COMPETITIVE ACCESS AND SERVICE ARRANGEMENTS OF CONTAINER MOVEMENTS: PORT BOTANY CASE

Mihailo Cvetojević[a*]

[a] Vessel Operations Group, DP World Australia – Sydney

Abstract: *The paper analyses New South Wales (NSW) Government role in supply chain and network efficiency as a new model that ensure competitive access and service arrangements of container movements between stevedores and transport carriers at Port Botany. The paper further analyses Operational Performance Measures (OPMs) set by the Government body that ensures that the port supply chain's stakeholders are made accountable to each other for their performance. Logistic chain participants are penalized, by paying a financial penalty to the other party, for performance that fails to meet the Operational Performance Measure (OPM) standards. The paper further analyses the impact on DP World Sydney - Port Botany container terminal operational requirements, changes of Key performance indicators (KPI) related to landside operations and strict monitoring of terminal performance, both landside and waterside, in very tight timeframe, decision making process for reallocating resources from waterside to landside operations and vice versa in order to minimize possible financial penalties or to gain financial benefits).*

Keywords*: Container terminal, Operational Performance Measures*

1. INTRODUCTION

Government role in the logistic and cargo movement task in particular shall be also focused on delivering network capacity that enables supply chain efficiency. This includes removing obstacles for achieving best practice, creating capacity and, where necessary, becoming involved in the marketplace to ensure the network operates efficiently (Ferreira, Bunker, 2003).

Cargo movement is a basic element of logistics. In New South Wales (NSW), as in most other states and areas, the cargo movement is mainly undertaken on a transport network where both the movement of cargo and the movement of people compete for space. The government primarily provides the physical network, and access to it; however there is an inexorable link between the actions of government and the performance of logistic tasks across the economy. In NSW the logistics industry accounts for approximately 13.8 per cent or $58 billion of NSW's economy; where more than 67 billion tonne kilometres of cargo is moved annually and the value of the products carried exceeds $200 billion (Transport for New South Wales, 2015).

The Government of NSW has made Freight and Ports Strategy that was released in November 2012, with aim to enhance productivity and efficiency in cargo flows realization. The NSW Freight and Ports Strategy identifies where government intervention is justified to enhance productivity and economic efficiency. Government intervention was defined in the form of the

* Mihailo.Cvetojevic@dpworld.com

provision of physical infrastructure, coordination and control, market structure reforms, co-investment with the private sector, regulatory reform and other economic incentives.

The objective of the paper is to analyze the impact on DP World Sydney - Port Botany container terminal operational requirements, changes of KPI related to landside operations and strict monitoring of terminal performance, both landside and waterside, decision making process for reallocating resources from waterside to landside operations and vice versa in order to minimize possible financial penalties or to gain financial benefits.

Remaining of the paper is organized in following way. The section 2 presents landside improvement strategy and NSW government regulatory reform. Section 3 discusses operations protocols, KPI and practice of PBLIS regulations application in DP World Port Botany container terminal ands section 4 gives some concluding remarks.

2. PORT BOTANY LANDSIDE IMPROVEMENT STRATEGY – NSW GOVERNMENT REGULATORY REFORM

Port Botany is essential infrastructure asset that serve as the primary import and export gateways to NSW. NSW is Australia's largest economy and home to approximately one third of the Australia's population. Port Botany is located 12 nautical miles south of the entrance to Sydney Harbor and is well serviced by road and rail networks. The facilities at Port Botany (Figure 1) currently consist of 3 container terminals with 12 container vessel berths and 2 bulk liquids berth, container support businesses, bulk liquid berth storage facilities and private berths. The volume of containers through Port Botany has approximately doubled over the past 11 years, from about 0ne million TEU in 1999 to more than two million in 2014 (Transport for New South Wales Strategy, 2015).

Container volume growth is forecast to continue at between 5 – 8% per annum over the next 25 years (Source: Sydney Ports 30 Year Vision). Using a growth rate of 7%, the volume of containers through NSW ports will be about 11 million TEU by 2036-37 (Transport for New South Wales Strategy, 2015).

Figure 1. Locations of Port Botany container terminals

Independent Pricing and Regulatory Tribunal's (IPART) Report (IPART Report, 2008) in March 2008 highlighted an inefficiency of the landside operations at Port Botany. In response to this report NSW Government has established the Port Botany Landside Improvement Strategy (PBLIS), which is led and coordinated by Sydney Ports and now by Transport for New South Wales (TfNSW). The main goal of the PBLIS is to improve the competitive access and service arrangements of container movements between stevedores and transport carriers at Port Botany.

The PIBLIS Regulation provides performance standards relating to access by road carriers to the Port Botany Container Terminals, the performance of road carriers at those terminals and the performance of stevedores in providing services to road carriers at those terminals. The Truck Marshalling Area (TMA) has been developed as part of expansion of infrastructure in Port Botany; TMA is a component of the Operational Performance Measures framework and is fundamental to moving vehicle congestion off public roads; and to provide a safe and secure area, for early arriving trucks to be staged before they are serviced by the stevedores.

2.1 PBLIS – operational performance measures (OPMs) and mandatory standards

Operational Performance Measures (OPMs), defined in PBLIS with industry financial penalties, commenced on Monday 28 February 2011. Logistic chain participants are penalized, by paying a financial penalty to the other party, for performance that fails to meet the OPM standards. The OPM standards that are measured for truck carriers include: Early Arrivals, Late arrivals, No Shows and Cancellation of bookings (listings). The operational performance standards that will be measured for stevedores include: Minimum Number of Slots Offered per Hour, Truck Turnaround Time, Truck Non Service and Time Zone Cancellations. The OPS integrates the stevedores' processing data and truck tracking data, to provide an independent and comprehensive data record of the operations of the landside interface. PBLIS Mandatory standards cover (Transport for Wales, 2012):

- Carrier Mandatory Standards, which sets mandatory standards regarding Carrier performance in respect of access by their Trucks to the land-based facilities and services at the Terminals at Port Botany;
- Stevedore Mandatory Standards, which sets mandatory standards which apply to Stevedores in respect of the operation and provision of land-based facilities and services at their Terminals at Port Botany;
- Regulation of Charges, which regulates the extent to which a Stevedore may impose certain charges, including by increasing certain charges, in relation to the operation or provision of land-based facilities and services at its Terminal;
- Determining Certain Matters (Definitions) such as: when Truck Arrives, when a Truck joins, or fails to join, a Service Line, Truck Turnaround Time, Minimum Number of Slots.
- Records and Information, which contains directions to Stevedores regarding the keeping of records and the provision of information by Stevedores and Carriers
- Invoicing of Financial Penalties, which prescribes certain matters with respect to the invoicing of Financial Penalties payable under the Regulation.

2.2 Mandatory standards and penalties related to DP World Sydney – Port Botany Terminal

PBLIS Performance Standards for Truck Carrier and Stevedore performance standards are presented in table 1 and table 2 respectively.
Operational Mandatory Standards also include regulations, rules and definition of terms and conditions such as (Transport for Wales, 2012):

- All truck carriers visiting Port Botany are required to register their details with the Transport for NSW Cargo Management Control Centre (CMCC).
- All trucks servicing Port Botany must be fitted with an RFID truck tracking tag. This tag is used to capture the movements of each truck when in the Port Botany precinct and records arrival time, queue time, TTT, the time taken to be serviced by the stevedore.
- The Stevedore notifies the Carrier that a Container is available for collection.
- The Stevedore notifies the Carrier less than 4 hrs prior to the commencement of the Time Zone in which the Booking is scheduled to occur that the Container is no longer available for collection. The Carrier makes a Booking in respect of that Container.

Table 1. PIBLIS Performance Standards for Truck Carrier

Truck Carriers Performance Standard	Description	Industry Financial Penalty
1) Early Arrival	No trucks to arrive before booked time slot. Trucks may be accepted into the terminal at the stevedore's discretion without penalty. Truck Turnaround Time (TTT) applies from start of time zone	$100 per trip Payable to the stevedore
2) Late arrival	No trucks to arrive after booked time slot. Trucks may be accepted into the terminal at the stevedore's discretion with "Late Arrival" penalties to apply. If truck is not accepted by the stevedore then a "No Show" penalty will apply	$50 per slot Payable to stevedore
3) No show and extended late	Truck fails to arrive within booked time slot and is not accepted by the stevedore	$100 per slot Payable to stevedore
4) Cancellation of bookings	Restrictions and penalties apply to cancellation of bookings for a slot within 24 hours of the commencement of that time zone	Less than 12 hours not ice, penalty is $50 per slot. Between 12 – 24 hours notice, penalty is $50 per slot unless slot is booked by another carrier Payable to stevedore

Table 2. PIBLIS Stevedore performance standards

Stevedore Performance Standards	Description	Industry Financial Penalty
Truck Turnaround Time (TTT)	Gate In to Job Complete 50 minutes for first container plus 10 minutes per additional container	Payable to the truck carrier Increments of $25 per each 15 minutes If a truck is affected by poor terminal performance during the specified period, (for subsequent trips the same truck may be eligible for extended arrival time (up to the same number of minutes that the truck was previously delayed).
Minimum slots offered	Minimum of 50 slots per hour must be offered 24/7 (min 1200 slots per day) Stevedores have the flexibility to offer, and are currently offering more than the minimum number of slots	Stevedore is subject to inf ringement (fine) and prosecution
Truck non-servicing	Stevedore fails to service a truck that has a slot booking. Truck Turnaround Time (TTT) also applies Stevedore must provide a replacement slot within 24 hours	$100 per slot plus TTT penalties apply Payable to the truck carrier
Cancellation of time zones	Closer the stevedore gets to the time zone the more restrictions apply	Greater than two hours notice, penalty is $50 per slot Less than two hours notice, penalty is $100 perslot Payable to the truck carrier

- For each Truck that Arrives at a Stevedore's Terminal pursuant to a Booking and for the purpose of receiving Truck Services a Stevedore must perform the Truck Services in full within the applicable Truck Turnaround Time.
- A Stevedore must not prescribe a Time Zone which is less than 60 minutes.
- A Stevedore must not cancel an entire Time Zone unless it is due to an Unforeseen Event or is necessary to do so to address reasonable concerns regarding the safety of a person or persons.
- A Carrier must not cancel a Booking for a Slot less than 24 hours prior to the commencement of the Time Zone in which that Booking occurs Stevedore must immediately make a cancelled Slot available to all Carriers for Booking.

- If a Carrier cancels a Booking after the commencement of the Time Zone in which that Booking occurs the Carrier will fail to comply with the mandatory standard relating to the arrival of Trucks.
- Each Stevedore must make available no less than the Minimum Number of Slots each Hour, 24 hours a day, in respect of which all Carriers can make Bookings.
- The Minimum Number of Slots to be made available by a Stevedore each Hour must be made available by that Stevedore for Bookings at least 2 Working Days prior to the commencement of that Hour unless it has received the prior approval of TfNSW to make one or more of those Slots available for a period that is less than 2 Working Days prior to the commencement of that Hour.
- A Stevedore and, if applicable, its Vehicle Booking System (VBS) must not make a Booking, or accept a Booking, for a Container to be loaded or unloaded onto or from a Truck at that Stevedore's Terminal unless that Booking has been made through that Stevedore's VBS. VBS is a web-based online slot booking system designed for facilities to organise the receipt and delivery of shipping containers. Truck Carriers utilise the VBS to create bookings in any of the 24 Time Zones (per day).
- Each Stevedore must create, collect and retain the records and data specified OPM and each Stevedore must provide to TfNSW the records and data specified in OPM.
- Financial penalties are issued via the stevedores' invoicing process for which they are responsible. Stevedores send an invoice to truck carriers that have not met OPM standards detailing penalties they owe. Stevedores are also responsible to self-invoice for financial penalties they owe to truck carriers.
- These invoicing processes are monitored and audited under the CMCC.

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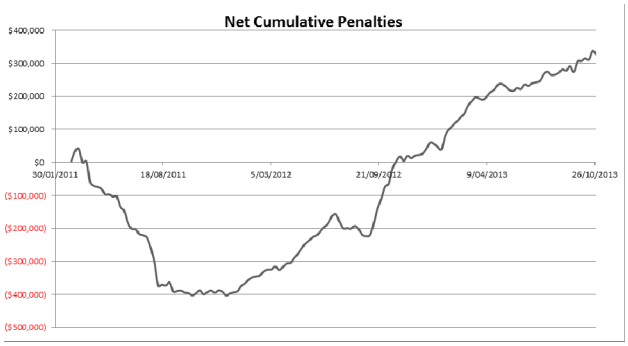
3. DPW SYDNEY – PORT BOTANY LANDSIDE IMPROVEMENT STRATEGY FOLLOWING PBLIS REGULATIONS

In response to PBLIS regulations DP World Port Botany terminal has amended the operations protocols, KPI and practices with increased focus on landside operations and balancing and improving efficiency of both landside as well as waterside operations. Prior PBLIS regulations the terminal was not financially penalised for failing to meet expected landside performance level and during period of restricted resources availability, the focus was usually shifted to waterside operations, as the penalties would be imposed by vessel operator if vessel failed behind agreed target. Close monitoring of landside operations becomes important as penalties paid to truck carriers, as presented in Figure 2, can quickly rise to substantial amounts.

Servicing trucks within PBLIS mandatory standards is essential task for landside operation and Truck Turnaround Time is calculated for each truck based on number of containers transactions booked for the truck visit (Figure 2) and based KPI is to keep TTT below the standard.

Truck Turnaround Time is calculated under PBLIS regulation from the time truck "Queue In" at Service Line, rather than at "Gate In", to the time truck leaves the terminal - "Gate Out" time. Service Lane starts about 800m from the terminal gate and therefore DPW Sydney terminal has adjusted respective KPI that includes time truck spent in service lane outside the terminal gates.



Cont. Trans. / TTT(min)		DROP OFF				
		0	1	2	3	4
PICK UP	0		1/50	2/60	3/70	4/80
	1	1/50	2/60	3/70	4/80	5/90
	2	2/60	3/70	4/80	5/90	6/100
	3	3/70	4/80	5/90	6/100	7/110
	4	4/80	5/90	6/100	7/110	8/120

Figure 2. DP World Sydney – Net Cumulative Penalties and Mandatory Standards TTT in relation to number of container transaction per truck visit

4. CONCLUSION

The Operational Performance System (OPS) integrates the stevedore's processing data and the carriers' truck tracking data, to provide an independent and comprehensive data record of the operations of the landside interface. This allows PBLIS to comprehensively analyze the performance of the landside interface, including booking information, carrier listings, etc. The data will also be possible to view at the complete industry level or at the single operator level, across all time periods i.e. time zones, days, weeks, months or years. This information provide the PBLIS team with technical insights as to how efficiently and consistently all the components on the landside interface are performing. Then, this knowledge can be used to improve the efficiency, consistency and transparency of the landside interface (Transport for NSW, 2015).

The regulations introduced in DP World Sydney appear to continue to have positive outcomes, particularly in terms of truck turn times and carrier arrival patterns. A significant improvements are reached can easily recognized if look at trucks arrivals schedule showing that almost there is no vehicles more than 1 minute late.

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