

# Container growth and capacity, Bass Strait



## 1. Context

As part of developing the draft Tasmanian Integrated Freight Strategy, the Department of State Growth undertook additional work examining the Bass Strait container market. This analysis addressed three information gaps: future container demand and capacity; the needs of the time sensitive freight market; and the potential viability of a low-cost, low-frequency shipping service.

This paper summarises the findings of the Bass Strait container demand and capacity analysis.

## 2. Overview of the Bass Strait container market

### Shipping capacity and services

In 2014-15, 149,927 full TEU<sup>1</sup> were exported from Tasmania and 187,141 full TEU imported. Total container volumes, including empty containers, were 220,693 TEU exports and 224,658 TEU imports. Major commodities include agricultural products, retail goods, industrial products and empty containers.

During current seasonal peaks, average utilisation for exports is 88 percent and 86 percent for imports, which is above the target effective operating capacity of 85 percent utilisation. Bass Strait container freight services are provided by Toll-ANL, SeaRoad Shipping and TT-Line. Each provides an overnight service to/from the Port of Melbourne.

Both SeaRoad and Toll have announced plans to increase their vessel capacity. The Tasmanian Government has committed to refurbishing TT-Line's existing ships, and will maintain existing freight capacity as part of this.

Container terminals require sufficient landside space for storage, loading and unloading. Access for larger ships may also be required over the longer term. Container capacity at Burnie and Devonport ports will be 590 000 TEU per annum at the conclusion of the Burnie Port Optimisation project in 2015. Based on forecast growth of 3 percent per annum, this capacity will be reached in around 2023.

<sup>1</sup> TEU refers to TEU equivalent (20 foot containers), and includes both containers and wheeled units moving between Tasmania's northern ports and the Port of Melbourne. Trailers have been calculated on the basis that 1 trailer = 2 TEU.

**Table 1. Summary of Bass Strait container services and capacity by operator**

	<b>Toll-ANL</b>	<b>SeaRoad Shipping</b>	<b>TT-Line</b>
<b>Port</b>	Burnie	Devonport	Devonport
<b>Vessels</b>	MV Tasmanian Achiever MV Victorian Reliance	MV Searoad Tamar MV Searoad Mersey	Spirit of Tasmania I Spirit of Tasmania II
<b>Frequency</b>	6 nights per week	6 nights per week	7 nights per week
<b>Cargo delivery cut off/departure times (Tasmania)</b>	Cargo delivery: 2:00pm – 3:30pm Departure: 5:00pm (4:00pm Saturday)	Cargo delivery: 3:30pm (1:00pm Saturday) Departure: 4:00pm	Cargo delivery: [7:00pm] Departure: 7:30pm
<b>Arrival (Port of Melbourne)</b>	7:00am	8:00am	6:00am
<b>Capacity (one-way)</b>	500 TEU plus general freight	180 to 260 TEU plus trailers	144 TEU (trailers only)
<b>Market share (TEU %)</b>	55	25	20

While all three shipping lines offer overnight services, there is some differentiation in the TT-line service, with a later freight delivery cut-off time, trailer-only cargo and an earlier arrival time into port. This appears advantageous to both freight forwarders in maximising use of their equipment, and to exporters, able to ship product on the day of harvest, unload in Melbourne in time to reach delivery cut off times and to meet connecting flights.

Both Toll and SeaRoad will provide expanded trailer capacity on their new vessels. New vessel configurations will likely see both operators extend their departure times from port allowing for later loadings for producers and easier and quicker access to destination ports.

### Future changes affecting Bass Strait

Proposed and potential market and regulatory changes have the capacity to significantly alter the Bass Strait container market. These changes may see additional capacity delivered into the market, and expanded shipping options for shippers.

These changes include:

- the extent to which planned private sector capacity increases will affect container prices offered by operators;
- as major customers of TT-Line, the extent to which vertically integrated freight forwarders SeaRoad and Toll will transfer volumes from TT-Line to their new vessels;
- the potential for capped capacity on TT-Line over the medium term to encourage existing shippers to use sailings during periods that are currently under-utilised (e.g. weekends and day sailings) or otherwise change operators;
- the nature of any changes to service offerings by SeaRoad or Toll, and the impact of these changes on market share, particularly for time sensitive freight and trailers;
- the impact of a privatised Port of Melbourne on shipping costs and the decisions of shippers;
- the potential for expanded domestic and international service choice for shippers as a result of direct international shipping services to Tasmania, and broader coastal shipping reforms; and

- the market stimulus effect of the recently announced extension to TFES to cover eligible non-bulk goods destined for international markets.

### 3. Approach to the analysis of Bass Strait container demand and capacity

The objective of the analysis is to identify when, and under what circumstances, effective operating capacity across Bass Strait becomes constrained.

#### Overview of approach

- The analysis examines annual and seasonal Bass Strait container demand and capacity to 2034-35, based on industry data.
- Discussions were held with Toll, SeaRoad and TT-Line. These discussions informed both this analysis and development of the draft Tasmanian Integrated Freight Strategy more broadly.
- The analysis adopts the industry standard of 85 percent utilisation in determining effective operating capacity. This refers to the level at which a logistics chain can recover from unplanned outages or unexpected peaks (Aurecon 2013).
- In identifying the point at which effective operating capacity is reached, this analysis uses a seasonal peak (February to June for exports, and October to December for imports), over annual average. This recognises the practical importance of peak period capacity to shippers, and that seasonal capacity issues will emerge – and therefore need to be addressed – earlier in a forecast period.

#### Vessel replacement plans

- The analysis assumes a deadline of 2020 for four new vessels to be operational in the market, delivered as:
  - SeaRoad Shipping: 2 x 436 TEU vessels; 2016 and 2019
  - Toll: 2 x 700 TEU vessels; both in 2018
- However, given there is still uncertainty around replacement plans, the analysis also considers the impact of a failure to invest by either Toll or SeaRoad.
- Consistent with advice from TT-Line regarding its effective operating capacity, the analysis adopts a capped capacity of 98 000 TEU for TT-Line. It is noted that weekend and day sailings are currently significantly under-utilised. While there appears to be real supply chain impediments to their greater use, there may be potential for businesses to evolve to make greater use of these sailings in the future, particularly weekends.
- Toll and SeaRoad have both indicated they will increase trailer space on their new vessels. Toll will include a dedicated trailer deck, increasing its trailer capacity from 35 to around 100 trailers. It is understood the new vessels will also have more efficient loading and unloading arrangements, supporting later loading and departure times.

#### Container growth rates

- There appears to be no consistency in the container growth rates used by operators or port owners, which vary from 1.5 percent to 3 percent.
- It is generally accepted that container volumes grow at a higher rate than GSP. The Department of Treasury and Finance has forecast GSP of 2 percent for Tasmania by 2016/2017.
- Container growth over recent years has been low, with largely negative growth. However, container growth between 2013-14 and 2014-15 approached 2 percent, with growth in full containers over 3 percent for exports and around 2 percent for imports.
- The future stimulus effect of the recent TFES extension and increased production associated with irrigation investment is expected to see an increase in agricultural exports, which is the largest sectoral driver of Tasmania's export task.
- The industry-led FLCT adopted a growth rate of 3 percent. The draft Tasmanian Integrated Freight

Strategy also uses 3 percent.

- The analysis examines a number of different growth rates, noting that the highest growth rate of 3 percent represents the ‘worst-case’ scenario in terms of capacity constraints.

## 4. Summary of supply side changes

This section summarises the impact on Bass Strait capacity as a result of planned investment by SeaRoad and Toll.

The timing of SeaRoad’s second vessel and of both of Toll’s replacement vessels has not been confirmed. However SeaRoad has indicated a second vessel would come on line around three years after the introduction of its first. This would see a new vessel in the third quarter of 2016 and a second in 2019.

Toll has indicated its vessel replacement plans are now three years away. Toll’s vessels have been factored in for the same year, i.e. 2018.

Table 2 shows the impact on total vessel capacity and total TEU across Bass Strait after all four new vessels are operational in the market. Investment is complete by 2020.

Table 2. Bass Strait capacity increases, post-investment by SeaRoad and Toll (2020)		
<b>Existing daily Bass Strait vessel capacity:</b>	1,730 TEU	↑ 830 TEU or 48% increase on existing capacity
<b>With investment:</b>	2,560 TEU	
<b>Existing annual Bass Strait TEU:</b>	540,650 TEU	↑ 254,342 TEU or 47% increase
<b>With investment:</b>	794,992 TEU	

Table 3 shows the step change increase in capacity (one-way only) as each new vessel enters the market. SeaRoad’s initial vessel replacement represents a significant increase due to the small capacity of the existing SeaRoad Mersey.

Table 3. Step change increases, Bass Strait capacity, post-investment by SeaRoad and Toll				
Year	Change	Annual TEU (one way)	TEU/operator	Percentage increase in total TEU (step change)
2015		270,325	Toll: 153,500 SeaRoad: 68,081 TT-Line: 48,744	
2017/18	First vessel, SeaRoad 436 TEU vessel	309,608	Toll 153,500 SeaRoad 107,364 TT-Line 48,744	↑ 15%
2018/19	New Toll vessels 700 TEU vessels	364,428	Toll: 207,000 SeaRoad: 108,684 TT-Line: 48,744	↑ 18%
2019/20	Second vessel SeaRoad 436 TEU vessel	390,544	Toll: 214,900 SeaRoad: 126,900 TT-line: 48,744	↑ 7%
2020/21	All new vessels for a full year of operation	397,496	Toll: 214,900 SeaRoad: 133,852 TT-Line: 48,744	↑ 2%

## 5. Summary of demand side scenarios

This section summarises container demand and capacity analysis under key scenarios.

The analysis uses three growth rates, where 2 percent is considered low to moderate, and 3 percent high.

The scenarios consider outcomes with and without investment by Toll. This focus recognises the importance of Toll's increased capacity to the Bass Strait market. With SeaRoad's first replacement vessel committed, the largest additional increase in capacity will come from Toll (18 percent).

Limited analysis was undertaken on the impact of SeaRoad's plans on container capacity.

The scenarios examined are:

- |   |   |   |
|---|---|---|
| <p><b>1. 3 percent growth rate</b></p> <p>a) with Toll and SeaRoad investment</p> <p>b) without Toll investment</p> <p>c) without SeaRoad investment in a second vessel</p> | <p><b>2. 2 percent growth rate</b></p> <p>a) with Toll and SeaRoad investment</p> <p>b) without Toll investment</p> <p>c) without SeaRoad investment in a second vessel</p> | <p><b>3. 2 percent growth rate (initial two years) increasing to 3 percent</b></p> <p>a) with Toll and SeaRoad investment</p> <p>b) without Toll investment</p> <p>c) without SeaRoad investment in a second vessel</p> |
|---|---|---|

### Summary of findings

- Higher forecast growth (3 percent) and any failure or delay in private sector investment, significantly impact on peak period utilisation.
- With investment by both operators, higher growth of around 3 percent will see peak period operating capacity reach an average of 85 percent in just over 10 years.
- At a lower growth rate of 2 percent, and with planned investment from both operators, capacity is adequate until the early 2030s.
- A failure to invest by Toll significantly impacts on peak period utilisation under all scenarios. If SeaRoad does not invest at all, existing peaks continue and intensify, with demand exceeding effective operating capacity.
- Table 4 summarises the impact on capacity under each of the demand scenarios, based on an average peak period utilisation of 85 percent.

**Table 4. Bass Strait capacity constraint points post-investment (average seasonal peak of 85% reached)**

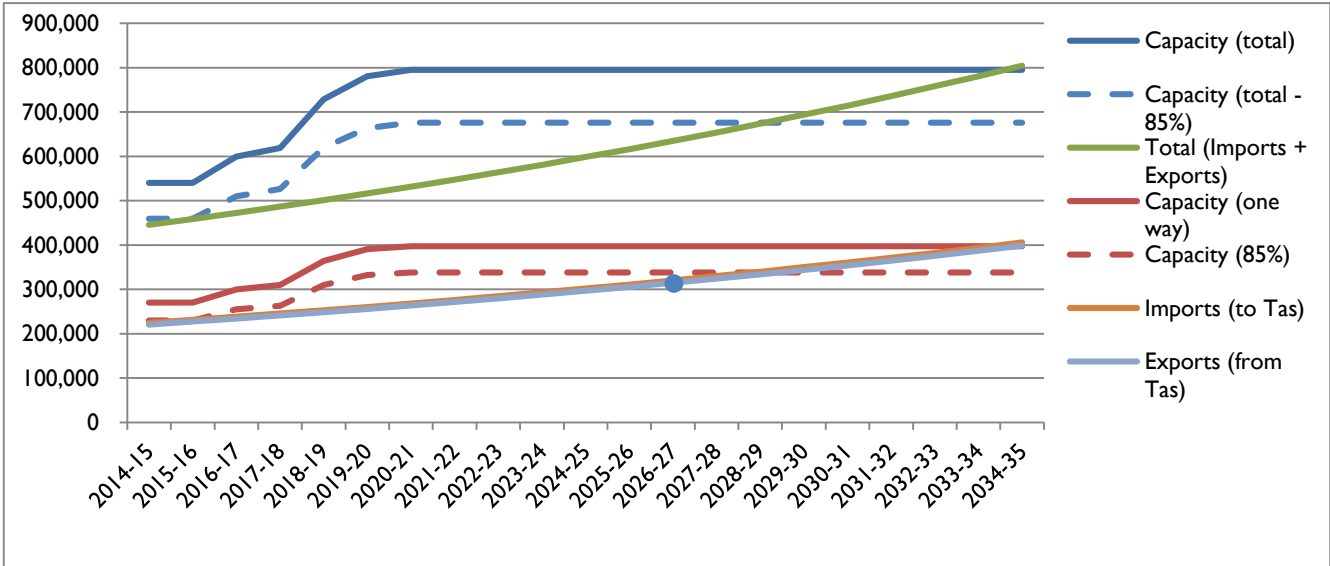
Scenario	Change	Exports	Imports
1 (3 percent growth)	With Toll and SeaRoad	2026/27	2027/28
	Without Toll	2021/22	2022/23
	Without 2 <sup>nd</sup> SeaRoad vessel	2024/25	2025/26
2 (2 percent growth)	With Toll and SeaRoad	2032/33	2033/34
	Without Toll	2024/25	2025/26
	Without 2 <sup>nd</sup> SeaRoad vessel	2029/30	2030/31
3 (2 percent growth, increasing to 3 percent growth)	With Toll and SeaRoad	2027/28	2028/29
	Without Toll	2022/23	2023/24
	Without 2 <sup>nd</sup> SeaRoad vessel	2025/26	2026/27

## I. Scenario I – 3 percent growth<sup>2</sup>

With high forecast growth and planned investment from both SeaRoad and Toll, capacity caters for demand into the late 2020s. If there is no investment by Toll, or SeaRoad do not invest in a second vessel, capacity is constrained much earlier.

### I (a)

Figure 1. Annual container demand and capacity – 3 percent growth rate

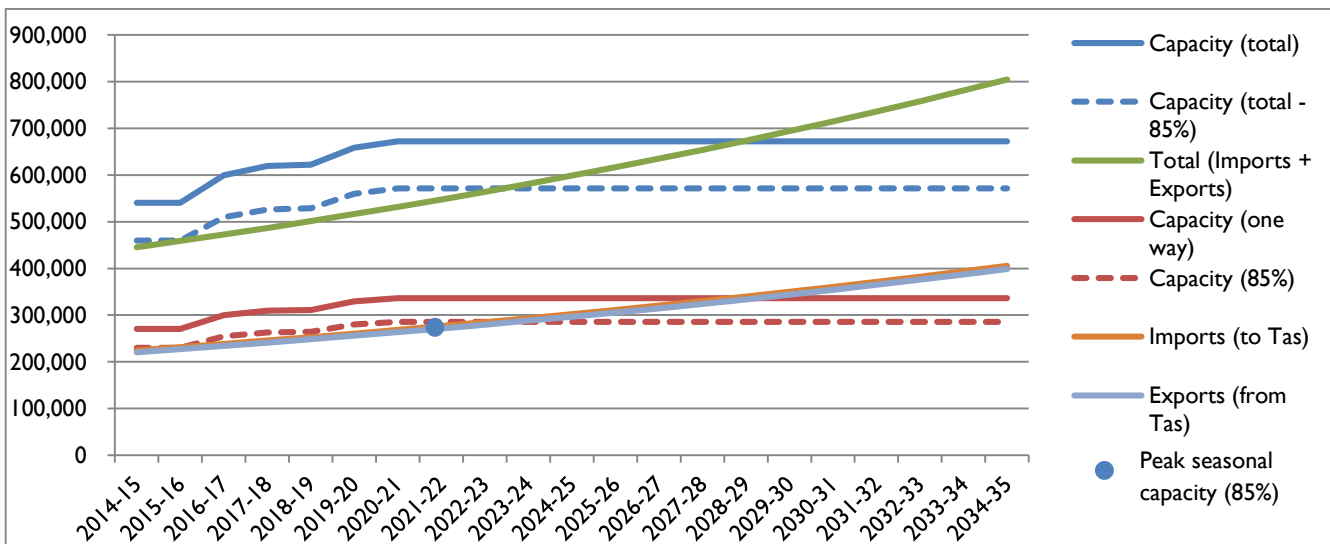


Effective operating capacity constraint points, based on seasonal peaks:

- Exports: 2026/27
- Imports: 2027/28

### I (b)

Figure 2. Annual container demand and capacity - 3 percent growth rate, NO investment by Toll



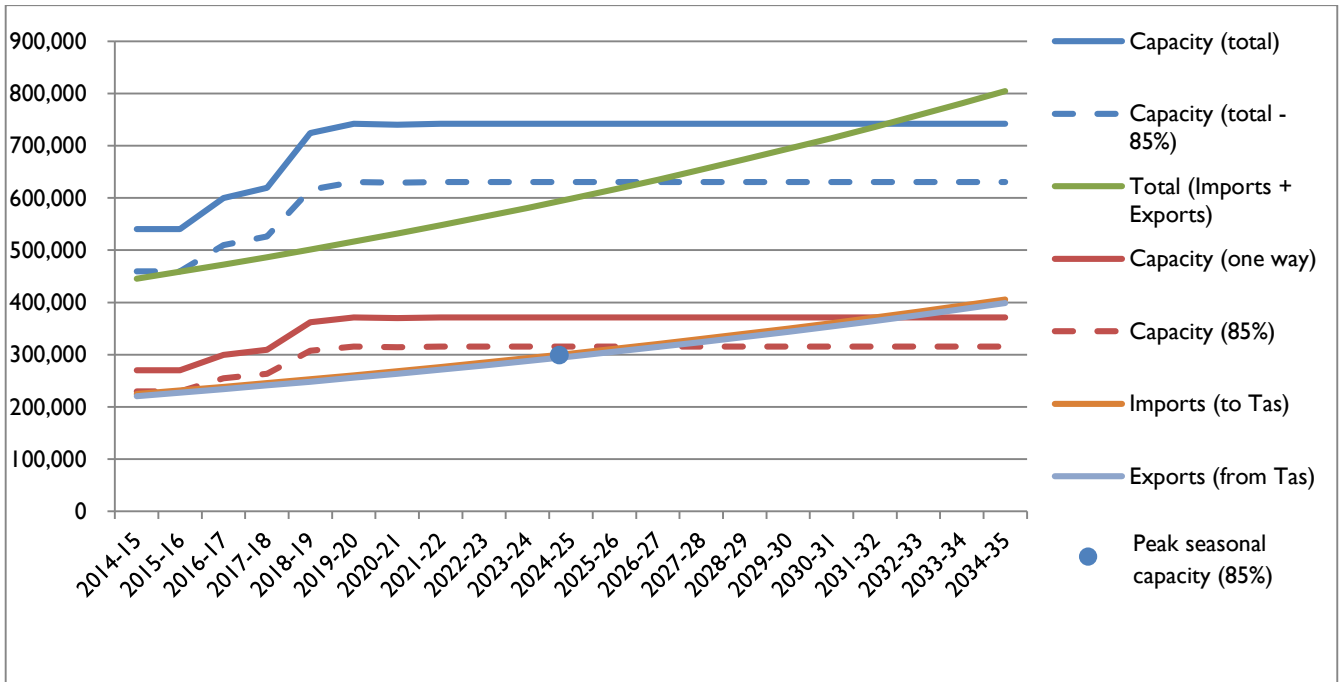
Effective operating capacity constraint points, based on seasonal peaks:

- Exports: 2021/22
- Imports: 2022/23

<sup>2</sup> While all graphs include export and import volumes, total annual volumes are similar, making import volumes difficult to read at this scale.

I (c)

Figure 3. Annual container demand and capacity - 3 percent growth rate, NO investment in second vessel by SeaRoad



Effective operating capacity constraint points, based on seasonal peaks:

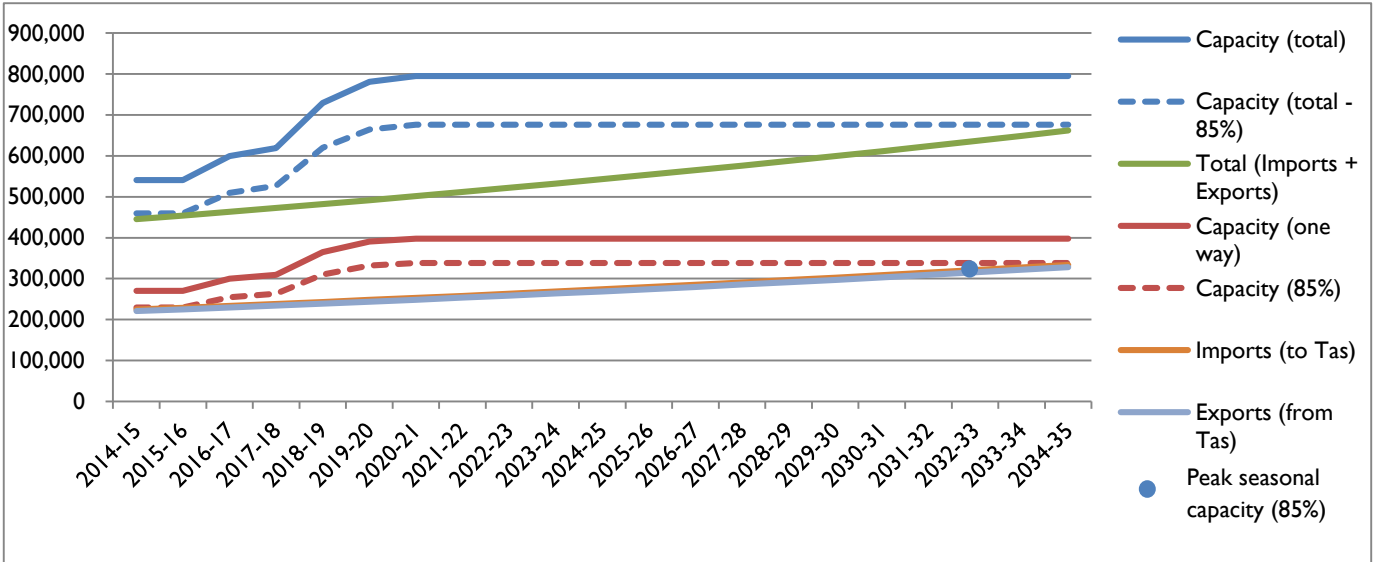
- Exports: 2024/25
- Imports: 2025/26

## 2. Scenario 2 – 2 percent growth

At lower forecast growth and planned investment from both SeaRoad and Toll, capacity caters for demand into the 2030s. Without investment by Toll, capacity is constrained by the mid-2020s.

### 2 (a)

Figure 4. Annual container demand and capacity - 2 percent growth rate

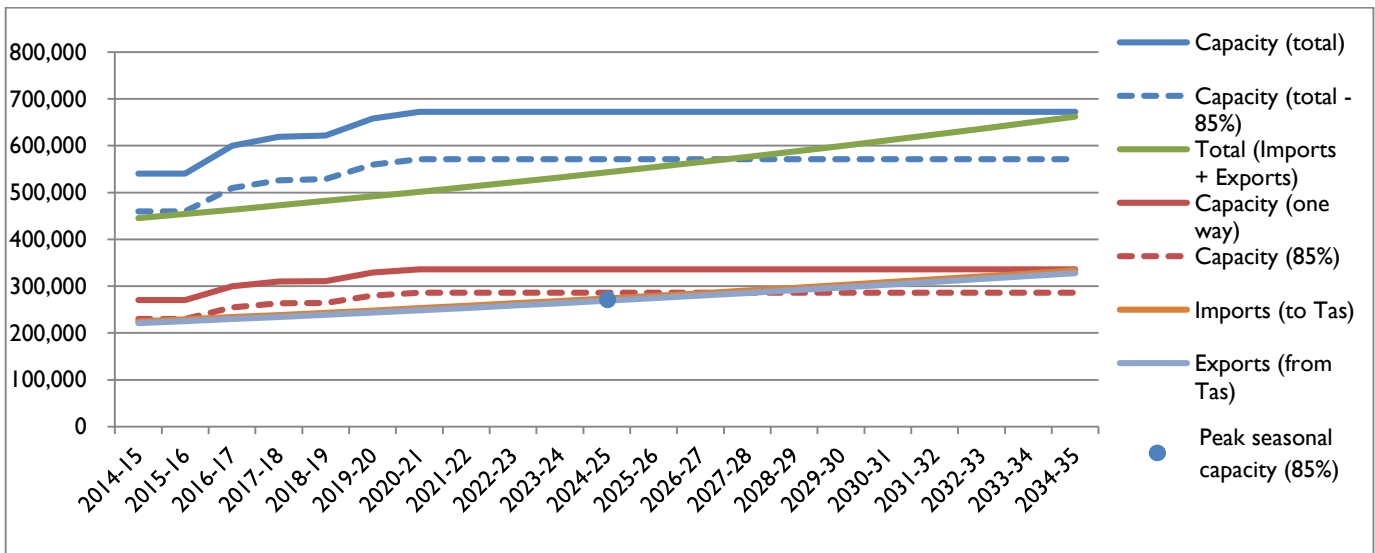


Effective operating capacity constraint points, based on seasonal peaks:

- Exports: 2032/33
- Imports: 2033/34

### 2 (b)

Figure 5. Annual container demand and capacity - 2 percent growth rate, NO investment by Toll



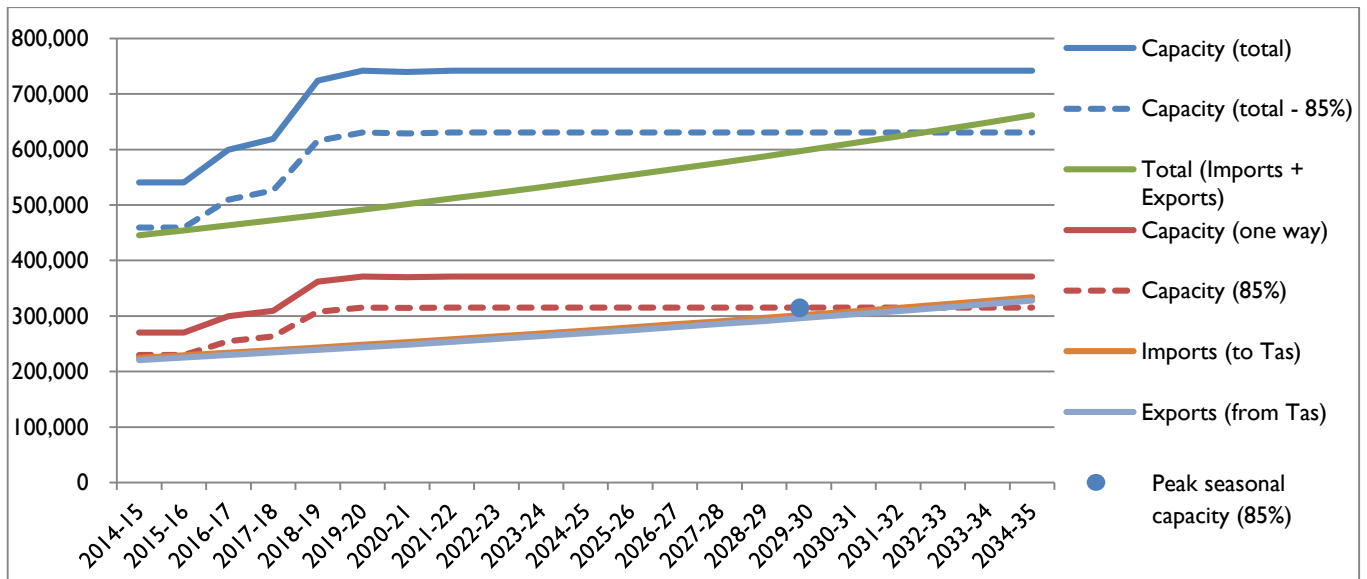
Effective operating capacity constraint points, based on seasonal peaks:

- Exports: 2024/25
- Imports: 2025/26



## 2 (c)

Figure 6. Annual container demand and capacity - 2 percent growth rate, NO investment in second vessel by SeaRoad



Effective operating capacity constraint points, based on seasonal peaks:

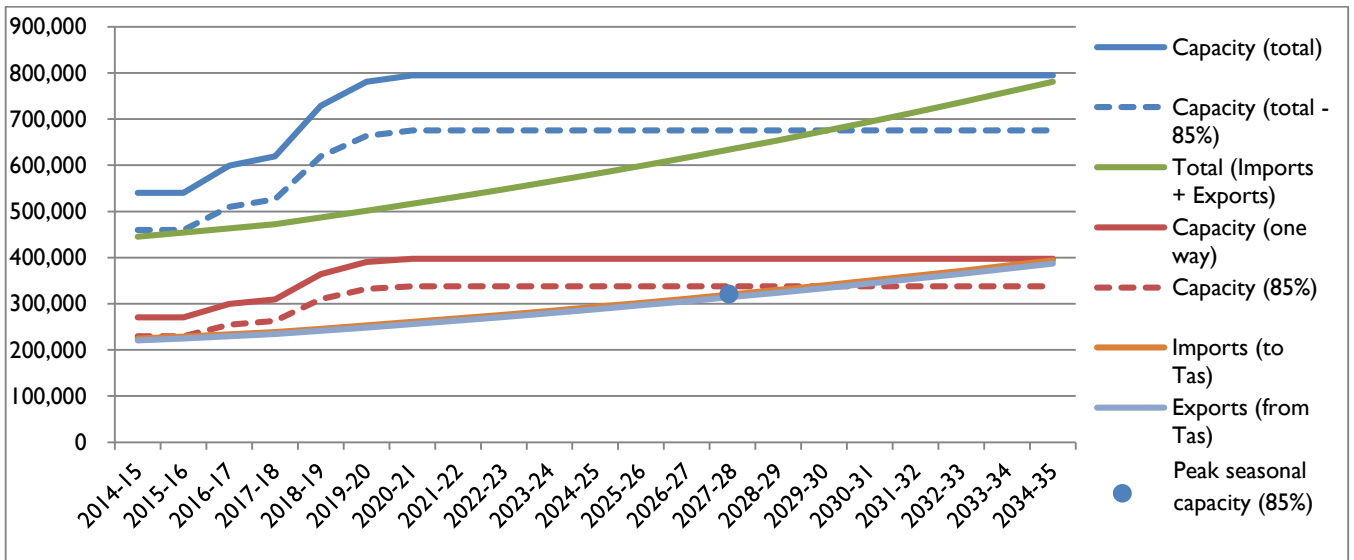
- Exports: 2029/30
- Imports: 2030/31

### 3. Scenario 3 – initial 2 percent growth (2015/16-2017/18) increasing to 3 percent (2018/19-2034/35)

With forecast growth starting at 2 percent then moving to 3 percent and planned investment from both SeaRoad and Toll, capacity caters for demand well into the late 2020s. If there is no investment by Toll, capacity is constrained much earlier.

#### 3 (a)

Figure 7. Annual container demand and capacity - 2 percent-3 percent growth rate

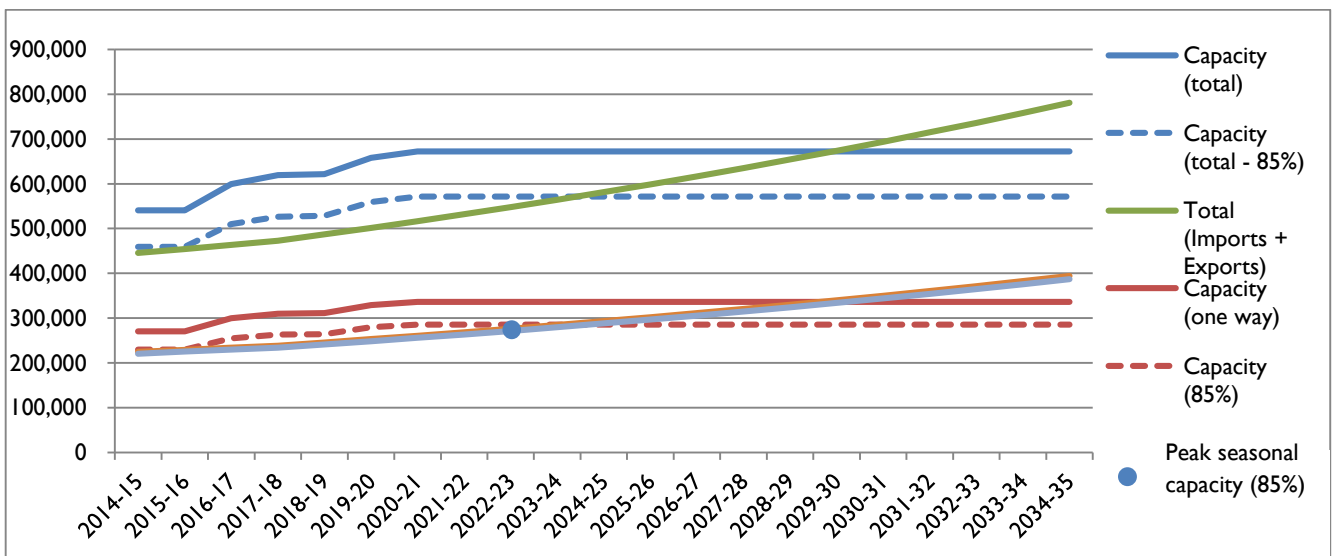


Effective operating capacity constraint points, based on seasonal peaks:

- Exports: 2027/28
- Imports: 2028/29

#### 3 (b)

Figure 8. Annual container demand and capacity - 2 percent-3 percent growth rate, NO investment by Toll

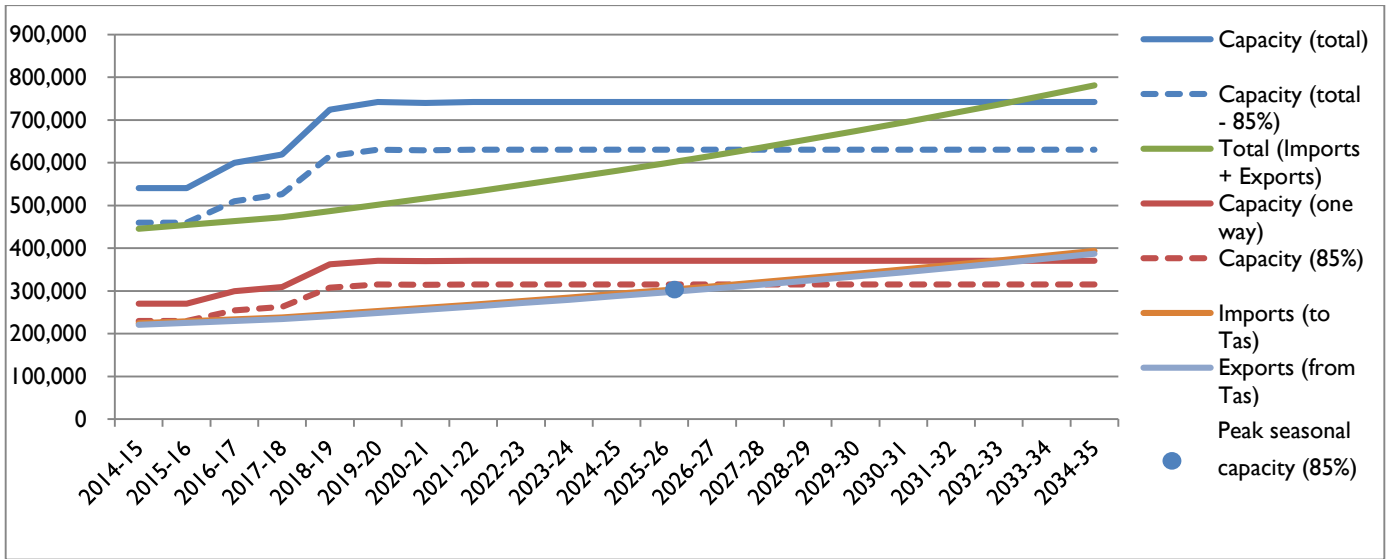


Effective operating capacity constraint points, based on seasonal peaks:

- Exports: 2022/23
- Imports: 2023/24

### 3 (c)

Figure 9. Annual container demand and capacity - 2 percent-3 percent growth rate, NO investment in second vessel by SeaRoad



Effective operating capacity constraint points, based on seasonal peaks:

- Exports: 2025/26
- Imports: 2026/27