

Key trends in the Australian maritime economy

Transport Events 7th Intermodal Asia 2016 Melbourne

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One trend overrides all others -
ship upsizing

This will change the design of our ports
and probably the value of our terminal
operating companies.

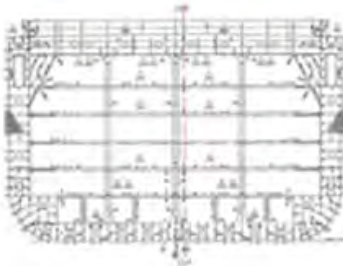
MSC Geneva in Shanghai being widened



REEDEREI NSB

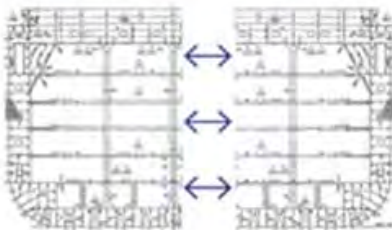
1

sectional view



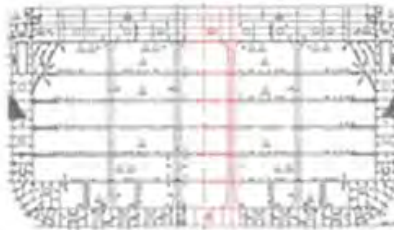
2

pulling apart



3

new middle section



The challenge becomes matching ships and
ports

- the small end of the scale

- Small ships matching the needs of small ports
 - The smallest shipping line in Australia in operation at one end of the scale.

Click the link below for video:

www.transportevents.com/presentations/melbourne2016/DavidBaynemedi1.wmv

The other end of the scale

- In international ports, the key question: is it fit for function?

Are we framing the right questions?

- In Australia we focus on capacity, but to frame the important issues surely we need to ask:
 - Are our exporters and importers gaining or losing against the international competition?

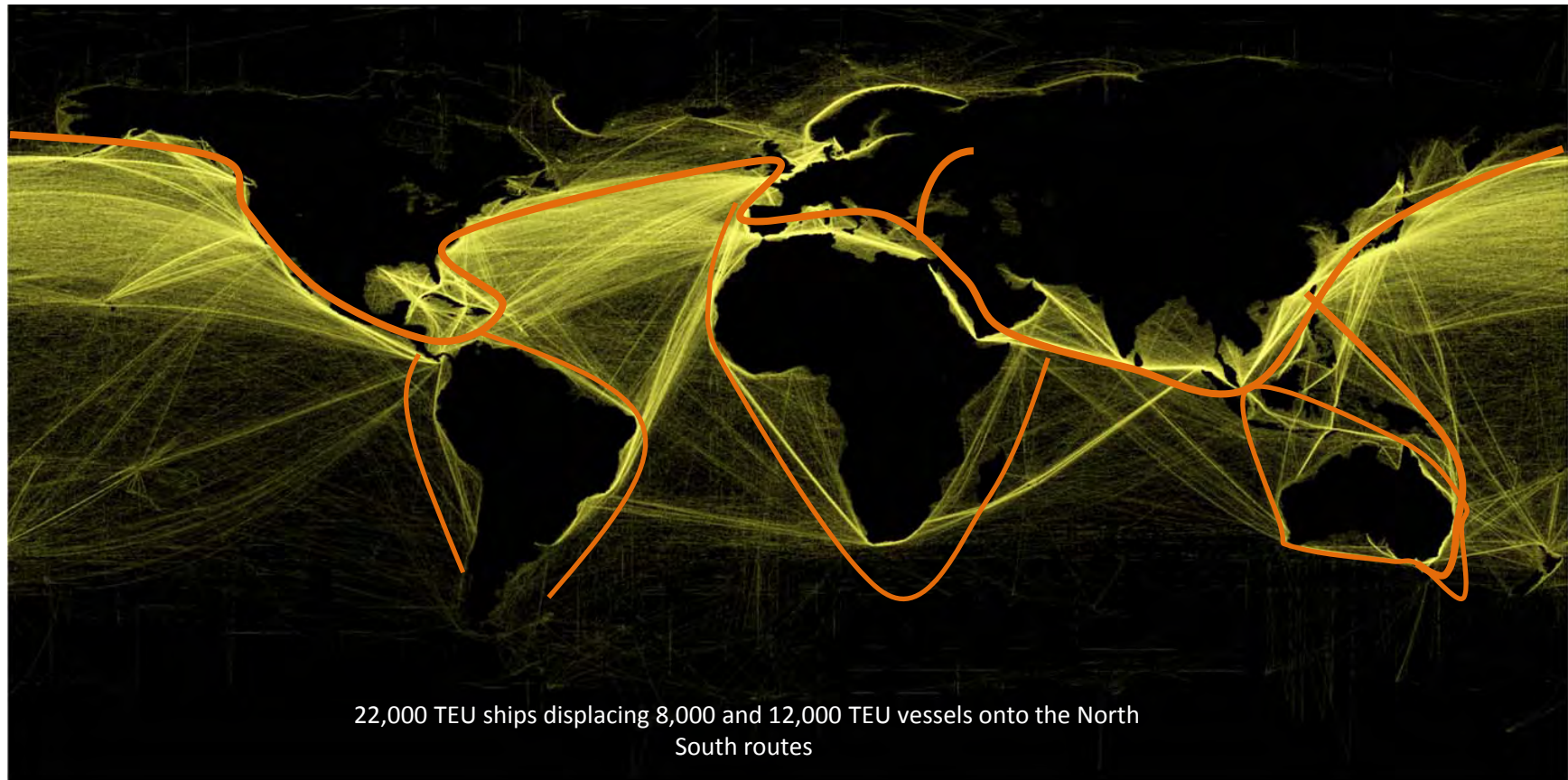
Australian international competitiveness in context

- World shipping density maps
 - East/West and North/South routes

AIS marine traffic density map



Key world trends that matter for Australia's competitive advantage



(Much) bigger ships + Bigger alliances + Vessel cascading

The triple whammy!



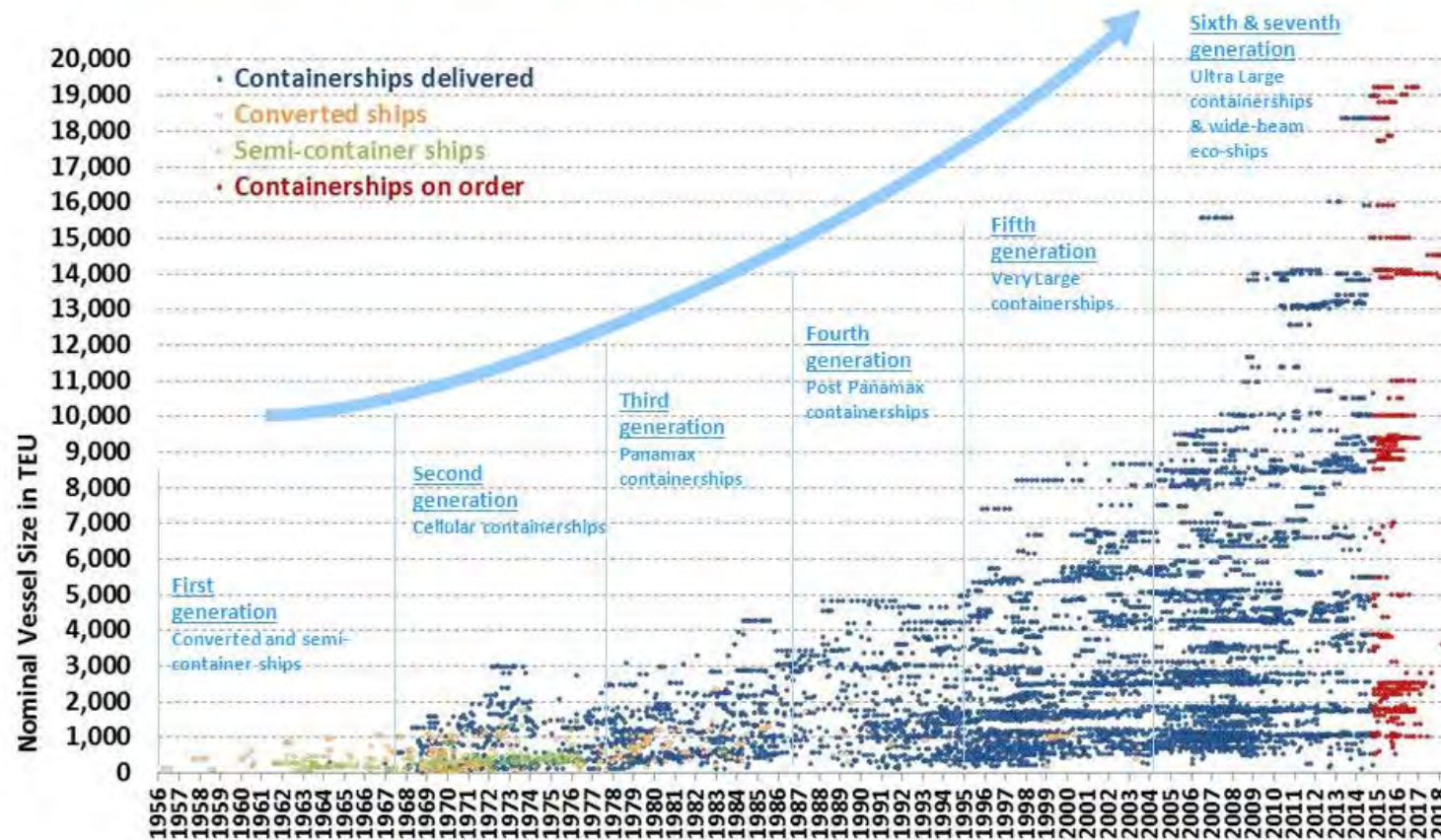
Video clips from Neil Davidson – Rotterdam 2015

Click the link below for video:

www.transportevents.com/presentations/melbourne2016/DavidBaynemedi2.wmv

The pace of upscaling is quickening

Evolution of container ships – the first 60 years

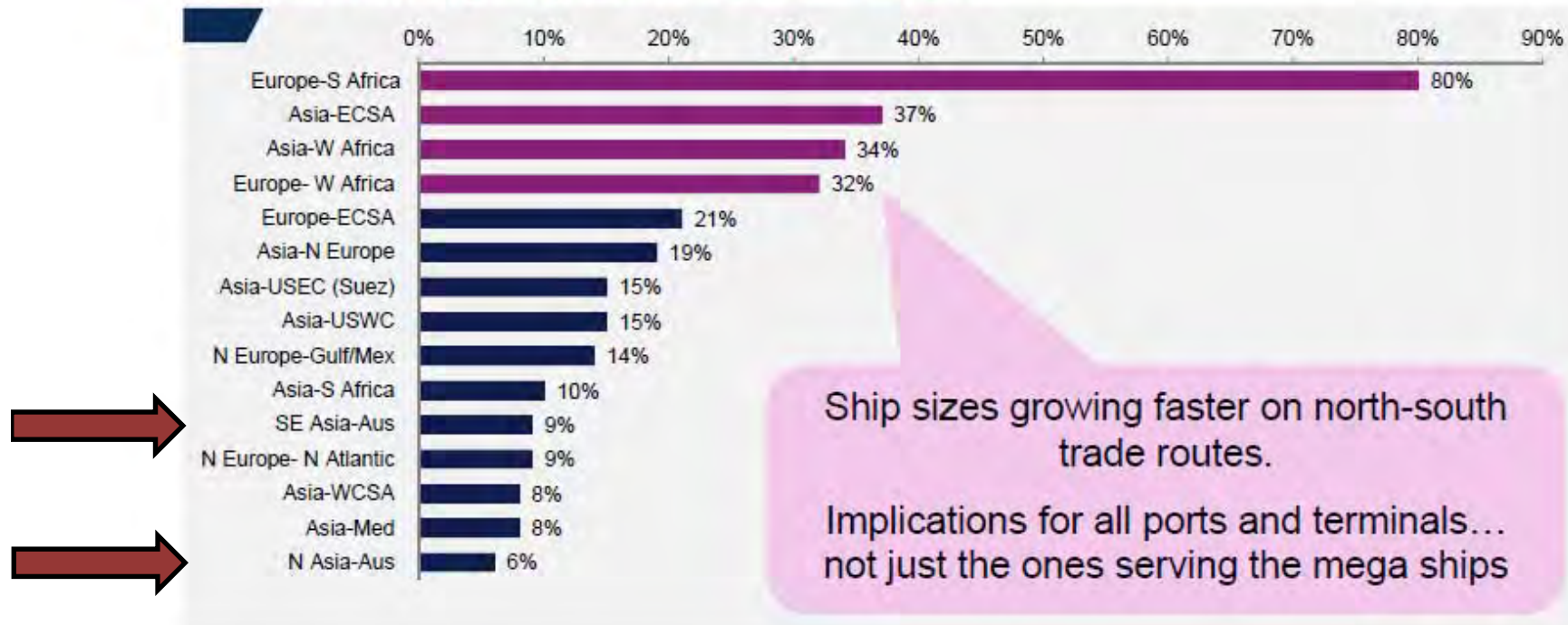


Where does Australia fit into this?

Vessel cascading

Rapid and ongoing increases in largest and average container ship sizes

Increase in average ship size: 1Q 2013 - 1Q 2015

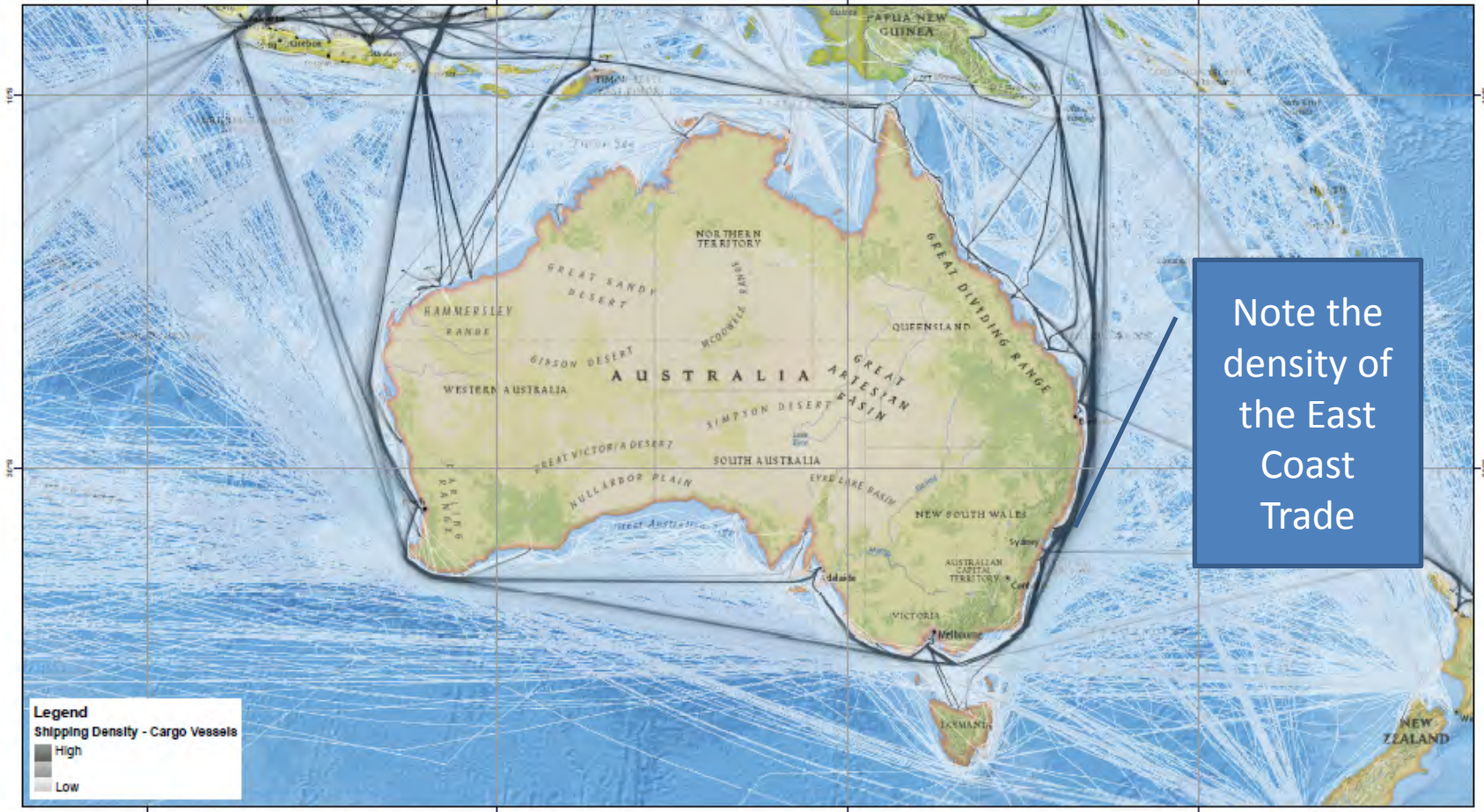


Cargo shipping density maps from AMSA and the Department of Defence

Click the link below for video:

www.transportevents.com/presentations/melbourne2016/DavidBaynemedi3.wmv

SHIPPING DENSITY MAP CARGO VESSELS - 2014



Note the density of the East Coast Trade

Legend
Shipping Density - Cargo Vessels

- High
- Low



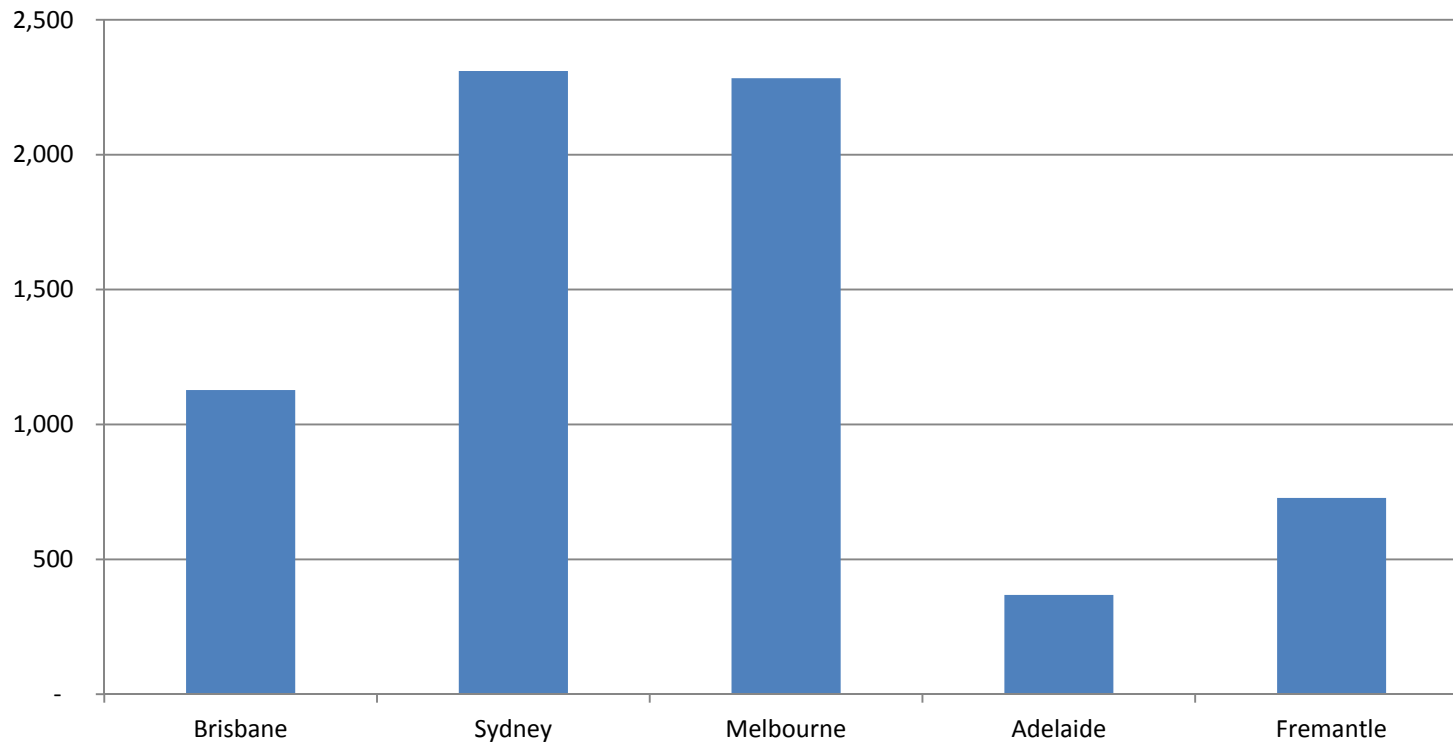
Author: R.Henderson
Date: 18/03/2016
Map name: C10D411G778_spatial_area_density_map_request
AMSA Reference: C10D411G778

Base Map: National Geographic World Map
The 2014 shipping density layer has been built from data obtained from AMSA's Craft Tracking System database.

Coordinate System: World Mercator
Projection: Mercator
Datum: WGS 1984
False Easting: 0.0000
False Northing: 0.0000
Central Meridian: 130.0000
Standard Parallel 1: -60.0000
Unit: Meter

The cargo data and the density maps correspond

TEUs by port 2014 - 2015



It is the East Coast ports that will determine ship upscaling

The three East Coast ports will determine the pace of upsizing

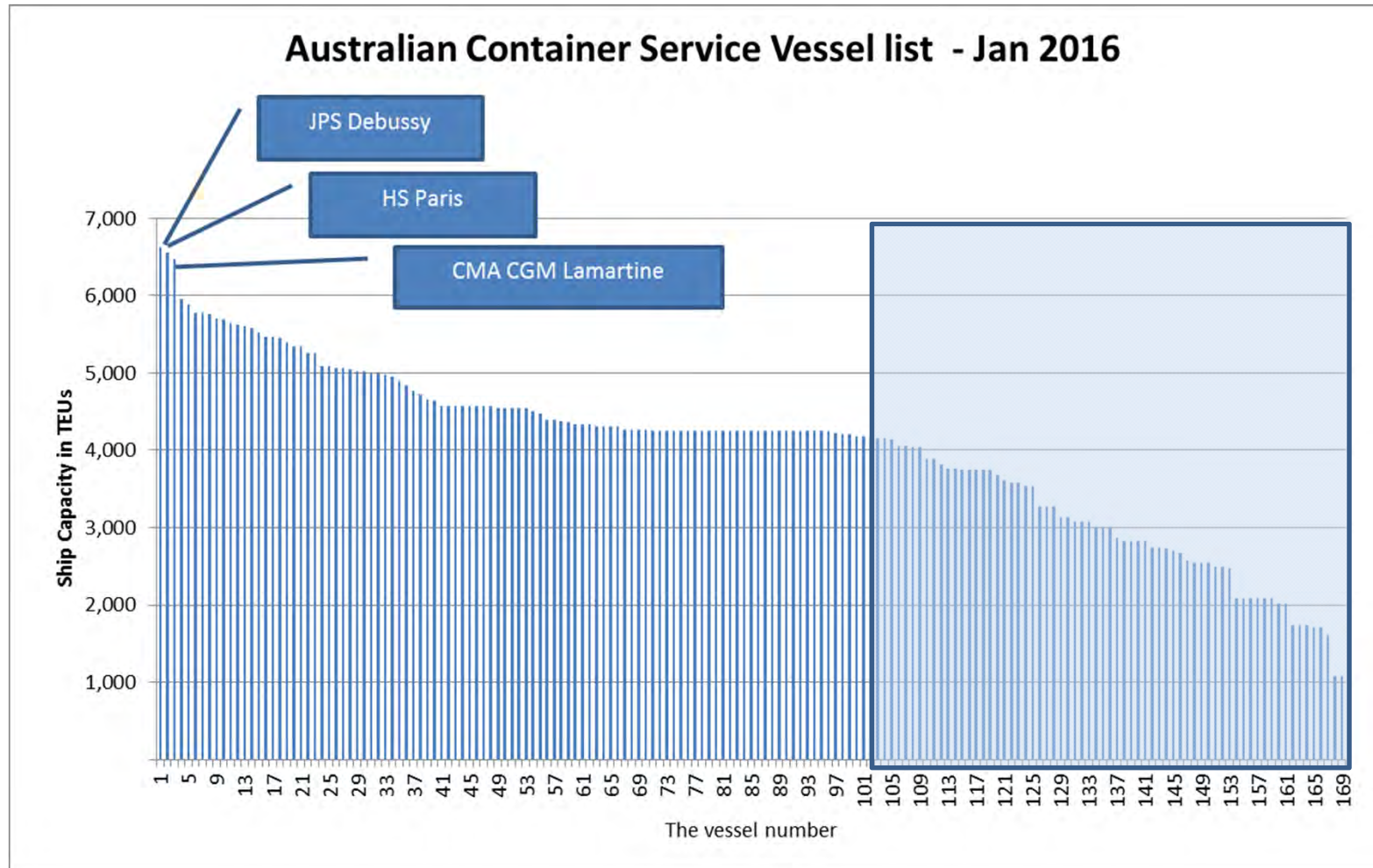


This means that even if Adelaide and Perth are not ready there will still be a demand for larger ships.

Australian container service vessel list - Jan 2016 (Drewry)

Service name	Vessel	Operator	Teu Capacity	Age	LOA
MSC - Australia Express	JPS Debussy	MSC	6,627	15	300.4
OOCL/CSCL/TS Line - ACE/AEA1/ACE	HS Paris	CSCL	6,552	4	299.9
CMA CGM/NYK/APL/ANL - AAX	CMA CGM Lamartine	CMA CGM	6,477	6	299.8
MSC - Australia Express	MSC Shanghai	MSC	5,962	11	275.0
OOCL/CSCL/TS Line - ACE/AEA1/ACE	OOCL Oakland	OOCL	5,888	9	280.5
CMA CGM/NYK/APL/ANL - AAX	CMA CGM Chopin	CMA CGM	5,770	12	277.3
CMA CGM/Hapag-Lloyd/ANL - EAX/New NEMO	CMA CGM Bellini	CMA CGM	5,770	12	277.3
OOCL/CSCL/TS Line - ACE/AEA1/ACE	OOCL Shanghai	OOCL	5,762	17	277.4
CMA CGM/NYK/APL/ANL - AAX	CMA CGM Wagner	CMA CGM	5,700	12	277.0
OOCL/CSCL/TS Line - ACE/AEA1/ACE	Xin Chi Wan	CSCL	5,688	12	279.9
OOCL/CSCL/TS Line - ACE/AEA1/ACE	OOCL Chicago	OOCL	5,642	16	277.4
OOCL/CSCL/TS Line - ACE/AEA1/ACE	Xin Ning Bo	CSCL	5,618	13	279.6
MSC - Australia Express	MSC Carolina	MSC	5,606	11	275.0
Cosco/ANL - SAS	COSCO Dalian	Cosco	5,576	11	279.0
CMA CGM/NYK/APL/ANL - AAX	Los Angeles Trader	NYK	5,527	9	276.2
CMA CGM/NYK/APL/ANL - AAX	Wide India	NYK	5,466	1	255.0
CMA CGM/Hapag-Lloyd/ANL - EAX/New NEMO	Wide Bravo	Hapag-Lloyd	5,466	2	255.0
Cosco/ANL - SAS	Chuan He	Cosco	5,446	19	280.0
Maersk/Safmarine/MSC - Boomerang/New Wallaby S	Clemens Schulte	Maersk	5,400	2	255.0
MSC - Australia Express	Box Hong Kong	MSC	5,344	21	276.0
MSC - Australia Express	Box China	MSC	5,344	20	276.0
Cosco/ANL - SAS	COSCO Hamburg	Cosco	5,250	15	280.0
Cosco/ANL - SAS	COSCO Shanghai	Cosco	5,250	15	280.0
MOL/OOCL/PIL - Bight loop (AAA2/AAT/FA2)	MOL Emissary	MOL	5,087	7	294.1
OOCL/PIL/Yang Ming/MOL - Torres loop (AAA1/AAB/A	MOL Emerald	MOL	5,087	7	294.1
CMA CGM/Hapag-Lloyd/ANL - EAX/New NEMO	Pinehurst Kontor	Hapag-Lloyd	5,060	12	294.1
CMA CGM/Hapag-Lloyd/ANL - EAX/New NEMO	Box Emma	CMA CGM	5,059	12	294.1
PIL/APL/ANL/NYK/OOCL/CMA CGM - NZS/NZE/NZX/NZS, ANL Waratah		ANL	5,047	11	294.1
Hamburg-Sud/Hapag-Lloyd/APL/HMM - FA2/CAS	CSL Manhattan	Hapag-Lloyd	5,018	11	294.2
OOCL/Cosco/NYK/K-Line/MOL - AU2/NAE/ESACO/AEA3	MOL Earnest	MOL	5,014	9	294.1

TEU capacity of all container vessels on Australian routes

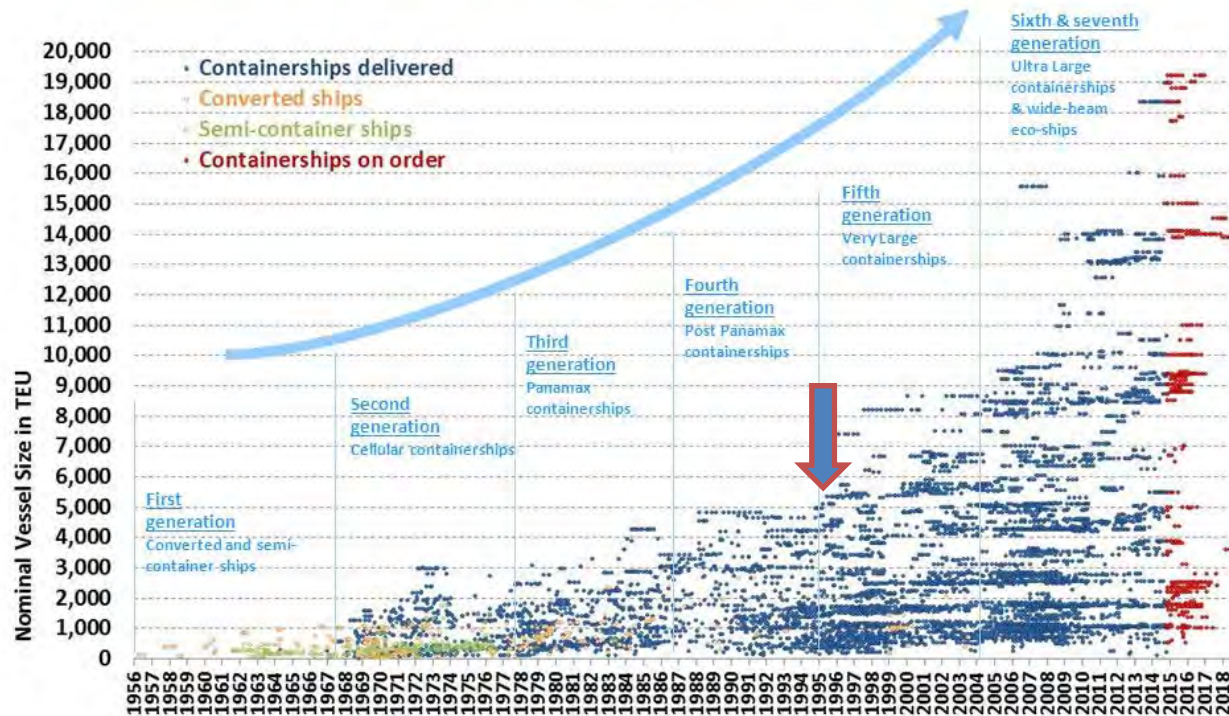


Source: Drewry Maritime Research

Where does Australia fit into the world scene?



Evolution of container ships – the first 60 years



Traditional ports out of the game?

More than 30 ports on secondary trade lanes served by ships of 8-10,000 teu

Don't forget:
It's all about the
cargo!

Australia is missing from the list

Latin America

Antofagasta
Buenaventura
Buenos Aires
Callao, Coronel
Iquique
Itajai, Itapoa
Montevideo
Navegantes
Paranagua
Puerto Angamos
Rio Grande
San Antonio
San Vicente
Santos
Sepetiba
Valparaiso

Black Sea

Constanza
Ilychevsk
Odessa

Adriatic

Koper
Rijeka
Trieste

Africa

Coega, Durban
Port Elizabeth
Abidjan, San Pedro
Lome, Lagos
Port Louis

Source: Drewry Route Capacity Database

Australia not on the list - why?

Is it because of not enough cargo ?

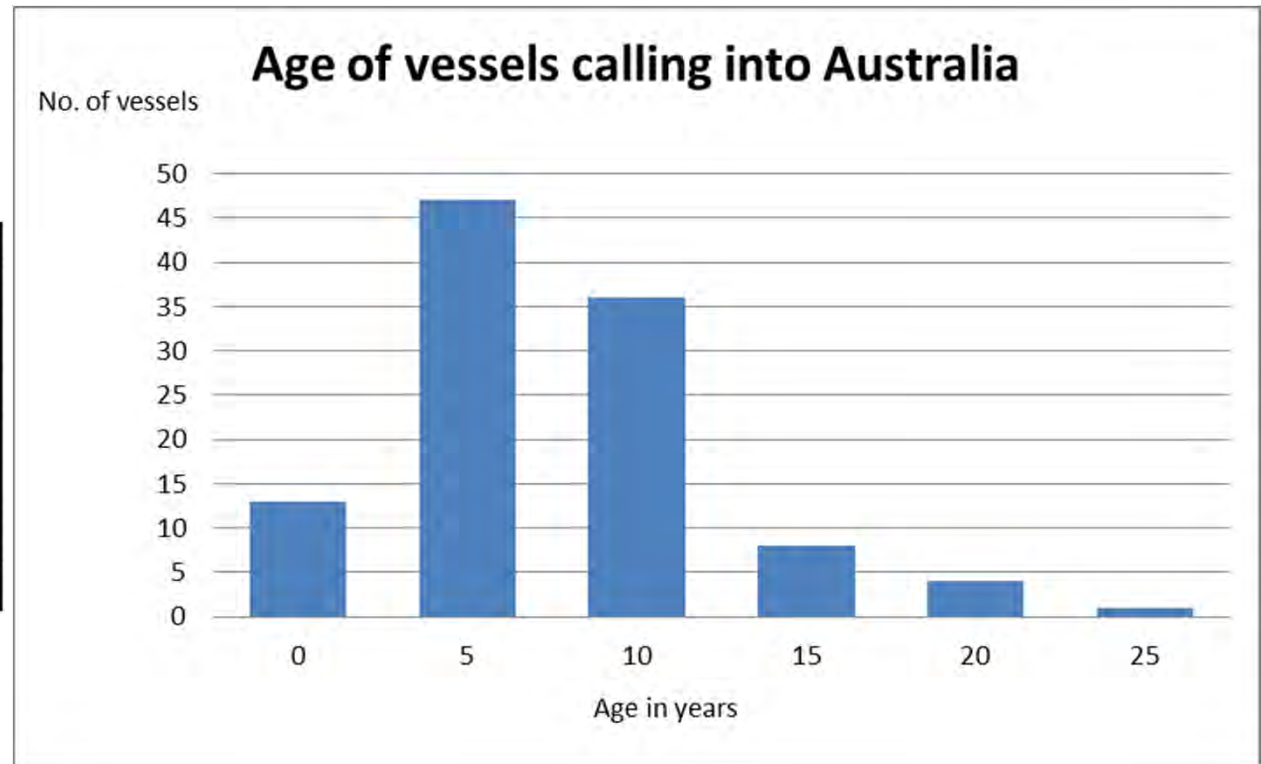
Australia has 2 ports in the top 100 container ports of the world (Melbourne at 60 and Sydney at 72) yet smaller ports than ours attract larger ships.

What is causing our disadvantage?

Are we being serviced with older vessels when competing economies (S. Africa, Argentina and Brazil) benefit from the newly built ships with lower freight costs and better environmental characteristics?

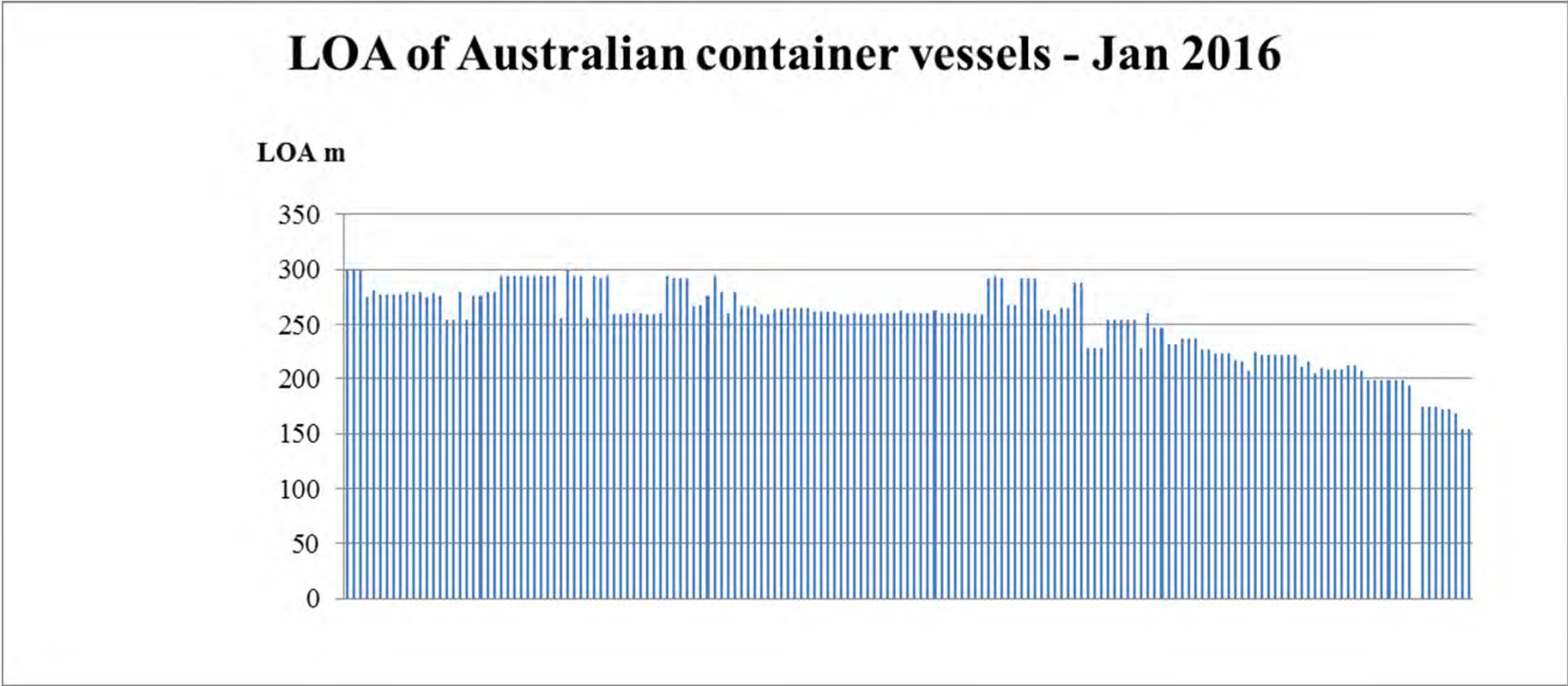
Australian container service vessels list - age profile

Age	Number of vessels
0	13
5	47
10	36
15	8
20	4
25	1
Average age in years	10.3



Source: Drewry Maritime Research

Are ships constrained by Australian ports?

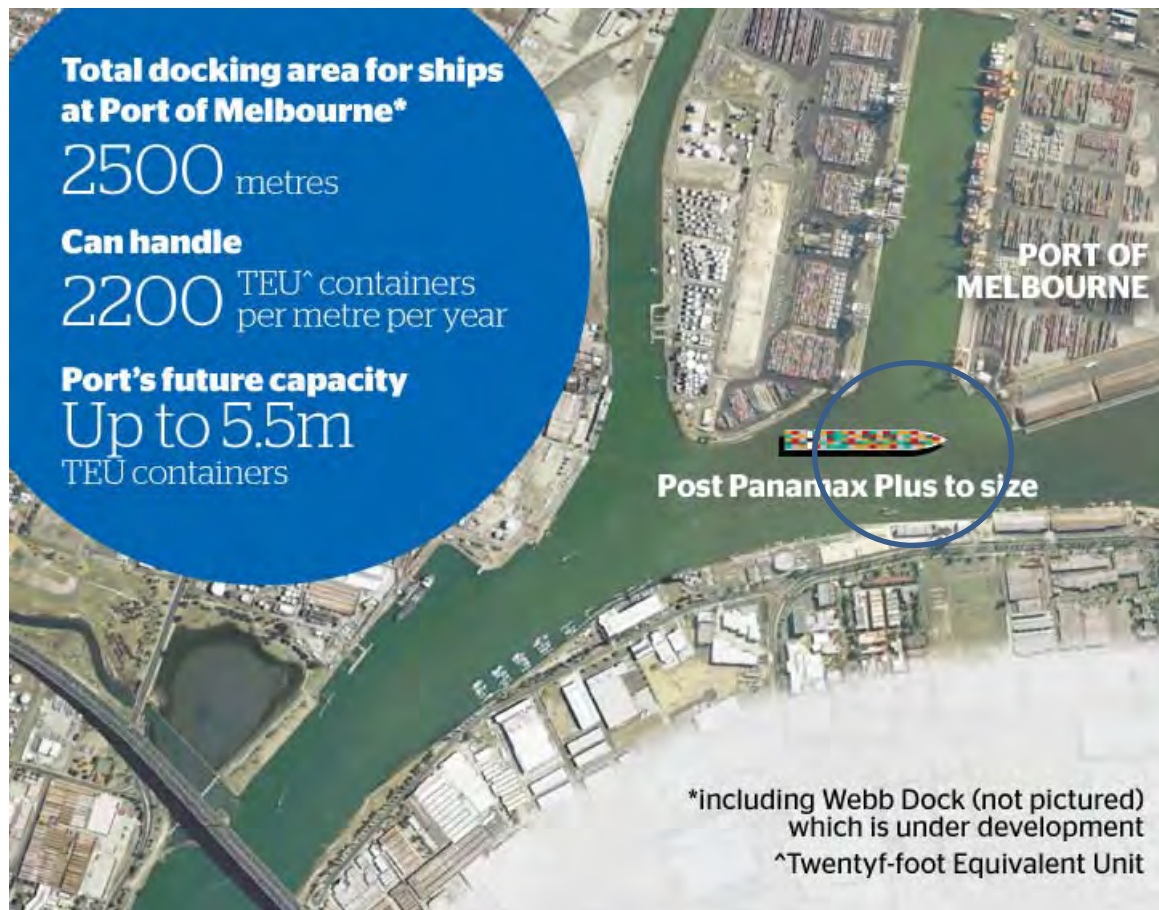


Source: Drewry Maritime Research

Ship length (LOA) constrains upsizing in Australia

- Sydney ship length is not an issue;
- Brisbane has a swing basin of 492 m;
- Whereas, ships in Melbourne's swing basin are limited to 300 m

The swing basin constraint



A tight turning circle even for current ship sizes.

Larger ships need greater reliability

The Institute for Supply Chain and Logistics noted that the largest ships currently visiting Swanson Dock can only use the turning basin during daylight hours, and that berth length prevents two of the largest ships currently visiting from being simultaneously unloaded. It also submitted that it is reasonable to expect that post-Panamax ships of 10,000 TEU will come to Australia.⁷¹

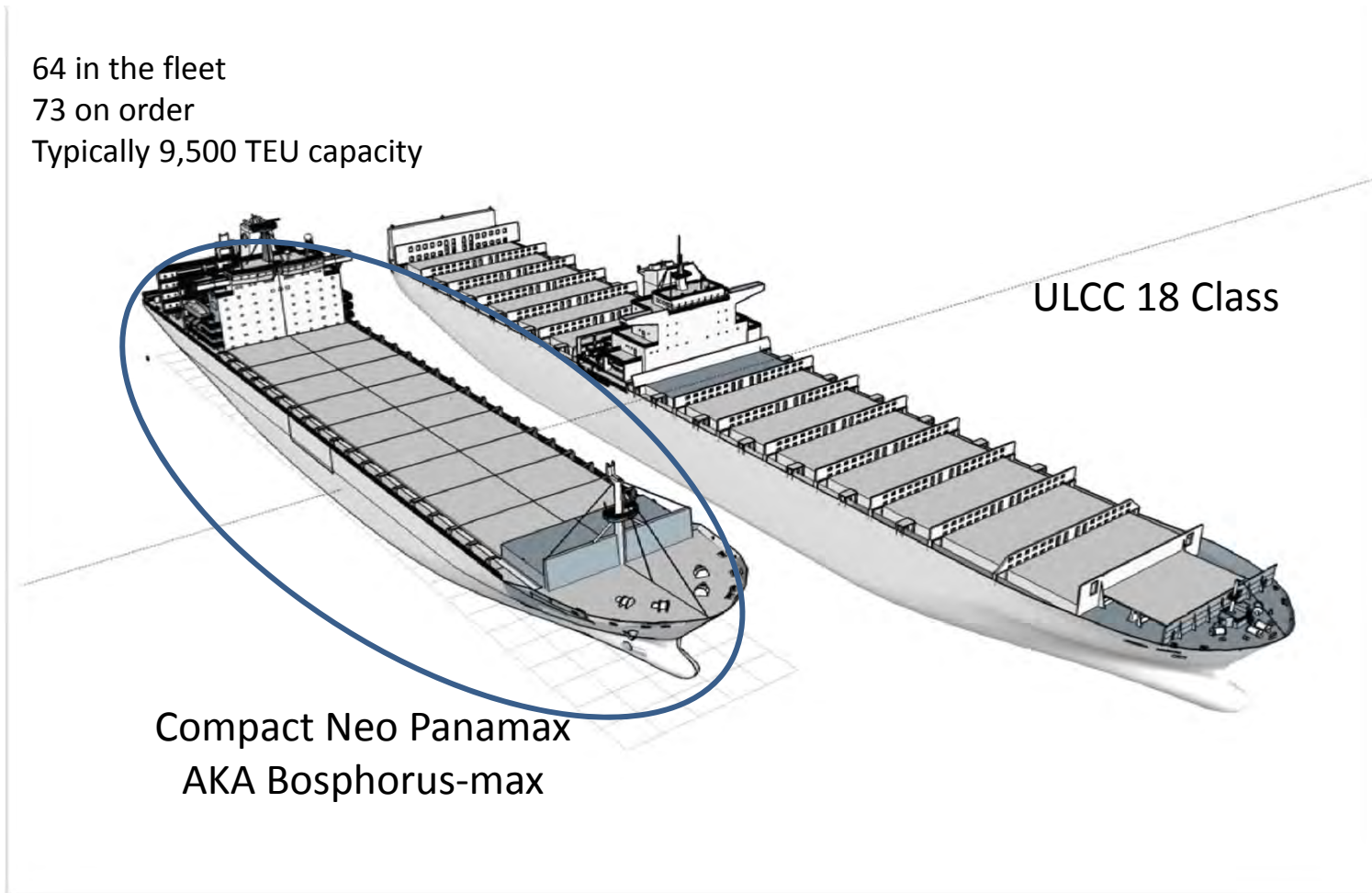
Melbourne's critical constraints

Constraints:

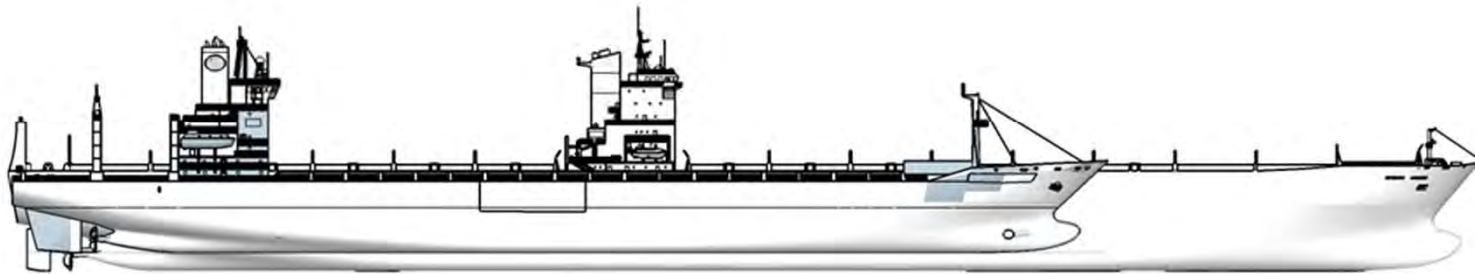
- The Harbour Master's instructions limit vessels to 300 m LOA;
- Approach channels are limited to 14 m and 0.6 m tidal assistance (DUKC);
- Beam restrictions within Swanson Dock depending on conditions;
- Westgate Bridge 50 m plus 2 m exclusion zone;
- Webb Dock could possibly handle larger vessels but the design vessel for the capacity upgrade has been limited to ships of 300 m LOA (some 6,500 TEU); and
- Port Phillip Heads while having 17 m draft, is difficult due to currents and likely to restrict the ships to the fifth generation of post Panamax ships to 6,500 TEU.
- But there is hope - the Bosphorus-max.



Two of the most common ship sizes on order



Two of the most common ship sizes on order

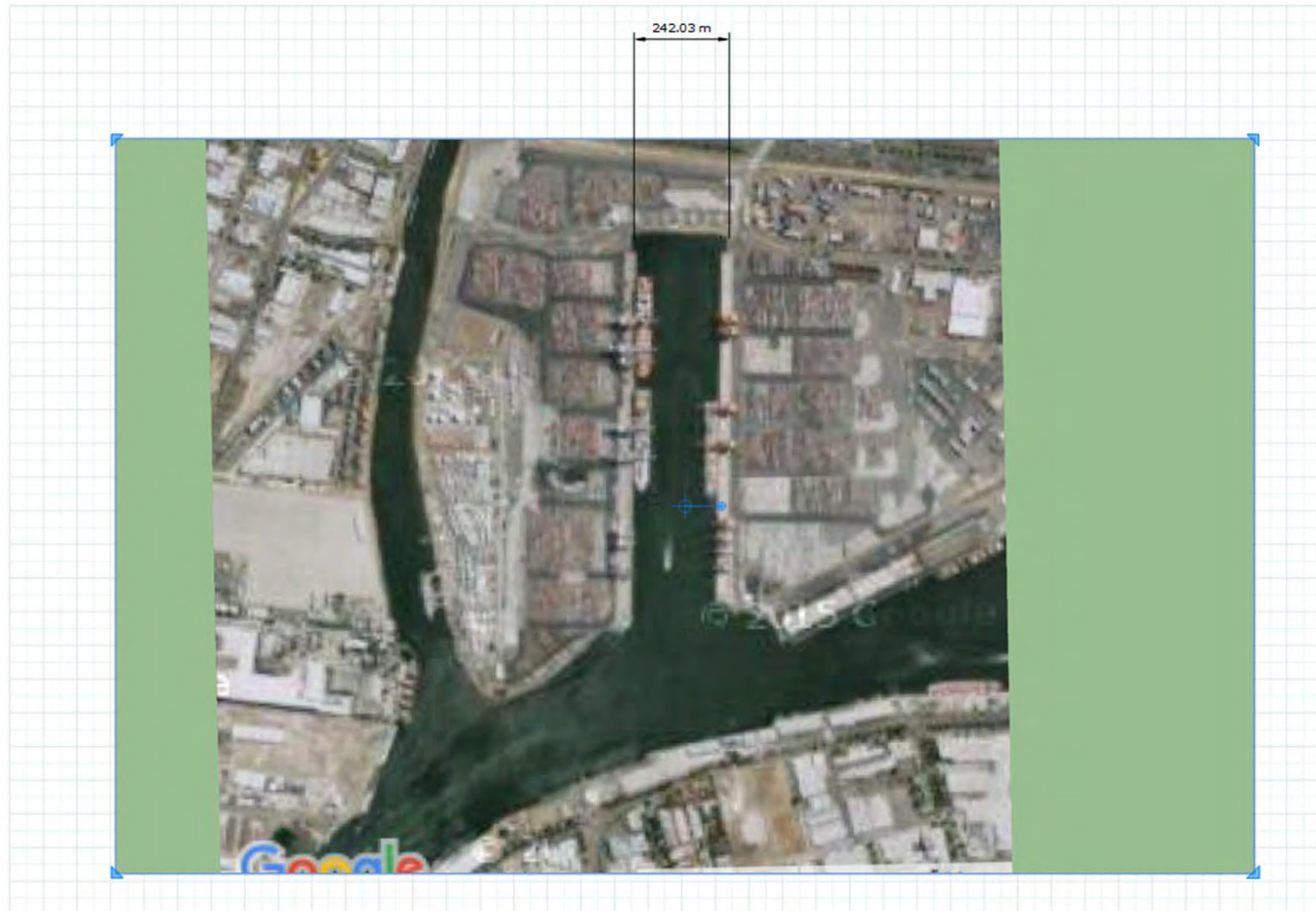


Bosphorus-max
LOA of 300 m
Beam of 49 m
Draft of 14.5 m

ULCC 18 Class
LOA of 399 m
Beam of 59 m
Draft of 15.5 m

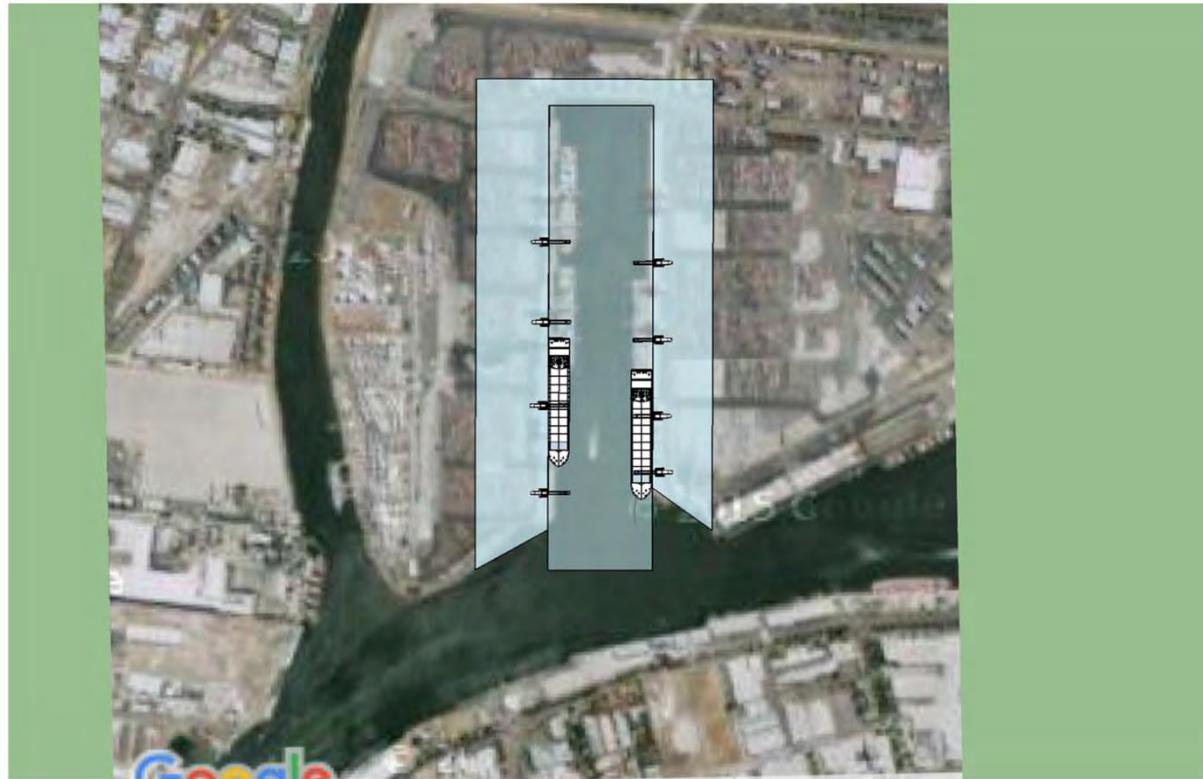
What does the Bosphorus-max look like in
Melbourne?

Step 1- create a quick sketch using Google and Sketchup

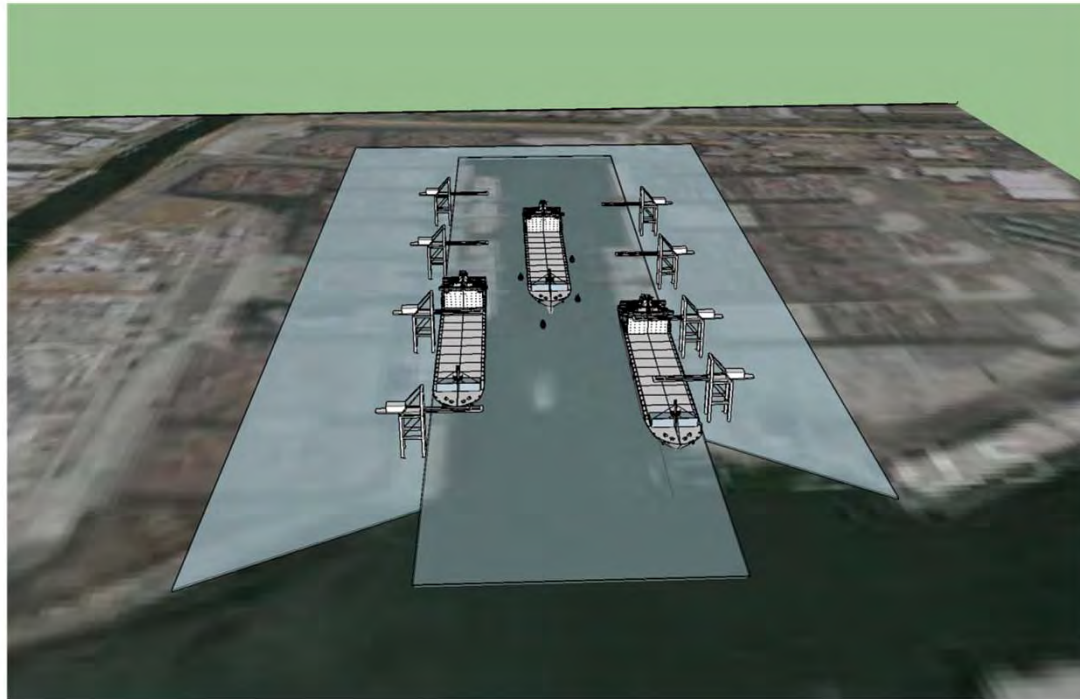


Source: Moorways Pty Ltd

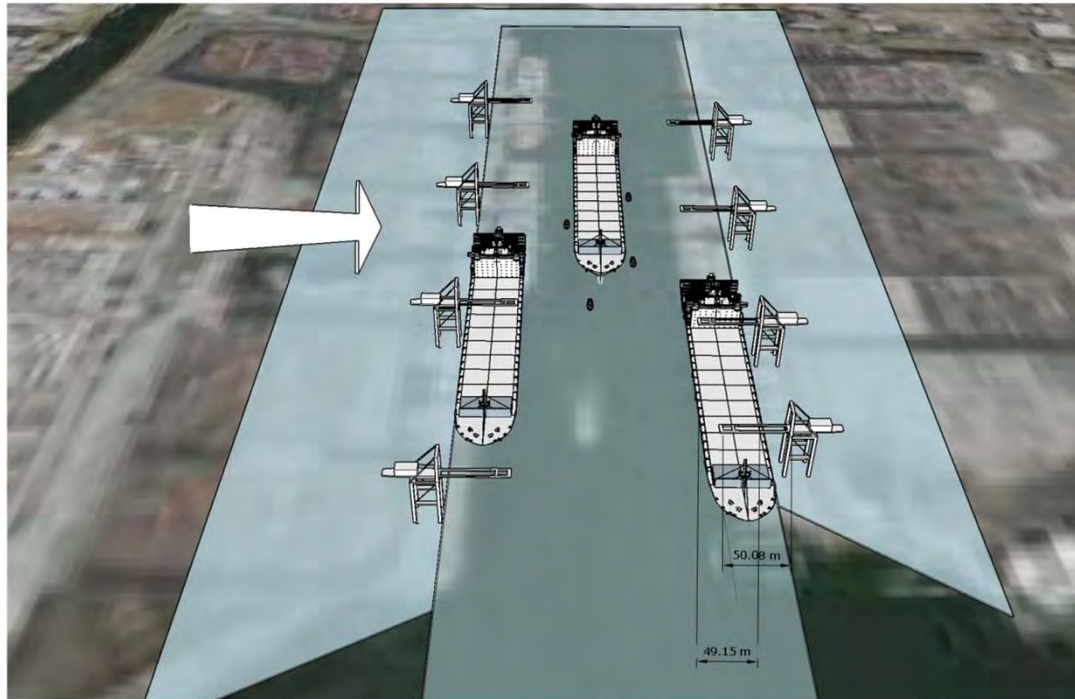
Step 2 - scale the cranes and place Bosphorus-max into the port



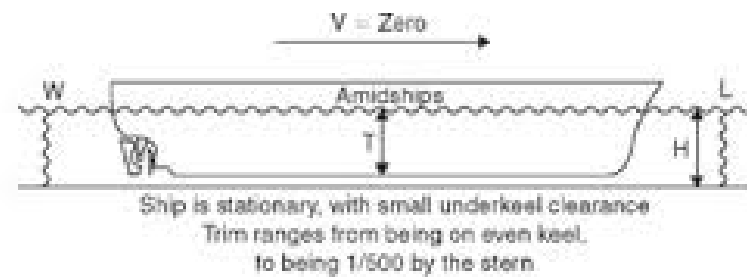
Step 3 - focus in to check from an ISO position



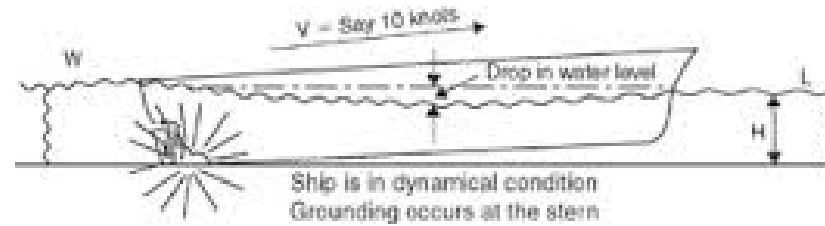
Step 4 - bring in a typical Pilot's (Harbour Master's) concerns



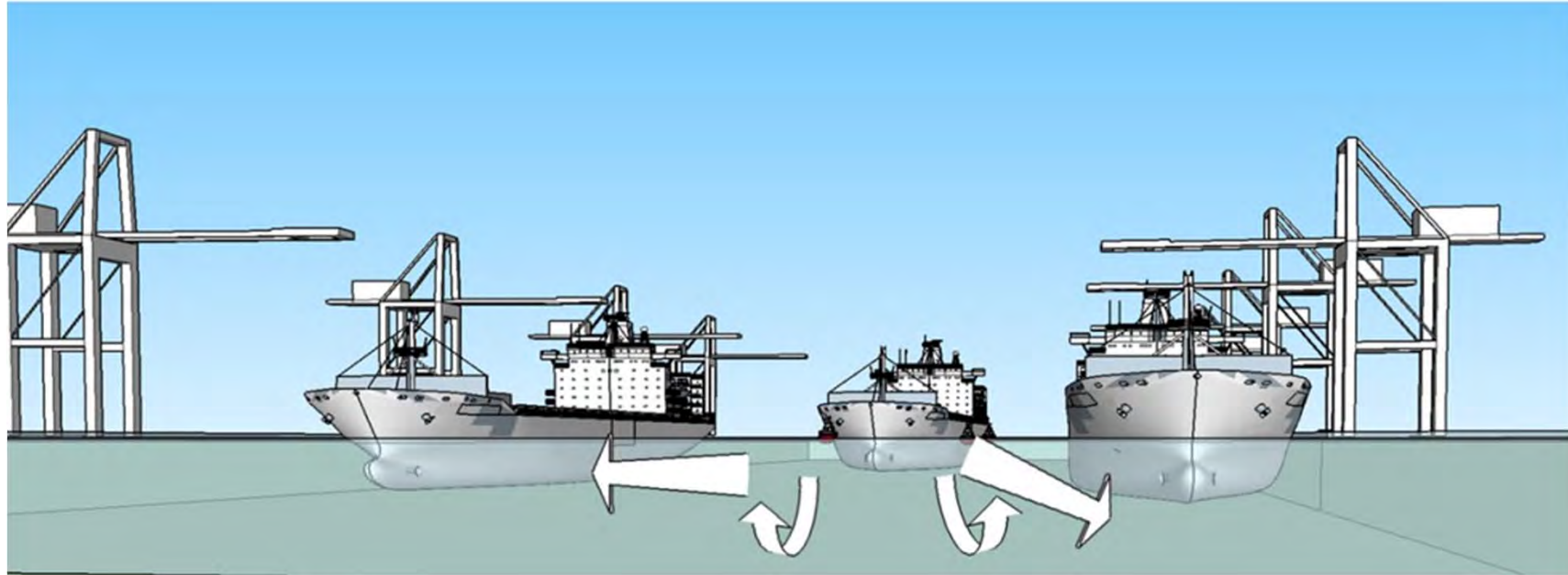
Squat



Ship Squat



Step 5 – look for squat, bow-in bow-out and cushion effects, also windage



The Bosphorus-max looks possible but not without risk

- Australia may at last get the larger vessels;
 - But beam constraints would be of concern at Swanson Dock;
 - Squat also would be of concern; and
 - The use of the turning circle may be limited to daylight hours only.
-
- However, these constraints do not seem to be as critical at Webb Dock.
 - Therefore Webb Dock may gain a competitive advantage that could affect terminal operations along the East Coast.
 - Consequently, DPW and Patricks may not wish to risk being locked in to the current terminals.

Neo-Panamax containerships matrix of Bay x Row (fleet 2015)

LOA (m)	299-300 m	301-320 m	321-340 m	341-360 m	The game changer	370 m
Container rows across Beam (m)						
17 rows across 42-43 m beam	43 2 6,300-7,800 TEU	22 0 6,700-7,900 TEU	165 2 8,000-9,600 TEU	40 0 8,600-9,600 TEU	12 0 9,500-9,700 TEU	0 0
18 rows across 45-46 m beam	23 0 7,500-8,700 TEU	15 0 8,100-8,600 TEU	98 1 8,400-9,600 TEU	34 0 9,900-11,000 TEU	16 0 11,300-11,600 TEU	0 0
19 rows across 48-49 m beam	64 73 8,600-10,600 TEU	0 0	31 46 10,000-11,000 TEU	0 0	95 6 12,500-14,000 TEU	0 0
20 rows across 51-52 m beam	0 0	0 0	0 0	0 0	41 33 13,300-14,500 TEU	38 16 13,800-15,000 TEU

Source: Alphaliner

Survey by Shipping Australia Ltd

Timing for the introduction of 8,000 + TEU vessels	Number of lines that would bring in an 8,000+ TEU vessel
Within 1 year from September 2015	0
Within 5 years	7
Within 10 years	1
Beyond 10 years	3

Source: Shipping Australia Ltd Oct 2015

In summary

- The pace of ship upsizing is quickening;
- Some ports are no longer fit for purpose;
- In the last 3 years Australia has lost competitive advantage to other economies on the North/South routes;
- Ship upsizing affects Australian productivity nationally – not just one State;
- New ships and those on order offer cautious optimism – in particular the Bosphorus-max;
- The other new ships may change the relationships between the operators;
- The change in the relationships could well see the disadvantaged operators press for new terminals sooner than now planned;
- Shipowners anticipate upscaling within 5 years; therefore,
- We must keep our port options open to be relevant for rapidly changing markets.

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Australia's largest container ship in 2015 was the "Pangal"

Pangal, the largest container vessel by TEU capacity (6,540) and LOA (304 metres).

Built in 2006
Beam: 40 m
Max draught: 14 m

