

Following a Roundtable meeting with industry on 14th September 2006, the Minister for Ports and Waterways agreed to establish an industry/government taskforce to provide comprehensive advice to government on issues in the land transport logistics chain at Port Botany, including port operations, stevedoring, road and rail freight operations, intermodal terminal operations, container parks, planning and regulation. The Minister chaired the first meeting of the Port Botany Logistics

Taskforce on 27th November 2006. Its Terms of Reference include vehicle booking systems and rail access charges.

According to the ACCC, increasingly, automated VBSs are being used to manage the flow of containers into and out of ports. Revenue from this activity represents about 6.6 per cent of total "non-stevedoring" revenue and is therefore not a significant component of total revenues in the industry. However, the VBS component of "non-stevedoring" revenue is increasing. VBS revenue on a per unit basis increased 224 per cent in the five years to June 2006.[269]

ACCC authorisations

The ACCC recently authorised the Container Logistics Action Group (CLAG) representing container carriers, freight forwarders, customs brokers, importers and exporters to negotiate collectively on behalf of current and future members with the stevedores on terms, prices and conditions of supply of a range of services and terminal access conditions. The authorisation, however, does not compel the stevedores to participate in negotiations.

The ACCC does not receive detailed cost and profit data on the VBSs. It simply provides economic monitoring of annual revenue data provided by the stevedores.

Major issues

A range of services are supplied to the participants in the land transport of containers by or in connection with stevedoring activity at Port Botany, including the VBSs, container storage, maintenance and repositioning services.

Major issues in connection with these services include:

- the transparency, applicability and affordability of charges and penalties
- the fees charged for access to the services and whether any benefit received is commensurate with those fees
- the level of penalties for missed bookings or late arrivals which may not be the carrier's own fault
- the imposition of penalties to include Sundays and Public Holidays and
- whether there is adequate transparency in the way time slots are allocated.

[269] This figure was derived by the ACCC and can be sourced at p 19 of ACCC, *Container stevedoring - Monitoring report no. 8.* The stevedores have advised IPART that it is misleading.

A.2 Relevant NSW Government and Industry Reports

- Container Stevedore Monitoring Report No 8 by ACCC November 2006.
- Mismatch of Hours Report by NSW Sea Freight Council January 2005.
- Railing Port Botany's Containers by the Freight Infrastructure Advisory Board July 2005.
- Container Logistics Action Group (CLAG) submissions to ACCC seeking authorisation to collectively bargain with stevedores, March 2006 at www.accc.gov.au.
- P&O Ports response to CLAG submission March 2006.

A.3 Competition and infrastructure reform agreement

The Terms of Reference require IPART to have regard to the Competition and Infrastructure Reform Agreement signed by COAG on 10 February 2006. The relevant clauses are Clause 4.1 and 4.2 and are listed in Box A.1.

Box A.1 Competition and Infrastructure Reform Agreement

4.1. The Parties agree that:

a) ports should only be subject to economic regulation where a clear need for it exists in the promotion of competition in upstream or downstream markets or to prevent the misuse of market power; and

b) where a Party decides that economic regulation of significant ports is warranted, it should conform to a consistent national approach based on the following principles:

– (i) wherever possible, third party access to services provided by means of ports and related infrastructure facilities should be on the basis of terms and conditions agreed between the operator of the facility and the person seeking access;

– (ii) where possible, commercial outcomes should be promoted by establishing competitive market frameworks that allow competition in and entry to port and related infrastructure services, including stevedoring, in preference to economic regulation;

– (iii) where regulatory oversight of prices is warranted pursuant to clause 2.3, this should be undertaken by an independent body which publishes relevant information; and

– (iv) where access regimes are required, and to maximise consistency, those regimes should be certified in accordance with the Trade Practices Act 1974 and the Competition Principles Agreement.

4.2. The Parties agree to allow for competition in the provision of port and related infrastructure facility services, unless a transparent public review by the relevant Party indicates that the benefits of restricting competition outweigh the costs to the community, including through the implementation of the following:

a) port planning should, consistent with the efficient use of port infrastructure, facilitate the entry of new suppliers of port and related infrastructure services;

b) where third party access to port facilities is provided, that access should be provided on a competitively neutral basis;

c) commercial charters for port authorities should include guidance to seek a commercial return while not exploiting monopoly powers; and

d) any conflicts of interest between port owners, operators or service providers as a result of vertically integrated structures should be addressed by the relevant Party on a case by case basis with a view to facilitating competition.

B Terms of Reference checklist

Terms of Reference	Relevant report section
IPART is requested to review the interface between the land transport industries and the Port Botany stevedores, including the vehicle booking system, rail access arrangements and the provision of any other services to industry by or in connection with the stevedore's business.	▼ Whole report
In advising on the above, IPART is requested to examine the following matters, and to develop and make recommendations on options available for addressing any issues which it considers materially impact on the efficiency of the port-land transport interface.	▼ see below
1. An assessment of the cost base underpinning the provision of the vehicle booking system and services referred to above	▼ Cost base underpinning VBS is discussed in section 3.4—note that IPART did not receive specific information on these costs, but was able to reach view that cost-price mismatch was not a serious problem ▼ Rail costs are addressed in section 5.2 ▼ Storage costs are addressed in sections 3.3 and 3.4
2. Structure and framework of charges and penalties (however described) payable by participants in the road transport industry and or rail operators	▼ Section 3.3 Access prices (by road and by rail) ▼ Sections 3.3 Storage charges
3. Impact of the vehicle booking system, and the manner of the provision of the services referred to above, on road transport movements	▼ Chapters 3, 4, 7,as well as section 6.2
4. Impact of road and rail pricing on the choice of mode by which containers are transported to and from the port	▼ Chapter 5 addresses road and rail cost differential
5. Efficiency of the landside logistics chain at Port Botany, noting the work already done by FIAB	▼ Chapters 3 and 5 assess the efficiency of the landside logistics chain. Chapters 4, 6 to 9 consider proposals to improve it
The report should consider:	
6. Whether charges and penalties are efficient	▼ Sections 3.3 - 3.5 summarises pricing and efficiency issues ▼ Section 5.2 assess the efficiency of rail charges ▼ Chapters 7 and 8 propose a more efficient pricing mechanism for road access

Terms of Reference	Relevant report section
7. Whether charges and penalties are fair to all users	▼ IPART's treatment of the fairness criterion is in section 2.6 where fairness is linked to efficiency and non-discrimination. Efficiency is dealt with in sections 3.3-3.5, 5.2 and chapters 7–8 ▼ Non-discrimination is dealt with in section 4.3 and chapters 7 and 8
8. Whether the efficient allocation of space/movement of trucks to and from the Port is affected	▼ Chapters 3, 4 and 7 consider the effect of charges and penalties on efficient behaviour by road operators
9. Arrangements which would help ensure that the stevedores provide a transparent and fair allocation of access and provision of services in connection with the terminal	▼ Section 4.3 addresses ownership or independent operation of the VBS ▼ Chapters 7 and 8 discusses independent auditing of firm VBS auction and VBS rule-based allocation
10. Any road and rail issues raised in addition to those considered by FIAB which are specifically related to the efficiency of the interface between the stevedores and land transport operators at Port Botany	▼ Chapters 3, 5 and 6 outline road or rail efficiency issues pertaining to the interface
11. Whether institutional changes can be made to improve the efficiency of the landside logistics chain	▼ Chapters 4, 6, 7 and 8 recommend various institutional changes that would improve efficiency
Other matters:	
12. IPART should consult with stakeholders and accept public submissions within the timetable for the investigation and report	▼ Opening paragraphs of Chapter 1 describe how IPART approached its task ▼ Appendix D – List of submissions and Roundtable participants
13. IPART should have regard to the port competition and regulation principles set out in Clause 4.1 and Clause 4.2 of the Competition and Infrastructure Reform Agreement signed by COAG on 10 February 2006	▼ Section 9.1 discusses the circumstances in which more prescriptive economic regulation would be needed
14. IPART should take into account any relevant studies and practices undertaken both in NSW or other jurisdictions. A list of relevant NSW Government and industry reports is at Appendix A2: – Container Stevedore Monitoring Report No 8 by ACCC Nov 2006 – Mismatch of Hours Report by NSW Sea Freight Council Jan 2005 – Railing Port Botany's Containers by the Freight Infrastructure Advisory Board July 2005 – Container Logistics Action Group (CLAG) submissions to ACCC seeking authorisation to collectively bargain with stevedores, March 2006 at www.accc.gov.au – P&O Ports response to CLAG submission March 2006	▼ The reports listed in Appendix A2 have been reviewed and taken into by IPART along with other studies referred to throughout the report

C List of recommendations

1 That each stevedore provides real-time information to the road transporters that would help them understand the shipside and landside tasks and the state of the terminal and, during delays, to convey the length of the truck queue at its terminal, and an estimate of the time that trucks with booked VBS slots will need to wait after their booked slot to enter the terminal. 69

2 That road transporters invest in the communication devices they need to receive and act upon the stevedores' real time communications. 70

3 That stakeholders adopt a non-discretionary set of communication rules that establish how the stevedores will adjust the number of VBS slots when delays occur in their landside service. Sydney Ports Corporation should take the lead in this matter by acting as the forum convenor. 72

4 To foster goodwill, that the stevedores provide basic amenities such as toilets and cold drinking water to truck drivers who are required to queue to gain access to the stevedores' terminals. IPART supports efforts by Sydney Ports Corporation to progress a truck marshalling location at Port Botany. 73

5 That each of the stevedore ensures that its terms of access for road transporters specifies, in clearly expressed terms, how it operates its VBS, the complete terms and conditions of access to this system, and what a holder of a booking to this system is entitled to. 76

The operating features of the VBS to be specified should include: 76

- a published register of road transporters eligible to enter each terminal and an objective basis for allocating slots per hour between these transporters that limits as far as possible any discretion in that allocation process 76
- publishing the total number of slots on offer beforehand or when each on-line VBS is opened (and reopened during the day) 76
- an unambiguous policy on the procedure for empty stack runs, including their number and timing 76
- collecting and submitting all VBS slot and empty stack run statistics and related information to an independent auditor in order to verify that slots have been allocated in compliance with the established basis of allocation, and 76
- making the audit findings accessible to road transporters as soon as practicable after the audit is complete. 76

6 That Sydney Ports Corporation engages an independent auditor to conduct regular audits of each stevedore's compliance with their terms of access for road transporters. 78

7 That if the current 'super B-double' trial at Port Botany is successful, the Roads and Traffic Authority approve permanent access for these trucks as soon as practicable. 82

8 That Sydney Ports Corporation investigates, in consultation with the stevedores, the creation of compatible Vehicle Booking Systems that encourage two-way loading, covering the wider port precinct. Sydney Ports Corporation should also take into account the views of the road transport operators. 84

9 That the stevedores provide less lenient 'grace periods' to the road transporters for late arrival. Sydney Ports Corporation can help to facilitate negotiations between the stevedores and the road transporters for more clearly defined rules on when penalties for late arrival should not apply. 87

10 That the NSW Government approach the Australian Government to consider the possibility of the Australian Customs Service making the following changes: 88

- Releasing containers on presentation of invoice for duty, and 88
- Extending Container Examination Facility operating hours. 88

11 That the stevedores grant two extra days of free storage rather than the present practice of granting one extra day for containers that have less than 24 hours of free storage available when they are cleared by the Australian Customs Service. 89

12 That the road transporters invest in the technology needed to fully automate the gate processing for trucks. 91

13 That the stevedores use whatever container numbers that have been provided 24 hours in advance to do more housekeeping to reduce truck turnaround times. 91

14 That the NSW Government continues to undertake the following non-price initiatives to overcome impediments to increased use of rail to transport containers to and from Port Botany: 99

- assist ARTC to secure AusLink funding for necessary improvements to Botany Yard 99
- require DP World to lengthen its sidings 99
- press for funding of further dedicated freight access across the Sydney metropolitan rail network (beyond the current Southern Sydney Freight Line). 99

15 That a Port Botany Rail Logistics Team (PBRLT), modelled on the successful Hunter Valley Coal Chain Logistics Team (HVCCLT), should be adopted to improve rail system performance at Port Botany relative to current arrangements. Given the distinctive differences between the Port Botany container chain and the Hunter Valley coal chain, a successful PBRLT would need to embody the following design characteristics: 125

- the objective should be to minimise total supply chain costs while meeting shipper demands for overall throughput and quality of service 125
- members' adherence to PBRLT decisions on investment should be voluntary, and the PBRLT should have no power to compel members to do anything 125
- members should include stevedores DP World and Patrick, track proprietor ARTC, RailCorp, Sydney Ports Corporation, and any of the train operators that wish to join 125
- Sydney Ports Corporation should act as a facilitator, declaring any interests in matters in which it has a commercial stake 125
- membership should not be available to road transport operators, freight forwarders, importers or exporters, but their views could be taken into account through the equivalent of the HVCCLT Industry Reference Group 125
- industry peak bodies should not be represented, either on the Steering Committee or the Industry Reference Group 125
- Australian Quarantine Inspection Service, and Australian Customs Service should not be represented, but could be part of the Industry Reference Group 125
- as many members compete with each other, ACCC authorisation should be sought as soon as the constitution is established 125
- the PBRLT should be staffed by secondees of member organisations, and the management of the team should be independent of all members 125
- system performance KPIs should be established, monitored regularly, and high level summaries reported publicly. 125

16 That the Minister request Sydney Ports Corporation to facilitate and each of the stevedores to independently implement a two-tiered system for booking access to each of the stevedores' facilities, as set out in Chapters 7 and 8. Essential features of this system would be: 181

- each firm slot would carry with it a guaranteed service level relating to time of entry to and time of exit from the terminal 181
- each firm slot would carry the right to a dual run 181
- the interruptible slots would have the same features as currently exist, including the booking system, prices, and penalties (subject to changes to be implemented in response to the other recommendations in this report) 181
- each stevedore would determine the number of firm and interruptible slots it issues in each hour of each day 181
- all slots except those for empty stack runs in and for Customs purposes would go through the vehicle booking system (for each stevedore), which will be computerised, and there would be clearly stated rules about when and how slots were made available. Data on empty stack runs in would be maintained for auditing purposes. 181
- each VBS and empty stack runs would be independently audited along the same lines as detailed in recommendation 6 181

- prices for firm slots would be set through descending bid auctions separately for each stevedore 181
- there would be penalties on both the stevedores and the road transporters for not meeting firm slot requirements, linked to the costs of delay 181
- there would be an unrestricted secondary market for the firm slots 181
- there would be no restriction on the number of firm slots any one party is entitled to acquire through the auction 182
- each stevedore would receive a pre-determined fee per firm slot that varies between peak and off-peak periods, to cover the costs incurred in offering firm slots plus an appropriate profit. 182

The issues to be considered for implementation of the proposed two-tiered system would include, but not be limited to: 182

- the precise service levels attached to the firm slots 182
- how a missed firm slot might be converted into an interruptible slot 182
- the precise number of containers that may be picked up (or delivered) per firm slot 182
- the precise penalties imposed on both the stevedores and the road transporters for not meeting firm slot requirements 182
- the timing requirements for providing container numbers for firm and interruptible slots, and the incentives for not changing them (or the penalties for changing them) 182
- who would participate in the auctions for firm slots 182
- who would conduct the auction 182
- the dismantling of existing priority schemes 182
- the mechanics of how the auction would run – in what order slots would be auctioned, how far ahead they would be auctioned, what would happen to unsold firm slots, and the starting price and bid increments 182
- the amount to be paid to the stevedores, and the allocation of proceeds in excess of those paid to the stevedores 182
- how the auction proceeds should be collected, held and distributed. 182

17 That the Minister legislate to enable Sydney Ports Corporation to collect information for the purposes of monitoring performance and investment in landside activities at the port. The data should be disaggregated by stevedore and published regularly. 189

18 That further economic regulation of the Port Botany containerised freight supply chain only be considered if 192

- voluntary cooperation has been insufficient to achieve the expected improvement in performance, and 192
- the benefits from more intrusive regulatory intervention are greater than the costs, a conclusion that should be supported by a rigorous assessment of the

costs and benefits, with public input to the process and public scrutiny of the reasons for the conclusion, and 192

– if this more stringent regulation is imposed, it is consistent with the key principles of good regulation and is incentive-based, taking into account the commercial interests of the regulated entities. 192

D List of stakeholders

D.1 Submissions to Draft Report

	Organisation/Individual	Name
1	Alltrans Logistics Pty Ltd and Alltrans Container Parks Pty Ltd	Warren Symonds
2	Australian Customs Service	Catherine Asbridge
3	Australian Rail Track Corporation	Terry Bones
4	Customs Brokers and Forwarders Council of Australia	Stephen J Morris
5	DHL	Phil Lumsden
6	DP World	Rob Humby
7	Independent Rail Group - Macarthur Intermodal Shipping Terminal, Independent Railways of Australia and Bowport Allroads Transport	Stephen Heraghty
8	Independent Transport Safety and Reliability Regulator	Carolyn Walsh
9	Individual	Michael
10	Maritime Union of Australia	Paddy Crumlin
11	NSW Maritime	Chris Oxenbould
12	Patrick Corporation Limited	James Dorney
13	Roads and Traffic Authority	Les Weilinga
14	Sea Freight Council of NSW	Geoff Farnsworth
15	SGT Logistics	William Reed
16	Shipping Australia Limited	Llew Russell
17	Snodgrass Customs Brokers and Freight Forwarders	W. Snodgrass
18	Sydney Ports Corporation	Barbara Filipowski
19	Tradegate Australia Ltd	Peter Blanchard
20	Transport Workers Union	Tony Sheldon

D.2 Late/supplementary submissions to Draft Report

	Organisation/Individual	Name
21	Alltrans Logistics Pty Ltd and Alltrans Container Parks Pty Ltd – late submission to Issues Paper	Warren Symonds
22	ATANSW/CLAG	Mike Moylan/Martin Feil
23	Australian Rail Track Corporation – supplementary submission	Terry Bones
24	Individual	Lynda Newnam
25	Ministry of Transport	Jim Glasson

D.3 Submissions to Issues Paper

	Organisation/Individual	Name
1	Australian Rail Track Corporation	Terry Bones
2	Australian Trucking Association NSW	Hugh McMaster
3	Botany Bay and Catchment Alliance Inc	Lynda Newnam
4	Customs Brokers and Forwarders Council of Australia	Stephen J Morris
5	Container Logistics Action Group (1)	Martin Feil
6	DP World	Andrew Adam
7	Independent Rail Group - Macarthur Intermodal Shipping Terminal, Independent Railways of Australia and Bowport Allroads Transport	Stephen Heraghty
8	Individual	David Lemke
9	Individual	John Tourrier
10	ING Real Estate*	Leisha Clarke
11	Maritime Union of Australia	Paddy Crumlin
12	Patrick Corporation Limited	James Dorney
13	QR National	Jim Noble
14	RailCorp	Barry Garnham
15	Randwick City Council	Karen Armstrong
16	Save Botany Beach Inc	Greg Killeen
17	Shipping Australia Limited	Llew Russell
18	Sydney Ports Corporation	Greg Martin
19	The South West Enviro Centre Inc	Gary Blaschke, OAM
20	Transport Workers Union	Tony Sheldon
21	Visa Australia Pty Ltd*	Simon Hardwidge

* Submissions not publicly available due to confidentiality.

D.4 Late/supplementary submissions to Issues paper

	Organisation/Individual	Name
23	City of Botany Council	Peter Fitzgerald
22	Container Logistics Action Group	Martin Feil
26	CRT Group	C. Dunn
24	Macarthur Intermodal Shipping Terminal	Steve Heraghty
25	Victorian Transport Association	Philip Lovel, AM

D.5 18 July Roundtable attendees

Organisation	Name
1st Fleet	S Taylor
1st Fleet	J Taylor
ARTC	Mark Owens
ARTC	Terry Bones
Asciano	Marie Festa
ATA NSW	Hugh McMaster
ATA NSW	Mike Moylan
Botany Bay and Catchment Alliance	Lynda Newnam
CBFCA	David Scott
CBFCA	Paul Zalai
City of Botany Bay Council	Paul Shepherd
CLAG	Martin Feil
DP World	Richard Johnstone
DP World	Andrew Adam
EG Property	Jeremy Spinak
ESC (Victoria)	Tony Kelly
Fairfax	Ashley Midalia
Independent Rail Group	Steve Heraghty
ING Real Estate	Leisha Clarke
J J Lawson	John Preston
J&J Robertson & Sons	Barry Robertson
Lloyd's List DCN	Sam Collyer
Maritime Union of Australia	Rod Pickette
Maritime Container Services	Grahame Wright
News Ltd	Tim Martin
NSW Maritime	Geraldine Andrews
NSW Maritime	Tony Middleton
NSW Ministry of Transport	Peter Ferris
Office of the Minister for Ports and Waterways	I McNamara
Patrick	David Phillips

18 July Roundtable attendees continued	
Organisation	**Name**
Patrick	Doug Shultz
Patrick	James Dorney
Patrick	Tim Kuypers
QR	Stephen Barnes
RailCorp	Matthew Jones
Save Botany Beach	Greg Killeen
Save Botany Beach	John Burgess
Shipping Australia Ltd	Ross McAlpine
Shipping Australian Ltd	Kushy Athureliya
Sydney Ports Cargo Facilitation Committee	Hart Krtschil
Sydney Ports Corporation	Simon Barnes
Sydney Ports Corporation	Denis Dillon
Sydney Ports Corporation	G Wallington
Sydney Ports Corporation	K Pareshal
The South West Enviro Centre	Gary Blaschke
Victorian Transport Association	Neil Chambers
Victorian Transport Association	Philip Lovel

E Intermodal terminals in NSW

Table E.1 Intermodal Terminals within Sydney metropolitan area

Intermodal Location	Intermodal Company	Rail Operator(s)
Cooks River	Maritime Container Services (MCS)	Independent Rail of Australia, Australian Railroad Group (part of QR National), Patrick PortLink and Pacific National (for holding of trains)
Camellia	Patrick PortLink	Patrick PortLink
Leightonfield	Road Sea Rail	Southern & Silverton Rail
Minto	Macarthur Intermodal Shipping Terminal (MIST)	Independent Rail of Australia
Yennora	Stocklands	Patrick PortLink
Villawood	Mannway	Southern & Silverton Rail

Source: Sydney Ports Corporation.

Table E.2 Intermodal Terminals in NSW regional areas

Intermodal Location	Intermodal Company	Rail Operator (s)
Bathurst	Patrick PortLink	Patrick PortLink
Blayney	FCL Interstate Transport Services (part of Linfox)	Independent Rail of Australia
Cootamundra	Sutherlands Transport	Independent Rail of Australia
Dubbo	Patrick PortLink	Patrick PortLink
Griffith*	Patrick PortLink	Patrick PortLink
Manildra	Manildra Group	Australian Railroad Group (part of QR National)
Moree	Dunavant	Patrick PortLink, Independent Rail
Narrabri	Inland Packing and Storage	Patrick PortLink, Southern & Silverton Rail, Independent Rail of Australia
Narrabri	Auscott	Patrick PortLink, Southern & Silverton Rail, Independent Rail of Australia
Newcastle	R&H Sandgate (part of Toll Holdings)	Patrick PortLink
Newcastle	Toll Carrington (part of Toll Holdings)	Patrick PortLink
Nowra	Manildra Group	Australian Railroad Group
Parkes**	FCL Interstate Transport Services	Pacific National
Parkes**	SCT Logistics	SCT Logistics
Tamworth	Pacific National	Pacific National
Wagga Wagga*	Bomen (part of Asciano Limited)	Patrick PortLink
Wee Waa	Namoi Cotton	Southern & Silverton Rail

Note: * Rail service to Melbourne only ** Parkes is the major regional intermodal location for the east-west interstate rail service.

Source: Sydney Ports Corporation.

F Congestion on landside – August 2007

Case 1: Landside terminal delays and a 'domino effect'

From Friday August 4, 2007 to Monday morning of August 6, one of the Port Botany terminal operators had to unload and load a much greater-than-usual influx of ships. The build-up of import containers in the terminal by the end of the weekend was apparently such that long delays resulted for trucks, both inside the terminal and/or seeking access to the terminal, in the days that followed.

One after-hours transport operator provided IPART with data on the VBS slots it had sought and been allocated for Tuesday and Wednesday 7 and 8 August. At the time of the initial allotments, the operator was unaware of the landside delays looming on the wharf as a result of the weekend shipside task. According to the transport operator, the message board that accompanied the VBS screen for that stevedore contained no advice or warning.

Once the road transporter's trucks were delayed in the very early hours of Tuesday morning, several taking four hours from access to exit, a "domino" effect of delays was created. The road transporter's trucks ran late throughout Tuesday, causing them to fail to meet VBS timeslot commitments booked for the evening.

To catch up, the road transporter redirected some trucks away from the stevedore's terminal, thereby automatically recording "no shows", but also thereby having the trucks available to fulfil later VBS timeslot commitments. Until midnight trucks continued to enter the yard several hours after the start-time of their VBS slots. By the start of evening commitments on Wednesday, the transport operator was recording no more delays (either before entry or inside the terminal) or "no shows".

In the light of the circumstances, the stevedore acceded to the road transporter's request to not be charged for the no shows. The stevedore was unable to grant another request for extra slots to enable the road transporter to access the containers left in the terminal as a result of the "no shows". When the operator attempted to book extra slots through the VBS, none remained available for either the afternoon and evening of the 8th or for any of the 24 hours of the 9th and 10th.

To avoid storage charges on the containers that were approaching the last day three days free storage, the operator switched container numbers on already booked VBS slots that he held. He also received some extra VBS slots from the secondary market so that none of the original "no show" containers incurred storage charges.

Case Two – No extra VBS access at night

A different road transporter has provided IPART with evidence that he was unable to obtain VBS slots in the very early hours of Tuesday 14 August.

Case Three - Long delays inside/outside the terminal

Several other road transport operators reported delays of three and four hours on Friday 10 August and on Monday 27 and Tuesday 28 August, again at one stevedore's terminal. One operator provided IPART with a sample of drivers' worksheets.

Summary of anecdotes and measured average TTTs

The available measure of landside efficiency that seeks to capture delays is average truck turnaround times. They appear to do so in August 2007, although the time spent within the terminals is considerably less than that experienced by the road transporters. Indeed, truck turnaround times seem to be more than double the average TTT on certain days.

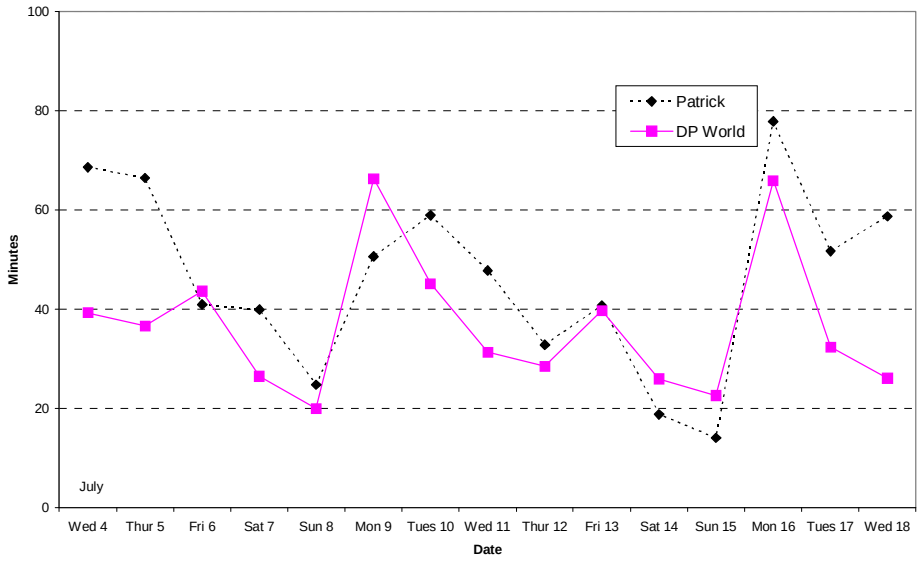
Figures F.1 and F.2 show how average TTTs behaved in July and August 2007 at each of the stevedores' terminals.[270] The duration of truck turnaround clearly rises in a sustained way at the Patrick terminal in August over the 6th to the 10th which is the period to which most of the case studies refer.

No measure of total truck waiting times is available for that period, but it is likely that they rose considerably more than the TTT.

The ability of measured TTTs to capture some of the extensive delays at the port makes them a useful, albeit limited, measure of landside efficiency as compiled and published by the BTRE.

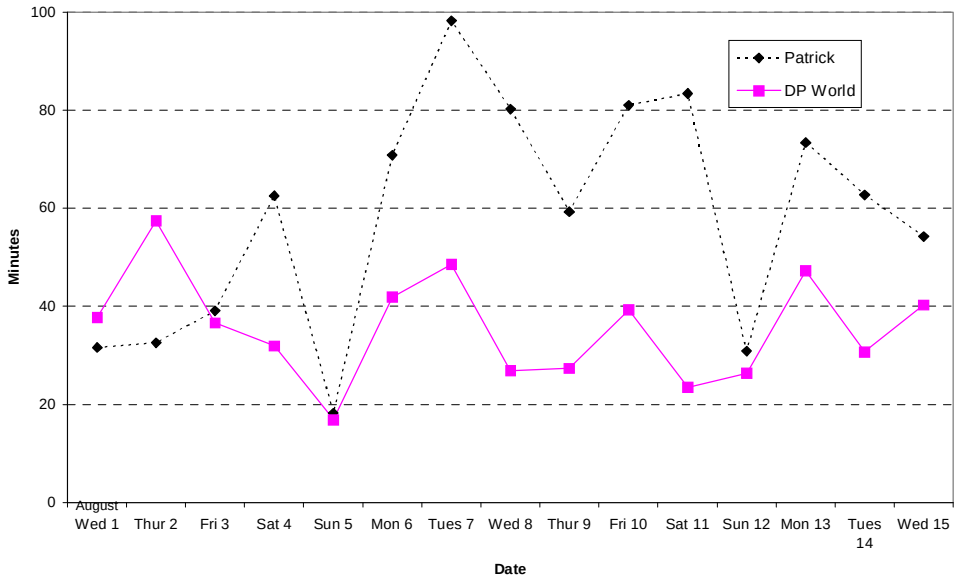
[270] The levels of the TTTs may not be directly comparable for the two stevedores because they measure TTTs differently. Patrick measures in-gate-to-out-gate; DP World measures from commencement of job processing to job completion. The latter is likely to be a shorter time than the former.

Figure F.1 Average daily truck turnaround times, July 2007



Data source: DP World and Patrick communications to IPART, August 2007.

Figure F.2 Average daily truck turnaround times, August 2007



Data source: DP World and Patrick communications to IPART, August 2007.

IPART recites these cases in order to highlight some of the challenges faced by transport operators in running their businesses. Unpredictable container inflows obviously place stress on all parties and in these times it seems especially crucial for mutual goodwill and good communications to prevail in order that the supply chain operate efficiently. How goodwill might be fostered and communications improved are discussed in Chapter 4.

G Statistical relationship between the shipside task and the road landside task

This appendix presents regression results on the relationships between the aggregate shipside and landside tasks (where aggregate means that the individual stevedores' data have been combined).

Regression analysis in a nutshell

Regression is a statistical technique for measuring the degree of association between two or more variables with the purpose of establishing which variables show statistically significant association with the variable of interest. Regression analysis cannot determine causation (that is, if one variable depends on another in a cause-and-effect manner) but it does measure the degree of association. If changes in one variable are already thought to be a cause of changes in another, regression results measure the strength, or otherwise, of that relationship.

The degree of association between the dependent and all the independent variables in any regression equation is measured by the R^2. The R^2 measures how much of the variation in the dependent variable is associated with the independent variables against which it is regressed. For example, an R^2 of 0.85 means that 85 per cent of the variation in the dependent variable is associated with the movements in the independent variables. If the independent variables are thought to *cause* the movements in the dependent variable, one could say, somewhat loosely, that 85 per cent of the variation in the dependent variable is "explained by" or "caused by" variations in the independent variables. The remaining 15 per cent, however, would be unexplained.

The *t-statistic* on each independent variable is a key statistic for determining whether a significant relationship exists between the dependent variable (say, daily truck entries to a stevedore's terminal) and one or more of the independent variables (say, today's import TEUs or yesterday's import TEUs). An absolute value of *t* that is greater than 2.0 means that the independent variable is statistically significant in the sense that it is highly unlikely that the statistical association with the dependent variable has occurred simply by chance.

Relationships within the roadside supply chain at Port Botany

In the case of container movements to and from Port Botany, it is widely believed that the size of the shipside task is a major cause of the size of the landside task and of the efficiency with which the landside task is performed. To measure the strength

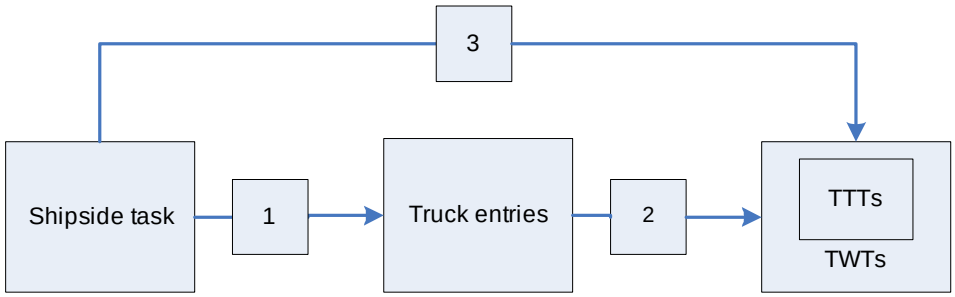
of the relationships that are believed to exist, measures of the two tasks and the efficiency with which the landside task is done must be found. Then the variable may be regressed in appropriate ways.

The following figure illustrates the supposed cause-and-effect relationships where:

- The **shipside task** is measured by daily import and export TEUs to be processed by the stevedores.
- The **landside task** is measured by the daily number of truck entries into the terminals.
- The **efficiency** with which the landside task is done is measured by average daily truck turnaround times (TTTs). Ideally, for the latter, total truck waiting times (truck waiting times) would be a better measure, but data on truck waiting times are generally not available.

As will be apparent shortly, truck entries depend heavily on the size of the shipside task (arrow 1 in Figure G.1 below) while truck turnaround times are modestly affected by the number of truck entries (arrow 2) or by the shipside task (arrow 3).

Figure G.1 Schematic representation of the Port Botany road supply interactions



In what follows, the detailed regression results for arrows 1 and 3 in the figure are presented and some inferences drawn from them.

Arrow 1 - Ship TEUs and Truck entries

To show how strongly truck entries into the stevedores' terminals are associated with the number of import and export containers to be handled, daily truck entries have been regressed against the previous week's import TEUs and the coming week's export TEUs. The notation in the detailed regression results are:

- "C" = the constant term
- "M" = import TEUs that were on ships that arrived at Port Botany 'today'
- "M1" = TEUs that arrived yesterday
- "M2" = TEUs that arrived two days ago, and so on
- "X" = export TEUs that were on a ship that departed 'today'
- "X1" = export TEUs that will depart tomorrow
- "X2" = export TEUs that will depart two days hence, and so on
- "SAT", "SUN" and "PUB" are dummy variables that isolate the effect of Saturdays, Sundays and public holidays on the dependent variable.

Because it takes a day or two after ship arrival before import containers are completely unloaded and therefore 'available' for collection, and then three days free storage is permitted, containers that arrived up to a week ago are likely to affect the number of truck entering the terminal 'today'. Similarly for export containers, exports due out over the next week could reasonably be expected to affect truck entries today.

Three dummy variables are included because truck entries are known to be considerably lower on Saturdays, Sundays and public holidays. This is related to downstream supply chain work practices rather than the size of any shipside task. The dummies isolate the weekday relationship that might exist between truck entries and shipside task. Once allowance is made for Saturday, Sunday and public holiday effects, truck entries are strongly correlated with the shipside task. This conclusion is based on the regression results set out in Table G.1.

The three columns of interest are the far left column which lists the independent variables, the "co-efficient" column which measures the average relationship between truck entries and each independent variable and the "t-statistic" column which indicates the likelihood that the relationship is not just due to chance – it is not if $t>2$. The co-efficients where $t>2$ have been shown in bold type.

In 2006/07, based on the results shown in Table G.1, it can be inferred that:

- The average number of truck entries per day into the terminals was 1,578 (as shown by the mean at the bottom right of the table. Adjusting for Saturday, Sunday and public holidays, the average daily weekday truck entries would be just over 2,000.).
- A minimum of **1,321** trucks enter the stevedores' terminals on average each day to deal with the shipside task (as shown by the value of the co-efficient on the constant term "C").

- More trucks also enter in response to the number of import TEUs that arrive each day between 2 and 7 days ago (as shown by the t statistics of >2 on each of the coefficients on the variables M2 to M7). Thus, if 1000 import TEUs arrived each day between two days and seven days ago, on average 306 trucks (the sum of the coefficients on M2 to M7 multiplied by 1000) would enter the terminals 'today'. If the average daily import TEUs of 2,212 had arrived each day between two and seven days ago, the number of extra trucks being induced into the port today in response would be **677**.
- If 'today' were a Saturday, the number of trucks would fall, on average, by 1,203, if a Sunday, by 1,864 and if a public holiday, by 1,437.
- Overall, 94 per cent of the variation in truck entries was associated with variations in import TEU inflows over the previous two to seven days, allowing for Saturdays, Sundays and public holidays (as shown by the value of the R^2 at bottom left of the table).

Table G.1 Truck entries and the shipside

Dependent Variable: TRUCK ENTRIES

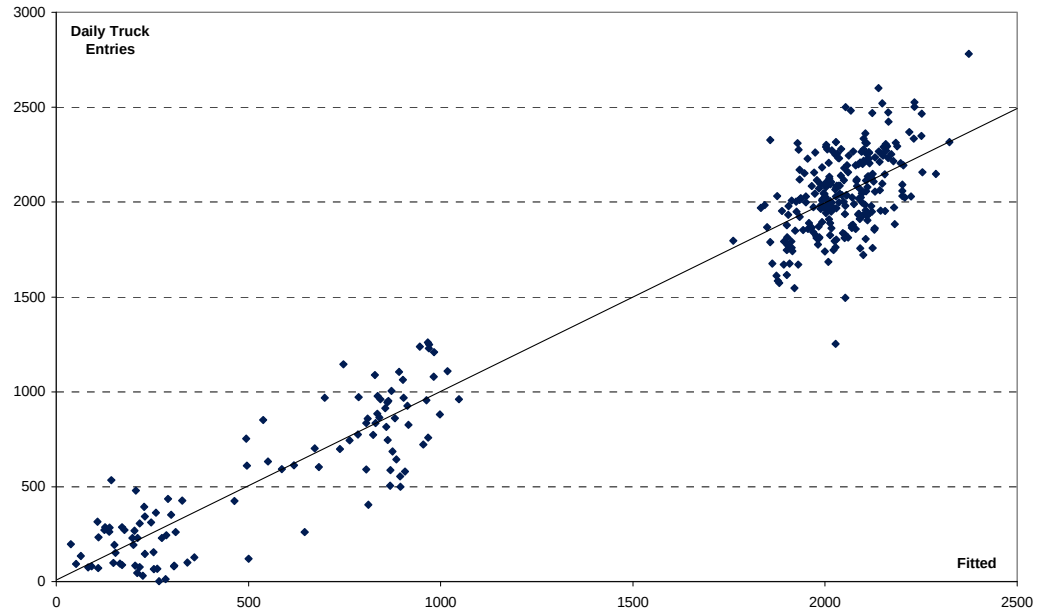
	Coefficient	Std. Error	t-Statistic	Prob.
C	1321	114.588	11.528	0.000
M	-0.002	0.009	-0.191	0.848
M(1)	-0.004	0.012	-0.333	0.740
M(2)	0.044	0.010	**4.663**	0.000
M(3)	0.060	0.010	**5.741**	0.000
M(4)	0.060	0.012	**5.164**	0.000
M(5)	0.058	0.012	**4.769**	0.000
M(6)	0.058	0.012	**4.949**	0.000
M(7)	0.026	0.010	**2.539**	0.012
X	0.012	0.012	0.995	0.321
X(1)	-0.012	0.012	-0.964	0.336
X(2)	0.008	0.009	0.923	0.357
X(3)	0.016	0.011	1.382	0.168
X(4)	0.008	0.011	0.717	0.474
X(5)	-0.002	0.010	-0.151	0.880
SAT	-1203	31.934	**-37.673**	0.000
SUN	-1864	32.182	**-57.929**	0.000
PUB	-1437	79.117	**-18.169**	0.000
R-squared	0.94	Mean dependent var		1578
Adjusted R-squared	0.94	S.D. dependent var		750.55

Source: Regression results from IPART's analysis of data provided by Sydney Ports Corporation, DP World and Patrick.

The closeness of the relationship can also be seen in the Figure G.2 below, which plots the actual daily truck entries in 2006/07 against the number that would be

predicted from the regression relationship. The line X=Y has been imposed on the figure.[271]

Figure G.2 Scatter plot of actual and predicted (fitted) truck entries



Source: IPART analysis of data provided by DP World and Patrick.

In layman's language, the number of import containers that arrived at the port 2 to 7 days ago all play a significant role in determining the number of trucks that enter the terminals 'today'. Saturdays, Sundays and public holidays see a large reduction in the number of trucks that enter the terminal because of the work practices of the downstream supply chain.

Arrow 3 - TTTs AND SHIPSIDE TEUs

The measure of port-average TTTs used in the regression below weighted each stevedore's TTTs by the number of daily truck entries. Table G.2 shows that port-average TTTs are associated with the shipside task and vary with Saturday, Sunday and public holidays, but that the association leaves much unexplained.

Import TEUs arriving between 1 and 6 days ago still have some positive effect on TTTs, as do export TEUs due out the next day and Saturdays, Sundays and public holidays. But the R^2 of 0.296 indicates that 70 per cent of the variation in TTT remains unexplained. A further explanation is offered in Appendix G and other factors that could affect TTTs are noted in Chapter 3.

[271] If Saturdays, Sundays and public holidays were excluded, the figure would reduce to Figure 3.3 on p 37.

Table G.2 Truck turnaround times and the shipside

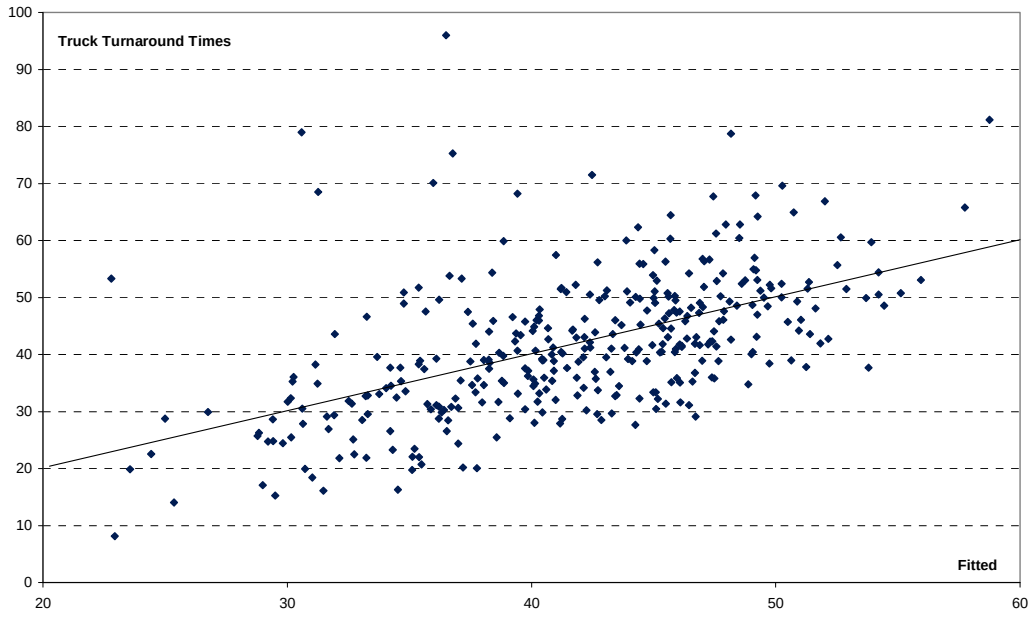
Dependent Variable: TTTs

	Coefficient	Std. Error	t-Statistic	Prob.
C	10.1935	6.9928	1.4577	0.1459
M	0.0000	0.0004	-0.0762	0.9393
M(1)	0.0013	0.0005	**2.5927**	0.0099
M(2)	0.0028	0.0006	**4.6656**	0.0000
M(3)	0.0029	0.0007	**3.9521**	0.0001
M(4)	0.0028	0.0007	**4.0570**	0.0001
M(5)	0.0016	0.0006	**2.5998**	0.0097
M(6)	0.0012	0.0006	**2.0167**	0.0445
M(7)	0.0007	0.0006	1.1175	0.2646
X	0.0005	0.0005	0.9997	0.3182
X(1)	0.0017	0.0006	**2.7238**	0.0068
X(2)	0.0011	0.0006	1.7437	0.0821
X(3)	0.0002	0.0005	0.3658	0.7147
X(4)	-0.0006	0.0005	-1.1096	0.2680
X(5)	-0.0002	0.0005	-0.3106	0.7563
SAT	-10.4733	1.7597	**-5.9518**	0.0000
SUN	-14.8626	2.5822	**-5.7557**	0.0000
PUB	-11.0337	1.7121	**-6.4444**	0.0000

R-squared	0.296	Mean dependent var	41.731
Adjusted R-squared	0.259	S.D. dependent var	12.211

Source: Regression results from IPART's analysis of data provided by Sydney Ports Corporation, DP World and Patrick.

Figure G.3 Scatter plot of actual and predicted (fitted) TTTs



Source: IPART analysis of data provided by DP World and Patrick.

H Statistical relationships between TTTs, days of free storage, stack density and truck entries

This appendix illustrates the quantitative relationships between TTTs, days of free storage at port, average stack density and truck entries. The results are summarised in the body of the report, section 3.2.1. The data analysis presented here was provided in part by Patrick on a confidential basis.

Stack density and truck entries as drivers of TTT

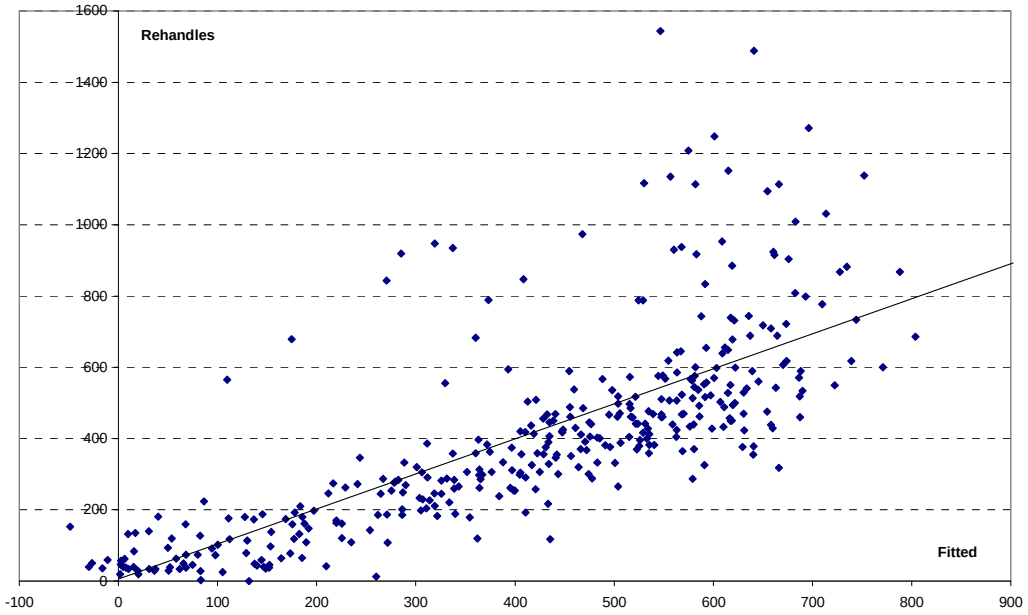
A key factor causing delays in serving the landside is the need to rehandle containers. Typically rehandling arises because a container will need to be moved in order to access a container beneath or beside it. Intuitively, the number of rehandles required in a given day will depend both on the number of truck entries (which correspond to the number of containers passing through the landside interface) and the average stack density across the terminal. The denser the stack, the more the rehandles.

Daily truck entries and average stack density on the prior day provide a good prediction of the number of rehandles required at Patrick in 2006. The regression relationship is such that 56 per cent of the variation in actual rehandles (R^2 0.56) is associated with variations in truck entries and stack density. Actual and predicted daily rehandles are compared in Figure H.1. The line X = Y has been superimposed on each figure that follows.

The same explanatory variables are also important drivers of TTTs. A similar linear regression model provides a reasonable prediction of TTT at Patrick over calendar 2006. It explains 27 per cent of the variation in actual TTT. Actual and predicted TTT are compared in Figure H.2 below.

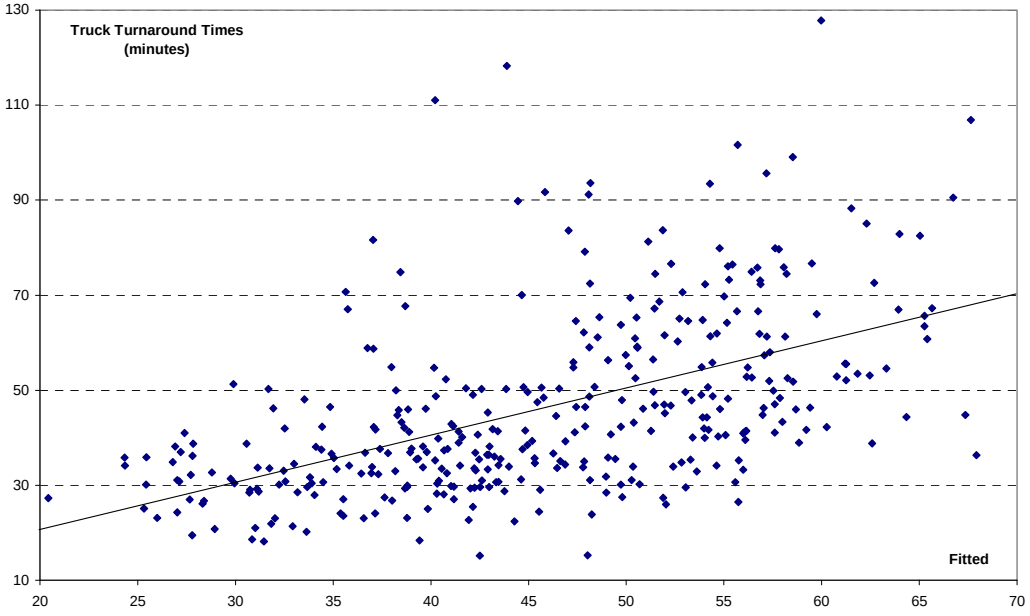
While this relationship does not explain all of the variation in TTT, all coefficients are statistically significant (at the 5 per cent level) and the coefficients for stack density and truck entries are highly significant (at the 1 per cent level; *t*-value > 8 for each coefficient).

Figure H.1 Actual and predicted (fitted) re-handles at Patrick in 2006



Source: IPART analysis of data provided by Patrick.

Figure H.2 Actual and predicted (fitted) TTTs at Patrick in 2006



Source: IPART analysis of data provided by Patrick.

Days of free storage as driver of density

It is obvious that if each container is permitted to stay longer at the terminal, the average number of containers held at the terminal will increase in proportion to the length of the stay. For example, if 100 containers arrived each day, and they had to be removed the same day, then the largest number of containers at the terminal on any day would be 100. If the rule were changed to 2 days before removal, then there could be as many as 200 containers on the terminal: those that arrived today plus those that arrived yesterday.

If one assumes that import containers will be removed at a constant rate over the days of free availability, then the average number of containers stored at port each day would be 50 per cent higher with 5 days free than with 3 days. Table H.1 provides an example where import containers are arriving at a rate of 150 a day. Under three days of free storage, 50 must be removed per day. Under five days, 30 must be removed each day. By day 4 the stock of boxes has built up to a level of 450 which is 50 per cent higher than the stock level under the three day allowance.

Table H.1 The effect on terminal stock levels of days of free storage

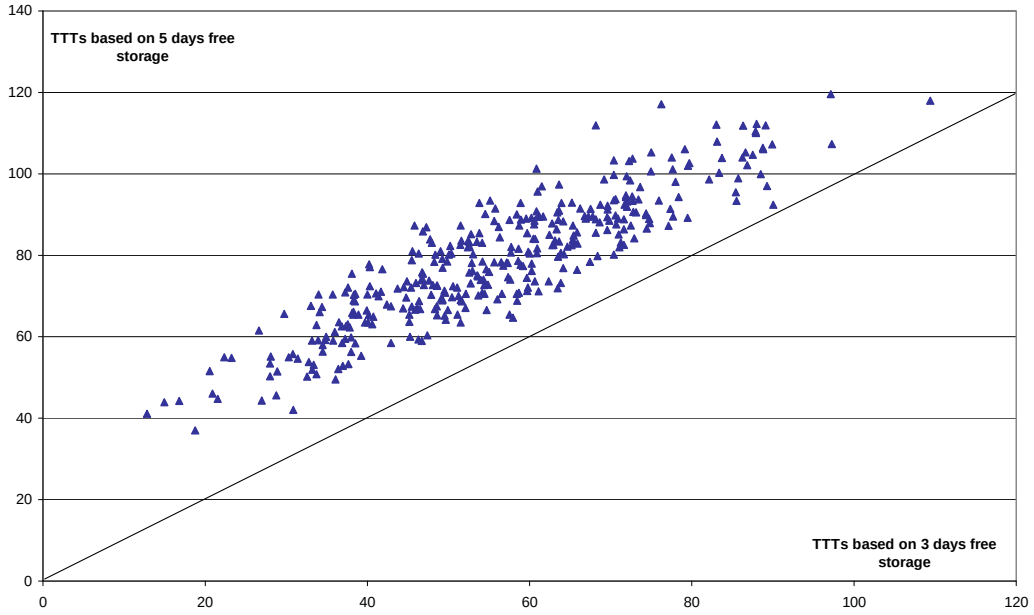
	day 0	day 1	day 2	day 3	day 4	day 5	day 6	day 7
boxes in	150	150	150	150	150	150	150	150
3 days free:								
boxes out	0	50	100	150	150	150	150	150
boxes at terminal	150	250	300	300	300	300	300	300
5 days free:								
boxes out	0	30	60	90	120	150	150	150
boxes at terminal	150	270	360	420	450	450	450	450

Net effect on TTT of a policy change to days of free storage

A change to the number of permitted days of free storage will have two effects. First, it will smooth the daily pattern of truck entries so that there will be fewer extremely busy landside days. Through the effect of truck entries on TTT, this smoothing would be expected to have some moderating influence over TTTs. Second, it will substantially increase the average stack density at the port, tending to increase TTTs.

The regression that estimates TTTs based on density and truck entries provides a means of quantifying the relative impact of these two contending influences. SPC data on daily import TEUs for 2006/07 have been used to calculate daily data for truck entries and stack densities based on a 3 day free storage scenario and a 5 day free storage scenario. Predicted TTTs for each day of the year were then derived from the regression relationship under both scenarios. Figure H.3 plots the predicted TTTs for each day based on 3 days free storage (x-axis) and 5 days free storage (y-axis).

Figure H.3 TTTs under free storage at five days and at three days



Source: IPART analysis of data provided by Sydney Ports Corporation and Patrick.

For almost every day of 2006/7, the average predicted TTT in minutes was higher under a 5 day free storage rule than under a 3 day free storage rule. The annual average predicted TTT was higher by 23 minutes under the 5 day free storage rule.

This result demonstrates that the following assertion is contrary to the evidence:

> The more days of free availability the less congestion and the greater operational efficiency throughout the supply chain.[272]

The more days of free availability, the greater the container congestion inside the terminal, the longer the truck waiting times, and the worse the performance of the entire supply chain. Intuitively, this result arises because the smoothing effect on truck entries of a longer free storage period is only important on a small number of days of the year, whereas the density effect on container rehandling is experienced every day of the year.

272 CLAG submission, p 63.

I DP World peak VBS slots – Melbourne vs. Sydney

IPART, drawing on some experimental estimates of the BTRE, raised the question in its Issues Paper of how it was possible for the stevedores to offer more VBS timeslots between the hours of 8am and 4pm in Melbourne than they did in Sydney.

DP World submitted that the data published by BTRE seemed to refer only to its operations and the stevedore therefore offered IPART an analysis of why it offers more peak VBS slots in Melbourne than it does in Sydney.

A summary of the data provided by DP World is shown in Table I.1 (comments in the final column are remarks made by DP World, condensed and interpreted by IPART). DP World made three adjustments to the Melbourne data to make it directly comparable with the Sydney data. These adjustments were:

First, an adjustment for rail which, unlike Sydney, is handled *outside* the stevedores' port terminals. Containers to be placed onto trains in Melbourne are first transported by trucks to a rail terminal. These movements are booked via the VBS, thus inflating the number of VBS slots used in Melbourne. In Sydney, whilst the same resources may be used to service the landside, some resources are devoted directly to rail and are not included in the VBS numbers.

Second, Sydney handles more empty export containers, most of which are returned to the terminal outside the VBS. In Melbourne, more export containers, being full, are returned to the port via the VBS. In Sydney, whilst the same resources may be used to service the landside, some directly service empty containers and are not measured in the VBS numbers.

Third, Melbourne has a larger container throughput, and one factor that determine how many peak VBS slots the stevedores offer is the demand from road transporters.

After making these adjustments, there was only a 3.4 per cent difference between the number of peak VBS slots offered in the June 2006 quarter at the two terminals.

However, IPART's central question was not: 'why does DP World offer more peak VBS slots in Melbourne than in Sydney?' but rather 'why is DP World able to offer more peak VBS slots in Melbourne?' The answer to this question seems to be primarily because DP World allocates more resources to its task.[273]

Table I.1 Comparison of peak VBS slots offered in Melbourne and Sydney

	Melbourne	Sydney	IPART's comments
Slots available	45,941	26,632	Question: how can Melbourne offer nearly 46,000 slots when Sydney only offers 26,600?
Slots used	43,920	25,247	
1. Rail proportion - adjustment	0.823		
Subtotal	36,146		43,920 is inflated by 7,800 pre-rail movements which Sydney does not need
2. Proportion of exports as empties (handled as bulk-runs) - adjustment	0.851		
Subtotal	30,760		Another 5,400 is for full boxes included in the Melbourne VBS but which are empties in Sydney and not in VBS
3. Terminal volume for quarter - adjustment	0.849		
Subtotal	26, 116		Of the 30,760, another 4,600 difference is because of greater volumes in Melbourne
DPW adjusted slots	**26,116**	**25,247**	**Percentage difference = 3.44%**

[273] In its 12 June 2007 submission, DP World lists the factors that affect the number of VBS slots (p 31). One of these factors is "the requirement of resources to be working vessels". The others are demand side variables which explain why a certain number are actually offered, not what affects how many could be offered. In its submission, Patrick states that the number of slots is "determined by Patrick management and reflects *the volume capabilities* of the operation for that particular day" (emphasis added) which seems to highlight resource limitations rather than demand factors (Patrick submission, p 27).

J Existing supply chain groups

This appendix outlines the role of existing supply chain groups that are involved in planning for better coordination of road/rail interface at Port Botany. It will identify who the various groups are, how they operate and what their limitations have been in achieving productive outcomes.

Port Botany Supply Chain Groups

Coordination of supply chain activities is a critical component in ensuring that the overall efficiency of the landside freight movement is maximised. The Port Botany containerised supply chain involves numerous players and activities of any one participant impacts on the commercial and operational efficiency of another. The Tribunal recognises that involvement of all key supply chain participants is necessary for any meaningful operational efficiency across to be achieved. SPC has worked towards facilitating forums where key supply chain participants such as the stevedores, road transporters, rail operators, empty container parks, ACS , and AQIS can talk to each other to plan for and resolve both strategic and operational efficiency issues. In recognising benefits from having such a forum, three groups have been set up on an informal basis that relies on cooperative working relationships and goodwill of participants. These are:

1. Sydney Port Users Consultative Group
2. Sydney Ports Cargo Facilitation Committee, and
3. Botany Rail Steering Group.

Strategically, the most important group at Port Botany is the Sydney Port Users Consultative Group. It is the only representative body that acts as a strategic advisor to Sydney Ports on matters of port management and port infrastructure capacity issues. The other two groups are operational groups that effectively deal with more detailed day-to-day matters of the supply chain. Each group is discussed below.

Sydney Port Users Consultative Group

The Sydney Port Users Consultative Group (SPUCG) was formed in 1998 as a representative body of senior members from the Port Botany logistics community to consider strategic issues on port related activities. The Group is independently

chaired and convenes quarterly.[274] Members of SPUCG during 2006 included representatives from:

- Patrick and DP World
- Sydney Ports Corporation
- Shipping Australia Ltd
- Shipping lines
- Road transporters
- Rail operators
- Intermodal operators
- Freight forwarders and customs brokers
- Australian Customs Service
- AQIS
- Sydney Ports Cargo Facilitation Committee Chair
- Private wharf operators
- Bulk liquid terminal operators.[275]

The focus of SPUCG meetings has been to provide a forum for information exchange and developing relationships amongst various port users. Meetings have served as a means of updating port users and other stakeholders on major developments and achievements of various supply chain members whilst also acting as an informal advisory body to SPC's Board of Directors on port needs and port performance issues.

Given the senior membership of this Group and the frequency of its meeting, it places more emphasis on strategic matters such as port capacity and infrastructure needs rather than land transport operational issues. If, however, any operational issues are raised at this forum, it is referred to another operational group, the Sydney Ports Cargo Facilitation Committee for consideration. Matters referred to the operational group are monitored through regular updates from the chair of the Cargo Facilitation Committee who is also a member of SPUCG. In addition to monitoring operational efficiency, SPUCG also monitors other areas of port activity, including trade and shipping, marine operations, bulk liquids and general cargo handling and port security.[276]

274 Prior to 2006, the Group met bi-monthly.
275 Sydney Ports Corporation communication to IPART, 23 July 2007.
276 Sydney Ports Corporation communication to IPART, 23 July 2007.

Sydney Ports Cargo Facilitation Committee

The Sydney Ports Cargo Facilitation Committee (SPCFC) is an operational working group made up of volunteer representatives from:

- Patrick and DP World
- Sydney Ports Corporation
- Road transporters
- Shipping Australia Ltd
- Intermodal operators
- Empty container depot operators
- Freight forwarders and customs brokers
- NSW Police
- Australian Customs Service
- AQIS
- Trade Unions.

It was formed as a forum where participants could monitor the turnaround performance of the terminals and plan and implement ways in which peak seasonal container movements could be better managed. For practical purposes, this group meets on a monthly basis and coordinates its activities through SPC. Other than reporting on issues referred to it by SPUCG, the committee undertakes collaborative planning activities leading up to the Port's Christmas peak period. To this end, a mid-year Transport Workshop is held annually by the committee in conjunction with SPC, where all industry representatives are invited to participate in planning and organising the handling of containers in the six months to Christmas.

SPCFC keeps track of terminal turnaround performance through monitoring truck turnaround times (TTT). They monitor the TTT (Gate-In to Gate –Out) as reported by the stevedores on a monthly basis to SPC and periodically conduct their own independent TTT survey. Over the last few years, SPC has undertaken this survey on behalf of the committee every 15-18 months. The last survey was undertaken in May 2007 with results released to the industry in late August 2007.

Botany Rail Steering Group

The purpose of the Botany Rail Steering Group is as a reference group to drive and promote the growth of containerised rail through Port Botany.

The membership comprises of:

- Patrick and DP World
- RailCorp
- Rail operators
- Intermodal terminal operators.

This Group was formed in 2000 to improve the rail interface at Port Botany by fostering a closer working relationship between key rail stakeholders. No meetings have taken place since October 2004. However, its operational role is performed by the Botany Rail Operation Group.

Botany Rail Operation Group

An operational sub-group formed around the same time as Botany Rail Steering Group. It is now known as the *RailCorp/Botany Stevedores Group* and meets weekly under the chair of RailCorp. This group addresses daily rail operational management issues, monitors rail operating protocols for Botany Yard and monitors weekly rail performance of Botany Yard and individual rail operators.

Port Botany Logistics Task Force

The Minister for Ports and Waterways established a Port Botany Logistics Taskforce in November 2006. It is chaired by the Minister for Ports and Waterways and includes members appointed from the following organisations:

- Sydney Ports Corporation
- RailCorp
- NSW Department of Planning
- NSW Maritime
- Sea Freight Council NSW
- NSW Roads and Traffic Authority
- Unions NSW
- Saha International
- Austate Logistics Terminal
- Dangerous Goods Logistics.[277]

[277] The taskforce consists of The Hon. Joe Tripodi (Chair), Minister for Ports and Waterways; Mr Geoff Farnsworth, Sea Freight Council of NSW; Mr Vince Graham, RailCorp; Mr Sam Haddad, Department of Planning; Mr Greg Martin, Sydney Ports Corporation; Mr Chris Oxenbould, NSW Maritime; Mr John Robertson, Unions NSW; Ms Liesbet Spanjaard, Saha International; Mr Terry Tzaneros, Austate Logistics Terminal; Mr John West, Dangerous Goods Logistics; and Mr Les Wielinga, Roads and Traffic Authority.

The Minister has announced that the Taskforce will be facilitating strategic industry input in providing advice to the NSW Government on issues in the land transport logistics chain, including port operations, stevedoring, road and rail freight operations, intermodal terminal operations, container parks, planning and regulation. The first meeting was held in November 2006 and the commissioning of the IPART review was a recommendation from that meeting.

Sydney Ports Corporation's role under the legislation

SPC was established as a Port Manager under the NSW *Ports Corporatisation and Waterways Management Act 1995* (which has since been renamed the *Ports and Maritime (Administration) Act 1995*). Its objectives and functions under the legislation are set out in Box J.1.

Box J.1 SPC's objectives and functions under *Ports and Maritime (Administration) Act 1995*

The principal objectives of SPC are set out in section 9 of the legislation, and are:

(a) to be a successful business and, to this end:

  (i) to operate at least as efficiently as any comparable businesses, and

  (ii) to maximise the net worth of the State's investment in the Port Corporation, and

  (iii) to exhibit a sense of social responsibility by having regard to the interests of the community in which it operates and by endeavouring to accommodate these when able to do so, and

(b) to promote and facilitate trade through its port facilities, and

(c) to ensure that its port safety functions are carried out properly.

The principal functions of SPC are set out in section 10(2) of the legislation, and are:

(a) to establish, manage and operate port facilities and services in its ports, and

(b) to exercise the port safety functions for which it is licensed in accordance with its operating licence.

Section 10(3) also allows SPC to:

(a) provide facilities or services that are ancillary or incidental to its principal functions, and

(b) conduct any business (whether or not related to its principal functions) that it considers will further its objectives.

The key requirements of SPC that are relevant to this review are therefore to promote and facilitate trade through Port Botany, by establishing, managing and operating port facilities and services there. In doing so, it can provide facilities or services that are ancillary or incidental to establishing, managing and operating its facilities at Port Botany, and can conduct any business that it considers will further the promotion and facilitation of trade through Port Botany.

What Sydney Ports Corporation currently does

SPC owns 349 hectares of property in Sydney Harbour, Port Botany, Cooks River and Enfield[278] and consequently is the significant landlord in the Port Botany container supply chain. It leases the two container terminals to Patrick and DP World at Port Botany. It also leases other specialised terminals to licensed stevedores of liquid bulk and general cargo.

SPC is also involved in implementing policies of the NSW Government that address the growing freight task as set out below.

Port Botany Expansion

To ensure capacity can be handled adequately, the NSW Government has decided to expand Port Botany's container facilities to significantly increase container handling facilities. SPC is facilitating this policy decision of the NSW Government to expand the port facilities, and is currently considering tenders for construction of a third terminal at Port Botany that will cater for five additional berths on 60 hectares of reclaimed land.[279]

Intermodal Terminal Development

SPC owns two metropolitan intermodal sites, as extensions of the port facilities located at Port Botany. In 2005, SPC purchased the intermodal terminal and empty container site at Cooks River from RailCorp, which had had plans to shut down this facility. SPC has stated that it purchased this site to secure continued operation for rail operators and exporters in close proximity to Port Botany the dedicated freight line.[280] Maritime Container Services currently operates this facility under lease.

SPC also owns a 60 hectare site at Enfield. This industrial estate has existing rail track connections to the Metropolitan Freight Network and to the Port Botany via the Botany Goods Line.

On 31 May 2007, the NSW Premier announced details of the Government's plans to increase freight rail from Port Botany and one of the key initiatives was to endorse plans to establish new freight terminals at the Enfield site and, subject to discussions with the Commonwealth Government, at Moorebank.

On 6 September 2007, the NSW Department of Planning announced that it has approved plans for the Enfield Intermodal Logistics Centre. SPC has secured Government funding to develop this site principally for rail transfer of containers to and from Port Botany. SPC has undertaken work on appropriate features for the

278 Sydney Ports Corporation submission, 13 June 2007, p 9.
279 For further information, see http://www.sydneyports.com.au/port_development/port_botany
280 Sydney Ports Corporation, *Logistics Review 2005/06*, p 13.

Enfield Intermodal Logistics Centre.[281] As noted in section 2.2 of this report, a taskforce is overseeing the business development of this site.

Landside tasks at Port Botany

SPC has played a role in co-ordinating the road and rail task, primarily through the SPUCG, SPCFC and the annual Transport Workshops. SPC is a member of each and provides secretariat support, but each is independently chaired.

Whilst SPC has an explicit role in managing port assets and providing navigational and operational safety services under its Act, it has no direct role in managing the efficiency of the landside interface. In effect, SPC possesses no regulatory powers under the legislation to regulate port-related road or rail activity. In the supply chain, the only contractual relationship SPC has is with the stevedores through the terminal leases entered into nearly thirty years ago. SPC has stated in its submission that their ability to influence the stevedores' operational practices on the landside are limited under the lease documentation.[282]

SPC has expressed its frustration at some industry actions that have hampered its efforts in pursuing transport efficiencies. SPC in its submission state that it was actively involved with the stevedores and road operators to effect enhancements to the VBS when their efforts were halted in 2004 through ACCC's investigations into the VBS and subsequent application by CLAG to ACCC for authorisation to negotiate collectively with the stevedores.[283]

Without any direct powers under the Act to control or sanction any commitment from participants in improving operational efficiency, any involvement by SPC must be based on cooperative working relationships between supply chain participants. This has already been occurring to date with groups like SPUCG and SPCFC, however with limited success.

The Victorian Approach to the role of a Port Authority

In terms of core functions, Port of Melbourne Corporation (PoMC) and SPC are very similar, in that they are effectively port asset managers and provide navigational and maritime services to the shipping industry.[284] In managing its port assets, the PoMC works as "an integrated partner in the broader freight and logistics system," [285] rather than itself managing the Port's supply chain coordination services.

A distinctive feature of the Victorian structure is the direct involvement of the Government. The PoMC has been coordinating number of projects on port-related

[281] Sydney Ports Corporation submission, 13 June 2007, p 17.
[282] Sydney Ports Corporation submission, 13 June 2007, p 10.
[283] Sydney Ports Corporation submission, 13 June 2007, p 10.
[284] The Port of Melbourne Corporation was established in 2003 as a statutory corporation under the *Port Services Act 1995* (VIC).
[285] Port of Melbourne Corporation, *Port Profile*.

infrastructure for which the Victorian Government has been securing a significant source of funding through the Commonwealth Government's AusLink program. Therefore, the Government plays a more central role in facilitating and coordinating supply chain initiatives.

Advice on port, freight and logistics matters is primarily given by the Victorian Freight and Logistics Council (VFLC), which was specifically established by the Government for this purpose in 2004.[286] Input from VFLC feeds into the Government's broader Freight and Logistics Strategy.

The Victorian Government's Freight and Logistics Strategy is a State blueprint through which it seeks to coordinate policy and prioritise strategic initiatives. To this end, the Government has created an industry consultative group structure that provides coordination of both the strategic and operational direction for the benefit of the whole supply chain.

In contrast to the informal strategic advisory role of Sydney Port Users Consultative Group at Port Botany, in Victoria, the Government itself (three Ministers) makes up the Victorian Supply Chain Consultative Group (VSCCG). Industry representative groups still play an important advisory role in Melbourne. The VSCCG in turn consults with a much larger and diverse industry representative group that forms the Victorian Transport, Distribution and Logistics Industry Roundtable (TDL).

The VSCCG links the Ministers of three Victorian Government portfolios and their departments with peak TDL industry associations, companies and customers. It provides a more robust mechanism for TDL members to directly address Ministers on any issues that affect their members. Currently, the three Ministers are:

- Minister for State and Regional Development
- Minister for Transport
- Minister for Education and Training.[287]

TDL is where key policy issues are raised and discussed to form a well considered and cohesive industry viewpoint. TDL is also responsible for establishing, supporting the various Partner Reference Groups and the Regional Roundtables.

Partner Reference Groups deal with operational matters. The chair of each group is a member of TDL. Regional Roundtables bring together local transport providers, business, tertiary institutions and state and local Government representatives in an ongoing forum focused on TDL industry issues. The chairs of the Regional Roundtables are also members of TDL.

IPART notes that the Victorians have a structured coordinated approach to funding and setting policy through the Government department and a series of advisory committees including the relevant Ministers, rather than through the PoMC.

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[286] More information on the group is available at www.vflc.com.au/html/s01_home/home.asp
[287] TDL Supply Chain Victoria – www.supplychainvictoria.com.au

K VBS auditing guidelines

One of the key concerns for many stakeholders is the lack of transparency in the way the current VBS is operated. IPART considers that the two-tiered VBS approach it has recommended and described in Chapters 7 and 8 will effectively address these concerns. One of the key features of this approach is that the entire system by computerised and based on clear rules, and that compliance with those rules be independently audited at regular intervals.

However, IPART recognises that the new two-tiered system make take some time to develop and implement. Therefore it has sought to address stakeholder concerns about the fairness and transparency of the current VBS by recommending that a clear set of rules for the operation of the VBS be established and published, and that increased reporting of the stevedores' performance, and independent auditing of the operation of the VBS and road access to the terminals be undertaken.

Independent auditing is a critical part of IPART's recommendations for modifying the current VBS and establishing a new two-tiered VBS. This appendix provides guidelines on the scope and processes for the audits to ensure their effectiveness and assure stakeholders of their contribution to the transparent and fair operation of the VBS and road access.

Some parts of these guidelines relate only to audits of the two-tiered VBS – for example, where they refer to firm and interruptible slots and auctions. However, the guidelines are also generally relevant to the wider audits that IPART recommends be undertaken on the stevedores' compliance with the terms and conditions of the current VBS.

K.1 Objective of the audits

The proposed audits of compliance by the stevedores will allay concerns expressed by some road transporters over possible conflicts of interest and lack of transparency.

The audits' key objectives are to provide comfort that:

1. the allocation of each of the three categories of road entrance to each terminal – that is, firm, interruptible, and empty stack runs – is in accordance with the rules that have been set and that are publicly available
2. physical access to the terminals occurs in accordance with that allocation

3. published performance statistics are accurate and reliable, and
4. penalties charged are in accordance with the publicised terms of access.

Positive audit outcomes from objective 1 and 2 will provide fair assurance to road transporters that stevedores' affiliated transport companies have not received favourable treatment.

The audits should extend beyond the computerised allocation of entrance to each terminal. They should also cover physical compliance with the allocation that has been made and application of penalties for non-compliance with the allocation rules.

In order that each stevedore (or any separate operator of a VBS) exercises the least amount of discretion, with regard to the allocation of access, physical access, and the charging of penalties, the rules under which allocations are made must be clear, indisputable, and fully publicly available. This is the intention of IPART's Recommendation 5.

K.2 Selecting and engaging the auditor

IPART's recommendation is that Sydney Ports Corporation (SPC) select and engage the auditor.

SPC is sufficiently detached from the outcome of the audit to do this in an unbiased way. And as owner of the port facilities, with an objective under the *Ports and Maritime Administration Act* 1995 "to promote and facilitate trade through its port facilities", SPC has a clear obligation to confirm that the stevedores have systems and procedures in place to enable them to interface with other parts of the containerised freight supply chain to ensure that the chain operates overall in an efficient way.

The engagement can be made following an open tender process. The successful tenderer should:

- demonstrate a clear understanding of the task
- provide a detailed project plan setting out the process to be adopted
- show that the staff undertaking the audit are competent
- establish that the audit will be cost effective, and
- include an undertaking that no conflict of interest exists.

SPC would be accountable for the appropriate process in evaluating and selecting the auditor. To the extent practicable, NSW Government practices should be adopted.[288]

[288] Such as those set out at: http://www.managingprocurement.commerce.nsw.gov.au/service_provider_selection_consultancy_services/cs_gl_tender_process.doc

While IPART supports a transparent processes, there would be no purpose served by making all of the tender process public (or by allowing involvement by the wider supply chain community in the tender process), other than an initial public invitation to tender and public announcement of the successful tenderer.

K.3 Qualifications of the auditor

The auditor must be in a position to conduct the audit to meet the standards set by ASAE 3000 (see below).

The auditor must be independent of both stevedores and the VBS operator(s). Standard conflict of interest tests would need to be met.

There is no reason why the same auditor needs to be appointed to audit both Patrick and DP World (although there may be scale economies). Having separate auditors might allow a wider pool of tenderers, given that some conflicts of interest may exist. However, if there is a common VBS platform and operator it would be logical that a single auditor is appointed.

K.4 Duty of care and tripartite agreement

A tripartite agreement between each stevedore, the auditor and SPC would see the auditor providing an opinion to SPC and each stevedore, on which SPC and each stevedore could rely.

Tripartite agreements are frequently used in compliance audits, where one party holds the data and undertakes the actions that are to be audited (here, the stevedores), and another party wishes to ensure that the tasks have been undertaken in a certain way (SPC). The auditor is accountable to both SPC and the stevedores.

While a tripartite agreement may be more complex than an arrangement in which the auditor has a direct relationship with either SPC or the stevedores, IPART that such an agreement is the best way to allow SPC a role in the audit (on behalf of other members of the supply chain) while recognising that it is the stevedores which perform the functions that are to be audited and must provide sufficient information to the auditors to enable them to express an opinion.

In the event a stevedore is not the operator of the VBS, the operator would perform the functions that are to be audited, but the stevedore would still be responsible for the terms of access being met. In the case of a separate VBS operator, the stevedore would need to procure from the operator in its contractual arrangements:

- assurance that the VBS operator will make available to the auditor all information that is required
- agreement that the operator is obliged to undertake all allocations and administration of the VBS in accordance with the terms of access.

This separate VBS operator would not be a part of the tripartite agreement. The tripartite agreement concerns the obligations of the stevedores to afford access to their terminals in a certain way, the need by SPC to ensure that this has been done, and the independent auditor's role to confirm to SPC that it has been done. A third party operator's obligations would be a 'sub-set' of the stevedores' obligations.

K.5 Scope of the audit and level of assurance

The audit should be conducted in accordance with ASAE 3000 Standard on Assurance Engagements "Assurance Engagements Other than Audits or Reviews of Historical Financial Information."[289]

Whether this is undertaken as a **reasonable assurance** engagement or a **limited assurance** engagement depends on the risk to the supply chain of the terms of access being breached.

The standard states that the "objective of a reasonable assurance engagement is a reduction in assurance engagement risk to an acceptably low level in the circumstances of the assurance engagement as the basis for a positive form of expression of the assurance practitioner's conclusion. Reasonable assurance means a high, but not absolute, level of assurance." It would not be feasible or cost effective, to obtain absolute assurance. The alternative would be a limited assurance engagement, the objective of which is "a reduction in assurance engagement risk to a level that is acceptable in the circumstances of the assurance engagement, but where that risk is greater than for a reasonable assurance engagement, as the basis for a negative form of expression of the assurance practitioner's conclusion."

The determination of the form of report that will be appropriate will be a matter of judgement that will need to balance a range of risks and considerations. The principal considerations should include:

- Whether SPC seeks the greatest possible level of independent assurance. If it does, then reasonable assurance would be appropriate.
- Whether SPC expects data to be materially misstated. If so, then reasonable assurance should be sought.
- The extent of analysis SPC might carry out that provides additional assurance that may complement the level of assurance received from an auditor.

IPART notes that this judgement cannot be made in general or be pre-determined because the assumption on which it may be based may differ in future years for each stevedore. Consequently, SPC may need to undertake explicit risk assessments in future years as the basis for these decisions.

Therefore, IPART's view is that the form of report should be determined by SPC after consultation with a range of stakeholders in the containerised freight supply chain.

[289] Available at http://www.auasb.gov.au/docs/ASAE_3000_09-07-07.pdf

It should also be taken into account that SPC would not be commissioning this audit for a statutory purpose, which may reduce the level of assurance that is necessary.

The report should comment on the adequacy of the VBSs to enable the ongoing audit of the compliance with the terms of access. A management review letter on the adequacy and interpretation of the existing rules from a control perspective should also be required.

K.6 Practical requirements

Following are some suggestions for practical requirements relating to the audit that. Others would need to be developed in the process of consultation during implementation of IPART's recommendations.

K.6.1 Adherence to auction rules

A complete record of all bids for each hourly auction should be retained for a set period of time, tied to the audit cycle. These records would permit the auditor to reconstruct the auction in order to match the actual award of firm slots with the result expected from the application of auction rules to the bids received. A complaints mechanism should be available to parties that believe their bid was not duly considered for a particular auctioned hour, but strict time limits for complaints should be established, to ensure availability of sufficient data to evaluate the claims.

K.6.2 Delivery of firm slots

Each stevedore records the time gated in and out for each truck. These time records should be maintained for a set period of time, tied to the audit cycle. Barring late arrival of the truck, these records should provide prima facie evidence supporting a claim for double money back for non-delivery of a firm slot. If the stevedore believes the truck was late for a reason outside the stevedore's control, then that fact should be flagged during the day in which the slot occurred, and contested fault situations should be resolved outside the auditor's scope of activity—preferably by agreement or mediation.

K.6.3 Adherence to interruptible slot allocation rules

As it would likely be impractical to record the precise time at which a given bidder for an interruptible slot lodged the bid, a statistical analysis of recipients of interruptible slots should be conducted from time to time by the auditor. This analysis would attempt to compare the time of day of entry across different road operators and importers/exporters that ship similar numbers of containers. The statistical analysis would need to be supplemented with interviews of the slot

holders to understand their preferred time of day (some may prefer to operate at night, for example).

K.7 Payment for the audit

One option would be that the audit fee would be payable from the proceeds of the firm slot auction. These are funds raised by the containerised freight supply chain that are designated to be used to improve its landside efficiency.

However, users of empty stack runs and interruptible slots would also benefit from the proposed audit. In the same way that road transporters have already argued that rail transporters should not benefit from the auction proceeds, it is not inconceivable that firm slot users might object to cross-subsidising other road transporters.

An alternative would be to impose a small levy on every container movement by road to cover the audit fee. This might be a big task administratively. It is also likely to raise the ire of road transporters.

The third alternative is that SPC pays the audit fee from its own budget. This would reinforce the concept of SPC undertaking activities that facilitate trade through Port Botany.

IPART suggests the first option - payment from the auction proceeds - once the auction commences. Assuming that it will take some time to implement the two-tiered auction approach, but that Recommendation 5 (clarification of terms of access) is implemented in the short term, as an interim step it may be necessary for SPC to fund any audit from its own funds.

K.8 Timing of audits and publication

It should be up to the auditor to determine the frequency, timing and scale of the audits, which should be set so that the auditor could meet its obligations under ASAE 3000, balanced against the administrative imposition on the stevedores.

The results of each audit, along with each stevedores' response to any significant breach of its terms of access, should be made public within a very short period after conclusion of the audit.