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SAL21-018

30 April 2021

Yvette Goss
Productivity Commission
Level 8, Two Melbourne Quarter
697 Collins Street
Docklands Vic 3008, Australia

Dear Yvette

RE: submissions to the Productivity Commission Vulnerable Supply Chain Study

1. Shipping Australia makes the following submission (below) in relation to the Productivity Commission's Vulnerable Supply Chains study.

About Shipping Australia

2. Shipping Australia is an industry association that represents the participants in Australia's international supply chain. We provide policy advice and information to our 29 full members, which includes ocean shipping lines and shipping agents active in Australia. We have over 40 corporate associate members, which generally provide services to the maritime industry in Australia. These services include port and terminal operations, pilotage, insurance, and legal advice among other things. Our members handle the vast majority of containerised seaborne cargo imports and exports to and from Australia. They also handle a considerable volume of our car trade and our bulk commodity trade. Our members employ more than 3,000 Australians.

Executive summary

3. Ocean going shipping is extremely resilient. Ocean going shipping is the key mode of transport in the international supply chain and, although any given ship may possibly be vulnerable to any given event or threat at any given time, ocean-going shipping as a whole has been proven to be remarkably resilient.

4. The primary reason why is massive redundancy and über-diversification. As you will see, the seaborne part of the Australian "supply chain" is actually a series of multiple supply chains populated by a multitude of different ships (literally thousands upon thousands of them) going to and from a variety of destinations. Each shipping company – and even each individual ship – also has a further multitude of diversification factors that massively reduce the risk of disruption.

5. It is good that shipping is so resilient because Australia's vital national interests are utterly dependent upon the provision of cheap freight by frequent and regular shipping services.

6. Shipping Australia shows ocean shipping is resilient to, and scarce affected by, the risks posed by warring nations, missile attacks, men with guns, global plagues and natural disasters such as cyclones.

7. However, we find it ironic that shipping is wholly vulnerable to the risks posed by Australian politicians, government officials, union officials and lobby groups.

Productivity Commission's interim supply chain study

8. Shipping Australia notes the publication of the Productivity Commission's interim supply chain study, in which it was found that the supply of essential goods and services in Australia is not highly susceptible to a short-term disruption. We note and support the Productivity Commission's interim views that firms are best placed to manage risk and the warning against government crowding out private investment.

9. We also specifically support the Productivity Commissions comments that the Australian government has the responsibility for maintaining and promoting a respected and rules-based international trading system that promotes low-cost training and the ability of firms to respond to disruption. We note that the Productivity Commission wrote: “All levels of government have responsibility for ensuring regulations are fit for purpose, including making temporary changes that let firms adjust to temporary disruptions".

10. As you will see from our submission, interference by Australian governments in the Australian end of the international seaborne supply chain is probably the single-greatest threat to the ongoing viability of the maritime supply chain to Australia.

How resilient is the maritime Supply Chain?

11. *"Supply chain resilience has been defined as the supply chain’s ability to be prepared for unexpected risk events, responding and recovering quickly to potential disruptions to return to its original situation or grow by moving to a new, more desirable state in order to increase customer service, market share and financial performance,"* by Hohenstein et al ("Research on the phenomenon of supply chain resilience: a systematic review and paths for further investigation," https://doi.org/10.1108/IJPDLM-05-2013-0128, 2015, International Journal of Physical Distribution and Logistics Management).

12. As will be seen in this submission, the international and Australian maritime supply chain is – and has been proven to be – extraordinary resilient to a wide range of catastrophes. Despite wars, pirates, cyclones, industrial fights with unions, pandemics – shipping has not stopped. Indeed, despite everything, the global ocean shipping industry has actually increased its services to Australia. Resilient indeed.

Risk management

13. There is a vast body of literature about risk management generally, and about supply chain risk management in particular. Although details vary, there are some high-level common principles that can be frequently seen in the field. These typically are:

- Environmental / industry analysis
- Define, identify and source the risk
- Determine the level of appetite for risk
- Identify the likelihood of the risk occurring
- Determine the scale of the risk / magnitude of harm
- Determine preventative measures
- Determine mitigating measures

14. In this submission, we will look at these factors. We will also look at specific threats to shipping services posed by adverse action from governments (including political, civil services, agency and regulatory actors) and by advocacy from other participants in the supply chain. We will also look at the concentration of risk at the seaport level.

Transport Terminology: shippers, carriers, consignees, dollars

15. A person or company that operates a ship, truck or aeroplane which carries freight is a "carrier". A person or company that engages the services of a carrier to transport its goods and commodities to another party is called a "shipper". The company or person that receives the transported goods and commodities as called a "consignee". Shipping Australia will use this terminology in its submission.

16. NOTE: it is completely wrong to describe a carrier that operates an ocean-going vessel as a "shipper". Unfortunately, this completely-wrong usage is prevalent in the media and even the specialist financial and business media. Confusion is caused because the common noun of an ocean-going vessel is: "ship". However, the verb that means to send freight from one person to another is "to ship".

17. International trade figures by value are often expressed in United States Dollars. This, obviously, has potential to cause confusion Australian figures that are usually (but not always) expressed in Australian Dollars. All dollar figures given below are in Australian Dollars unless otherwise stated.

18. We note that there are some sectors, such as education, that are major export services. Shipping Australia's submission is focused on the physical transport of tangible goods and, other where necessary, we do not discuss non-tangible imports and exports.

About Australia's international trade

19. The starting point is to note that international trade is vital to Australia. Exports of goods and services account for about 24.1% of our gross domestic product while imports of goods and services account for 21.6% of gross domestic product, according to 2019 World Bank figures. Accordingly, by adding the two sets of numbers together, we can see that international trade accounts for about 45.7% of Australia's gross domestic product. Unfortunately, these percentage figures take into account non-tangible imports and exports, so a better indicator, perhaps, might be the merchandise trade figure. Merchandise trade accounts for about 35.3% of our economy as a percentage of gross domestic product.

20. Australia's merchandise trade comprises a vast range of goods. By way of illustration, consider the sheer size of the Customs Tariff Classification List available from the Australian Border Force. The main list is split into 21 sections and 97 chapters detailing different types of goods that are imported.

21. A small selection of goods and commodities that comprise Australia's international trade include, but are not limited to iron ore, coal (thermal and metallurgical); natural gas, bauxite, alumina, livestock , chilled meats, aluminium, pharmaceutical products, wool, skins, seafood products, vehicles, machinery, general goods sold in retail stores and supermarkets (clothes, shoes, personal accessories, jewellery, household chemicals, household products, furniture, food and so on) among a vast range of other goods of all kinds.

22. For simplicity's sake, and for the purposes of this study, we can assume that, of the national inventory of all of the goods and commodities available for sale in Australia, at least some stock will have been imported. Likewise, we can also assume that, of all the primary, secondary and tertiary goods and commodities produced in Australia, at least some stock (in in some cases a very large proportion of that stock) is produced for export. Further comprehensive details can, no doubt, be obtained from the Australian Bureau of Statistics or other appropriate government bodies.

Mode of transport of Australia's trade

23. Australia is an island-continent therefore there are only two ways to import or export goods and commodities: by sea in a ship or by air in a plane. Bulky, heavy and high-volume freight is typically freighted by sea. Light, low-volume, high-value, short shelf-life and urgent goods are typically freighted by air.

24. There are some cargoes that can be transported by either mode: pharmaceuticals, seafood, meat, vegetables and fruit are the obvious examples. They can be carried by sea despite the substantially longer journey times because they can be transported frozen, chilled or otherwise cooled in a very controlled environment in what is known as a "reefer" (refrigerated) container.

25. Another example of cargo that can be freighted either by air or sea would be expensive retail electronics (mobile phones, computer game consoles). Typically, large volumes of such goods would often be sea-freighted however they may be air-freighted at certain times of very high demand (e.g. just-in-time for a new product launch) so as to meet

that demand. Meanwhile, there are some freight forwarding companies that offer air-sea freight services. Also, when a given transport mode, or a given nodule in that transport mode, is undesirable for some reason (e.g. delay, freight rates, capacity) then freight forwarders may divert cargo that is contestable between the two modes from one mode to the other.

26. Shipping Australia will largely not further discuss aviation or aviation freight other than in passing reference.

Volume and value of Australia's international seaborne trade

27. Shipping Australia notes that the vast majority of goods to / from Australia by volume and value are carried by sea. Further details may be found in the following tables.

*Weight (million tonnes) of Australia's sea freight (**2016-2017** data)*
by trading region discharging / loading

	Exports	% of total	Imports	% of total	% of Import & Export Total
Africa	4.8	0.3	3.3	3.3	0.5
Central Asia	0.0	0.0	0.0	0.0	0.0
China	867.5	59.8	15.6	15.7	57.0
Europe	27.3	1.9	5.2	5.2	2.1
Middle East	13.1	0.9	6.5	6.6	1.3
New Zealand	3.6	0.2	2.8	2.8	0.4
Nth & Central Am	4.9	0.3	6.1	6.2	0.7
Other East Asia	403.3	27.8	20.9	21.1	27.4
Pacific & PNG	2.4	0.2	1.1	1.1	0.2
South America	10.4	0.7	1.9	1.9	0.8
South Asia	53.8	3.7	2.5	2.5	3.6
SE Asia	58.5	4.0	28.4	28.7	5.6
RoW	0.4	0.0	4.8	4.8	0.3
TOTALS	1,450.0	100.0	99.1	100.0	100.0

Source: "Table 1.8" Australian Sea Freight 2016-2017, BITRE
SAL Table 1

*Value of Australia's sea freight (**2016-2017** data) $ billion*
by trading region discharging / loading

	Exports	% of total	Imports	% of total	% of Import & Export Total
Africa	2.4	1.0	2.6	1.3	1.1
Central Asia	0.0	0.0	0.0	0.0	0.0
China	89.8	35.6	48.4	25.1	31.0
Europe	11.7	4.6	33.0	17.1	10.0
Middle East	5.5	2.2	3.8	2.0	2.1
New Zealand	6.9	2.7	6.5	3.4	3.0
Nth & Central Am	8.0	3.2	19.5	10.1	6.2
Other East Asia	68.2	27.1	30.9	16.0	22.3
Pacific & PNG	2.6	1.0	0.9	0.5	0.8
South America	2.3	0.9	2.4	1.2	1.1
South Asia	14.8	5.9	4.6	2.4	4.4
SE Asia	39.5	15.7	40.5	21.0	18.0
RoW	0.4	0.2	0.1	0.1	0.1
TOTALS	252.1	100.0	193.2	100.0	100.0

Source: Table 1.7 Australian Sea Freight 2016-2017, BITRE
SAL Table 2

28. Seaborne import values per tonne are so much higher than seaborne exports per tonne because of the nature of cargoes carried. Outbound cargoes by volume are typically iron ore, coal, and liquified natural gas. These are cargoes that might have a price of a few tens of dollars to hundreds of dollars per tonne. Imports, however, may include such things as consumer electronics like mobile phones. These may have a price of many hundreds of dollars – perhaps thousands of dollars – for a few grams.

29. It is clear from the BITRE data (above) that Australia is very dependent upon China and Other East Asia, and to a lesser extent, South East Asia, as both customer and supplier of the bulk of our merchandise trade by volume and by value.

Volume of ocean-going ships calling at Australia

30. BITRE reports on the number of vessel calls in Australian ports. In 2016-2017 these were as follows: 5,845 uniquely identified cargo ships made a total of 32,801 port calls at Australian ports in 2016–17. These included 5,743 cargo ships which made 17,068 voyages to Australian waters from overseas ports.

Method of seaborne transport of Australia's trade

31. Ships are built to match a trade and a cargo type. There are three main categories of ship and one catch-all category. These are "dry bulk cargo", "wet bulk cargo", "general cargo", and "other".

Dry bulk cargo

32. These are non-liquid, single commodity cargoes that are carried as one large parcel per ship. They are normally loaded via conveyor belt into large holds and are discharged via suction, grabbers and bulldozers. These are typically large-volume agricultural products or mineral ores. Examples include wheat, barley, iron ore, alumina and bauxite among others. Ships that carry such cargoes typically have large void spaces within the hull and are characterised by large flat hatches.

33. Incidentally, dry bulk ships sometimes carry large pieces of cargo, such as wind turbines, by being strapped onto the deck of a dry bulk ship.

34. Australia is a large shipper of the major dry bulk cargoes of iron ore, grain and coal, which form the vast majority of commodity exports from Australia to destinations in Asia.

35. Australia exported about 836 million tonnes (estimate) of iron ore in 2019, according to the Office of the Chief Economist, and this was mostly to customers in China. There are large competitor suppliers around the world, particularly Brazil.

36. About 177 million tonnes of metallurgical coal was exported in 2019-20. Customers are primarily found in China, India, South Korea, Japan and the European Union.

37. About 212 million tonnes of thermal coal was exported in 2019-20. Thermal coal is currently bought by customers in China, India, Japan, South Korea, Taiwan and south east Asian nations. There are also competitor suppliers around the world.

38. About 16.5 million tonnes of dry bulk agri-products (wheat, coarse grains, oilseeds and sugar) were exported from Australia in 2019-2020, according to the Department of Agriculture, Water and the Environment. Volumes have been lower than in previous years (about 22.05 million tonnes of wheat alone were exported 2016-2017) owing to the drought. Customers are particularly found in Indonesia, the Philippines, China, Vietnam, Yemen, Korea, Japan and Malaysia.

39. There were 15,998 port calls by bulk carriers at Australian ports in 2016-17.

40. BITRE does not appear to produce data on what types of ships call at what ports however, using industry knowledge and BITRE data, we note that following ports are the major bulk ports in Australia and are therefore most likely to have attracted bulk carriers.

2016-17

Primarily iron ore (millions of tonnes)

Port Hedland: 489 mt; Dampier 162.5 mt Port Walcott: 188.9 mt

Primarily coal:

Hay Point: 106.7 mt; Gladstone: 95.1 mt Abbot Point: 25.1 mt; Port Kembla: 10.8 mt

Others

Brisbane 13.8 mt (primarily a container port but also coal volumes)

Fremantle 18.5 mt (primarily a container port but large volumes of wheat)

SAL Table 3 Source: Shipping Australia

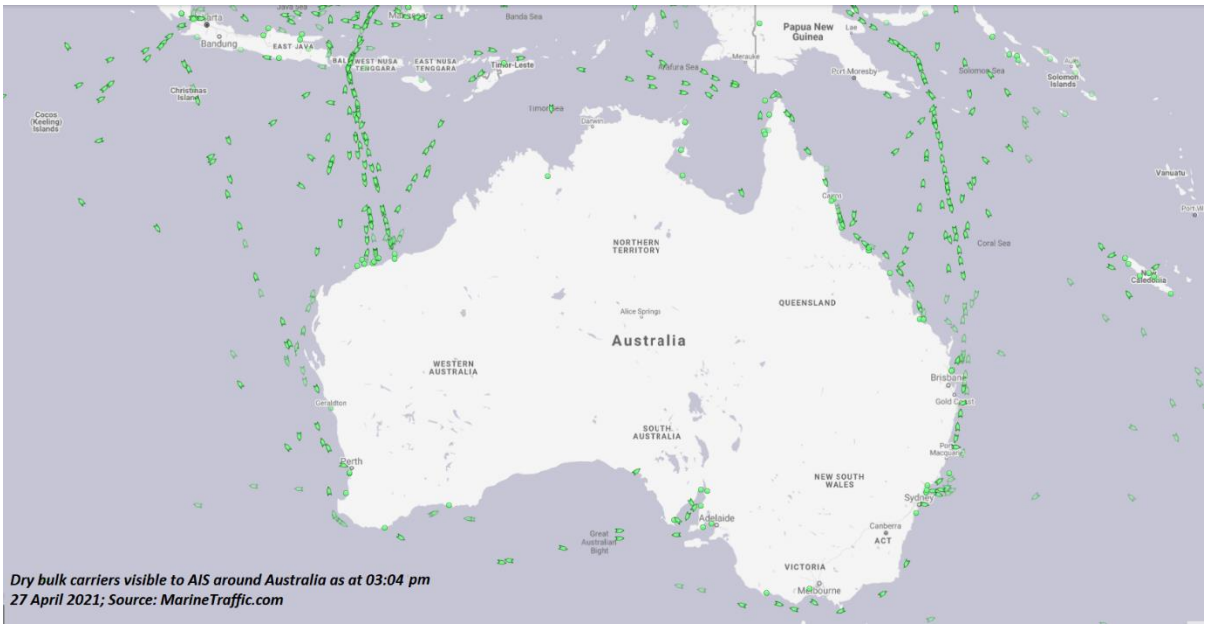


Figure 1

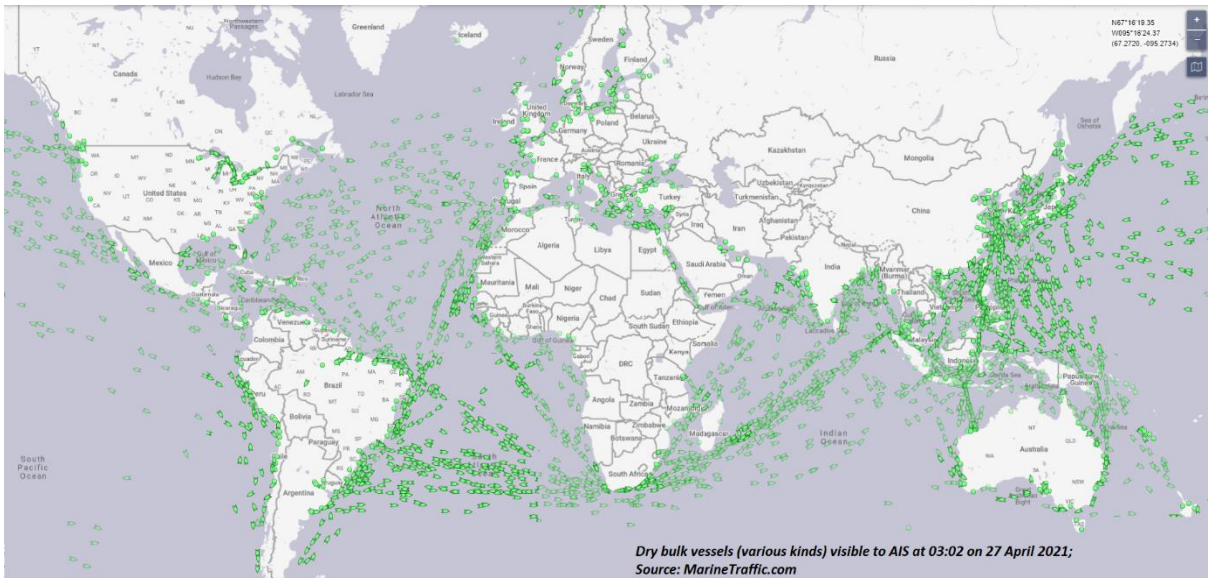


Figure 2

Wet bulk cargo

41. Wet bulk cargoes are commodities that are liquid, are often homogenous, and are carried in large tanks within ships. Load and discharge take place via cargo being pumped on and off ship via pipelines. Examples of cargoes include edible oils, liquefied petroleum gases, liquefied natural gas, products of oil and crude oil.

42. Another major type of liquid bulk cargo is liquefied natural gas (super-cooled, pressurised methane gas) which is a source of energy. With 79 million tonnes exported in 2019-20, Australia is the second-largest exporter by volume (after Qatar with an estimated 110 million tonnes per annum; source: Reuters). Although, obviously, exports of LNG are important for the purposes of generating revenues and jobs, Shipping Australia will focus on the energy ***import*** sector owing to the importance of fuel to the general Australian economy, industry and population.

43. In 2018-19 Australia imported 21,760.8 mega litres of crude oil and other refinery feedstocks. The volume of imported refined petroleum products in the same year stood at 36,609.8 mega litres of refined petroleum product imports, according to the Australian Energy Update 2020 by Australia's Department of Industry, Science, Energy and Resources.

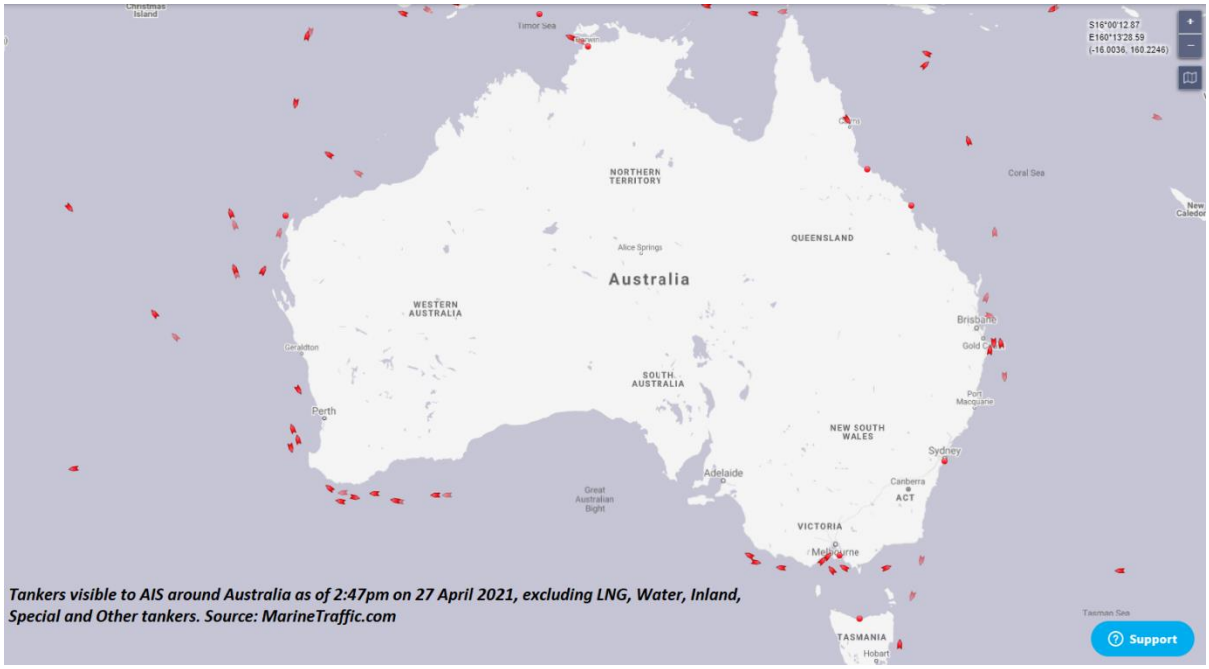
Tankers – different kinds for different jobs

44. Tankers are generally not interchangeable. An LNG carrier can't carry crude oil; a crude oil carrier can't carry refined petroleum products and so on. Dirty products are include crude oil and bunker fuel, which are carried in crude carriers. Clean products are typically refined products, such as jet fuel. LNG carriers are a particularly peculiar ship as they carry super-cold, pressurised commodities and must travel to / from particular terminals. They are very specialised, highly technical, ships.

45. Not all tankers carry homogenous commodities. Some tankers, such as product and parcel tankers particularly, may carry many different types of chemical cargoes in the same ship in different tanks. The tanks will have been constructed so as to carry different kinds of cargoes. Tanks may be heated, or refrigerated, coated in various coatings (for example to resist corrosion from acids), or agitated so as to prevent settling of the cargoes. These are very complex vessels.

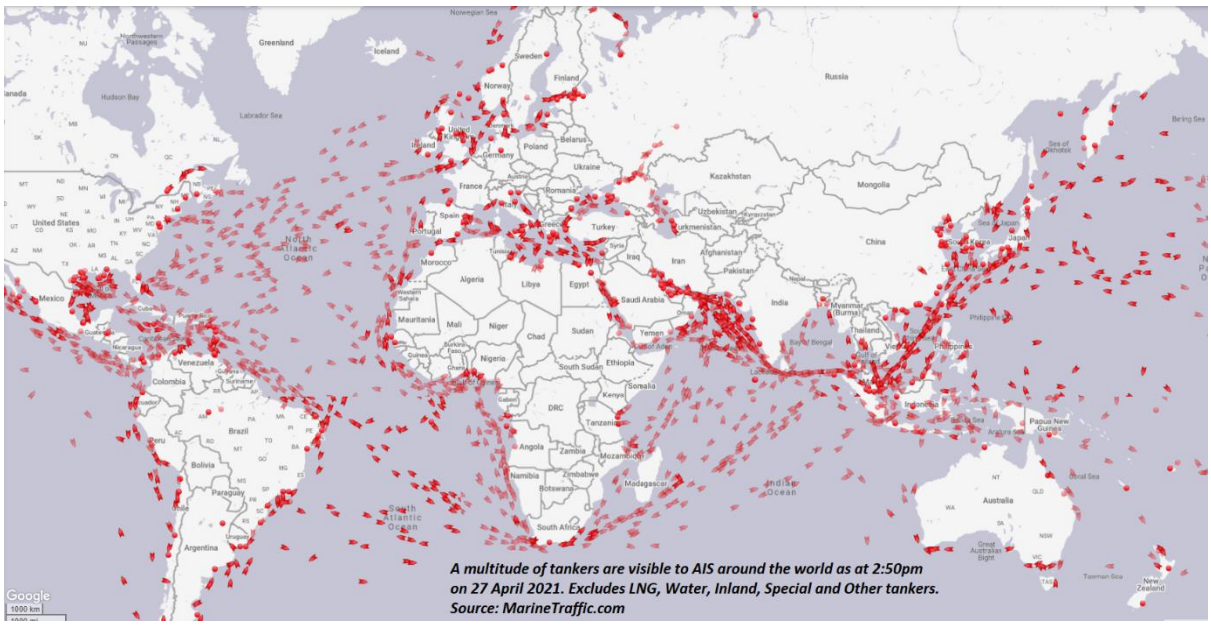
46. Tankers are also segmented by size. The smaller crude oil carrying Panamax vessels start in size at about 50,000 deadweight (deadweight (dwt) – the cargo carrying capacity of a ship) and they rise in size to Very Large Crude Carriers (200,000 dwt plus). VLCCs typically ply the trades between the major production and refining centres e.g. Middle East to Singapore. Clean product tankers may start in size at about 25,000 dwt (so-called medium range) and rise in size to "long range" (100,000 deadweight).

47. A multitude of tankers can be seen at sea at any given time.



Tankers visible to AIS around Australia as of 2:47pm on 27 April 2021, excluding LNG, Water, Inland, Special and Other tankers. Source: MarineTraffic.com

Figure 3

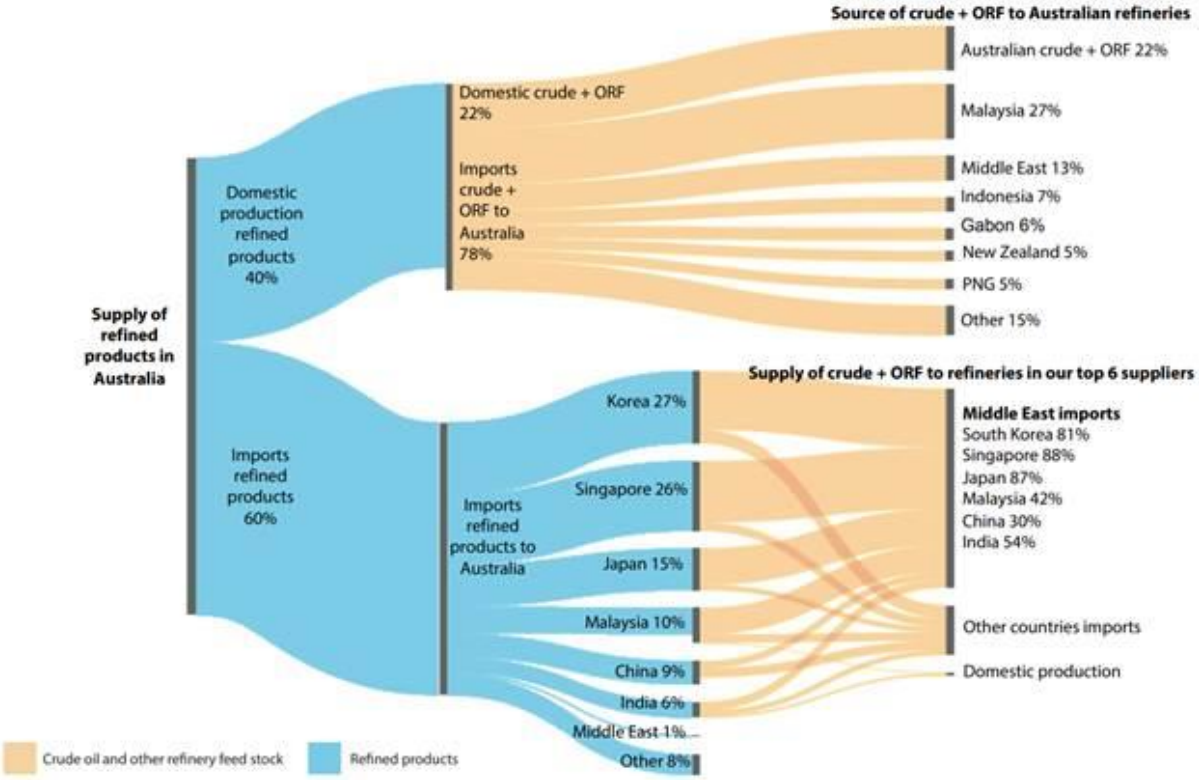


A multitude of tankers are visible to AIS around the world as at 2:50pm on 27 April 2021. Excludes LNG, Water, Inland, Special and Other tankers. Source: MarineTraffic.com

Figure 4

Supply of crude oil and refined petroleum products

48. Crude oil sent to Australia for refining originates from a variety of sources around the world. Crude sent to overseas refineries for import into Australia as refined products often originates from the Middle East. [Note: "ORF" means "other refinery feedstock"].



Source: Department of the Environment and Energy, Liquid fuel security review: interim report, 2019, p. 23.
Figure 5

Conversion of crude oil refining facilities to refined petroleum product import terminals

49. Global economic activity, supply and demand drives the demand for freight, local factors play the major part for the transport of freight. However, sea-borne carriage of crude oil and petroleum products is, unsurprisingly, driven by the presence of crude oil refineries and import/export terminals.

50. In or about the year 2000, Australia had eight refineries. However, and for reasons beyond the scope of Shipping Australia's submissions, by the time of writing (April 2021) that had declined to one refinery at Lytton (Brisbane) and the other at Geelong. Continuation of operations at Lytton is under review and it may be converted into a fuel import terminal.

51. The other refineries – Kwinana (Perth), Altona (Melbourne), Gore Bay (Sydney); Kurnell (Sydney); Bulwer Island (Brisbane), have been converted to fuel import terminals. Meanwhile, other fuel import terminals have been built elsewhere, for instance, oil major Shell built an import terminal at Newcastle in 2011.

52. This conversion from refineries to import terminals can be seen in the liquid fuel import statistics. In 2009-10, Australia imported 27,284.3 mega litres of crude oil and other refinery feedstocks, according to Australian Energy Update 2020. Although there has been some year-by-year variation in volumes, that amount in 2018-19 stood at 21,760.8 mega litres. That's a 20.2% fall in volume.

53. Meanwhile, the volume of imported refined petroleum products has markedly increased. According to the same source, in 2008-09 there were 18,899.7 mega litres of refined petroleum product imports. By 2018-19 there were 36,609.8 mega litres of refined petroleum product imports. That's a 93.7% increase.

54. These figures are worth putting side by side for emphasis: over the ten year period 2009-2019, volumes of crude imports fell 20.2% and volumes of petroleum product imports rose 93.7%.

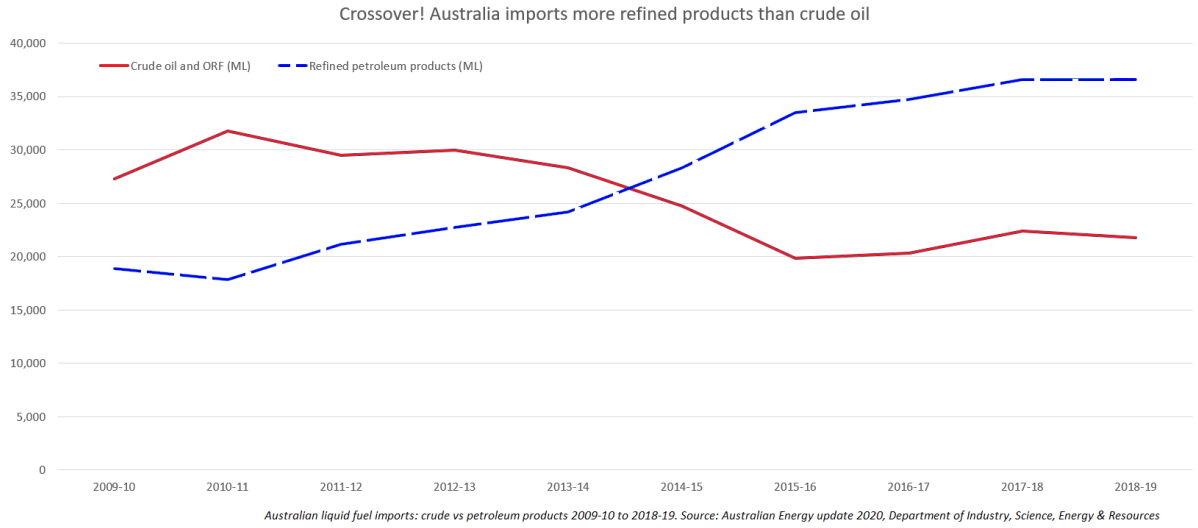
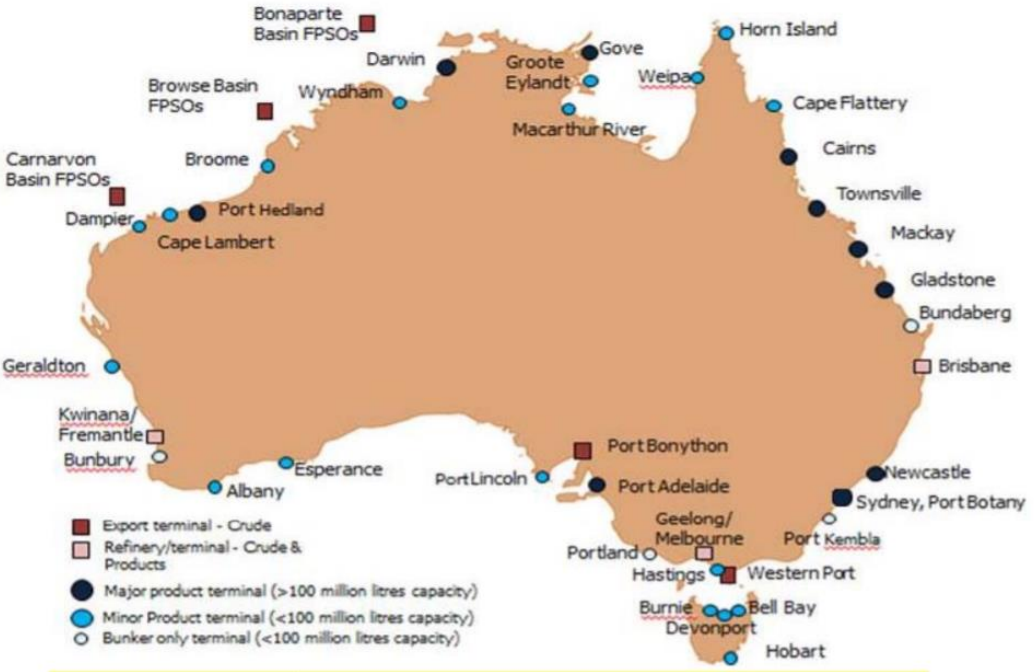


Figure 6

Refined petroleum product import terminals

55. There are many entry points to Australia for the import of petroleum-related products, as can be seen in the following 2015 diagram *(Figure 7)* from the Australian Institute of Petroleum. Note, this diagram is now a little out of date as the some of the refineries shown in Figure 7 have been converted into clean product import terminals.

Multiple "Entry Points" to Australia for Petroleum Imports



Major capital cities (eg. Sydney, Brisbane and Melbourne) have multiple entry points and terminals for imports of petroleum products

Source: Australian Institute of Petroleum

Figure 7

56. Tanker-related ports of call in Australia (2016-17) were as follows:

- 466 chemical tankers
- 854 LNG tankers
- 507 LPG tankers
- 2,775 other tankers

Source: Australian Sea Freight 2016-17, BITRE
SAL Table 4

General cargo

57. This is freight of all kinds. It could literally be anything provided it can fit on a ship in some way. The cargo could be any combination of liquids (using container-sized bladders), foodstuffs such as grains (using containers that have been cleaned to food-grade quality), other commodities, or manufactured goods of every conceivable type (anything from bathroom tiles to machinery) provided it can fit inside a container. Such cargo can be manufactured anywhere in the world where it is safe and economic to do so. Accordingly, ships bound for Australia carrying general cargo can in theory originate from literally anywhere in the world where there is a seaport.

58. The majority of general cargo is carried inside standard ocean shipping containers, which are carried on what are described as "fully-cellular container ships".

Containerised ocean shipping is cheap and efficient

59. Ocean container shipping is the single most efficient way to move large volumes of goods bar none. Back in 1956, loading of a medium sized break-bulk ship cost US$5.83 per US ton. Loading of the first true container ship, the Ideal-X, in 1956 was US$0.16 per US ton. It was literally 36 times cheaper than the alternative. *Source: "The Box", Marc Levinson, Princeton University Press, 2008; https://www.amazon.com/Box-Shipping-Container-Smaller-Economy/dp/0691136408.*

60. Container shipping has increased its efficiency and value-for-money since then.

61. According to the World Shipping Council, if all the containers from an 11,000 TEU ship were loaded onto a train, it would need to be 77 kilometres long. A container can be moved from a factory in Malaysia to Los Angeles – a journey of roughly 14,484 kilometres – in just 16 days. The cost of transporting a small electronic appliance from Asia to the US is about US1.50, a kilo of coffee is US$0.15 and a can of beer is a penny, according to the WSC.

62. The baseline ocean shipping container has dimensions of 5.89 metres long (twenty foot), 2.35 metres width and 2.36 metres tall. They can carry 21.7 tonnes of cargo. For both historical and ease-of-reference reasons, these are referred to as twenty footers and "TEU" (twenty foot equivalent unit). The main variant is the FEU or forty-footer, which is just over twice the length but the same width and height. FEUs carry 26.5 tonnes.

63. Container ship capacity, world trade and port throughput are all measured in TEUs. So one FEU is two TEU.

64. There are a variety of container variants – high cubes (about 33 centimetres taller but otherwise identical), flat racks, open topped (for the transport of ores), and refrigerated containers (for the transport of meat, seafood, pharmaceuticals, agri-products and other perishables; commonly known as "reefers").

65. A "container" could therefore be a TEU, an FEU, a refrigerated container (although these are normally referred to as "reefers") or an open-top. The exact nature of the container is normally obvious from the context in which it is referred.

66. Fully cellular container ships have metal guide rails inside that create "cells" (or slots) for each container. As ocean shipping containers are all the same length and width, they fit in the guides which are also built to standard dimensions. Loading and discharge equipment in ports is built to the same dimensions. A fully cellular containership can therefore carry any standard ocean shipping container from anywhere in the world to anywhere in the world where equipment that is capable of handling standard containers is used. Which is pretty much everywhere. Even ports that do not have dedicated container cranes usually have cranes of some description that can handle standard ocean shipping containers.

67. Although the cell guides in container ships are built to exact and standard dimensions, the ships themselves are built to a variety of lengths and widths. The very largest container ships can be about 400 metres long, over 61 metres wide and with a draught (the part of the hull that is underwater) in excess of 16 metres. However, the most important dimension is the number of containers they can carry. The very largest ships can carry in excess of 23,000 TEU (twenty-three thousand TEU).

Container shipping network organisation

68. Ocean container shipping companies are often called "lines" or "liners". Shipping lines typically transport containers between ports on a pre-determined set of port calls. These are often called "strings", "lines" or "loops". The major main line routes run between the main regions of the world. The major routes in the world are the Asia-Europe, the trans-Atlantic and the trans-Pacific. These are particularly sailed by the major international ocean shipping companies. There are also the intra-regional routes, such as the intra-Asia and the intra-Europe. These are also sailed by the international shipping companies and may also be sailed by intra-regional lines known as "feeder lines" (which can be very substantial operations owning numerous, high-value assets). There are also the lesser routes such as those within a particular part of a region, or between some of the lesser trafficked parts of the world. For instance, there is a cabotage (coastal shipping) route between continental USA and the islands of Hawaii.

69. Container shipping lines tie all the routes of the world together by using a "hub" and "spoke" model of transport, in much the same way that international aviation designates certain airports as hubs for the movement of people. The opposite of a "hub" is an "origin" or "destination" port whereby large volumes of containers either originate from, or are destined for, a seaport. Container ports in Australia are typically destination ports although they do export small volumes of containers too. Examples of origin ports include such places as Shanghai (43.3 million TEU; the world number one port by volume) and Ningbo-Zhoushan (27.5 million TEU), which are both in China.

70. Shipping companies (be they main liners or feeders) will pick up comparatively small volumes of containers from regional ports using multiple ships and will transport the containers to a hub. At such container shipping hubs the temporary receival, storage, and onward transport of containers (trans-shipment) is the predominant activity of the hub. Hubs in our region include Singapore (37.2 million TEU; the world number two port by volume) and Port Klang (13.6 million TEU; in Malaysia).

71. At the hub, bigger ships will usually arrive to pick up large volumes of containers. As noted above, the biggest ships will take up to 23,000 TEU, and will transport them to another hub on the far side of the world. From that other hub, smaller vessels will arrive and will transport containers to their destination.

72. A slightly different method of transportation is for smaller (compared to the giants) intra-regional vessels to pick-up boxes and drop them off at a central hub. Other small intra-regional vessels from a neighbouring region may the visit the hub to pick up boxes for onward transportation.

73. Containers imported to / exported from Australia may be transported by either method. Europe origin / destination containers to / from Australia will likely be carried by huge main line vessels between hubs such as Singapore and Rotterdam. Similarly, containers to / from Australia to / from Vietnam will likely travel by smaller vessels to and from, say, Port Klang.

74. Liner shipping companies have an alternative method of network organization, which the authors of the well-known reference work, "The Geography of Transport Systems", refer to as "circuitous nodal hierarchy". As opposed to a hub-and-spoke, these services are commonly arranged as a sequence of port calls. This pattern can be seen in Australia (and also in New Zealand and the Pacific Islands). After calling at a hub such as Singapore, Laem Chabang (Thailand) or Port Klang, ocean-going liners usually follow a clockwise loop of port visits around Australia calling at Brisbane, Sydney, Melbourne, Adelaide and Fremantle (or some variation thereof). This is a "circuitous nodal hierarchy" pattern of port calls. There are also a few services that run counter-clockwise starting at Fremantle but these are fewer in number as the preponderance of container volumes runs from east to west in Australia and there are only thin volumes going the other way.

75. Regionally, there are also loops around / between New Zealand and Australia, Papua New Guinea and Australia, and Australia and the Pacific Islands. Further afield there are loops to / from Australia and the Americas (some of which may involve hubs in / around Central America, other strings are on a circuitous node) on Americas-calls.

76. It may be worth noting that potential future hubs in the Oceania region could include the Port of Brisbane and, in New Zealand, Tauranga, as both ports are deep water and have room for expansion. Both ports already somewhat act like hubs as they handle trans-shipment trade for the Pacific Island nations.

77. Finally, there is also the point-to-point system. In Australia, for instance, ocean shipping line ANL set up a direct Singapore-Port Hedland route in October 2020 for break-bulk, containerised and out-of-gauge cargo. The service is aimed at reducing the length of the WA supply chain, reducing road haulage and helping shippers and consignees to import and export more easily from remote north west Australia.

78. There is also the Northern Australia specialist Sea Swift, which has launched a new liner service in November 2020 connecting Singapore and Dampier with a nine-day transit

time and a frequency of 20 days for the carriage of containers, break bulk and less-than-container-loads.

79. The number of shipping lines serving Australia can fluctuate. There are currently (April 2021) about 20 ocean shipping container lines serving Australia. We are pleased to note that, within the last few months, Australia attracted another container shipping line, Zim, which had exited the Australian trade some years ago and which has since returned.

80. There were 4,323 container ships calls at ports in Australia in 2016-2017, according to BITRE.

81. Container throughput in Australian ports is as follows:

- **Brisbane:** 1.3 million TEU
  (calendar year 2020 data; of which 54,628 are transhipped; 370,635 are empty;)
- **Sydney:** 2.4 million TEU
  (of which 764,000 TEU are empty; Jun-2019 to Jul-2020 data)
- **Melbourne:** 2.88 million TEU
  (2019-2020 data; of which 239k TEU are trans-Bass Strait; 152k at trans-shipped and 680k empty)
- **Adelaide:** 410,506 TEU
  (2020 data; of which full: 333,443 TEU and empty: 77,063)
- **Fremantle:** 783,802 TEU
  (2019-20 data; of which full: 610,414 TEU and empty: 173,023 TEU).
- **Main Australian ports:** 7.77 million TEU
  (Approximate: other non-container ports, e.g. Newcastle, Darwin etc also handle small volumes; varies by year)

Source: Shipping Australia
SAL Table 5

General cargo – break bulk, project cargo and heavy lift

82. One interesting form of general cargo is "break bulk". It's interesting because, historically, all general cargo was carried this way until modern containerisation was invented. It's also interesting because it is best thought of by what it is not. It is not dry bulk or wet bulk liquids. It is not cargo that goes into a container. It is individual units of dry cargo that are not categorised elsewhere.

83. This cargo type includes everything from bags, bales, barrels, drums and reels (e.g. steel coils) through to rubber tiles, large pieces of machinery, wind turbines and even giant industrial equipment up to and including oil rigs. The smaller end of the cargo can be thought of as break bulk, mid-size as being project cargo, and heavy lift, as the name implies, comprises the very biggest, heaviest cargoes. The mid- to upper-end of project cargo and heavy lift are probably best thought of as case-by-case, specialist, engineering-centred, sectors and, having been noted, do not need to be discussed further here.

84. There are multiple and considerably different definitions of the size of the world break bulk fleet and debate over what constitutes break bulk. The shipping of break bulk is often called "multi-purpose" shipping. For a further discussion, see *"Port Report: break bulk's existential angst",* by Jim Wilson of Freightwaves.com, 07 October 2019.

85. There is an ongoing market in Australia, New Zealand and the Pacific Islands for the carriage of unit cargoes ranging from small break bulk up through to mid-sized cargoes. Such ships are typically "geared" (i.e. they have cranes installed on the vessel able to load and discharge heavy cargoes especially in remote and lesser developed areas).

86. In some ways, break bulk shares characteristics of other shipping sectors. They may call at ports on a "circuitous nodal hierarchy" (i.e. on a loop), or by point-to-point. They need large flat and often reinforced spaces for the loading and unloading of cargo.

87. Break bulk has lost (and in some cases continues to lose) market share to container shipping. Some containers are flat-racks (consisting of a floor and a wall at each end but no roof or sides) which can be used to transport machinery. Container ships can also carry out-of-gauge cargo on the top of their container stacks – they simply surround the unitised cargo with containers which protects it from the weather. Break bulk also loses some market share to dry bulk vessels (which can carry certain types of unit cargo, such as steel coils, on deck). Break bulk is also losing share in developing regions to ports that are adopting more advanced technology such as mobile harbour cranes, or new floating infrastructure (floating cranes, barges, floating supply docks and bases). Other new(ish) competitors are the ro-ro and pure car and truck carrier sectors.

88. Break bulk operators are deploying bigger and more standardised vessels, with greater capacity, and are typically operating on line-routes and are trying to focus on going where other types of ships cannot or do not go. They have an advantage anywhere that is less developed and to which floating infrastructure cannot be easily mobilised or wherever there are large volumes of cargo that come in a variety of shapes and sizes.

89. As may have been realised, the break bulk sector may be a specialised sector, but it is not completely separate from other shipping sectors. For instance, dry bulkers can carry unit cargo. Multi-purpose ships can carry vehicles, machinery and large tanks of liquid fuels. The COVID crisis has induced a spike in demand for the carriage of containerised general cargo that has led to a shortage in the availability of container ships. It has since been widely reported in the trade media that ship operators are now hiring break bulk ships to carry containers as a way of mitigating that shortage.

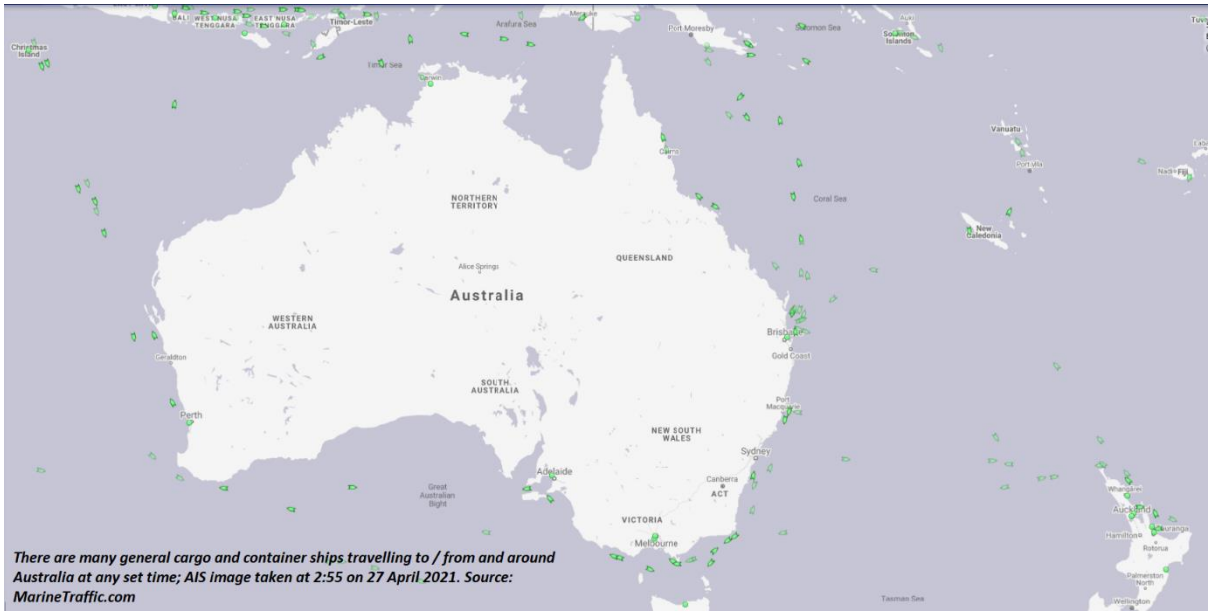


Figure 8

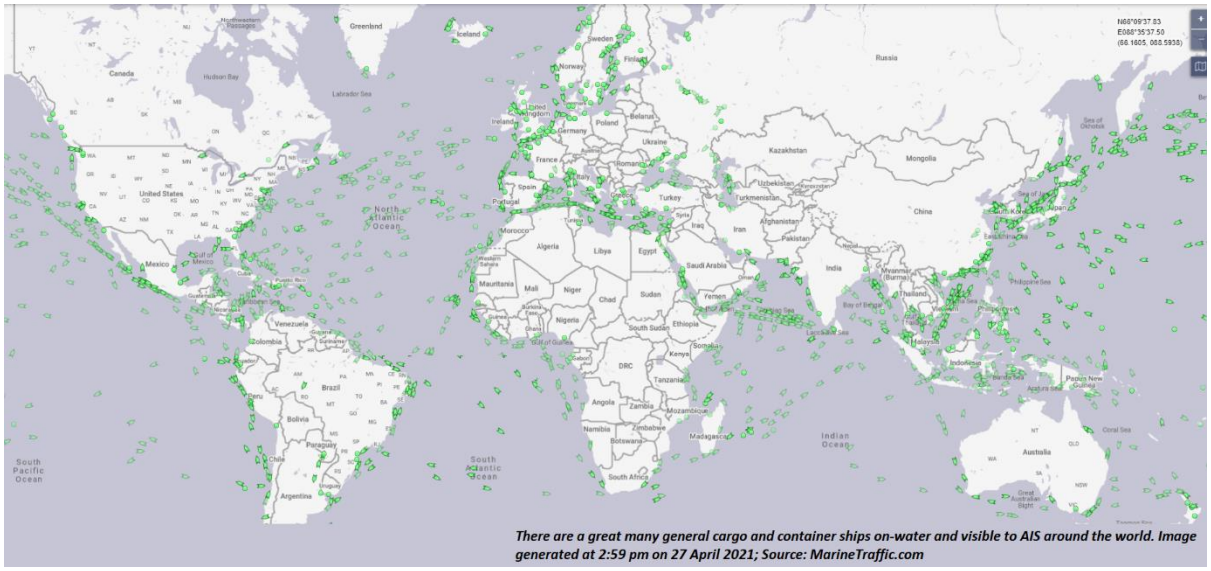


Figure 9

"Other cargoes"

90. The world of shipping is vast and there are far more types of cargoes and ships than can be sensibly covered here.

91. One final cargo and ship-type of note is the Pure Car and Truck Carrier (PCTC) which is used for the carriage of vehicles. Inside the cargo carrying area they look much like giant multi-story car parks with ramps, signs and laneways. Because they are wholly-enclosed they are very suitable for ensuring that vehicular cargo is not subject to any damage from the sea or from adverse weather.

92. PCTCs typically operate on loops (much like container shipping) from the main centres of vehicle manufacturing around the world (such as China, the USA, Thailand, Japan and Korea) to the end user. Major car import centres in Australia include Brisbane, Port Kembla, Melbourne, Adelaide and Fremantle.

93. All car (but not truck) manufacturing in Australia ceased in late 2017. We therefore assume that new car sales from 2018 onward were of imported cars. In 2017, there were 1.19 million cars were sold (although some of that was domestic production), according to insurer BudgetDirect. The following year, 2018, there were 1.15 million cars sold.

94. There are, however, some trucking and van manufacturers in Australia. About 14% of the total volume of trucks/vans that are sold in Australia are domestically produced and the rest are imported, according to the Truck Industry Council, which collects sales figures for all light duty vans, light trucks, heavy trucks that exceed 3.5 tonnes gross vehicle mass. In 2018, there were 41,268 units sold, which means that, in 2018, there were 35,490 imported and 5,778 domestically produced vans and trucks. This was described by the Truck Industry Council as a record year.

95. In 2016-17 there were 219 vehicle carriers that called at Australian ports, according to BITRE's Australian Sea Freight data publication.

Identify risk; identify sources of risk

96. While there are multiple risks that can be identified and defined in global trade, Shipping Australia is focused on risks to shipping services. So, for instance, although there may be a particularly high percentage of trade in a given vital product with *country X*, that presents a concentration of risk for the shipper and the consignee. It does not present a risk to the ability of shipping companies to carry out the business of transporting cargo.

97. The main high-level risks, and the sources of risk, to ocean shipping are:

- A severe and global decline in the volume of cargo available for carriage leading to a severe decline in the demand for shipping services
    - global economic downturn, recession or depression
    - global pandemic that stunts agricultural and manufacturing production as well as consumer demand

- Prevention or disruption to the ability to pick-up, transport, and deliver freight from one country to another
    - Natural hazards (extreme weather)
    - Policies of national and regional governments
        - includes government departments, agents, civil servants, regulators
    - Industrial action by unions
    - Physical hindrances to navigation (blockages of channels)
    - Hostile enemy action (war)
    - Hostile criminal action (extensive piracy)

- Changes to the economic environment so that it becomes economically impossible to operate ships for the purpose of carrying on an ocean shipping business
    - Rent-seeking advocacy by other participants in the supply chain
    - Imposition of taxes, fees, levies
    - Catastrophic decline in freight rates / persistent low-level freight rates

Determine the magnitude of harm

98. Given the importance of shipping to Australia's vital interests (see environment overview above), any event or series of events that causes a severe and persistent inability for shipping companies to carry out their business in a reasonable manner would potentially be catastrophic to Australia's people, industries and its economy.

Determine the level of appetite for risk

99. There are few risks that can be completely eradicated without creating a new risk. For instance, there is a risk to personal safety when driving vehicles. Eradication of that risk would require banning the driving of cars. However, this would be catastrophic to modern society. Accordingly, society must accept some level of risk. Given the importance of ocean shipping to the Australian people, we suggest that there should only be a very low level of appetite for risk of disruption to shipping services to Australia.

Identify the likelihood of the risk occurring

100. Professional econometric modelling and forecasting, intensive scenario planning and intensive industry consultation, perhaps using the Delphi method, would be needed to identify the likelihood of any given events occurring with any degree of numerical precision.

Determine preventative and mitigating measures

101. There are a wide number of risk preventative and mitigating factors that, while are relevant, are a bit beyond the scope of any submission that Shipping Australia could make. We would, for instance, be disinclined to offer any views or carry out any research into employee attitudes to risk in a commercial environment, or corporate risk management culture. While, of course, these (and many other areas of risk management) are of great interest, importance and relevance to a supply chain study, we will leave them to other commentators. We will focus on risk management as it relates to the continuity of supply of shipping services / to from Australia.

102. *"Ocean carriers, with various logistics options throughout the world, experience disruptions on a very frequent basis. They are adept at rerouting around storms, managing delays, and diverting to alternate locations or modes if needed. As a result of carrier alliances, global shipping lines have even more resources for resumption and recovery efforts, including moving cargo to different vessels and/or to alternate terminals,"* noted the authors of the 2019 edition of Freight Transportation Resilience in Response to Supply Chain Disruptions, by the National Academies Press.

103. Shipping companies have a wide range of options available to manage a variety of risks to their business continuity. These options include, but are not necessarily limited to:

- Cancelling services
- Withdrawal, or increase of, capacity e.g. blanking, or adding, services
- Altering service parameters
    - e.g. changing route, ship(s) deployed, capacity, timing, frequency, call rotation, slowing down or speeding up
- Altering freight rates charged (either increase or decrease)
- Moving cargo between different vessels and vessel slot sharing
- Doing more / less business on the spot markets / contract markets
- Increasing / decreasing numbers of suppliers
- Increasing / decreasing numbers of customers
- Changing suppliers / customers
- Entering / exiting specific sectors or geographic markets
- Issuing ancillary charges
- Issuing surcharges
- Financial protection (insurance and other financial protections (e.g. derivatives contracts, options)
- Buying-in extra services (e.g. armed guards (counter-piracy); tugs for port entry)
- Hardening assets (e.g. barbed wire, inclusion of strong rooms)
- Extra or situation-specific training for staff, particularly for mariners
- Changing the flag under which the vessel is registered

Source: Shipping Australia
SAL Table 6

104. In summary, international ocean shipping as a whole is inherently resilient to supply chain risks that affect shipping (as opposed to supply chain risks that affect the origin or destination of cargo) because of massive systemic redundancy and massive diversification. We can think of global ocean shipping as being an industry of "multiple differences":

> *Multiple different owners and multiple different ship-operators of multiple different nationalities operate multiple different ships, registered under multiple different flags and working under multiple different regulatory regimes and crewed by people of multiple different nationalities, sail vessels of multiple different sizes in multiple different sectors carrying multiple different cargoes created by multiple different producers along multiple different routes to / from multiple different seaports in multiple different countries under multiple different patterns of seasonality. The owners and operators have multiple different strategies, options and tactics to address their multiple different risks.*

Let's see how that might look in practice…

> *Two ship owners, one German and the other Greek, hire Singaporean and Isle of Man ship-managers to operate their mixed fleets of containerships and dry bulkers (which are registered under the flags of Panama, the Marshall Island and the Bahamas and*

are therefore subject to three different sets of flag-state control). The managers hire mixed crews from eastern Europe and the Philippines.

The ships range in size from relatively small box ships to the largest types of dry bulker. The container ships carry a diverse range of freight from a wide range of manufacturers while the dry bulkers typically carry, say, iron ore (but it could be grain or some other commodity) from, say, the West Australian producers.

The container ships follow a loop originating from south east Asia and the call at several different ports in a variety of Asian countries. In Australia, they call at the main capital city ports on the east coast plus Adelaide and Fremantle. The box ships can mix or vary their routes at any time for any reason.

The bulkers run from the north west shelf of Australia to different iron ore import terminals in, say, Korea. Although the dry bulkers sail a fairly standard route, if, for any reason, their standard route through the Sunda Strait (the strait between the Indonesian islands of Sumatra and Java) is not available, the bulkers can instead sail the Lombok Strait to the east of Java. There are other options if absolutely necessary (e.g. through the Banda Sea to the east of Timor-Leste).

The bulkers tend not to be affected by seasonality, but the containerships will have different patterns of trade throughout the year e.g. more demand in the run-up to Christmas and less demand just after.

At any time and at any point the shipping companies can adopt any of the tactics given earlier in this submission to adapt to any change in the market.

Specific Risks

Enemy action (war and war-like activities); armed criminal activity (armed piracy)

105. Exactly how Australia would deploy its military forces to deter an aggressor and protect shipping is an area that is largely best left to experts in the field. However, there is experience in commercial shipping history of cargo ships being caught up highly dangerous regions and of commercial crews facing armed, dangerous and determined aggressors.

Example: the Tanker War

106. Between 1984 and 1988 there were a series of naval and aviation attacks on commercial tankers in the Persian Gulf. Attacks were begun by the military forces of Iraq and these tactics were later followed by Iranian military forces. Iraq and Iran were, at that time, fighting a local war. Tankers (and other shipping) were attacked with missiles (surface to ship, surface to air), helicopters and mines.

107. Numerous tankers were attacked with various missiles and bombs and suffered a variety of harm including minor damage, severe damage, being set on fire, being run aground, and being sunk.

108. Commercial vessels responded to the attacks in a variety of ways. The chokepoint of the Strait of Hormuz is just that: a chokepoint. It is 30 miles wide (48 kilometres) at its narrowest point. Tankers continued to traverse the Persian Gulf despite the attacks. Defensive tactics included re-routing (staying close to the coast of the Arabian countries and travelling at night). Some vessels re-flagged to the flags of other countries. Various third party naval powers protected tankers and navy-protected convoys were formed.

109. It is worth noting the comments from the Robert Strauss Center for International Security and Law at the University of Texas on this war:

"Oil tankers are not very vulnerable to damage. 61 percent of the ships attacked during the Tanker War were oil tankers. In total, only 55 of the 239 petroleum tankers (23 percent) were completely sunk or declared CTL, compared to 39 percent of bulk carriers and 34 percent of freighters," the authors write in their assessment (https://www.strausscenter.org/strait-of-hormuz-tanker-war).

110. The Robert Strauss centre also noted that, although the Tanker War led to a 25% drop in commercial shipping and a rise in the price of crude, it "did not significantly disrupt oil shipments… and the real global oil price steadily declined".

111. Writing in "History Today" magazine, Martin S Navias, a teaching fellow at the Department of War Studies, King's College London, also noted: "ultimately the Tanker War did not lead to the closing of the Strait of Hormuz, nor did it significantly impact upon oil exports from the Gulf or result in sustained increases in oil prices. According to some estimates, the combined campaigns of both Iran and Iraq never disrupted more than two per cent of ships in the Gulf".

112. Although ships and crews were clearly at risk of destruction and death, nonetheless insurers, ship owners and crews were ready to assume the risk in return for higher monetary reward namely bigger insurance premiums, higher freight rates and hazard pay.

113. Ocean going shipping did not stop, and was largely not severely disrupted by, the Tanker War despite being targeted for missile attacks and aerial by two highly-aggressive powers in a confined and narrow waterway over a four-year period.

Example: Somali piracy

114. Piracy is any illegal act of violence or detention, or any act of depredation, committed for private ends on the high seas against any ship or persons or property onboard any ship (Article 101 of the UN Convention on the Law of the Sea).

115. Somalia collapsed into anarchy in or about 1991. Machine gun and rocket-propelled grenade wielding pirates began hijacking commercial ships and kidnapping crew off the coast of Somalia and the Gulf of Aden, holding them for ransom in Somalia. Unfortunately, Somalia is adjacent to the Gulf of Aden, a very heavily trafficked body of water because it leads to / from the Red Sea and, ultimately, to / from the Suez Canal in Egypt. About 50 ships a day pass through Suez and there are also numerous seaports either side of the Red Sea such as Djibouti (Djibouti), Port Sudan (Sudan), Jeddah (Saudi Arabia), Sokhna and Suez

(both in Egypt). There's also traffic through the Gulf of Aden bound to / from the port of Eliat (Israel) and Aqaba (Jordan).

116. Located between Arabia and the Horn of Africa, the Gulf of Aden is funnel-shaped. It is only 30 kilometres wide in the west at the Strait of the Bab-El-Mandeb and it widens out to the Arabian Ocean. Owing to the concentration of ships in the region, pirates were abundant (and for a long distance off the coast of Somalia) and they carried out numerous attacks per day. Shipping companies could not change routes. However, shipping companies responded by hardening their ships (barbed wire, inner-fortresses, spraying high-pressure hoses, employing armed guards). They also sought, and were granted, naval protection from a world-coalition of navies that escorted ships in convoys.

117. From a market viewpoint, just as in the tanker war, insurance premiums, freight rates and hazard pay all increased. Despite the dangers, Somali piracy did not stop the continuity of shipping services through this vital waterway.

118. Over the last forty or so years, there have been numerous military actions, wars, and war-like actions and acts of piracy all over the world. There is ongoing armed conflict, and armed piracy, around the world particularly in Africa, the Middle East, parts of south eastern Europe and south east Asia.

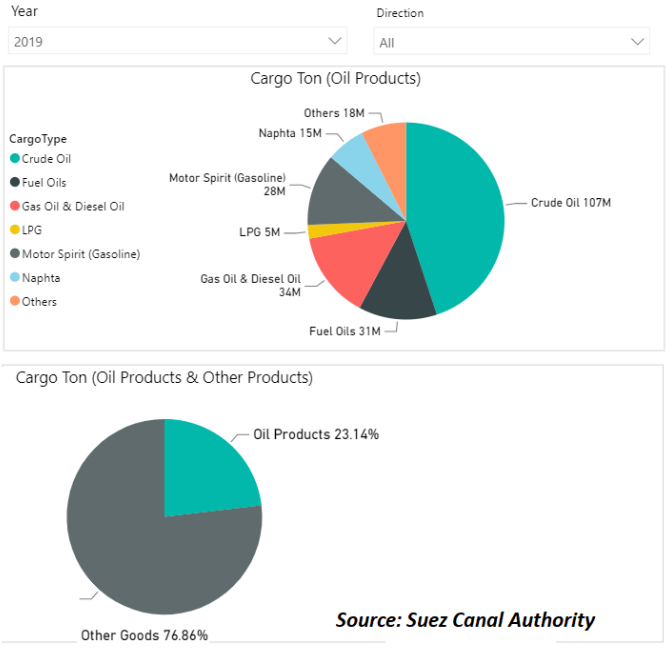
119. Ocean-going shipping has adapted its risk management practices in each case. Ocean going shipping has not stopped, nor has it been really severely disrupted, by these conflicts. We can conclude that the international commercial shipping fleet is highly resilient to international armed conflict and attacks by armed criminals.

Physical hindrances to navigation (blockages of channels; Suez Canal)

120. Several commentators in the media have referred to the recent blockage for six days of the Suez Canal that occurred when a very large container ship ran aground. Far from being an incident that demonstrated the so-called "fragility" of maritime supply chains, it demonstrated that the maritime supply chain is, in fact, extremely resilient.

121. In 2019, about 52 ships a day passed through the Canal, carrying about 1,031 million tonnes of cargo, which was described in the media as accounting for 12% of world trade.

122. Clearly the Canal is of immense value to the world economy. Further details of the canal trade can be seen in these diagrams and tables from the Suez Canal Authority:



Goods	North / South	South / North	Total
Oil Products			
LPG	5,114,000	245,000	**5,359,000**
Naphta	15,100,000	140,000	**15,240,000**
Others.	13,766,000	3,942,000	**17,708,000**
Motor Spirit (Gaso...	5,471,000	22,738,000	**28,209,000**
Fuel Oils	27,533,000	3,240,000	**30,773,000**
Gas Oil & Diesel Oil	1,176,000	32,930,000	**34,106,000**
Crude Oil	59,062,000	48,136,000	**107,198,000**
Total	**127,222,000**	**111,371,000**	**238,593,000**
Other Goods			
Food Stuffs	1,867,000	472,000	**2,339,000**
Machinery & Parts	2,823,000	3,756,000	**6,579,000**
Oil Seeds	5,908,000	1,892,000	**7,800,000**
Others	3,447,000	6,382,000	**9,829,000**
Veg. Oils	4,790,000	12,394,000	**17,184,000**
Fertilizers	16,783,000	4,440,000	**21,223,000**
Fabricated Metals	10,558,000	12,402,000	**22,960,000**
Chemicals	7,867,000	15,112,000	**22,979,000**
LNG	8,113,000	23,312,000	**31,425,000**
Coal & Coke	24,931,000	10,343,000	**35,274,000**
Ores & Metals	48,699,000	4,767,000	**53,466,000**
Cereals	53,043,000	1,092,000	**54,135,000**
Cont. Cargo	256,294,000	251,112,000	**507,406,000**
Total	**445,123,000**	**347,476,000**	**792,599,000**
Total	**572,345,000**	**458,847,000**	**1,031,192,000**

Figure 10

Effect on world economy was not as bad as feared

123. However, despite this immense importance of the Canal and the fact that the blockage caused large pure economic loss to Egypt, the blockage of the Canal for six days did not in fact put the world economy into a dive.

124. The main issues are that the blockage delayed ships already physically close to the Canal, caused a queue of vessels around the canal, and delayed ships from arriving on time at European and Asian ports. These ships are / will have "bunched up" and discharge of bunched-up cargo will cause stress on landside logistics during the process of getting containers through the ports, onto trucks and rail, and into warehouses. Logistics and transport companies, along with consignees, may find that they do not receive their cargo when they expected (leading to localised shortfalls) and will later find they have more than expected when the backlog arrives (leading to localised gluts).

The blockage will inevitably have resulted in a loss of production, wasted costs and wasted resources of various kinds around the world, but it did not put the world economy into freefall.

Effect on shipping was not as bad as feared

125. Shipping analysts at Europe-based consultancy "Sea Intelligence" crunched the numbers on the effect on world trade and found that "ripples gone 1st week of June".

126. *"We updated our analysis on the ripple effects on Asia-Europe network capacity and expanded it to see when exactly the main Suez ripples would be removed from the system… we took the weekly change in capacity compared to the pre-Suez situation, and calculated the cumulative change. Next, we have calculated this cumulative impact as a percentage of the total capacity offered to the shippers in the market. This way we obtain a method for seeing when the cumulative impact approaches 0% - which would then in turn indicate the timeframe it takes to absorb the Suez impact… After 9 weeks, the effect is almost fully absorbed, but not quite… the Asia-North Europe trade is on track to have all the effects removed by early June,"* wrote Sea-Intelligence CEO, Alan Murphy, in his weekly and widely-read industry-briefing.

Mitigating actions in the supply chain

127. Meanwhile, those companies that are affected may find that they can increase their future prices, pass on costs to other parties in the supply chain, or otherwise avoid difficulties (e.g. trucking companies often do not have to accept empty containers into their yards) by virtue of appropriate clauses in contracts and by making claims on insurance.

128. The main indirect problem would / will have been if the various types of ships fell into further short supply at a time of already tight supply owing to supply of ships declining owing to being forced around the Cape of Good Hope. Shipping costs (i.e. the costs to shipping companies) and freight rates are increasing, which is indicative of a tight market. However, and from a supply chain resilience viewpoint, ships and shipping services are not stopping because of this tight market.

129. Another point worthy of noting is that, unlike the closure of the Suez Canal in previous decades, ships are a lot more efficient now. In 2006 the containership Emma Maersk launched. At the time, it was one of the world's biggest container ships with a capacity of 11,000 TEU. Today, the world's largest container ships have more than doubled in size to about 23,000 TEU. So, if ships have to deviate away from the Suez Canal, they have vastly more carrying capacity than at any time in history. Although, in the current market, the ships are stuffed to the brim with goods.

130. Bigger ships also result in massively lower slot (container-space) costs. This gives extra financial capacity in the world fleet (and the world economy) enabling it to bear one-off disruptions more easily when compared to previous decades.

Management theories have (inadvertently) caused increased supply chain risk

131. This Suez Canal event does highlight a non-shipping risk which is this: consignees of various kinds have been slowly reducing the number of suppliers (lean supply chain strategies) and have been running down the stock levels (lean inventory management strategies; just-in-time management strategies) to save money. They may, perhaps, have not given sufficient weight to their risk management and may have not held a sufficiently large volume of buffer inventory in their warehouses to cover the inevitable incidents, accidents and upsets that materialise in the real world (however, see our comments about on-water buffer-stocks).

132. We understand now that shippers and consignees are now building and holding bigger inventory volumes to provide cover in the rare event of disruption. It is being described as just-in-case (as opposed to just-in-time).

133. Excessively following lean supply chain and stock management strategies is, however, a non-ocean shipping risk. We mention it in passing here because other commentators sometimes incorrectly conflate such non-shipping risks with shipping.

Blockage did not strongly adversely affect Australia

134. The Suez Canal blockage didn't strongly adversely affect the Australian economy. The primary reason for a lack of effect on Australia is that most of our freight does not originate from, nor is it destined for, the European side of the Suez Canal.

135. Firstly: fuel. Much of our crude, and the crude that is refined into our petroleum products, comes from the Middle East on the eastern side of the Canal. Our petroleum products are mostly refined in Asia.

136. Second: our dry bulk exports. These are mostly from Australia to countries in Asia.

137. Third: containers. Most of our container trade comes from Asia – only a small portion of our box trade is from / to Europe.

138. There were, of course, some ships that were bound for Australia that do transit Suez and they will have been delayed. As explained above, such delays inevitably lead to ship bunching which places stress on landside logistics. We understand that some such ships are now (late April) arriving in Australia ready to discharge cargo.

139. But, otherwise, the immediate, direct, impact in terms of the ocean-borne transport of cargo to / from Australia was fairly limited.

A by-product of shipping is that it effectively creates on-water buffer-stocks

140. At the time of the Suez Canal blockage, ships on the Europe-Asia route effectively found themselves in three main categories:

- Ships close to the canal, waiting to transit
- Ships that had recently passed through the canal and were en-route to destination
- Ships that were still some distance away and were intending to transit the canal

141. Those vessel in immediate vicinity were blocked from proceeding. They were delayed and experienced wasted costs and resource.

142. Ships that had already just passed through the Canal and were en-route to their destination were not affected at all. As ships do not travel at hundreds of kilometres per hour, it takes ships time to get anywhere. That means there is often a lot of cargo of all kinds en-route to destination everywhere in the world at any given time (see AIS maps). This cargo-on-the-water capacity provides an immediate buffer stock for all kinds of cargoes – whether that is iron ore, consumer goods or crude oil or petroleum products. So, in this case, the stock-on-the water in ships that had already transited through the Canal provided a buffer stock that covered the six days of blockage.

143. Ships that were anywhere from a little distance away to a long distance away from the Suez Canal were not immediately blocked from proceeding. Ships are inherently mobile objects and are capable of changing speed. This variable speed means that ships some distance away but heading toward the blockage could slow down and, when the blockage was cleared, could speed up again. This capability helped ensure largely continued smooth supply on a global scale.

Alternative routes to the Suez Canal

144. The Suez Canal was only blocked for a few days. But it was feared that it could have been blocked for some weeks. From a risk management view, there is the concern that the canal could get blocked for months or years if, say, there was a local armed conflict.

145. The ships that were intending to transit the canal were suddenly faced with a choice – go to the canal and wait or sail an alternative route, specifically, via the Cape of Good Hope in South Africa. It is worthwhile considering this choice because the reasoning (below) will demonstrate why a longer term closure of the Suez Canal would not be the absolute disaster that is feared.

Speed = time / distance (and route!)

146. Many commentators worked themselves into a frenzy over the thought that ships might have to travel the 23,700 km distance around Africa to get from one side of the Canal to the other. While that is the distance around Africa, the commentators did not realise that ships do not sail from, say, Port Said in northern Egypt, head west across the Mediterranean, head out into the Atlantic, sail all the way around Africa, sail up the Red Sea and then discharge cargo at the city of Suez on the other side of the Canal.

147. If it truly was necessary to ship smaller volumes cargo from the immediate east to the immediate west of the Canal, from, say, Cyprus to Djibouti, then it would probably be unloaded at Port Said and be land-hauled by truck to the city of Suez. There are other land routes e.g. cargo could be unloaded at the Israeli port of Ashdod, trucked south and re-loaded onto a ship at the Port of Eliat in the Gulf of Aqaba.

148. Larger volumes of cargo destined for the eastern end of the Mediterranean and originating from Asia would likely be carried on a mainline vessel to the western end of the Mediterranean and then dropped off a local trans-shipment hub, say, Algeciras in southern Spain or Tangier in Morocco. Large feeders would then shuttle the cargo from west to east.

149. A ship sailing from, say, Singapore to Rotterdam (or vice versa) that could not use the Suez Canal would simply not enter the Mediterranean or the Red Sea but would instead sail around the Cape and then across the Indian Ocean.

150. Secondly, the true distance is the difference between the Suez and the Cape i.e. the distance using the Suez Canal route needs to be deducted the distance of the Cape of Good Hope route. The Suez route is 15,350 km (roughly) and the Cape is about 21,770 km, a difference of about 6,421 km (3,467 nautical miles).

151. Unfortunately, some of the media reporting was a bit wide of the mark in explaining the consequences. For instance, the BBC, breathlessly reported in "The cost of the Suez Canal blockage" https://www.bbc.com/news/business-56559073 that the Suez route takes a ship from London to Kaohsiung (Taiwan) about 25.5 days and the Cape route would take about 34 days at an average speed of 10 knots (one knot is one nautical mile per hour or about 1.852 km per hour). The BBC seemed to be blissfully unaware that different types of ships sail at different rates; that a mean average can be grossly affected by outliers; and that ships can speed up.

152. For instance, while fully laden dry bulkers carrying heavy iron ore may proceed a leisurely service speed of about 10 knots (and they tend not to go via Suez anyway), container ships will likely travel at about 20 knots and can go faster than 25 knots. Using the BBC's example, a container ship proceeding around the Cape from Europe to Kaohsiung, Taiwan, at 25 knots will arrive in just over 22 days. Or, in other words, it will arrive at Kaohsiung a couple of days ahead of a containership travelling to the same destination via Suez at ten knots.

153. Of course, the cost of the longer journey is a factor… or is it? Well, it has a variable effect. It depends upon calculating all the costs and then working out how they interact with each other. We then have to think about the opportunity costs of missed freight rates.

154. When ship costs are low and freight rates are low, it makes sense to go the long way around the Cape at a slow speed as this reduces cost and takes capacity out of the market. This happened during the beginning of the COVID pandemic when cargo volumes and freight rates were low. Shipping companies sought to save money by sailing slowly around the Cape and, in so doing, also avoided having to pay Suez Canal fees.

155. When costs are high there is then an optimal speed to be calculated, taking into account all voyage costs while also taking into account the possibility of incurring an opportunity cost by missing out on high freight rates.

156. Going fast around the Cape versus going at the same speed on the Suez route would incur extra costs for the shipping company. But the fact that Suez Canal fees will be avoided will also need to be borne in mind.

157. Ultimately, if the Suez Canal is blocked during a time of high freight rates, then a decision to wait, or go slow around the Cape, or go fast around the Cape, is likely to be a decision based on the opportunity cost of missing out on high freight rates. At the time of writing (28 April 2021) the Freightos Global Container Index is quoting a price of USD$4,372 per FEU (AUD$5626) and USD$7,779 (AUD$10,010) on the China-Europe Route. Red circles have been added to Figure 11 to highlight the most relevant freight rates.

Source: Freightos
Figure 11

158. While an ocean carrier won't necessarily be able to fill its entire capacity on the spot market (it will have long term contracts, offer length of service and volume discounts etc), these Freightos numbers give an indication that, in the current market, time really is money. Incidentally, the unusual current environment is just that: unusual. Freight rates are typically much lower than the prices displayed on the left-hand column of the Freightos screenshot. Freight rates are typically far lower (see the long tail on the Freightos graph, on the right of the screenshot, which goes back to some point in the first half of 2019. Note – Freightos quotes rates on a forty-foot container basis).

159. At a freight rate of just under US$7,800 / FEU any containership operator is going to sail the ship as fast as is possible around the Cape of Good Hope to avoid the opportunity cost of delay and to take advantage of this current, unusually high, freight rate.

Other alternative routes

160. The shortest alternative Asia-Europe route is not via the Cape of Good Hope. It's via Russia. Specifically, it's via the Russian Arctic Sea Route. It's possible that the Canadian North West Passage may also be shorter (although this may depend on the exact route chosen). Future shipping routes may possibly be routed over the top of the world in the future. This table showing a trip between Rotterdam (Netherlands) and Hong Kong (China) puts it all in perspective:

Distance in nautical miles – route taken by ship

- 8,963 nautical miles – Russian Northern Sea Route
- 9,529 nautical miles – Canadian North West Passage
- 9,988 nautical miles – Suez Canal Route
- 13,437 nautical miles – Cape of Good Hope Route
- 14,843 nautical miles – Panama Canal Route

Note: different calculation methods may result in different distances from those given here.

Source: Shipping Australia
SAL Table 9

161. This multiplicity of routes is also of interest in the context of supply chain resilience. In the rare event of the Suez Canal being unavailable for some duration there are at least two viable routes that ships can go right now (via the Cape of Good Hope or via Panama). And, in the near future, there will likely be two more routes – one over the Canadian Arctic and another over the Russian Arctic. Incidentally, there's also another route, Hong Kong to Rotterdam via Cape Horn (at the very tip of South America) – but it's 17,400 nautical miles long and we do not consider it further here.

162. At the moment, the area within the Arctic Circle is entirely covered by ice for the nine months from November to July. For much of the year it is completely inaccessible to ships without an icebreaker.

163. We've known for some years now that the Arctic is melting. It will likely melt sufficiently to allow the opening of navigable trans-Arctic shipping routes up to September each year. This is likely to happen before mid-century. A merchant shipping trial took place a few years ago when a Maersk vessel sailed from Vladivostok (Far East Russia) to St Petersburg (Far West Russia) over the Arctic via the Northern Sea Route.

Sea lane blockages near Australia

164. There are no waterways of the same or similar importance to world trade as the Suez Canal anywhere near Australia. There are, however, some very heavily trafficked sea areas such as the Strait of Malacca (between the Indonesian island of Sumatra and the Malaysian peninsula). If the Malacca Strait becomes unavailable for some reason, perhaps some hostile power blocks the Malacca Strait to traffic, then ships could sail via either of the Sunda or Lombok Straits, which are located either side of the Indonesian island of Java. They could even sail to the east of Papua New Guinea if necessary. If a power was to enforce a

no-sail zone through the South China Sea, then ships can sail around it to the east of the Philippines to Japan, Korea and northern China.

165. No single sea blockage, or disruption in any one particular area of the sea can stop ships – they will simply go around. Even where the sea is enclosed, two warring littoral powers couldn't even prevent shipping from using a shallow, narrow gulf during the 1980s war in the Middle East.

166. The world's sea spaces are vast. The routes around the sea are legion. No one power, or group of powers, has any hope of blocking all, or any discernible fraction of, Australia's sea routes. And even if an incident or an enemy actor did so block a route, ship operators and crews have repeatedly proven they are willing to take the risk (for a fee) and have successfully carried out large numbers of shipping operations despite being attacked.

Potential blockages of Australian channels

167. However, although the sea lanes around Australia are, effectively unblockable, Shipping Australia notes the existence of underwater narrow channels that give access to and from seaports in Australia. These channels are dug into the bed of seas / rivers / bays in shallow water and give large ships access to and from seaports. They are a universal feature of seaports around the world. Other underwater features include berths and turning basins.

168. Digging and maintaining such underwater infrastructure with specialised underwater digging equipment and vessels (called "dredges") is very expensive. Maintenance is required because of siltation and sedimentation into the channel as sediments are typically transported in the water column by littoral drift and / or riverine transportation. So, typically, seaports will excavate and maintain just as much of a channel as is needed to allow ships to enter and leave ports safely.

169. Shipping Australia further notes that our own seaports have captured a very high market share. Port Botany, for instance, claims a 95% market share on containers into Sydney. NSW Ports controls Botany and the state of NSW has determined that Port Kembla, also an NSW Port, will be the next container port in the state. Newcastle is one of the world's major coal export ports. The three main Pilbara Iron Ore ports of Hedland, Dampier and Walcott are world leading iron ore export ports. However, all three are in a cyclone zone. In Victoria, the Port of Melbourne has a vast hinterland. It is angling to expand and extend its port and one of the consequences of that expansion, should it go ahead, is that it could potentially squeeze out rival developments in its hinterland, such as the proposed Burnie International Container Terminal in Tasmania.

170. Lengthy blockages of such infrastructure could be potentially concerning. Such underwater infrastructure could potentially be blocked briefly or for a longer time for a several different reasons.

171. Ships can sometimes become the centre of legal or commercial disputes, although in such cases the ships are normally moved (either under their own power or under tow) out of the way to an anchorage area. However, during the global Hanjin Bankruptcy crisis, there were fears expressed as to what might happen in Sydney if multiple Hanjin ships were

arrested. Sydney does not have an offshore anchorage area and if multiple ships were arrested then there were concerns about the availability of berths for those ships. This blockage scenario did not eventuate as Hanjin ordered its ships to stay out of ports during the crisis. That, of course, led to the realisation of a different kind of risk, namely that cargo consignees in Australia did not receive their cargo on time if their cargo was shipped on Hanjin vessels. This had some quite profound implications for time-sensitive businesses such as major events businesses.

172. Perhaps of more concern is the possibility that ships could physically block channels, turning basins and berths. This could potentially happen for relatively mundane reasons such as engine failure, machinery failure or bad weather. It could also happen in more extreme scenarios such as criminal activity (some kind of sabotage) or, in the event of some kind of armed conflict, through enemy action.

173. Policy makers may wish to turn their attention to the possibility in Australian seaports of access channels, turning basins and berths becoming blocked, potentially for long periods of time, and satisfy themselves that there are adequate preventative and mitigating risk management strategies in place. These might include physically ensuring that channels are not blockable, and / or that there are legal powers, and the physical ability, to enable the immediate relocation of blocking ships and wrecks without first getting tied up in any legal dispute or any dispute about payments i.e. act first and sort out the bill later.

Concentration of seaport ownership

174. Shipping Australia also notes a related set of risks, namely that many of the Australian ports form local monopolies and there is limited competition between ports. Even though there may be seaports that are close to each other they may be focused on handling very different commodities.

175. For instance, the Port of Melbourne and the Port of Geelong are near neighbours, and both handle vast amounts of cargo. Melbourne is focused on containers and Geelong is focused primarily on dry bulk cargoes. The two ports do not contest for the same cargo. In Western Australia, the main seaports are all owned by the state government.

176. Shipping Australia considers that localised concentration of ownership also presents a risk management issue.

177. For instance, if ports set extremely high prices, then there is little that shipping companies can do except pay. There are many complaints about port pricing including lack of justification for frequent and regular price rises and a lack of transparency. With a scarce few exceptions, there is little oversight over port pricing and fees. Owing to the essential nature of trade, Shipping Australia recommends that all ports around Australia be subject to some kind of price controls, perhaps on the model seen in Victoria in which the Victorian Essential Services Commission oversees pricing.

178. There are other concerns too, especially where there is a bundling of services provided by owners of concentrated seaports. For instance, the ACCC is taking legal action against TasPorts for alleged misuse of market power (see "Action against TasPorts for

alleged misuse of market power" of 9 December 2019. The ACCC has alleged that TasPorts took action to prevent a new entrant from competing effectively with TasPorts' own marine pilotage and towage business.

Australian liquid fuel security

179. There are many aspects of debate about Australian fuel security, we however will largely focus on the shipping aspects. So, for instance, we will not discuss the advantages and disadvantages of maintaining a particular level of oil stocks. We will also largely not discuss LNG as a liquid fuel for Australia as this either is, or is nearly wholly, exported (although LNG import terminals are being built in Australia). We also note that, owing to technological change, that the demands for liquid fuels of all kinds could greatly decline in the not-too-distant future as electric vehicles of all types, or biofuels, become more popular and attract greater market share.

180. As noted earlier, the composition of Australia's liquid fuel supply is changing. It is increasingly moving away from the importation of crude oil, because the numbers of refineries in Australia have reduced, to the importation of products refined from crude oil. It is possible that in the not-too-distant future that there will be no refineries in Australia.

181. Many commentators have expressed opinions that this change equates to greater risk. The argument is that importation of crude and refining into products in Australia is somehow more secure / less risky / less vulnerable than importing refined products because Australians would have control over refining (and would presumably, therefore, not engage in practices that would harm their own vital self-interests).

182. The above argument is unsupported by evidence and does not stand up to examination.

183. An obvious point to make in relation to the above argument is that there is no clear and rational reason as to why the importation of crude oil to Australia from a given source, say, the Middle East, is any riskier than the importation of refined petroleum products from the same source. As fuel security consultants Hale & Twomey noted: "It is difficult to conclude that there is a significant difference in supply risk between crude and product imports", in "Review of Market Resilience to Oil Supply Disruptions" June 2014.

184. If anything, importation of refined petroleum products is far less risky than the importation of crude oil.

185. Firstly, Australia would only potentially be harmed by disruptions to the fuel that the Australian economy demands and uses. Evidence shows that what the Australian economy demands and uses is refined petroleum products.

186. We know this because there are very few oil-fired power stations around Australia (which are mostly small and, in any case, mostly burn diesel). Meanwhile, the vast volume of liquid energy sales is primarily for automotive transport, followed by aviation (see Table 3A, Sales of Petroleum Products, Australia in "Australian Petroleum Statistics"). The only reason

Australia even demands crude oil is for the purpose of refining it into products. There is little potential for increased harm if there is no real demand for the commodity being imported.

187. Secondly, seaborne crude oil from the source-region (the Middle East) to Australia is transported on relatively well-known and predictable routes in large, slower-moving vessels, to known import locations within Australia that are only few in number. The larger crude oil production and transport companies in the Middle East may well be owned and operated by the state or emanations of the state. There are clear political risk factors as the local region has been prone to wars. It is possible that Middle East governments could develop a hostile stance toward Australia. There are risk factors from weather (cyclones can hit the Middle East) and potential hazards to navigation (although it should be remembered that extreme risks in the 1980s Tanker War did not stop crude oil shipping). Meanwhile, it would be obvious to any hostile actor which crude oil carrying ships are destined for Australia and it would be difficult for Australia to defend those crude carriers when they are transiting the vast and remote spaces of the high seas.

188. In contrast, seaborne petroleum product imports to Australia are far less vulnerable.

189. We can consider four main risk areas in the supply chain of petroleum products to Australia. These are the

- origin-of-the-feedstock risks
- the seaborne transport of crude feedstock to overseas refineries risks
- the risks at the overseas refining stage, and
- the risks of seaborne transport of refined products to Australia.

190. As the source of crude and the crude-feedstock for petroleum products is (mostly) the Middle East, then the source-region risk for both the crude and the petroleum supply chains are similar to each other.

191. The risk profiles for ships transporting crude to Australia versus ships transporting crude to an overseas refinery will differ from each other once the ships leave the vicinity of the Middle East.

192. Although the ships on both routes (Middle East to Australia vs Middle East to Overseas Refineries) are likely to be physically similar (i.e. large, slow, crude carriers for both supply chains), they will experience different risks to each other because the routes to their destination differ. They may experience different weather risks and they may experience different political risks en-route. For example, a ship that leaves the Middle East en-route to Australia via the high seas of the Indian Ocean will experience different weather, operational, navigational and political risks compared to a ship that leaves the Middle East en-route to a refinery on, say, the east coast of India.

193. As the ship carrying the crude-feedstock to an overseas refiner would not be destined for Australia then, even in the event of a deterioration in the relationship between the Middle Eastern government and Australia, there would be no reason for the suppliers of that crude feedstock to stop, delay or block a shipment of crude. There would also be no

reason for any anti-Australian hostile actors to target any particular shipment of crude feedstock during seaborne transport either.

194. For example, if a ship carrying crude bound for Australia leaves port in the Middle East and there happens to be some political hostility at that time, then it is possible that the supplier country (or some other hostile power) would realise that the particular shipment (and any subsequent shipments) is or would be bound for Australia. That shipment could potentially be stopped, delayed or attacked because it is bound for Australia. Conversely, if the ship is carrying a crude oil cargo that will be used as feedstock for a refinery in, say, south east Asia, then even if there happens to be some kind of anti-Australian political fallout no-one would have any particular motivation or reason to stop that shipment of crude feedstock to south east Asia.

195. Seaborne crude feedstock shipments to overseas refiners will also be more spread out in both the timing of individual shipments and the destinations compared with direct shipments of crude to Australia. This adds a further diversification in the event of any accidents, such as ships breaking up in the ocean, running aground, falling afoul of bad weather or being targeted by hostile actors.

196. There is further diversification of risk at the refining stage. Different refineries in different countries will have different levels, and different types, of risk. They will have different political risk, they will experience different weather systems, they will have different industrial relations environments, they will have differently configured seaport layouts and currents. There will just be many differences, which lowers risk of disruption.

197. The different refiners source their crude feedstock from different suppliers. According to the Department of the Environment and Energy's "Liquid fuel security review: interim report", South Korea sources 81% of its crude feedstock from the Middle East, Singapore sources 88% and Japan sources 87%. Middle Eastern governments collectively would have to fall out with three separate Asian governments, and restrict supply to them, so as to seriously begin to threaten supply of Australian refined products. In such a case, as Hale and Twomey note: "Australia’s sources of crude oil are diverse and cover a wide range from Malaysia to West Africa. Major supply disruption would likely see reallocation of this supply to mitigate the disruption," (see "Review of Market Resilience to Oil Supply Disruptions" Hale & Twomey, June 2014). Similarly, overseas refiners could source alternative sources of crude oil from other suppliers while, at the same time, we in Australia could also seek to diversify our liquid fuel products from a wider range of refiners.

198. There are other differences that will tend to lower risk. While Japan and Korea may experience cyclones, there are no cyclones in Singapore because of the Coriolis Effect. Each of these countries will have different risk profiles in terms of industrial relations, commercial risk and political risk too.

199. Shipping of petroleum products to Australia from overseas refiners also presents minimal risk for reasons given earlier in this submission. These are: it is not possible for an incident or a bad actor to block all, or even a substantial fraction of all the sea-routes to Australia; shipping is inherently resilient to risk because it is an industry of "multiple

differences"; in the event of any given incident happening at any point-in-time there is already a lot of stock-on-the-water en-route to Australia; ships can speed up, slow down or change route to mitigate any adverse consequences of any particular risk; there are a lot of fuel product import terminals in Australia and no one adverse event or bad actor is going to be likely to be able to shut them all at the same time other than in situations of the most overwhelming display of force. And remember: if there is a hostile actor, Australia has its own defence forces plus it has political relationships that it can call upon to provide aid.

200. There have been several reviews into the topic of fuel security by energy-focused experts Hale & Twomey. One of their areas of specialist expertise is energy security. Hale & Twomey have carried out several reviews into Australian fuel security and have repeatedly found that the maritime supply chain is flexible and, because it is flexible, resilient.

201. Shipping Australia particularly notes the Hale & Twomey conclusion that: ***"in reality, it is difficult to envisage a scenario in which shipping is not available and historically we cannot point to an event which saw the collapse of the petroleum tanker market"*** (see "Australia's Maritime Petroleum Supply Chain", Hale & Twomey, June 2013").

202. Hale & Twomey carried out a corporate resilience scoping exercise and an extensive scenario-planning exercise in "Review of Market Resilience to Oil Supply Disruptions" for the Department of Industry in June 2014. They concluded that in the event of any serious disruption then Australia could simply switch from suppliers in one region to another region and that, if there was any disruption, inventory could be moved around by ship. Ultimately, they conclude in that document that ***"major supply disruptions impacting on the global [petroleum products] market have occurred reasonably frequently in the past and the market has continued to operate"***.

203. Hale & Twomey also carried out a "Stock on the Water Analysis" for the former Australian Department of Resources, Energy & Tourism in February 2013.

204. While some analogies can be drawn between pipelines and ships in the ongoing transport of crude and petroleum products, there is one fundamental difference between the two. As Hale & Twomey explain, "unlike a pipeline where product will stop flowing out of a pipeline as soon as product stops going into it, ***vessels will keep arriving even if supply is disrupted. With numerous cargoes on-water at all points in time, the supply chain can become non-linear*** (you do not have to wait for cargo A to discharge before loading cargo B). ***This allows maximum flexibility between final destinations and allows all buffer stock across various ports to be used as contingency as cargoes are re-optimised to where they are required most.*** Ships once empty can be used to transport product around the coast to cover any infrastructure disruption".

205. In their "Stock on the Water Analysis, Hale & Twomey noted that Australian companies often own and control significant volumes of stock-on-the-water (i.e. inside ocean-going tankers) because they acquire title to the products during loading at the overseas port of loading. ***Furthermore, for much of the time, those tankers are in or near the Australian Exclusive Economic Zone.***

206. ***"While secure under the control of locally based companies, the marine supply chain provides flexibility in responding to disruption events as ship discharges can be managed to ensure all available buffer stocks can be used as contingency. The 15-20 days of stock on the water also delays any impact from any disruption, giving countries time to make internal decisions for responding to any disruption,"*** Hale & Twomey said.

207. It is therefore reasonable to conclude that seaborne imports of refined petroleum products are highly resistant and resilient to supply chain shocks.

An increase in risk: proposals for a national fleet aka "a single-point-of-failure fleet"

208. Several commentators have called for the creation of an Australian-controlled fleet. This has been tried in Australia and around the world. The results were less than spectacular with the national fleets typically being shut down and sold off.

209. National fleets typically become bogged down in domestic commercial matters and domestic political issues. Governments may, for instance, be tempted to reduce unemployment figures by directing workers to work in the national fleet. This certainly happened, for instance, with the old shipyards of Malta. At one point a considerable portion of the population was employed by the shipyards. Another example of a potential political conflict of interest could be the need of the national fleet to get empty boxes back to the manufacturing centres of the world (i.e. Asia) for the purposes of loading with more cargo for import back to Australia. However, Australian exporters would likely demand of Australian politicians that certain volumes of empty boxes be reserved for their use. This would pit importers against exporters and would increase costs of the national single-point-of-failure fleet, thereby helping (along with all the other conflicts of interest) to render the national fleet uncompetitive. The conflict between a single-point-of-failure fleet and consignees / shippers would have to be resolved through political intervention.

210. In the current free market set-up, this conflict is managed by the pricing signal and sound commercial management. If exporters want to export at times of high demand for containers, then they can simply secure their container by paying the market rate. They can manage the risk of high rates by booking in advance, negotiating for returning customer preferences, insurance and by using other financial tools where appropriate.

211. Restructuring or downsizing the national single-point-of-failure fleet would be an epic nightmare of Herculean proportions as it would inevitably result in a major industrial relations conflict with the trade unions. Union control over a single-point-of-failure fleet would provide huge leverage to any trade union over the various state and federal governments of the day.

212. Having a national single-point-of-failure fleet also eliminates the great benefits of having a sector of "many differences". Instead of having different flagged ships, and different owners, and different managers and different crew, there would be one owner, one flag, one manager, one set of crew. That's a single-point-of-failure. As is seen elsewhere in this submission, the single greatest threat to the ongoing delivery of shipping services is bad decisions by government. Having a national single-point-of-failure-fleet concentrates

the risk of, and increases the likelihood of, government action disrupting shipping. Similarly, another major threat to the supply of shipping services in the event of the creation of a national single-point-of-failure-fleet would be industrial action by trade unions. They would be able to hold Australian families hostage to their industrial action – as they have repeatedly done to the shipping industry in the past.

213. Some commentators have called for subsidies to commercial industry – think of it as some kind of retainer – to ensure that there is a fleet available in times of crisis. But history has shown that, in relation to shipping services, there is always tonnage to charter on the commercial markets even during times of crisis. Ships and crews were available via the commercial markets to sail the Persian Gulf during the height of the Tanker Wars. Ships and crews were available via the commercial markets, and shipping services continued, through the height of the Somalia piracy crisis.

214. Shipping Australia believes and asserts that the existing international seaborne fleet is far superior in risk management terms than any national single-point-of-failure fleet. The international fleet is strategically robust. It is strategically resilient. It is strategically diverse. It is ***THE strategic fleet bar none.***

Shipping sailed on through the COVID-19 crisis

215. Ships and crews and commercial shipping services have been available throughout the COVID pandemic even though there were blank sailings in the early part of the COVID crisis when uncertainty was at its highest and cargo volumes were low as Asian centres of manufacturing temporarily shut down. But capacity was not reduced overall and nonetheless cargo continued to flow to Australia despite COVID. Goods were always delivered to seaports ready for onward transport and sale.

216. Early in 2021, analyst company Sea-Intelligence examined blanked capacity and year-on-year capacity change on a key trade route using a running four week average dating back to February 2020.

217. The data confirmed that, in the early days of the pandemic when Asian production was adversely affected, blank sailings were high. Blankings reduced somewhat but were still high until about May. Thereafter, in July and August, blankings slumped to zero. There was a surge in blankings again in the end-days of 2020, which trended back down toward zero in the early days of 2021.

218. "So there has been [an increase] in the number of blank sailings, despite the current bottleneck problems, but this does not mean that the carriers have also reduced capacity, compared to a year earlier," Sea-Intelligence CEO Alan Murphy revealed.

219. He added that extra capacity has been introduced into the global fleet through the introduction of larger vessels and extra loaders, *"which has more than exceeded the amount of capacity removed through blank sailings. there have been periods where the growth in capacity injection was pushing 30% [year-on-year], despite some sailings being blanked".*

220. A similar pattern has been seen on a variety of key trade routes around the world, Sea-Intelligence indicated. *"The data is… clear: carriers have not reduced deployed capacity, despite having blanked some sailings,"* Mr Murphy concluded.

221. While there was briefly a shortage of some goods in shops, particularly toilet paper, in the early part of the year, this appears to have been the result of irrational panic-buying that may have been triggered by hoarders and, if the general media is to be believed, by profiteers buying up toilet paper stock and then trying to sell later at a very high price during the resulting short supply.

222. This earlier period of toilet paper shortage, hand sanitizer shortage and other cleanliness shortage was driven wholly by domestic panic buying and had nothing to do with operation of ships or the provision of commercial shipping services.

223. We note other commentators / submitters to this inquiry have talked of a supply chain disruption and / or supply chain fragility during the pandemic:

i. however, the seaborne supply chain has managed to adapt to the pandemic

ii. shipping lines continued to be serve Australia with many Asia-Australia shipping services

iii. Melbourne, Sydney, Brisbane, Fremantle and Adelaide continued to attract containerised shipping from Asia

iv. Ships calling into Australia are also calling into China, Japan, Korea, Thailand, Singapore, Malaysia, Indonesia and Thailand

v. Member lines report that ships calling into Australia from Asia range in size from approximately 2,800 twenty-foot equivalent units to 8,000 twenty foot equivalent units throughout the pandemic

- (there may be some outliers bigger than 9,000 TEU from time to time);
- the median size vessel appears to be about 4,000 to 4,500 TEU

224. However, there were some changes during the period of the pandemic:

i. a small number of sailings, (small, relative to the total number of sailings) were blanked (mainly February – April)

ii. such blankings may, however, have occurred because of generally low cargo volumes at the time of year (as the China COVID shutdown extended the normal low volume period around Chinese New Year) (i.e. some blankings may merely have occurred at the same time as the pandemic and may not have actually been caused by it; i.e. correlation is not causation)

iii. volumes of imports have exceeded seasonal norms from about June onward and some additional vessel services have been introduced to manage this demand (this is the very definition of resilience – shipping services to Australia came back from the

pandemic even better than they were before the pandemic, although, owing to a wide range of factors, schedule reliability has unfortunately declined).

225. It is remarkable that the international shipping industry continues to provide high quality, good value, containerised ocean shipping services that serve a wide range of destinations, despite the challenges posed by the COVID-19 pandemic.

Other natural hazards

226. Australia is a land of extreme natural weather events. Drought, bushfires, cyclones, storms and floods are a few of the main extreme natural weather events. However, unlike land-based operations, none of these weather phenomena have had barely any effect on international shipping at all. Indeed, ocean-going ships in their various forms may be looked upon as a way of providing emergency aid relief. Even if the local seaport is damaged, crane-bearing break bulk ships can load and unload anywhere there is space and water depth. Even if the underwater access channels and berths are damaged, break bulk vessels with cranes can offload containers onto floating platforms and shallow barges that can then be towed to shore by tugs.

227. Overseas centres of manufacturing (particularly in Asia) and our export customers elsewhere all experience phenomenally bad weather from time to time. This includes cyclones, hurricanes, earthquakes, floods, heavy rains, tsunami and many more. None of this has ever disrupted seaborne shipping to any appreciable degree.

Severe economic downturns, recessions and depressions

228. Shipping operators and companies have existed through some of the worst economic downturns in living memory, and shipping companies have existed through the worst recessions and depressions in history. While the world fleet may have shrank during these times, while the numbers of shipping companies may have taken a hit, nonetheless shipping has continued.

229. There is by now a vast literature, history and memory embedded in general media, trade media, archives, libraries and academic journals along with institutional memory of what to do in a downturn. Shipping has a variety of tools and adaptations to manage risk.

230. The industry can blank sailings (i.e. inform customers that a given sailing will not, in fact, go ahead). Blanking was done in the early days of the COVID pandemic to take capacity out of the market when the populations in the Asian nations (being the centres of world production) began to fall sick and when industrial activity declined.

231. Shipping companies can send older ships for demolition and recycling – this is another time-honoured tactic of coping with downturns. Younger ships can be put into layup (either "hot" (which means it is comparatively easy to return the ship to service) or "cold" which means it is a considerably more difficult thing to do). In downturns past, ships have been laid up in the Philippines and in Scottish lochs, among other places. A similar phenomenon is currently happening now in the aviation industry with large numbers of

planes parked in the desert. Shipping companies can also cancel the number of ships they have on order, which, again, shrinks the size of the world fleet thereby reducing capacity.

Market volatility and disruption

232. In less interesting times, shipping companies also have a range of other techniques, available to many businesses, to manage through periods of uncertainty. These include but are not limited balance sheet management (asset sales, taking on / reducing debt etc), reduction of headcount, restructuring and so on. In volatile market situations, they also have a series of financial instruments such as derivatives (in the form of over the counter and market-cleared forward freight contracts) that allow them to reduce their financial risk.

233. Shipping companies also have the ability to issue ancillary charges to cover surging costs in areas such as surging fuel prices, or surging currency rates. Whether anyone actually pays them is a different matter.

234. Global ocean-going shipping operates in a free market. In such markets, costs sometimes spiral upwards. For instance, the charter market to hire container ships has increased by about 61% between January 2021 and late April 2021, according to Shipping Australia calculations on charter data. Shipping handles such increases through normal market mechanisms; as shipping costs increase, there is upward pressure on freight rates.

235. Shipping companies also have the ability to manage congestion. Sometimes, for a variety of reasons, seaports become congested. Ships can slow down (or, if appropriate, speed up), they can skip a given port of call or, if they are tramp-ships on a point-to-point trade, they can decline the business or charge a surcharge to cover congestion. Shipping companies will, if the congestion becomes too severe for too long, be likely to withdraw their services from that port. Such actions, or the likelihood of such actions, often put pressure on the appropriate port stakeholders to investigate the causes of congestion and to remedy them.

What can – and does – stop shipping services

236. Nonetheless there are a few risk factors in Australia that can, and do, stop the provision of shipping services and the flow of cargo. The greatest threats to the provision of shipping services to Australia and the carriage of cargo to and from this country are:

- the actions of politicians, civil servants and government officials
- industrial action by unions
- burden-shifting behaviour by other participants in the supply chain

Industrial action by unions

237. You can read details of the waterfront dispute last year as it developed. See our Appendix 01.

238. The "waterfront" is the shared geographic / commercial / operational area in which cargo is loaded and unloaded from ships. The main actors are the shipping companies, ports, stevedores (who, in this context, are also container terminal operators), trade unions and their members, along with providers of ancillary services.

239. As members of the Productivity Commission would be aware, workers have the right to unionise and to carry out collective industrial action (strikes etc) in pursuit of doing an employer-wide deal on terms and conditions. Industrial action can only be carried out during enterprise bargaining and in pursuit of an agreement. Such deals are known as "enterprise bargaining agreements" and they theoretically occur on a three-year basis.

240. The unions had been working on a plan for a long time to ensure that the enterprise agreements of all the major participants working on the waterfront were expired at the same time. That concurrent period of expiry at all major participants would allow the main union (in this case the Maritime Union of Australia, part of the Construction, Forestry, Maritime, Mining Energy Union, hereafter "MUA") to carry out industrial action at all the major participants on the waterfront at exactly the same time.

241. Bearing in mind that shipping, and therefore the waterfront, are utterly vital to the Australian national interest, extended industrial action would have been absolutely crippling both for the waterfront companies and for the Australian people.

242. However, because of the onset of COVID, the unions simply could not have carried out their planned massive industrial action and were unable to hold the nation hostage because public, commercial and, we suspect, political tolerance for such tactics during COVID would have been very low. Nonetheless, the unions mounted a very aggressive campaign of industrial action.

243. During the campaign the union:

- carried out a series of work stoppages at all the main container terminal stevedores ranging from an hour to up to 96 hours
- carries out a series of strikes at the major towage providers
- banned overtime and shift extensions, and other normal working arrangements
- arranged for a reduction in productivity through the creation go-slow working methods (including getting authorisation for engineers and mechanics to carry out work with their "non-dominant hand"!)
- banned work on sub-contracted ships (during industrial disputes, stevedores will sub-contract work to their rival stevedores to ensure that the ships are serviced and that ordinary Australians are not badly inconvenienced); the ban on sub-contracted ship put pressure on stevedores to do a deal. It effectively meant that a non-party to

the dispute, the shipping line, was unduly and unreasonably dragged into the dispute and suffered adverse financial and operational consequences
- banned work on ships belonging to nominated shipping lines
- banned work on ships belonging to shipping lines when the union was in dispute with another company in the group of which the shipping line was also a member

Source: Shipping Australia
SAL Table 10

244. It is noted, and to some degree, accepted, that the purpose of industrial action is to put pressure on an employer to do a deal. However, it should also be noted that the stevedore, Patrick, stated that many of the waterfront workers were "already earning at least $150,000 per year for 180 days of work".

245. The problem of industrial action of this scale is that the waterfront is a key node in the supply chain and its purpose is to enable the flow of essential goods (foodstuffs, household goods, consumer products of all kinds) to the Australian people. A disrupted supply chain has giant adverse economic effects on the economy as a whole. Much of the trucking, retail and warehousing sector, for instance, is dependent on the flow of containerised goods for their daily business.

246. The consequences of this disruption to the waterfront were – and are – legion. These include but are not limited to:

- massive delays of up to 18 days for ships and shipping. This causes huge, wasted costs. A one day stoppage for a vessel at today's level of expenses would cost several tens of thousands of dollars a day for a stationary 4,500 TEU ship; that figure would be much greater for a bigger vessel and much greater again for any vessels that are forced to sail and thereby consume fuel

- shipping lines simply cannot afford to have their assets sitting around for that length of time; some shipping lines opted to skip Port Botany and dropped off cargo in other ports. That would have caused huge costs for the consignee to arrange either for coastal shipping for the box back to the intended port or a huge freight bill to truck the box back across the country

- other lines opted to reduce services in other ways e.g. by reducing frequency

- some imports were delayed for weeks

- some shipping lines opted to issue surcharges to shippers and consignees

- at a time of altered supply / demand, industrial action led to a massive empty container build-up in Australia which is extraordinarily costly and both resource and time consuming for all parties in the supply chain

- container shipping works on a schedule with "windows" to load and unload cargo at different ports in the loop. Ships have to meet their window otherwise they can be severely delayed at the next port of call:
    - industrial action threw container shipping schedules out of the window
    - ships racing to try and meet their next window would have had to have sped up; fuel consumption disproportionately increases the faster a ship sails
    - a ship travelling an extra knot faster from, say, 6 to 7 knots will burn relatively little extra fuel. A ship increasing speed by 1 knot from 24 knots to 25 knots will burn a huge amount of fuel.

247. Shipping Australia supports reform of industrial relations law on the waterfront.

248. Our suggestion would be that stevedoring become an essential service similar to that seen under the National Access Regime found in Part IIIA of the Competition and Consumer Act 2010.

249. Australia's vital interests would benefit if stevedores and union enterprise disputes were to be sent to mandatory final and binding arbitration if the parties could not agree the terms of a replacement enterprise agreement prior to the expiry date of an existing enterprise agreement.

250. We also argue that an automatic ban on industrial action should come into effect on the day after the expiry of the existing enterprise agreement. Unions would have the right to take industrial action but they would have to undertake any industrial action in support of an enterprise agreement before the expiry date of the existing enterprise agreement.

251. Shipping Australia notes that there are 180 day periods under the National Access Regime. However, owing to the time-sensitive nature of the work carried out on the waterfront, and its vitally important nature to the interests of all Australians, a 180 day period would be far too long.

COVID: action by political and government bodies

252. In our submission so far, we've covered some the industrial and commercial risks posed by COVID. Although the SARS-CoV-2 pathogen did not stop ocean shipping during the COVID crisis, actions by various Australian political and government actors very nearly did.

COVID: Bad governance caused multiple shipping crises

253. Looking back over our publications, notes and records, it is hard to pick out the single worst decision by government actors. There were so many panicked, illogical and plain bad decisions. You can read a variety of our articles about these decisions. The headlines and links can be found in Appendix 02.

254. The Federal Government shut our borders on 20 March 2020 to most non-residents and citizens, which has proven over time to be a sound measure. Such measures were replicated around the world. It was the subsequent decisions that led to the crises.

255. In the panic, there was no exemption for crew changes. Every month about 100,000 to 150,000 crew changes need to be carried out. The consequence of closing borders without giving crew change exemptions were that crew changes suddenly became next to impossible to carry out. International aviation effectively collapsed. There were difficulties getting visas for crew. Borders became impassable.

256. At the peak of the crisis about 400,000 people were trapped at sea and another 400,000 people were unnecessarily stuck without work during one of the worst economic crises in living memory. Regional and international shipping associations rushed to provide advice and help. Lengthy guidelines and processes were drawn up by expert bodies around the world. The International Maritime Organization produced protocols and guidelines with the best and latest medical advice explaining how to safely carry out crew changes.

257. For many months, for far too many months, it was to no avail. At first the shipping industries and associations begged for help. Then head of the International Maritime Organization made please for crew changes. Then the heads of a variety of UN Agencies such as the International Labor Organization, the International Civil Aviation Organization and other such bodies begged the governments of the world. UN agencies ruled that governments were acting in breach of international law. The Head of the United Nations, Antonio Guterres called for crew changes to take place. The CEOs of global supply chain and companies warned that, without COVID-safe crew changes, the interruption to the flow of goods "could push companies and countries over the edge".

258. Even the Pope spoke out against the continued crew change crisis!

259. Eventually, and far too slowly given that the IMO had produced extensive protocols on how to safely move crew around the world, governments began to allow crew changes.

260. But it was an extraordinarily difficult thing to do. Flight caps were imposed, it was hard to get flights, it was hard to make the crew logistics work (especially in Australia) as there were numerous difficulties and inconsistencies between the Federal and state. And, of course, the rules kept changing.

261. New South Wales was, for a long time, an extraordinarily bad place to do a crew change as officials were at best obstructive and at worse antagonistic. Systems and processes simply didn't work. There were absurd rules such as the requirement that all persons, seafarers included, had to undertake a 14-day quarantine. A seafarer arriving at Kingsford Smith Airport were thrown into a 14-day quarantine upon arrival even though the ship, ***at the adjacent Port Botany***, was leaving Australia that day or the next day. If common-sense had prevailed, the seafarers could have simply gone straight to the ship from the plane, wearing masks and observing social distancing the whole time.

262. There was repeated profound ignorance of the maritime sector and its importance to Australia. Worse, various professionals simply gave the appearance of completely disregarding advice given about the importance of the maritime sector. In one (virtual) meeting, after Shipping Australia advised the health professionals that they were running grave economic, mental health and public order risks by not allowing crew changes the

health professionals just repeatedly reiterated that, having reduced the incidence of COVID to zero or near zero, then there was no appetite for risk. This was not a meeting at the beginning of the pandemic – it was a few weeks ago.

263. Difficulties were not limited to NSW. There were also massive problems getting people across Australia's internal borders.

264. Western Australia was extraordinarily difficult. It published rules that, when it was worked out what they meant, resulted in the realisation that it was impossible to comply with the rules and be able to carry out a crew change. In one discussion with WA Police, it was asserted that while the Police would allow high-skilled maritime personnel to transit over the WA border to join a ship, they would not allow so-called low-skilled people to do so. The WA Police asserted, for instance, that if a cook was needed aboard a ship then any cook from WA could do the job. Such comments really betray a profound ignorance of the maritime sector. It is just not possible to take any random person and put him or her aboard a ship. All marine crew have to undertake certain education to join a ship crew. For instance, ship's cooks, unlike landside cooks, need to have a basic knowledge seafaring matters. See, generally, the ILO document "Guidelines on the training of ships' cooks," available via https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/normativeinstrument/wcms_218575.pdf. Ships' cooks need to have familiarity with the International Ship Management Code (see paragraph 4.10.4 of the ILO Guidelines on the training of ships' cooks).

265. Australia as a whole quickly became one of the worst places in the world to do a crew change. The logistics of moving people around – tests, flights, visas, accommodation, onward travel - became too difficult and many people and companies gave up. Eventually, after a very long time, governments opened up a little. There were some bright spots. Shipping Australia would particularly like to acknowledge and thank Angus Mitchell and Maritime Safety Queensland for their excellence in leadership in making it possible to carry out a reasonable crew change in Queensland. We suspect that Queensland acted as a relief pressure valve in Australia.

COVID: Crew change crisis: the disaster that was narrowly avoided (so far, at least)

266. Some crews were heading towards, and perhaps over, 18 months at sea. They urgently needed to be repatriated.

267. António Guterres, the secretary general of the United Nations, highlighted the humanitarian crisis that seafarers were experiencing.

268. *"Physically and mentally exhausted, away from their families and loved ones, their time at sea has now been extended far beyond the standards stipulated in international conventions, with some tours of duty now stretching more than 17 months. Fatigued seafarers cannot operate indefinitely, and disruptions to international shipping would have devastating consequences,"* he said.

269. Some seafarers later spent far more than 17 months at sea. Safety of life and protection of the environment hung in the balance.

270. The International Maritime Organization secretary general, Kitack Lim, warned the world's governments that their restrictive policies were adversely affecting maritime safety and the protection of the marine environment.

271. *"Overly fatigued and mentally exhausted seafarers are being asked to continue to operate ships. Many of these seafarers have already spent more than a year at sea, well beyond their original contracts, without a proper rest and far away from their loved ones. Every single Government would agree that seafarers are crucial for the safe operation of ships, and therefore the protection of the fragile marine environment,"* Mr Lim said. *"Ship safety is hanging in the balance… the safety of navigation is in peril,"* he warned.

272. Shipping Australia's current CEO, Melwyn Noronha, is a commercial shipping expert, a former master mariner and a former transport safety investigator. He commented during the height of the crew change crisis that, "fatigue is a well-known casual and contributory factor in maritime accidents."

273. Shipping Australia attended many meetings with industry executives, government and port representatives.

274. At one point in the crew change crisis, one boss of one of Australia's major ports – one through which millions of dollars freight move every hour – needed to import highly skilled personnel for a specific task. However, government approval was not forthcoming. Every week through the crisis the situation got worse and the cries from the port became ever more frantic until the port boss – normally a very reserved individual – was swearing in, and at, the meeting that the port would have to "bloody stop bloody shipping" within two weeks if he could not get the personnel to do the task.

275. ***We will reiterate that point: one of Australia's major export industries came within two weeks of shutting down because of unreasonable government intransigence.***

COVID: Bad governance 2 and the multiple shipping crises – the stay away rules

276. Early in the pandemic, government bodies imposed 14-day stay away rules on ships. This was highly illogical. Not only were governments not allowing crew changes and were forbidding crew to literally set foot in Australia (which needs to be done for simple practical and safety measures), governments were preventing ships from even entering Australia's waters for up to 14-days after leaving port overseas. Given that the appropriate protective measures of personal protective equipment, masks, sanitizer, face shields and social distancing were understood to be effective safety precautions relatively early in the pandemic, and given that it was also possible to keep crew separate from maritime workers and the general public, there was no sensible or rational reason to run the risk of disrupting trade by making ships stay away for 14 days.

277. Early in the pandemic, the Port Authority of New South Wales had rules banning ships from arriving at NSW Ports within 14 days of leaving China, Italy, South Korea, Iran. This quickly became a very silly set of rules as these countries began to get a grip on their COVID cases, but COVID numbers were escalating elsewhere. So when matters were under control in China, and while COVID had become rampant in the USA, the PA NSW was banning ships from China but not the USA.

278. A particularly bad decision early in the piece was the decision of Maritime Safety Queensland on 18 March 2020 to ban all ships of all types from Queensland until 14-days had passed. This would have been an absolute disaster. You can read our immediate 18 March 2020 analysis at ***"Queensland slams door on cargo ships; desperately needed goods at risk"*** https://www.shippingaustralia.com.au/banning-cargo-ships-during-covid-19-outbreak-poses-risk-of-severe-harm-to-australians/ (Note: in this article, there are references to shipping costs of AUD$25,000 a day. It later transpired that this was a gross over-simplification and a gross underestimate).

279. At the time, although no-one realised it, Queensland was in danger of shipping lines refusing to load cargo that would have been destined for discharge in Queensland.

280. Fortunately, the next day and evidently realising its blunder, Maritime Safety Queensland implemented numerous important exceptions to its own policy (e.g. exempting ships that had last called at Singapore (which is one of the major Asian (and world) trans-shipment hubs) and ships that had called at New Zealand) that the 14-day stayaway policy was effectively neutralised.

COVID: so many bad government decisions

281. There was a litany of bad decisions by government actors of all kinds. On 05 August 2020, Shipping Australia made a submission to the “Inquiry into the implications of the COVID-19 pandemic for Australia’s foreign affairs, defence and trade". At that time, we had extensively categorised many of the worst decisions from the viewpoint of the shipping industry.

282. These bad actions / policies / poor execution include(s)

- shipping being unnecessarily and excessively disrupted by uncoordinated government action
- crew change crisis: government rules create risk for our people, environment & economy
- crew change crisis: the Maritime Labour Convention
- crew change crisis: quarantine rules are overly restrictive
- crew change crisis: caps on arrivals into Australia by air (note the details were correct at time of writing)
- crew change crisis: risk from seafarers is low; infection control measures in place
- stay-away rules of 14-days are reducing the efficiency of shipping and increasing costs
- classifying freight and logistics (including international maritime trade) as essential services has been vital
- maritime supply chains have been largely sustained despite the pandemic
- nationally consistent protocols for dealing with ships with COVID-19 cases aboard and for enabling those ships to continue with cargo operations is both essential and required (and was ignored)
- communications - challenges

Source: Shipping Australia
SAL Table 11

283. You can read our COVID, Foreign Affairs and Trade submission on our website at https://shippingaustralia.com.au/wp-content/uploads/2020/08/SAL20160-SAL-sub-JSC-Covid-and-Trade.pdf

Markets, decisions, and policy that could render shipping services to Australia uneconomic

284. Shipping is an unashamedly and unabashedly commercial business. Shipping industry investors and participants no doubt love the industry but they are fundamentally in it to make a profit.

285. It follows then that any decisions that unnecessarily and unreasonably reduce the profitability of the industry reduce the incentive to provide shipping services. Should this happen too much, too often, and in too great a volume then the provision of shipping services to Australia will decline.

Uneconomic: markets

286. It is a truth often observed that shipping is a high-risk, low-return business. In the current market, however, shipping is a high-return business. But that's the nature of the shipping markets. Although low and uneconomic markets are a risk factor for shipping, there are a range of management options available to shipping companies as noted above.

Government (political and official) decisions can render shipping uneconomic

287. There are some decisions, political and official, that just defy rational explanation and which potentially render shipping uneconomic. They all have at root cause the perception that the international shipping industry is a vast pot of money that can be accessed by politicians and officials at will for whatever purpose.

288. There are, unfortunately several examples.

Western Australia: the Port Hedland Voluntary BuyBack Scheme

289. In the run up to Christmas, the WA government, via its owned entity, the Pilbara Ports Authority, whacked the international shipping industry with an approximately AUD$13,000 charge on iron ore carriers calling at Port Hedland.

290. It's an unjustifiable AUD$84m a year cash grab by the state government on the global shipping industry to fund the fall-out from the govt's own pollution.

291. Read more:

New Year, New Cash Grab in Western Australia
https://www.shippingaustralia.com.au/new-year-new-cash-grab-in-western-australia/

Letter to the Editor: Port Hedland Voluntary Buy-Back Scheme Charge on Shipping
https://www.shippingaustralia.com.au/letter-to-the-editor-port-hedland-voluntary-buy-back-scheme-charge-on-shipping/

WA Government backs polluters and fails re: key drivers of State's economy
https://www.shippingaustralia.com.au/wa-government-backs-polluters-and-fails-on-key-driver-of-states-economy/

New South Wales likes charging so much it does it twice!

292. Every time a ship enters port it has to pay a fee which covers the provision of such essential infrastructure such as access channels, beacons, lights and so on. However, the Port Authority of NSW, Transport for New South Wales and NSW Ports, have all had a hand in gouging extra cash from the shipping industry. If a ship has to temporarily cross the port boundaries for reasons beyond its control, then it gets charged again for crossing the boundary. At up to AUD$60,000 a go, it's a nice charge if you can levy it. But charges like this could render the provision of shipping charges uneconomic.

Transport for New South Wales is writing the charge into the new Ports and Maritime Administration Regulations.

> **Cash grab: Unfair New South Wales double-dipping port charges are unprecedented**
> https://shippingaustralia.com.au/wp-content/uploads/2020/10/SAL_Spring_2020_WEB3.pdf
>
> **TfNSW's Ports and Maritime Administration Regulations remake**
> https://www.transport.nsw.gov.au/projects/current-projects/consultation-on-ports-and-maritime-administration-regulation-2012

Advocacy from lobby groups

293. We note the potential for shipping to be unreasonably burdened by proposals that originate from other advocacy groups.

294. Shipping Australia notes with concern and alarm that there is a push by landside logistics groups to interfere in the commercial business of ocean shipping companies by shifting financial burdens from their businesses to ocean shipping companies.

Advocacy: container detention hire

295. The base unit of global general cargo shipping is the ocean shipping container. Shipping containers are (usually) the assets of shipping companies. They hire out shipping containers at the point of discharge to consignees so that the consignees can get the container to their premises. Once shipping containers reach the consignee, those containers are un-stuffed and they become "empty shipping containers". For the first ten days or so, the cost of that hire is zero-rated. After that period ends, the normal daily hire rate for the container (whatever that is) begins. At that point the consignee becomes liable for hire.

296. Other advocacy groups are pushing for regulation and / or legislation banning shipping companies from charging for the commercial hire of their shipping container assets. Apart from being a gross imposition on the regular and legitimate commercial freedoms of the containers shipping industry, if no fees are charged for the ongoing hire of a container, the consignees will have no incentive to return the container. Given the costs of transporting empty containers, there would be an incentive not to return a container. It is likely therefore, that shipping containers would not be returned. Put simply, Australian trade, global shipping world trade would quickly cease to function without the speedy return of shipping containers.

297. Further detail and explanations can be found on our website:

> **Container Hire and Late Return/Detention Charges**
> https://www.shippingaustralia.com.au/container-hire-charges/
>
> **Food Quality Containers**
> https://www.shippingaustralia.com.au/food-quality-containers/

Explainer: container logistics, industrial woes, berthing delays and propaganda-busting
https://www.shippingaustralia.com.au/explainer-container-logistics-industrial-woes-berthing-delays-and-myth-busting-propaganda/

Explainer: why is there a shortage of food quality containers around the world?
https://www.shippingaustralia.com.au/explainer-why-is-there-a-shortage-of-food-quality-containers-around-the-world/

Explainer: why has the inventory of empty shipping containers built up in Australia?
https://www.shippingaustralia.com.au/explainer-why-has-the-inventory-of-empty-shipping-containers-built-up-in-australia/

Dramatic vision of massive U.S. boxship congestion off Los Angeles
https://www.shippingaustralia.com.au/dramatic-vision-of-massive-u-s-boxship-congestion-off-los-angeles/

Advocacy: terminal access charges

298. Container terminal operators have, in the last few years, begun charging a fee to trucking companies for the right to access their terminals. These Trucking Access Charges (TACs; sometimes called Infrastructure Charges) are charged by the stevedores to help them recover the cost of providing landside infrastructure such as roads, traffic lights, round-abouts, parking bays and so on for use by the trucking industry. Previously, the stevedores did not charge trucking companies for access. Now they do. The trucking industry is livid.

299. Industry advocates have been lobbying for ocean shipping companies to pay these charges. Ocean shipping companies correctly point out that they already pay navigation and wharfage fees which covers the costs of providing water-side infrastructure such as access channels, turning basins and wharfs.

300. Land-side lobby groups have been arguing that, nonetheless, ocean shipping companies should pay because ocean shipping companies are the customers of container terminal operators. Shipping Australia understands the fundamental underlying premise of this argument is that it is reasonable to expect customers to pay reasonable fees. However, Shipping Australia also notes that the dictionary definition of a "customer" is a person or company that pays money to another person or company in return for the provision of goods or services. As trucking companies pay money to the container terminal operators in return for access to the container terminal services, it follows that trucking companies are in fact also the customers of container terminal operators. Therefore it is reasonable to expect trucking companies to pay their fair share for the provision of infrastructure provided for their benefit.

301. You can find out more about this topic on our website.

Terminal Access Charges

https://www.shippingaustralia.com.au/frequently-asked-questions/terminal-access-charges-who-should-pay/

Shipping AND trucking companies are both customers of ports

https://www.shippingaustralia.com.au/shipping-and-trucking-companies-are-both-customers-of-seaports/

Availability of containers / slots on containerships for export

302. We note that there have been complaints in the industry about an alleged inability for exporters to access containers and container slots for hire. We explain the current COVID-induced market background in our "Explainers".

Explainer: container logistics, industrial woes, berthing delays and propaganda-busting
https://www.shippingaustralia.com.au/explainer-container-logistics-industrial-woes-berthing-delays-and-myth-busting-propaganda/

Explainer: why is there a shortage of food quality containers around the world?
https://www.shippingaustralia.com.au/explainer-why-is-there-a-shortage-of-food-quality-containers-around-the-world/

Explainer: why has the inventory of empty shipping containers built up in Australia?
https://www.shippingaustralia.com.au/explainer-why-has-the-inventory-of-empty-shipping-containers-built-up-in-australia/

303. While a full-blown econometric study would be needed to accurately determine the exact situation right now as to the availability of containers, we have reason to believe that containers are available for exporters and have been available for exporters to hire right through the pandemic.

304. If the trade throughput of Port Botany is examined, we can see that empty containers and full containers have been exported via Port Botany right though the pandemic. On average, full export TEUs account for about 35.3% of the total TEU exports from Port Botany since January 2020 to about March 2021. So clearly some participants in the Australian market have been able to access containers for the export of their goods right the way through the pandemic. Meanwhile, empty TEU exports account for about 64.7% of total TEU exports. Apart from the odd outlier here and there (e.g. full TEU exports only accounted for 29.6% of all TEU exports from Port Botany in November 2020), the figures are largely consistent from month to month.

305. If the volume of full TEU exports had fallen relative to the total volume of TEU exports it would, we think, have been reasonable to suspect that full TEUs were not available to exporters to hire or book. But, given that full TEU exports from Port Botany account for 35.3% of all TEU exports on average ***over the course of the pandemic*** then it is reasonable to conclude there was no / is no change in the availability of export containers.

306. Any problems in finding export containers, it would seem, are just a consequence of the current surge in demand for market containers. It would therefore seem appropriate for the situation to be managed through the continued use of normal market mechanisms such as negotiations, deals and, of course, through normal competitive pricing set by buyers and sellers acting individually in the market.

307. Ultimately, this demand will be met with supply. Container shipping companies are already making large orders for containers and container ships. For instance, in mid-April, container shipping line Hapag-Lloyd ordered 150,000 TEU of containers at a cost of roughly USD$550 million. See: https://www.hapag-lloyd.com/en/press/releases/2021/04/hapag-lloyd-orders-150-000-teu-of-standard-and-reefer-containers.html. There are other examples.

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Appendix 01 – Waterfront industrial action – selected material from Shipping Australia website

Details of how the last year's industrial action can be followed on the Shipping Australia website. Unfortunately, there are still outbreaks of industrial action today.

August 2020

- **Waterfront strike threat: how the industrial relations environment has been – legally – manipulated to Australia's detriment** https://www.shippingaustralia.com.au/waterfront-strike-threat-how-the-industrial-relations-environment-has-been-legally-manipulated-to-australias-detriment/
- **OPINION: as an industrial action crisis looms, it is no accident that enterprise agreements have expired across the waterfront -** https://www.shippingaustralia.com.au/opinion-as-an-industrial-action-crisis-looms-it-is-no-accident-that-enterprise-agreements-have-expired-across-the-waterfront/
- **Opinion: spin and nonsense from the Maritime Union -** https://www.shippingaustralia.com.au/opinion-lies-and-nonsense-from-the-maritime-union/

September 2020

- **For the sake of Australian families, the MUA must stop its waterfront industrial action -** https://www.shippingaustralia.com.au/for-the-sake-of-australian-families-mua-must-stop-its-waterfront-industrial-action/
- **Disruption from waterfront industrial action just gets worse and worse -** https://www.shippingaustralia.com.au/disruption-from-waterfront-industrial-action-just-gets-worse-and-worse/
- **Shipping Australia takes action to support DPWA -** https://www.shippingaustralia.com.au/shipping-australia-takes-action-to-support-dpwa/
- **Industrial action withdrawn at DPWA but waterfront problems will continue -** https://www.shippingaustralia.com.au/industrial-action-withdrawn-at-dpwa-normal-service-to-resume/
- **DP World Australia anticipates finalising EBA in Sydney in the near future -** https://www.shippingaustralia.com.au/dp-world-australia-anticipates-finalising-eba-in-sydney/
- **Waterfront "go slows" and work restrictions are crippling Australia, so Shipping Australia supports Patrick's bid to terminate industrial action -** https://www.shippingaustralia.com.au/waterfront-go-slows-and-work-restrictions-are-crippling-australia-so-shipping-australia-supports-patricks-bid-to-terminate-industrial-action/

October 2020

- **Industrial dispute pause is welcome but disruption is ongoing -** https://www.shippingaustralia.com.au/industrial-dispute-pause-is-welcome-but-disruption-is-ongoing/
- **Industrial action causes widespread liner service disruption -** https://www.shippingaustralia.com.au/industrial-action-causes-widespread-liner-service-disruption/
- **Union's ruthless campaign of bullying and intimidation** - https://www.shippingaustralia.com.au/unions-ruthless-campaign-of-bullying-and-intimidation/
- **Extreme container disruption continues in Sydney despite industrial cease fire -** https://www.shippingaustralia.com.au/extreme-container-disruption-continues-in-sydney-despite-industrial-cease-fire/
- **Union/Patrick Fair Work hearing cancelled pending further talks -** https://www.shippingaustralia.com.au/union-patrick-fair-work-hearing-cancelled-pending-further-talks/
- **New month-long waterfront industrial action threatens supply of goods and fuel security -** https://www.shippingaustralia.com.au/new-month-long-waterfront-industrial-action-threatens-supply-of-goods-and-fuel-security/
- **Waterfront industrial action underway -** https://www.shippingaustralia.com.au/waterfront-industrial-action-underway/
- **Waterfront union strikes at Fremantle, Kwinana and Port Botany -** https://www.shippingaustralia.com.au/waterfront-union-strikes-at-fremantle-kwinana-and-port-botany/

December 2020 to February 2021

- **MUA to shut down DPWA's Fremantle container terminal over Christmas/New Year -** https://www.shippingaustralia.com.au/mua-to-shut-down-dpwas-fremantle-container-terminal-over-christmas-new-year/
- **Serious industrial action at the Port of Melbourne on the way, VICT warns -** https://www.shippingaustralia.com.au/serious-industrial-action-at-the-port-of-melbourne-on-the-way-vict-warns/
- **Rolling industrial action at Melbourne -** https://www.shippingaustralia.com.au/industrial-action-imminent-at-melbourne-tomorrow-friday-sunday-next-monday/

Appendix 02

Details of how world and Australian governments reacted to the COVID crisis and how they very badly damaged shipping can be found on our website.

1. **COVID-19 aviation caps must exempt seafarers – Government review**
   https://www.shippingaustralia.com.au/government-review-of-covid-19-aviation-caps/

2. **Visas for seafarers**
   https://www.shippingaustralia.com.au/visas-for-seafarers/

3. **PA NSW scraps restrictive rules on vessel arrivals**
   https://www.shippingaustralia.com.au/pa-nsw-scraps-restrictive-rules-on-vessel-arrivals/

4. **International shipping industry issues plan to save 150,000 trapped seafarers**
   https://www.shippingaustralia.com.au/international-shipping-industry-issues-plan-to-save-150000-trapped-seafarers/

5. **150,000 seafarers trapped at sea**
   https://www.shippingaustralia.com.au/150000-seafarers-trapped-at-sea/

6. **UPDATE: commercial shipping in Australia and the coronavirus**
   https://www.shippingaustralia.com.au/update-commercial-shipping-in-australia-and-the-coronavirus/

7. **Queensland slams door on cargo ships; desperately needed goods at risk**
   https://www.shippingaustralia.com.au/banning-cargo-ships-during-covid-19-outbreak-poses-risk-of-severe-harm-to-australians/

8. **Regional WA crew changes now virtually impossible**
   https://www.shippingaustralia.com.au/regional-wa-crew-changes-now-virtually-impossible/

9. **Government COVID-19 crew change policies threaten safety, imperil the environment and disrupt the flow of goods**
   https://www.shippingaustralia.com.au/government-covid-19-crew-change-policies-threaten-safety-imperil-the-environment-and-disrupt-the-flow-of-goods/

10. **Reasons why Australia should help crew changeovers take place here**
    https://www.shippingaustralia.com.au/why-australia-should-help-crew-changeovers-take-place-here/

11. **CRISIS POINT: seafarers trapped, medical care denied, ships detained**
    https://www.shippingaustralia.com.au/crisis-point-seafarers-trapped-medical-care-denied-ships-detained/

12. **Help transport workers, UN heads urge world governments**
    https://www.shippingaustralia.com.au/help-transport-workers-un-heads-urge-world-governments/

13. **UN General Assembly adopts resolution calling on governments to designate seafarers as key workers**
    https://www.shippingaustralia.com.au/un-general-assembly-adopts-resolution-calling-on-governments-to-designate-seafarers-as-key-workers/

14. **Global consumer goods CEOs warn of supply chain disruption; interruption "could push companies and countries over the edge"**
    https://www.shippingaustralia.com.au/global-consumer-goods-ceos-warn-of-supply-chain-disruption-interruption-could-push-companies-and-countries-over-the-edge/

15. **Global aviation body urges governments to enable flights for seafarers**
    https://www.shippingaustralia.com.au/global-aviation-body-urges-governments-to-enable-flights-for-seafarers/

16. **Pope speaks out on crew change crisis**
    https://www.nautilusint.org/en/news-insight/news/pope-speaks-out-on-crew-change-crisis/

17. **Covid-19 – Shipping Update… Requirements, restrictions, rules and policies affecting the maritime industry at Australian ports**
    https://www.shippingaustralia.com.au/covid-19-shipping-update/