



## **Port Botany Landside Improvement Strategy (PBLIS)** Industry Behavioural Research

**Transport for NSW**  
**Summary report**

14 April 2022

# Overview

PBLIS was introduced in 2010 to improve the efficiency of carriers and the landside operations of terminal operators. There are four pillars which PBLIS aims to achieve: efficiency, consistency, transparency and 24/7 operations.

The features of PBLIS that were introduced to achieve its objectives can be summarised in four categories:

- 1. Regulation of slot booking listings and cancellations.** A minimum number of slots every hour was imposed to provide transparency to transport operators.
- 2. Imposition of penalties for early or late arrivals and impose targets for truck turnaround times (TTTs)** to manage traffic in the port precinct. Penalties were introduced for both transport operators and stevedores for early, late and non-arrivals. This is monitored using number plate recognition to track when trucks enter and leave the ports. Penalties were also introduced to stevedores for not meeting TTT targets.
- 3. Establishment of the truck marshalling area (TMA)** to manage early arrivals in the port, away from public roads which allows road carriers to manage their booking slots, avoid congestion and avoid receiving an early arrival penalty. It also provides an area in the event of a stevedores unforeseen event.
- 4. Provision and management of service lines** and enforcement of parking and stopping rules around the port precinct which is supported by a sophisticated network of automated cameras.

Deloitte Access Economics was engaged by TfNSW to undertake research to understand the behavioural impacts of PBLIS to inform the independent review. TfNSW is seeking to understand the impact of PBLIS on the behaviour of stevedores, road operators and rail operators that has: occurred as intended, did not occur as intended or any unintended impacts on behaviour

The aim of this research is to:

- Identify and explain specific behavioural changes that have resulted from the introduction of PBLIS
- Seek to identify if PBLIS has contributed to any specific behaviour changes or if these changes may have occurred without the introduction of PBLIS
- The drivers underpinning these behavioural changes
- Describe these behavioural changes by different industry segments

This research will contribute to understanding how the industry interacts with PBLIS and will inform the independent review of PBLIS. It will also be considered as part of the development of any potential policy options for improving the efficiency of Port Botany operations and the supply chain more generally.

## Independent Review of PBLIS

In 2021, Transport for NSW announced a comprehensive independent review by Ed Willett of the Ports and Maritime Administration Act 1995 (the Act) and the Port Botany Landside Improvement Strategy (PBLIS). The focus of this review is to determine whether the current policies remain the most effective approach for promoting efficient landside operations at Port Botany.

# Approach and key findings

To understand the behavioural impacts of PBLIS, a number of research key activities were undertaken:

- A total of **22 consultations with key stakeholders** and organisations who interact with PBLIS were undertaken, including, 13 road operators, 3 rail operators, all 3 stevedores and 3 other participants (industry associations and port operators). The consultations asked stakeholders to reflect inwardly on how PBLIS has impacted their organisational behaviour.
- Analysis of the **PBLIS mandates outlined in the Ports and Maritime Administration Regulation** were undertaken to understand which elements of the Act have impacted on behaviour
- A review of the **Castalia Cost Benefit Analysis (CBA) of PBLIS performance (2022)** was undertaken for any supporting quantitative analysis that may explain behaviour.

Through the analysis, six overarching behavioural themes emerged. These themes draw on shared experiences across different industry participants:

- 1. Road operators have focused on more direct trips into the terminal, and truck turnaround times (TTTs) have improved**
- 2. Road operators are booking more slots than required as they maintain high demand for VBS slots at peak times**
- 3. Rail operators are holding onto windows, and rail windows are being underutilised**
- 4. Arriving within the VBS slot booking time zone has become the top priority for road operators**
- 5. Stevedores have effectively incorporated PBLIS into their commercial and operational decisions and behaviours**
- 6. Road operators continue to favour daytime operations**

Through the consultation process, Deloitte Access Economics interviewed a diverse share of major stakeholders operating at Port Botany.

Despite different contexts, this report identified a number of consistent attitudes towards the regulation. **In particular, all participants agreed that PBLIS has generally had a positive impact on participant behaviour at, and in dealing with, Port Botany.**

In general, industry noted a number of key points:

- **PBLIS regulation had resulted in a rapid and dramatic adoption of better, more sustainable data gathering and sharing practices.** The availability of higher quality data has significantly improved visibility over port operations and accountability for bad practice. Data collected at Port Botany as a direct result of PBLIS has become the industry benchmark for other ports across Australia.
- **Greater transparency and accountability in the form of financial penalties has altered the behaviour of all participants.** While there have been improvements to on-time arrivals by truck operators and improvements in TTT by stevedores, stevedores have become more rigid and there has been a reduction of 'good will' as they incorporate the PBLIS rules into their operations. In particular, less leniency is shown to participants higher up the chain (usually in response to delays), since this would transfer liability, and potentially financial penalties.
- **There remains an imbalance of power between transport operators and stevedores.** This imbalance creates tension within the port leading to behaviours creating inefficiencies, such as duplicated transport journeys to mitigate the impact of upstream delays. Some participants also suggested that that this imbalance perpetuates the dominance of road transport which is considered a more reliable and less risky mode of transport to rail, especially given the consequences of delays.

These issues and more are explored throughout the remainder of this summary report and in more detail in the full report

# Key Behavioural Themes

The consultation process uncovered six main behavioural changes as a result of PBLIS. The key drivers for each theme are discussed over the following pages as well as how they perform against each of the four PBLIS pillars.

1

## Road operators have focused on more direct trips into the terminal, and TTTs have improved

PBLIS has delivered faster and more consistent truck turnaround times (TTT). More cycles have been conducted as a result of improved TTT efficiency and consistency. The number of cycles has also increased as PBLIS has not encouraged greater overall trip efficiency. Road operators are disincentivised from increasing container density and dual loading, even as volumes have grown.

2

## Road operators are booking more slots than required as they maintain high demand for VBS slots at peak times

Road operators book more vehicle booking system (VBS) slots than they require, then return them after determining what they do and do not need, without incurring a penalty. Some road operators have adopted off-peak operations to avoid busy periods, but this is not feasible for all road operators, particularly smaller operators. This makes it challenging for those who need slots to plan appropriately, where some VBS slots are potentially hoarded.

3

## Rail operators are holding onto windows, and rail windows are being underutilised

Rail operators often hold more windows than they utilise with the benefits of doing so outweighing the current costs. Regional rail operators often leave the port empty and reduce rail efficiency as they require significantly more time to split and shunt at the port. Stevedore behaviour has also been questioned with suggestions they often only meet minimum lift requirements and prioritise road over rail due to PBLIS penalties.

4

## Arriving within the VBS slot booking time zone has become the top priority for road operators

The focus in PBLIS on turnaround times disincentivises trucks from using ECPs in case the truck is delayed and misses its slot at the port. There are also efficiencies that sit outside of PBLIS, such as stack runs, that can be deprioritised over PBLIS trucks. PBLIS has also increased the number of administrative tasks for all participants, including data collection and accuracy, and the administration required to pay or contest fines.

5

## Stevedores have effectively incorporated PBLIS into their commercial and operational decisions and behaviours

Stevedores are meeting the minimum requirements under PBLIS including slots per hour and minimum lifts. However, there are increased pressures on terminal throughput due to larger ships and growing volumes. In some cases, trains are leaving empty with boxes being left behind. Stevedores have also utilised unforeseen events policies under PBLIS, creating a perception that this is to potentially avoid penalties. The efficiency of road has improved, but challenges remain for rail.

6

## Road operators continue to favour daytime operations

The majority of participants in the supply chain from the port are not equipped or well positioned to service a 24/7 port. Not all ECPs provide 24-hour service. As a result, transport operators largely choose to not service overnight. In addition, many operators schedule their runs to deliver to customers and warehouses during their opening hours, which are generally during the day and on weekdays.



# Behavioural Theme 1: Road operators have focused on more direct trips into the terminal, and TTTs have improved

Road operators have seen a reduction in TTTs and an improvement in TTT consistency. Although stevedore performance has improved, PBLIS has not incentivised other behaviours which would increase truck trip efficiency. The current structure of PBLIS rules disincentivises road operators from increasing container density, consecutive visits to different stevedores and dual loading. The improved TTT and lack of dual loading may have led to an overall increase in the number of trips made to the Port under PBLIS.

Drivers of behaviour

## Faster and more consistent TTTs

PBLIS has achieved its primary objective of reducing truck turnaround times (TTT) at the port. Many stakeholders have acknowledged that PBLIS has resulted in more consistent and improved turn around times. PBLIS has reduced truck congestion around the port and the increased consistency of TTTs has allowed road operators to conduct more cycles to the port. These benefits have extended beyond those operators regulated by PBLIS, with other port operators, such as bulk liquid operators also benefiting from reduced congestion at the port.

## Containers density per truck not at full capacity

Despite significant increases in container volumes and vehicle size, container density has not improved and there is opportunity to increase truck efficiency. The current VBS process makes it difficult to book multiple slots in the same time zone and road operators would like ECP delays to be considered for late arrivals. Although some road operators use ECPs, there is a lack of data on utilisation and ECP returns prior to import movements. Road operators report that there are challenges to conduct export tagging and drop off multiple containers at the same time. Stevedores also reflected that despite HPVs being more common, container density hasn't changed.

## Two way loading opportunities to avoid empty running not fully utilised

The current PBLIS rules disincentivise dual loading/two way running. The risk of a PBLIS fine due to late arrival means road operators are less likely to plan a dual run. Many stakeholders agree container density has not improved despite the improved TTT. During the consultations, road operators reported that the introduction of PBLIS has also seen the removal of export tagging at one stevedore. Many stakeholders agree that dual loading would improve efficiency but meeting slot bookings to avoid fines is a key priority for road operators.

## Use of multiple stevedores may have downstream impacts and is not covered under PBLIS

PBLIS has not acted as a whole of port solution. As the Stevedore Impacted Truck rules do not take into account that trucks do not always return to the same stevedore, this disincentivises road operators from booking consecutive slots at different stevedores. If a road freight operator is delayed at one stevedore, they risk being fined at another (e.g. drop off an export box at one stevedore and pick up an import box at another). Therefore, road operators are running half empty trucks and not utilising dual loading, to avoid being fined.

Summary of feedback

# Behavioural Theme 2: Road operators are booking more slots than required as they maintain high demand for VBS slots at peak times

The Vehicle Booking System (VBS) under PBLIS allows operators to return slots to the system within a defined period of time if a timeslot is no longer required. Whilst this is intended to maximise the use of available slots, an unintended consequence is that it encourages overbooking and hoarding. As a result of overbooking, road operators who are unable to book enough time slots or slots at their preferred time must monitor the system for returned slots. In many cases road operators cannot react quickly enough to a re-opened slot and therefore, slots are underutilised.

Drivers of behaviour

## Overbooking and hoarding slots

PBLIS has not been effective at reducing slot hoarding. The vehicle booking system (VBS) under PBLIS does not restrict road operators from booking more slots than actually needed. Road operators will book more slots than they need in order to mitigate personal risk and ensure they have the slots to meet their operational needs, however this is at the cost of overall efficiency of the system. While an efficiency measure, the PBLIS rules on the ability to return slot without penalty prior to 24 hours or to list slots without penalty if taken up, has allowed this behaviour. In addition, road operators are perceived to be hoarding slots which takes them out of the market even if they may not be utilised.

## Slot cancellations 24 hours prior to booking time incur no penalty

Road operators can cancel a slot 24 hours prior to the allocated time without incurring a penalty. This lengthens the process for all road operators in booking their required slots as they must continually monitor the VBS in case more slots open or slots at more suitable times are returned to the system. This also means that returned slots are often underutilised as operators cannot adjust their operations on short notice. Some small road operators are perceived to also be coordinating to take slots from one another as they put them back into the pool.

## High demand for slots during preferred times

The overbooking of slots results in an inefficient allocation since stevedores may face a congested allocation of slots, rather than a staggered allocation of slots that allows a single truck to operate multiple trips. This results in more trucks on road at peak times, since operators may only have a short period to conduct their movements. Road operators and stevedores report that demand for slots is still focused in the morning and on weekdays, and slots are being underutilised at night and on weekends. In addition, there are limited rail windows which do not provide relief for slot demand issues on the road.

## Coordination requirements constrain the ability to improve slot booking systems

The rigidity of PBLIS has entrenched some outdated systems and practices and created a reluctance to collaborate with stevedores and other terminal operators to improve or replace inefficient methods. The current system leads to road operators to grab as many slots as they can and releasing them back 24 hours prior, which may not be enough time for other road operators to utilise these slots. Although some stevedores are trying to innovate, it may be challenging for them to coordinate their approach. The lack of innovation is, in part, due to increased accountability in the event a delay occurs.

Summary of feedback

# Behavioural Theme 3: Rail operators are holding onto windows, and rail windows are being underutilised

Rail operators are perceived to be holding more windows than they utilise with the benefits of this practice outweighing the current costs. Regional trains need to split and shunt into multiple terminals impacting overall window utilisation. Stevedore behaviour has also been questioned by rail operators with suggestions they will often only meet minimum lift requirements and prioritise road over rail due to PBLIS penalties. Although stevedores do not agree with this view, they do believe capped lift rates have not incentivised investment in rail. Together these drivers have contributed to lower rail efficiency.

Drivers of behaviour

## Window sitting

## Regional container trains are not at full capacity, impacting overall window utilisation

## Rail operator behaviour is largely unaffected by PBLIS

## Road is prioritised over rail

Summary of feedback

To avoid losing windows, rail operators may hold more windows than they use, or cancel them at the last minute (48 hours out) when it is too late for another operator to utilise the window. Rail and road operators utilising rail, reported that in some cases rail operators may be sitting on windows at all three port terminals simultaneously. Rail operators report doing this as a contingency plan in the event their volumes require it. These behaviours are driven by the low cost of window booking, cancellation rules and the difficulty in finding a window which aligns with paths through the passenger network. There is also a perception by stevedores and other rail operators that rail operators are holding windows to block out other competitors to use this window. Therefore, rail operators may prefer to keep their windows whilst not utilising them fully. The price of paying for a window is much less than the cost of losing a window and never getting it back. As a result, there is a shortage of windows, however at the same time, utilisation and allocation data from stevedores and other stakeholders show that windows are being underutilised. This also impacts the further take up of rail by road operators and others. Some stevedores would like to see more a more dynamic rail window environment, whereby trains are able to show up and be immediately serviced.

Regional export trains bring exports to the port, but do not load import containers. The splitting and shunting of long regional trains into multiple terminals also takes up window capacity at the port and impacts lift time (up to half the window). This impacts overall port and window productivity, as well as the total number of windows offered or available. Metro rail operators and stevedores suggest regional rail operators run their longer trains to metro IMTs with a transfer on to a dedicated 600m shuttle. This would avoid splitting at the port and drive improved two way loading with the shuttles fully loaded both ways supporting overall rail mode share.

Stevedore lift rates have improved. The introduction of PBLIS hasn't changed how rail operators conduct their business. However, challenges elsewhere in the supply chain, including vessel availability and volume, can have a cascading effect on rail. For instance, rail operators often have to stage their boxes, which leads to increased costs, due to vessels being unavailable or there being uncertainty around their availability.

Rail and road operators suggest that PBLIS has decreased the relative importance of rail and that the balance between shipping lines and landside may not be equal. For stevedores, servicing shipping lines remains the top commercial priority followed by road (as per PBLIS), with rail coming in last. Due to the PBLIS fines, there is a perception that stevedores have shifted their focus towards road. In addition, the capped lift rates for rail are not enough incentive for stevedores to prioritise rail or to encourage innovation for the rail side. Stevedores don't necessarily agree that they prioritise road, however PBLIS has had a commercial effect on their operations. In addition, trucks are more convenient to service over rail.

# Behavioural Theme 4: Arriving within the VBS slot booking time zone has become the top priority for road operators

Truck turnaround times within the port have improved significantly, although the rigidity of the system has created duplication, reduced leniency and increased administration costs. Road operators are hesitant to fully utilise ECPs before a stevedore slot unless TTT and reliability within the ECPs are improved, reducing the risk of a PBLIS penalty. Other internal movements, such as stack runs, can have their efficiencies impacted by the focus on PBLIS truck movements. Penalties and reporting have a direct financial cost as well as an indirect cost associated with more administrative duties.

Drivers of behaviour

## TTT in ECPs not covered under PBLIS

Road operators are reluctant to use ECPs enroute to the port. Whilst port efficiency such as TTT has been improved with the introduction of PBLIS, ECP's are not covered under PBLIS. Therefore, efficiency and reliability within ECPs are still a challenge. This undermines potential benefits since operators do not want to risk missing a slot at the port terminal and receiving a fine due to delays at the ECP. Road operators therefore prefer to make direct trips to the port.

Summary of feedback

## Slot rigidity constrains flexibility

The enhanced monitoring has made supply chain participants less likely to accept delays from upstream since any leniency can cascade into a significant financial penalty. While the VBS allows road operators to book more slots than they need, there is still rigidity around slot times means that often additional resources (i.e. trucks and drivers) are deployed to mitigate the risk of delays, this impacts flexibility and two-way loading. The TMA is being used for early arrivals by some road operators prior to time zone opening, but is typically underutilised once the next time zone is opened with some carriers also still parking outside the port precinct instead. Stevedores are sometimes allowing early arrivals if their capacity allows it to get ahead.

## PBLIS trucks are prioritised over stack runs

There are certain efficiency measures existing outside of PBLIS that are unable to be fully utilised. The introduction of PBLIS and TTT has shifted the focus by stevedores. For instance, PBLIS movements are often given priority by stevedores, over moments that are not regulated under PBLIS including stack runs and DREs. Road operators report that stevedores often reassign resources towards PBLIS trucks, and therefore reducing efficiency of stack runs and DREs.

## Reporting requirements add to administrative impost

All participants are subject to more administrative tasks as a result of PBLIS requirements. Processing financial penalties as well as collecting and verifying data that needs to be reported to Transport for NSW, and PBLIS billing can be onerous and has reportedly increased workload across the chain. Stevedores indicated they have had to hire additional staff for PBLIS billing and reconciliation, and road operators report deploying additional resources for PBLIS administrative tasks.



# Behavioural theme 5: Stevedores have effectively incorporated PBLIS into their commercial and operational decisions and behaviours

Stevedore efficiency has improved in recent years and other stakeholders feel a rebalance of priorities between port and quayside operations has occurred. It is unclear how much of this rebalance is due to PBLIS as opposed to a corresponding increase in competitive pressure over the same period. Despite this, road operators maintain the perception that stevedores still benefit from a power imbalance, although stevedores disagree that this is the case. Road operators also believe that the current TTT delay penalty for stevedores (\$25 / 15 minutes) does not take into account the increased costs of road transport and charges with HPVs, which have occurred since the introduction of PBLIS. Stevedores report that whilst PBLIS has had a positive impact on the overall efficiency of the port at the outset, the growing volumes today have required operational changes in their landside operation regardless to manage the greater throughput now required. .

Drivers of behaviour

## Growth in ship size and vessel exchange has not been accompanied by growth in slots

The minimum number of slots required has remained constant, however, vessels now carry a greater volume of containers. There is a perception that stevedores have not increased slot allocations in line with the increases in vessel size and shipping line availability. This can make it difficult for road operators to be allocated slots within the first or second day of availability and increase the risk of detention charges.

## Meeting but not exceeding minimum rail lift requirements

Trains often leave the port without imports being fully loaded or, in the case of exports, containers are left on the train. Stevedores often only meet the minimum total lift requirements for a rail window with the remaining boxes left at the port. This creates reliability issues for rail freight, which disincentivises operators from relying on rail.

## 'Unforeseen events' provide some leniency, but are seen to be used to mask penalties

There is a perception from road operators that stevedores have a lighter burden of proof when claiming unforeseen events, especially for internal issues. This has created the perception that they use these claims to avoid penalties from the cancellation of slots. There is also dissatisfaction with the level of accountability on stevedores to appropriately resolve technical issues that have resulted in an unforeseen event. Whilst stevedores are able to cancel time zones under PBLIS and are typically following the rules around replacement slots, road carriers report inconveniences with trying to rebook slots and adjust resources.

## PBLIS has improved road efficiency, but structural limitations of rail use persist

Road transport is less complex, and more reliable and practical than rail in most cases. PBLIS has improved TTT and stevedore efficiency and forces stevedores to prioritise road to avoid penalties. Similarly, transport operators will prioritise the avoidance of detention fees by choosing road over rail. The reliability of road over rail is also an important factor based on customer urgency for their container. Stevedores report that their priority is addressing the growing volumes, of which PBLIS is one tool to help manage this. Stevedores also commented that road is more convenient for handling when compared to rail. In addition, some stevedores and other stakeholders have invested in rail infrastructure to provide more efficient servicing.

Summary of feedback

# Behavioural Theme 6: Road operators continue to favour daylight operations

PBLIS has created an outcome whereby the port terminals provide consistent service across 24/6 operations. Some transport operators have adopted longer operating hours to take advantage of this, however, many operators, in particular smaller ones have limited capacity and are not equipped to operate 24/7. Many key points in the supply chain that impact road operations cannot provide consistent 24/7 operations. For instance, many ECPs, customers and their warehouses are only open during the day on weekdays. There are industry wide staffing and resource constraints that also create barriers to shift to a 24/7 operation.

Drivers of behaviour

## Customer and warehouse opening hours are mainly daytime weekdays

Many road operators schedule their runs to deliver to customers and warehouses directly in their opening hours. As a result, stevedores and road operators are reporting huge demand for slots from 6am to 9am on weekdays. However, slots are being underutilised on weekends and at night when many warehouses are closed. Running schedules according to customer opening hours allows road operators to avoid storage costs from using a third party yard, which is especially true for those who do not have their own yards. Smaller operators also report operating during the day time as that's what their volume requires, with some occasionally running at off-peak times when larger volumes come through.

## Resourcing constraints limit ability to operate 24/7

There is a shortage of drivers across the industry, which intensified during COVID-19. Transport operators have been unable to get drivers for day shifts let alone longer or night shifts. With higher weekend and night time rates, operators, especially small ones, are also often unable to afford these additional costs, especially if their volume doesn't require off-peak operations.

Truck operators also note that tunnels are often closed for maintenance at night which impacts their operations. Tunnel closures can cause significant issues which they have to manage regularly, particularly if it impacts multiple routes.

## Majority of boxes are staged

The majority of boxes require staging due to the large volume and PBLIS requirements. Medium and large road operators are able to own their own yards to stage container movements, enabling them to run outside of peak periods and on weekends without incurring additional costs. However, smaller transport operators do not have yards for staging. Therefore, smaller road operators would prefer to go directly to their customers during the day to avoid additional fees. In addition, finding well aligned slots throughout the day to manage volumes can be a challenge and therefore smaller operators may run more cycles.

## ECPs only operate during the day, as they are not captured by PBLIS

Many ECPs are not open 24/7 and as a result operators have fewer options to return boxes if they use slots at night. Road operators working at night are forced to stage their empty boxes if they are unable to access an ECP, which leads to additional costs, and disincentivises night time operations.

Summary of feedback

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