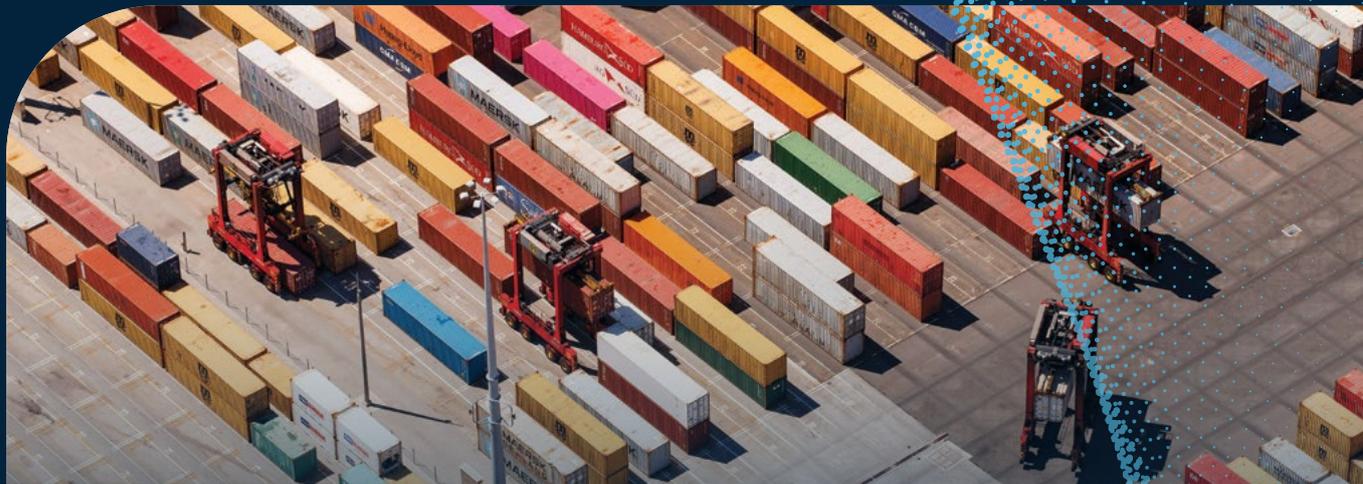


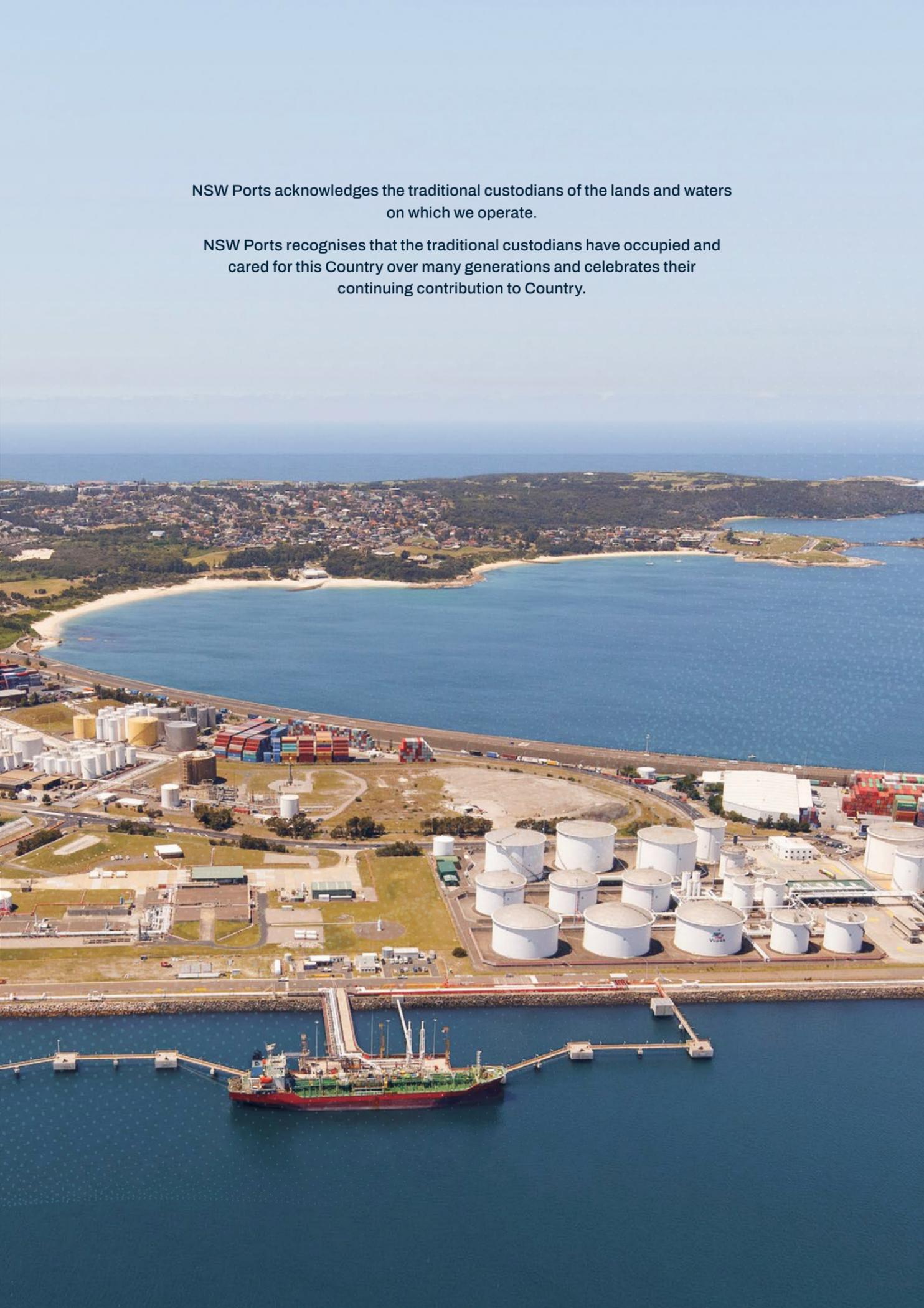
NSW PORTS

2063

OUR 40-YEAR MASTER PLAN
FOR SUSTAINABLE GROWTH



nswPorts



NSW Ports acknowledges the traditional custodians of the lands and waters on which we operate.

NSW Ports recognises that the traditional custodians have occupied and cared for this Country over many generations and celebrates their continuing contribution to Country.

Executive summary

Port Botany and Port Kembla are critical to the economic growth and prosperity of the State and nation, contributing \$13.6 billion per annum to gross state product and supporting more than 64,000 jobs.

By 2063, NSW will be home to around 12 million people. Technology improvements will see a rise in digitalisation and automation. The future workforce will be made up of more workers with technology, digital and sustainability skills. Limited supply of industrial lands will drive the need for multi-storey warehouse developments and intensification of uses on these lands. Productivity in our supply chains will be enhanced through centralised trade systems and greater co-ordination and data sharing between stakeholders. Decarbonisation initiatives will impact supply chain operations and influence the types of trades handled at the ports.

NSW Ports 2063: Our 40-Year Master Plan for Sustainable Growth outlines port trade growth and changes expected over the next 40 years. It considers the probable future, key drivers of change and actions that will need to be taken to respond.

Port Botany operates in support of the people and businesses of NSW, handling one-third of Australia's container volumes, around one-third of NSW's fuel supply and chemicals used in domestic manufacturing, making the port critical to the national economy and national fuel security.

Port Botany connects NSW to other States and the rest of the world. Its: short and deep shipping channel; ability to handle large cargo vessels; 24/7 operations; on-dock port rail; and rail, road and pipeline connections make it a highly efficient and effective gateway for goods and products.

Over the next 40 years, **Port Botany** will remain Australia's premium port and NSW's primary container port servicing Australia's largest population centre.

Port Kembla is NSW's motor vehicle import port and an international trade gateway for bulk agricultural, construction and mining industries. It services growing demand for population-driven trades such as vehicles and construction material imports.

Port Kembla's expansion and diversification will support NSW's growth. Its: short and deep shipping channel; ability to handle large cargo vessels; 24/7 operations; excellent supply of surrounding industrial land; proximity to the population centre of Greater Sydney; and rail and road connections make it an efficient and effective trade gateway.

Over the next 40 years, Port Kembla will continue to grow and diversify its import and export trade and be a critical part of NSW's green energy future. It will be the site of the State's next container terminal once Port Botany nears capacity.

In 2063 Port Botany and Port Kembla will be catering for increased trade:

- Container volumes could increase from 2.8 million TEU to over 9 million TEU annually, driven largely by population growth.
- Bulk liquid and gas volumes will be impacted by shifting fuel demands and the rise of sustainable fuels.
- Motor vehicle and machinery import demand will continue to increase and will potentially double from current numbers, driven by population growth and changing technology.
- Bulk construction material imports will increase significantly and diversify, driven by dwindling local supplies and demand for increased housing and infrastructure projects.

- Project cargo such as onshore wind farm components, tunnel boring equipment, heavy and light rail carriages, steel and transformers will continue to grow, and the rise of offshore wind developments will see further growth in the movement of componentry in and out of Port Kembla.
- Bulk agricultural exports will continue to be influenced by climatic conditions, with fluctuating volumes around a long-term average.
- Bulk mineral imports will continue to support steel-making at Port Kembla whilst critical minerals could be handled to support the energy transition, renewable energy generation and battery development.

We have identified five objectives to sustainably cater for forecast trade growth. This Master Plan identifies the required actions to deliver on these objectives.

NATION

Cater for the trade needs of NSW and Australia.



Our ports connect Australian businesses and consumers to domestic and international markets. Meeting import and export needs requires long-term planning and investment.

MOVEMENT

Grow the volume of freight moved by rail and improve the efficiency of road connections.



The efficient movement of freight to and from our ports is critical to cost-effective and sustainable supply chains. Growing the use of rail and strengthening road connections around the ports and across key freight routes is needed to cater for trade growth, deliver resilient supply chains, reduce greenhouse gas emissions and lessen the growth of trucks on roads.

CAPACITY

Grow freight handling capacity



Investment will be required in infrastructure, land, plant and equipment, productivity initiatives and sustainability programs to sustainably grow the capacity of our ports and intermodal terminals, in line with trade demand.

LAND USE

Ensure the efficient and responsible use of land and infrastructure.



Land within our ports and intermodal terminals is finite and in demand. Ensuring efficient and responsible use of that land is critical to sustainable operations and catering for long-term trade needs.

PLACE

Protect our ports, freight-related lands and freight transport routes.



Our ports, freight-related industrial lands and freight transport routes form part of thriving, populated areas. This reduces the distance goods travel but can give rise to land use conflicts without appropriate planning.

Protecting the operating environment of the ports, freight lands and connecting transport routes is essential to sustainably cater for growing trade needs and to ensure prosperous cities and flourishing communities.

This Master Plan outlines our priorities and the actions we believe are required for a sustainable and efficient port supply chain. Delivering on this Plan requires action by government and supply chain participants as well as improved coordination and collaboration between stakeholders.

Effectively planning for the future of our ports and port supply chains is essential to NSW's economic prosperity. Long term, dependable plans are needed to promote the business investment that is required to sustainably cater for NSW's long term future trade needs.

Our Port and Intermodal Assets



CEO and Chair Message

NSW Ports caters for the trade demands of the people and businesses of NSW through our assets: Port Botany, Port Kembla, Enfield Intermodal Logistics Centre and Cooks River Intermodal Terminal.

Through managing sustainable, efficient and productive assets, we support communities with cost-effective supply of goods and connections to global markets.

This 40-Year Master Plan outlines our commitment to sustainable growth. It frames growth through the lens of future technologies, demographic trends and global disruptors. It outlines our high-level plans to cater for trade growth and diversification, increase the use of rail and protect industrial lands.

We will only be able to fully support NSW's trade needs if we strive for the sustainable use of land and assets and the sustainable movement of freight.

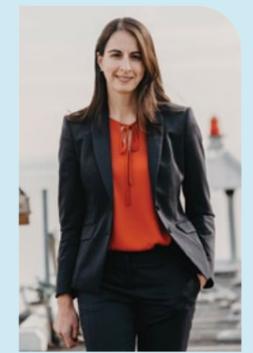
We can't do this alone. Our ports form just one part of the overall supply chain – sustainability and productivity is contingent on operations throughout the system. Road and rail connectivity and resilience is critical.

We want to thank the community and the many stakeholders throughout the supply chain for their input and support. We look forward to working with everyone as we implement our Master Plan.

On behalf of NSW Ports, we are proud to present this Master Plan as a guide to our business direction and as support for strategic planning within NSW.



Patricia McKenzie
Chair



Marika Calfas
CEO



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CONNECTING PEOPLE AND BUSINESSES WITH GOODS AND OPPORTUNITY

Our ports are critical to the economic growth and prosperity of the nation.

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PORT BOTANY GLOBAL GATEWAY

Port Botany will remain Australia's premium port and NSW's primary container port, servicing Australia's largest population centre.

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PORT KEMBLA GLOBAL GATEWAY

Port Kembla will continue to grow and diversify its import and export trade and be a critical part of NSW's green energy future.

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THE FREIGHT NETWORK

Freight network performance, connectivity and resilience are critical to efficient port operations.

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1

CONNECTING PEOPLE AND BUSINESSES WITH GOODS AND OPPORTUNITY

Our ports are critical to the economic growth and prosperity of the nation.



Port Botany and Port Kembla are critical to the economic growth and prosperity of the State and nation, contributing \$13.6 billion per annum to gross state product and supporting more than 64,000 jobs.

NSW Ports is responsible for the sustainable management and development of Port Botany, Port Kembla, Cooks River Intermodal Terminal and Enfield Intermodal Logistics Centre.

Our ports connect people and businesses with goods and trade opportunities in a global marketplace. We facilitate trade and industry by partnering with port and logistics organisations that operate within our precincts.

The productive operation of our ports and the wider supply chain is critical to a sustainable future.

For our ports to be efficient, transport networks connecting the ports must also effectively and reliably move goods and there must be a sufficient supply of industrial land to accommodate the growing freight task. Information sharing and collaboration between stakeholders is essential.

Together, these factors are crucial for goods to be delivered on time, cost effectively and sustainably.

Effectively planning for the future of our ports, and the supply chains they are a part of, is essential to NSW's future economic prosperity. Long term, dependable plans are needed to promote business investment decisions given the long lead times for, and large scale of, the ongoing investments needed to sustainably cater for NSW's long term future trade needs.

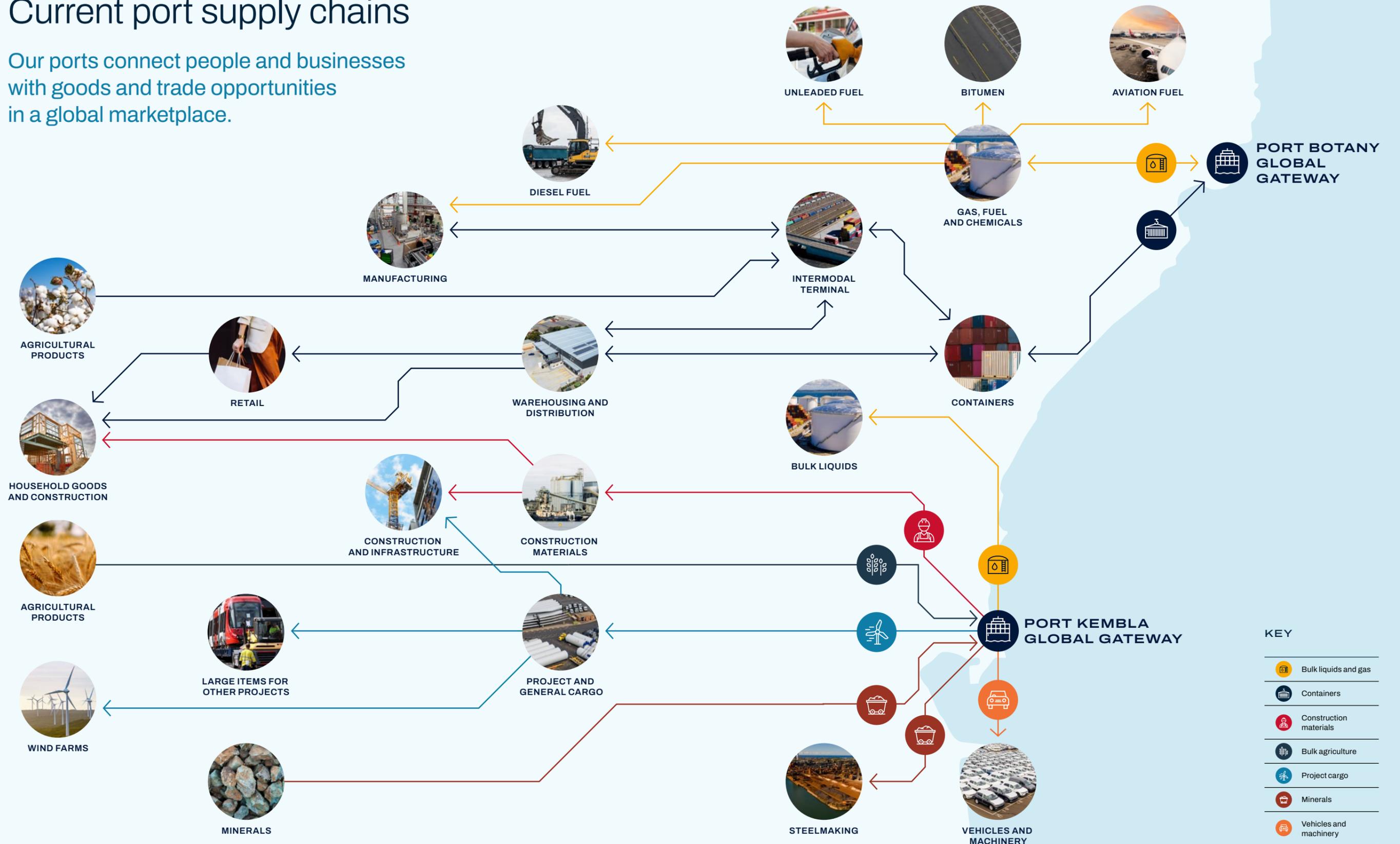


Required actions:

Provide long term, dependable planning for ports and port supply chains to promote business investment.

Current port supply chains

Our ports connect people and businesses with goods and trade opportunities in a global marketplace.



2

MEETING THE CHALLENGE

Keeping the nation's economy moving, catering to growing demand.



This Master Plan outlines port trade growth and changes expected over the next 40 years. It considers the probable future, key drivers of change and actions that will need to be taken to respond.

It targets a future where our ports and supply chains are sustainable and resilient, effectively supporting the growth and productivity of New South Wales.

Achieving our Master Plan objectives will contribute to sustainable ports and supply chains — reducing emissions, minimising community impacts, supporting the competitiveness of exports and supporting cost-effective goods for consumers and businesses.

OUR SUSTAINABILITY PRIORITIES

- Champion Decarbonisation
- Build Resilience
- Support Thriving Communities
- Steward Forecast Growth

OUR MASTER PLAN OBJECTIVES



NATION

Cater for the trade needs of NSW and Australia.



LAND USE

Ensure the efficient and responsible use of land and infrastructure.



MOVEMENT

Grow the volume of freight moved by rail and improve the efficiency of road connections.



PLACE

Protect our ports, freight-related lands and freight transport routes.



CAPACITY

Grow freight handling capacity.

2.1

Master Plan Objectives

NATION
Cater for the trade needs of NSW and Australia.



Our ports connect Australian businesses and consumers to domestic and international markets. Meeting import and export needs requires long-term planning and investment.

MOVEMENT
Grow the volume of freight moved by rail and improve the efficiency of road connections.



The efficient movement of freight to and from our ports is critical to cost-effective and sustainable supply chains. Growing the use of rail and strengthening road connections around the ports and across key freight routes is needed to cater for trade growth, deliver resilient supply chains, reduce greenhouse gas emissions and lessen the growth of trucks on roads.

CAPACITY
Grow freight handling capacity



Investment will be required in infrastructure, land, plant and equipment, productivity initiatives and sustainability programs to sustainably grow the capacity of our ports and intermodal terminals, in line with trade demand.

LAND USE
Ensure the efficient and responsible use of land and infrastructure.



Land within our ports and intermodal terminals is finite and in demand. Ensuring efficient and responsible use of that land is critical to sustainable operations and catering for long-term trade needs.

PLACE
Protect our ports, freight-related lands and freight transport routes.



Our ports, freight-related industrial lands and freight transport routes form part of thriving, populated areas. This reduces the distance goods travel but can give rise to land use conflicts without appropriate planning.

Protecting the operating environment of the ports, freight lands and connecting transport routes is essential to sustainably cater for growing trade needs and to ensure prosperous cities and flourishing communities.

The community told us they support the proposed objectives, particularly the need to move more freight by rail and cater for the trade needs of NSW and Australia.

2.2

Port and supply chain performance

Efficient ports require coordination within industry and between industry and government.

Many factors influence port performance. Ports are part of an interconnected supply chain where a disruption or inefficiency in one part of the chain affects other parts of the system.

Improving productivity within the supply chain and freight network is a joint effort that benefits from information sharing and collaboration. This will make it easier to measure performance and target investment.

National coordination and consistency of regulations and standards is essential in a global industry such as shipping. Imposing different State or national requirements can create a competitive disadvantage for the maritime supply chains of a port, State or the nation through higher costs and/or reduced service.

Required actions:

- Improve supply chain data collation and performance analysis to identify constraints and priorities for productivity investments.
- Ensure national coordination of regulations and standards for ports and port supply chains and coordination with international approaches, to avoid creating competitive disadvantages to a port, State or the nation.



3

WHAT THE FUTURE HOLDS

Catering for changes in productivity, technology, sustainability and population.



A future freight scenario

Our journey over the next 40 years will be shaped by key milestones and transformed by innovation and progress. This is one possible future freight scenario.



3.1

Drivers of change

There are many drivers of change that will influence the future of our ports and supply chains. These drivers have been considered in this Master Plan, including in forecast trade types and volumes as well as infrastructure needs and operational initiatives.



POPULATION GROWTH

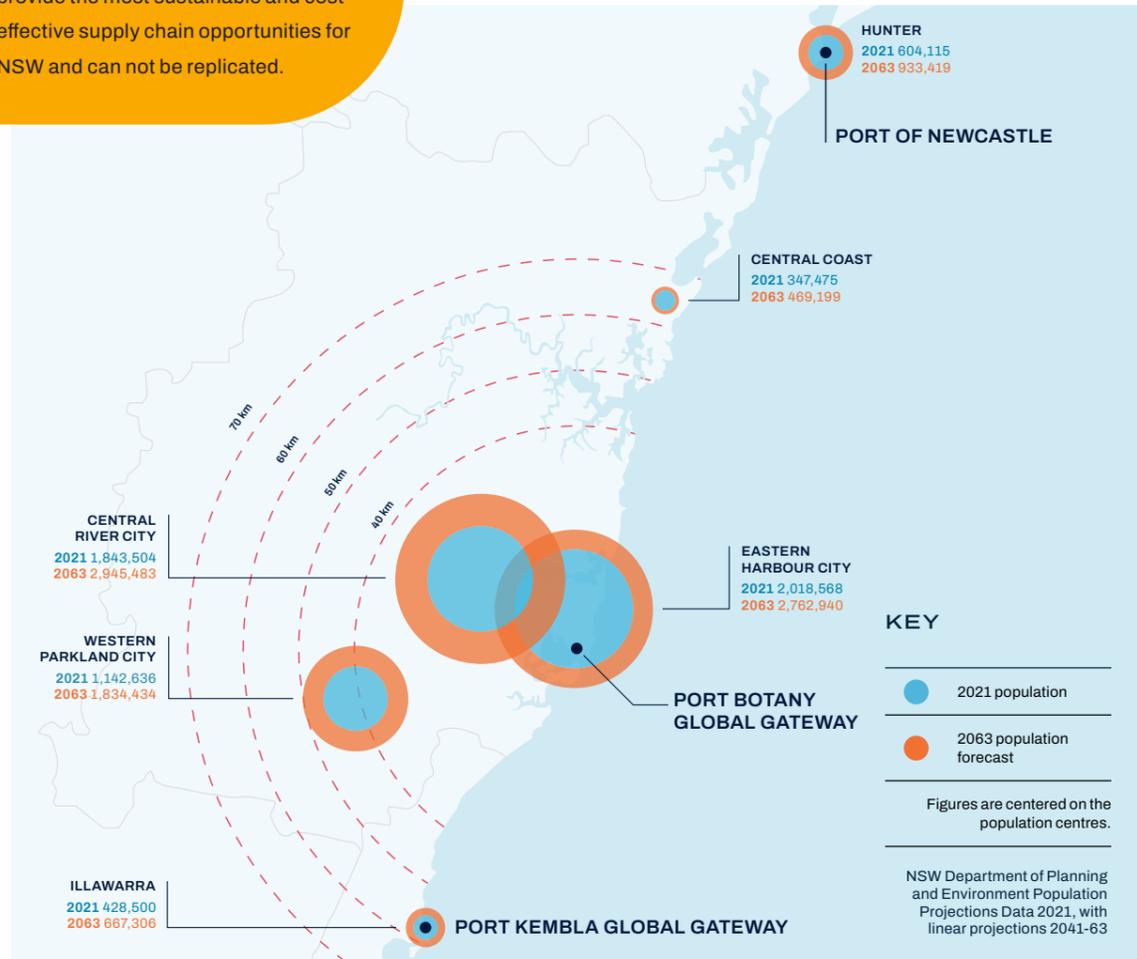
By 2063, the Greater Sydney, Illawarra and Hunter regions will be home to around 9.6 million people, an increase of 3.28 million people from 2023 (+51%). Growth will be greatest in the Central and Western cities of Greater Sydney, which will be home to an additional 1.8 million people.

The total NSW population will reach almost 12 million people over this same time period.

Population growth is closely connected to consumer demand and import trade volumes. As we plan for this growth, we must consider the requirements for our port supply chains and their resilience to disruptions, including actions required to grow capacity and mitigate risks from climate change, natural disasters, geopolitical pressures or pandemics.

Our ports are strategically positioned closest

to the major consumer and business trade demand centres. These locations provide the most sustainable and cost-effective supply chain opportunities for NSW and can not be replicated.



TECHNOLOGY AND AUTOMATION

Devices to track cargo in real-time, digitalisation for optimisation and drones for operational oversight, safety and last mile delivery will form part of future supply chains.

Autonomous vehicle and equipment technology will increase across supply chains including in ports, logistics, warehousing and last mile freight delivery.

Growth in e-commerce and online shopping will continue, with on-demand delivery expected by consumers. Automation and autonomous delivery will be part of e-commerce delivery solutions.

A centralised 'trade system' will optimise maritime supply chains and improve productivity and transparency.

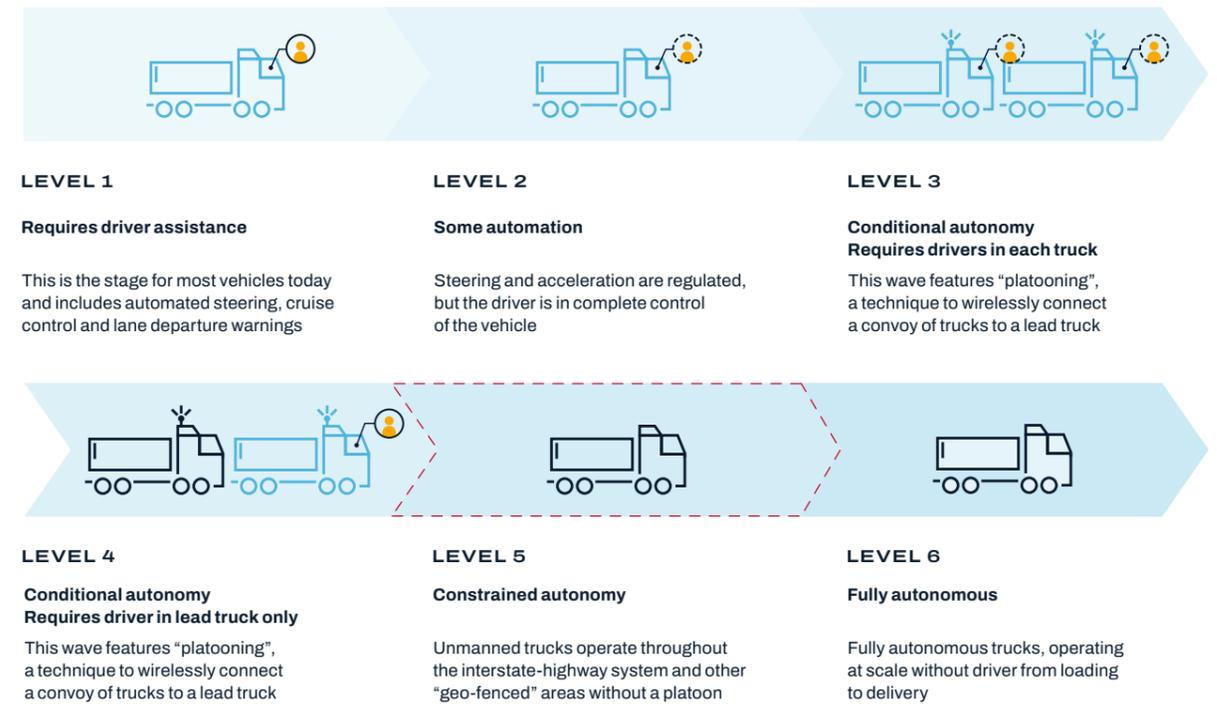


LABOUR AND SKILLS

The future workforce will be made up of more workers with technology, digital and sustainability skills. Technology will improve worker safety and could mitigate some impacts associated with labour shortages.

The transition period to technology solutions presents a significant risk for labour availability as the current workforce retires.

THE ROAD AHEAD: THE EVOLUTION OF AUTOMATED TRUCKING TECHNOLOGY





LAND USE ALLOCATION

Scarce port and industrial land availability in urban areas will influence supply chain operations.

Multi-storey warehouse developments will be driven by land prices and constrained industrial land availability in urban areas.

Intensification of industrial uses and rezoning to create additional industrial land in west and south western Sydney will occur.



POLICY AND COLLABORATION

Standardisation and data sharing will improve supply chain visibility and performance monitoring.

The extent of coordination between the Australian and State Governments, and between Governments and supply chain participants, will influence Australia's domestic and international competitiveness.

Simplification to Australia's trading system through enhanced permit processes, trusted trader systems, connected technology systems across government and risk based border control processes will bolster productivity.

Required actions:

Develop and implement a centralised trade system to bolster supply chain productivity, commencing with a Single Maritime Window as required under Australia's international obligations by January 2024.

A centralised trade system will bolster productivity

Throughout the freight journey, data is entered multiple times and into systems that do not communicate with each other. Some processes still require manual intervention. This results in duplicative effort, inefficiencies, delays and errors.

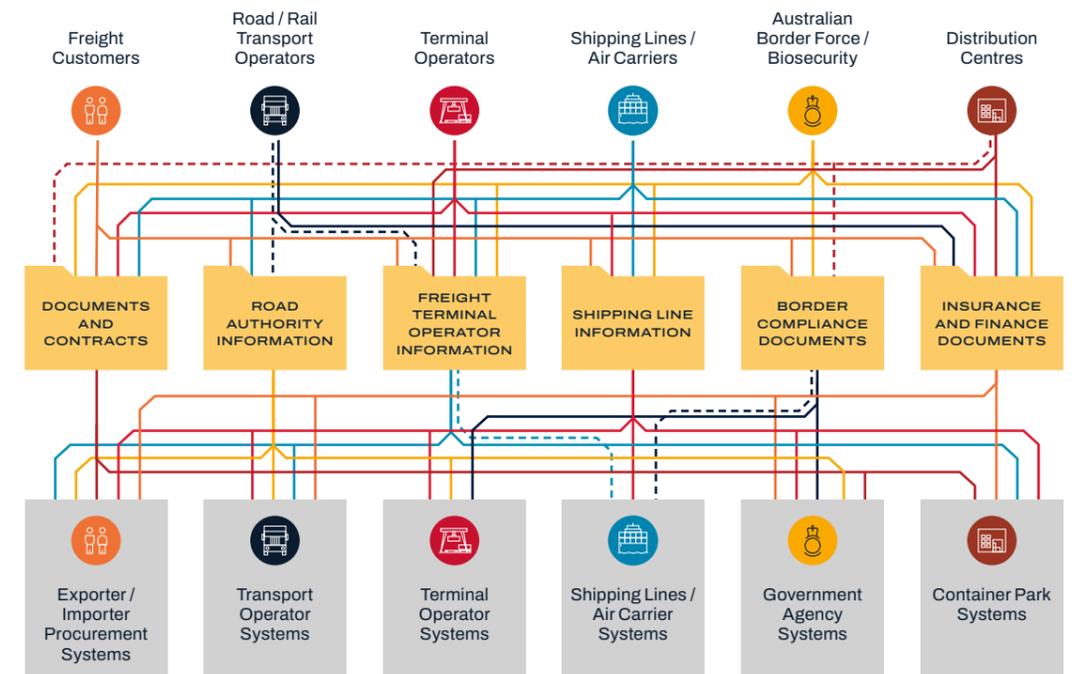
A centralised trade system, with a single window data exchange, could increase the productivity and resilience of Australia's maritime supply chains. A digitised system would handle data and communicate between ports, port authorities, customs, other regulatory bodies, transport operators, shipping lines, agents, freight forwarders, stevedores, terminal operators, depots and freight importers and exporters.

It would transact border and freight clearances and allow data interfaces across multiple systems, not only creating a more efficient, effective and resilient system, but improving forward planning to better optimise land, infrastructure and assets.

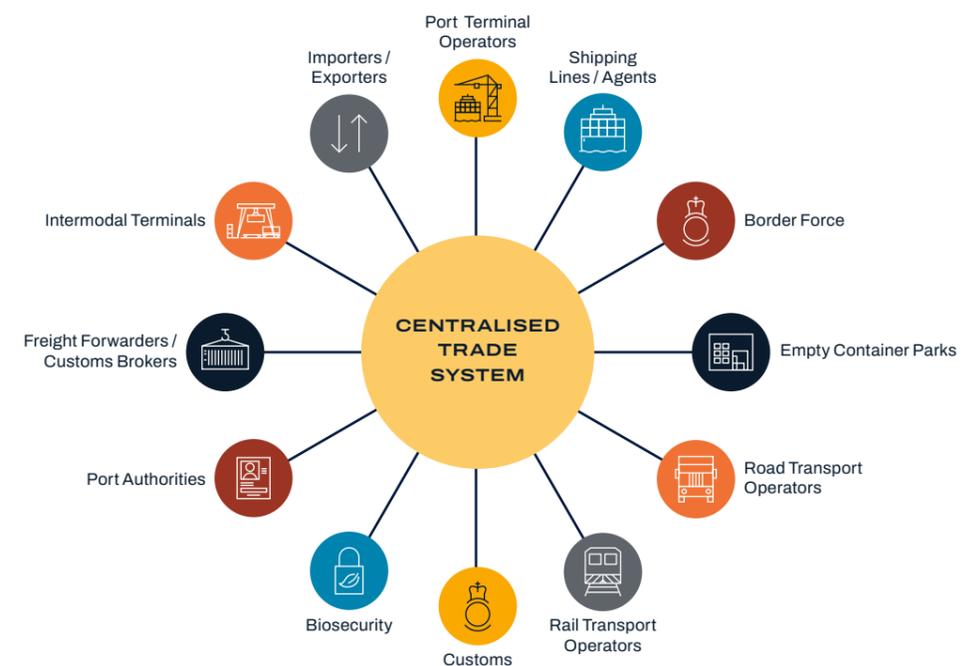
These systems operate around the world today, contributing to operational efficiency and productivity. Any system adopted must be national and led by the Australian Government.

Australia has an international obligation, through amendments adopted in the International Maritime Organisation's Facilitation Convention, to have a single maritime window in place by January 2024. The system is to support the electronic exchange of information required on arrival, stay and departure of vessels in ports. Making data exchange mandatory in ports around the world will accelerate digitalisation in shipping. This should be viewed as a first step towards a more comprehensive centralised trade system.

REPRESENTATION OF CURRENT INFORMATION/DATA EXCHANGE PROCESSES



FUTURE STREAMLINED INFORMATION EXCHANGE PROCESS





DECARBONISATION AND CIRCULAR ECONOMY

Decarbonisation of supply chains including shipping, port plant and equipment and road and rail transport will progressively be implemented.

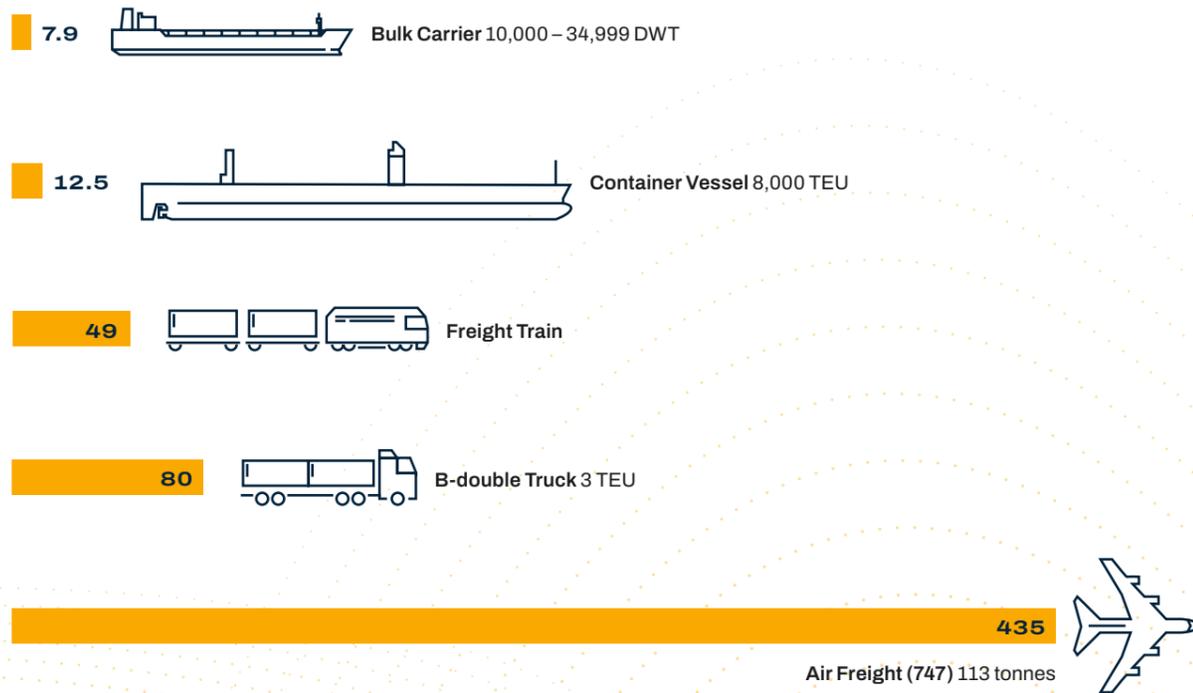
Carbon pricing mechanisms are likely to be introduced in supply chains in the future.

New technologies and changing consumer demands will influence the types of materials and commodities in demand.

There will be a global shift away from fossil fuels which will be reflected in trades handled at the port. A rise in the demand for critical minerals such as the lithium and cobalt needed for batteries, sustainable fuels and components for renewable energy projects will influence trades handled at the ports in the future.

The circular economy will reduce waste by keeping products in circulation through re-use and recycling instead of disposal, reducing the extraction of new resources and improving nature. This will also impact on the types and volumes of goods and products handled at the ports.

EMISSIONS BY MODE OF TRANSPORT (CO2/TONNE-KM)



Source: International Maritime Organisation, Second IMO GHG Study 2009

Reducing emissions from shipping

Australia relies on maritime shipping to connect it with the world. More than 98% of goods are handled through Australian ports.¹

Shipping is the most sustainable form of transport for moving large volumes of cargo. Globally, shipping contributes around 3% of worldwide greenhouse gases.² With growth in demand for shipping these emissions would increase unless action is taken.

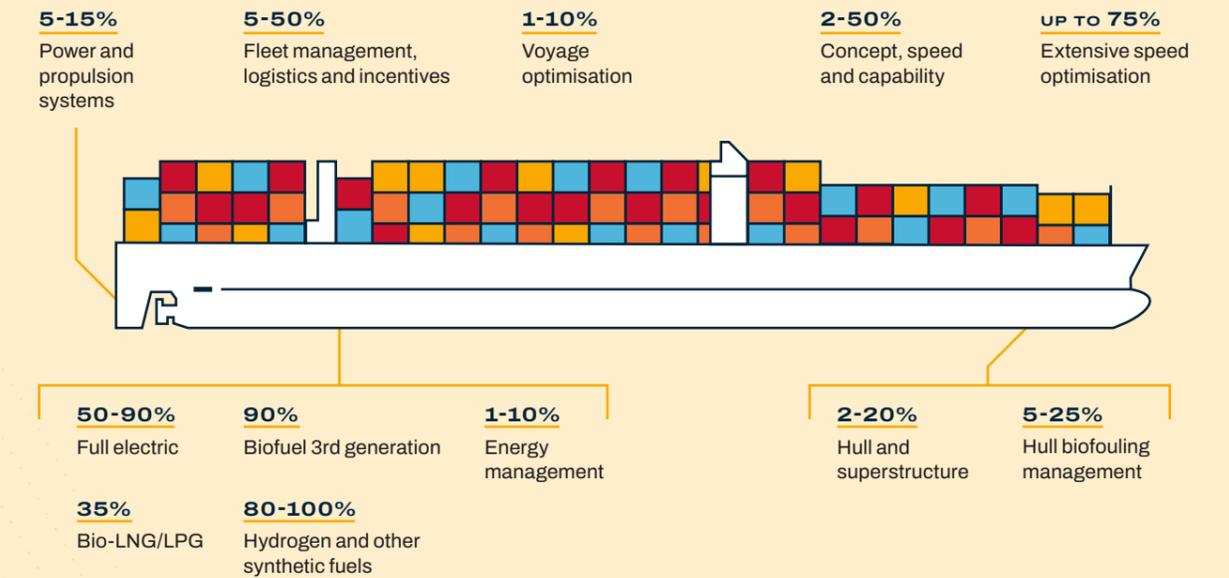
The International Maritime Organization (IMO) Initial Greenhouse Gas (GHG) Strategy has set an objective of 40% reduction of CO2 emissions by 2030 and 70% by 2050, compared to 2008, across international shipping. The IMO's strategy works towards phasing out GHG emissions from shipping entirely as soon as possible in this century.

Required actions:

- NSW Ports to achieve net zero scope 1 and 2 greenhouse gas emissions³ by 2025 and work with port operators, port users, suppliers and Government to reduce our scope 3 emissions.⁴
- Ongoing assessment of potential impacts of climate change and resilience on port land and infrastructure and identification and implementation of required actions.

¹ Ports Australia, *Value of Ports*, May 2023. ² The Organization for Economic Cooperation and Development (OECD), *Ocean shipping and shipbuilding*, May 2023. ³ Emissions from NSW Ports direct use of fossil fuels and electricity. ⁴ Emissions from companies in our upstream and downstream value chain.

POTENTIAL SOLUTIONS FOR REDUCING EMISSIONS FROM SHIPPING



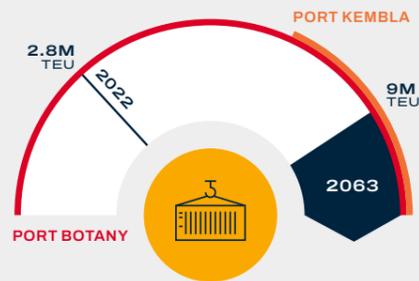
Source: International Maritime Organisation, 'IMO's work to cut GHG emissions from ships', 2021

3.2

Trade growth

CONTAINERS

Container trade demand in NSW is projected to increase from 2.8 million TEUs to over 9 million TEUs in 2063 (3-4% per annum growth). To meet demand, the Port Kembla container terminal will be developed as Port Botany nears capacity.



CONTAINER PORT OF CHOICE

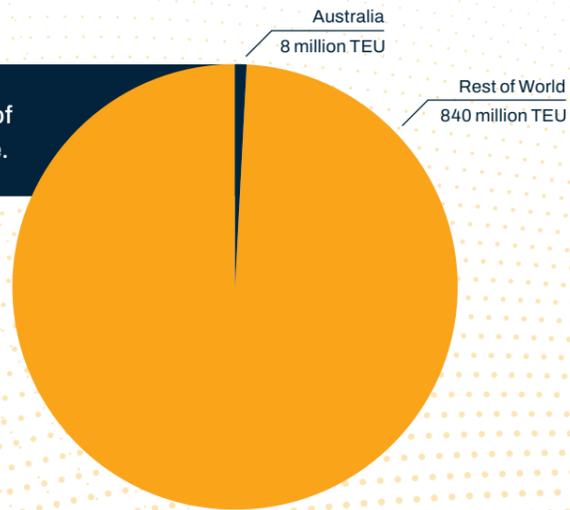
Nearly half the goods in an average Sydney household come through Port Botany – from food, beverages, clothing and floor coverings to mattresses, paints, fridges, televisions and toys.

90% of all import containers travel no further than 50 kilometres from Port Botany before their contents are unpacked for distribution to customers, primarily in Greater Sydney. Port Botany is located close to the end destination of the container which reduces truck kilometres travelled and costs for consumers.

Port Kembla is the next closest port to the end destination of containers. Parts of south western Sydney are almost as close to Port Kembla as they are to Port Botany. This geography underpins Port Botany's role as NSW's container port and Port Kembla's selection as NSW's second container port, once Port Botany nears capacity.



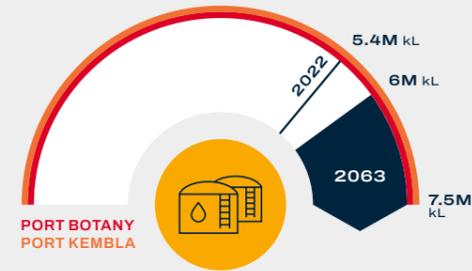
Australia handles <1% of global container volume.



Source: United Nations Conference on Trade and Development, UNCTAD 'Ocean Trade' database, February 2022.

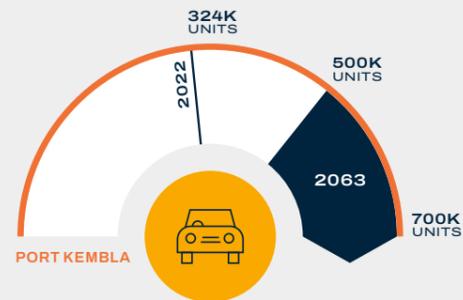
BULK LIQUIDS AND GAS

Port Botany handles around 5.4 million kilolitres of bulk liquids and gas per year and Port Kembla handles around 300,000 kilolitres. The development of a gas import terminal at Port Kembla and the future shift to sustainable fuels (such as biofuels and hydrogen) will result in changed product types and increased volumes being handled across the two ports.



MOTOR VEHICLES AND MACHINERY

Motor vehicle and machinery imports include cars, trucks, buses, emergency services vehicles and machinery used in construction, mining and farming. Demand for motor vehicles could double over the next 40 years due to population growth, vehicle emission regulations driving stock renewal, new technologies such as electric or hydrogen cell vehicles and greater industrial, farming and construction activity.



BULK CONSTRUCTION MATERIALS

The demand for construction materials is linked to population growth and the need for housing and infrastructure, together with availability of local sources and adoption of more sustainable products such as low carbon and recycled products. Cement and gypsum are currently handled in bulk through Port Kembla and bitumen through Port Botany. Future import trades could include sand and aggregate.

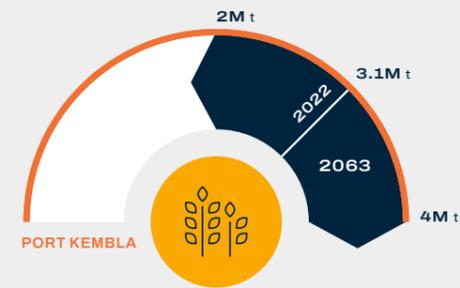


PROJECT/GENERAL CARGO

Port Kembla handles a range of project and general cargo such as onshore wind farm components, tunnel boring equipment, heavy and light rail carriages, steel and transformers. This will be expanded in the future to include the components required for the development of offshore wind farms.

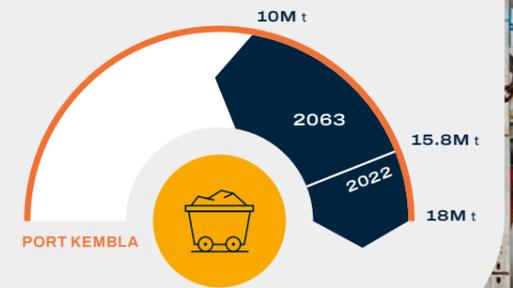
BULK AGRICULTURAL PRODUCTS

Grain exports and fertiliser imports make up the current bulk agricultural trade through Port Kembla, while containerised agricultural exports occur through Port Botany. Agricultural trade is influenced by climatic conditions resulting in fluctuating volumes around a long term average.



BULK MINERALS

Bulk mineral trades through Port Kembla include iron ore imports to BlueScope Steelworks and the export of commodities such as coal, copper concentrates and other ores. In future, critical minerals could be handled through Port Kembla to support the energy transition, renewable energy generation and battery development.



4

PORT BOTANY GLOBAL GATEWAY

Port Botany will remain Australia's premium port and NSW's primary container port servicing Australia's largest population centre.

Premium shipping access with a short, direct, deep water shipping channel that minimises vessel transit time and contributes to port efficiency.

Centrally located within Australia's largest population centre, meaning shorter landside transport distances with cost benefits for consumers and reduced emissions.

Capability to handle large cargo vessels of at least 15,000 TEUs.

Strong global shipping connections with more than 220 ship movements a month connecting ports across the world.

Capability to handle significant increases in container trade.

Operates 24 hours a day, seven days a week.

On-dock port rail at all three container terminals.

Well connected across metropolitan and regional NSW including by dedicated freight rail, the Sydney motorway network and fuel pipelines.



Containers



LPG



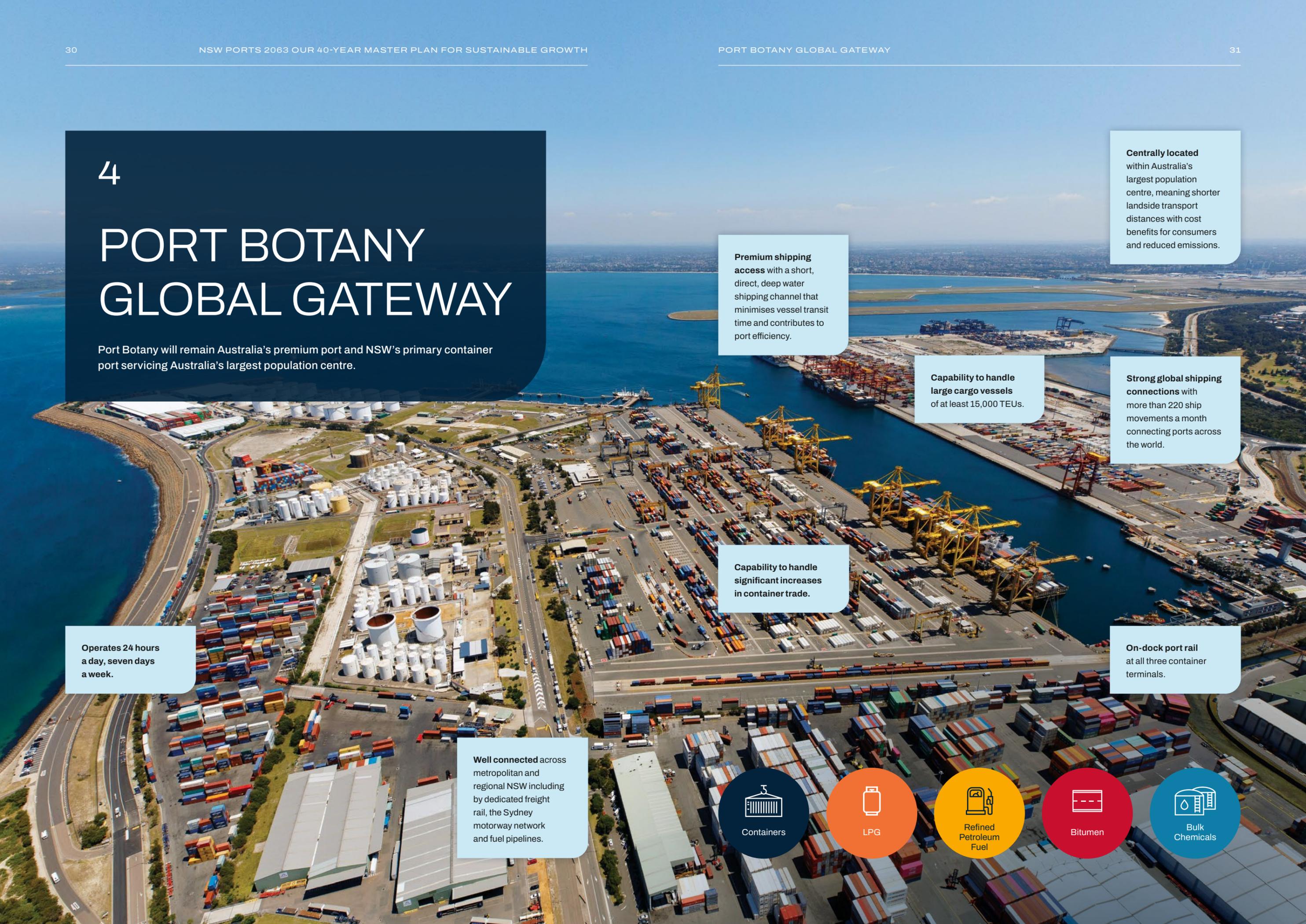
Refined Petroleum Fuel



Bitumen



Bulk Chemicals



Supporting the nation

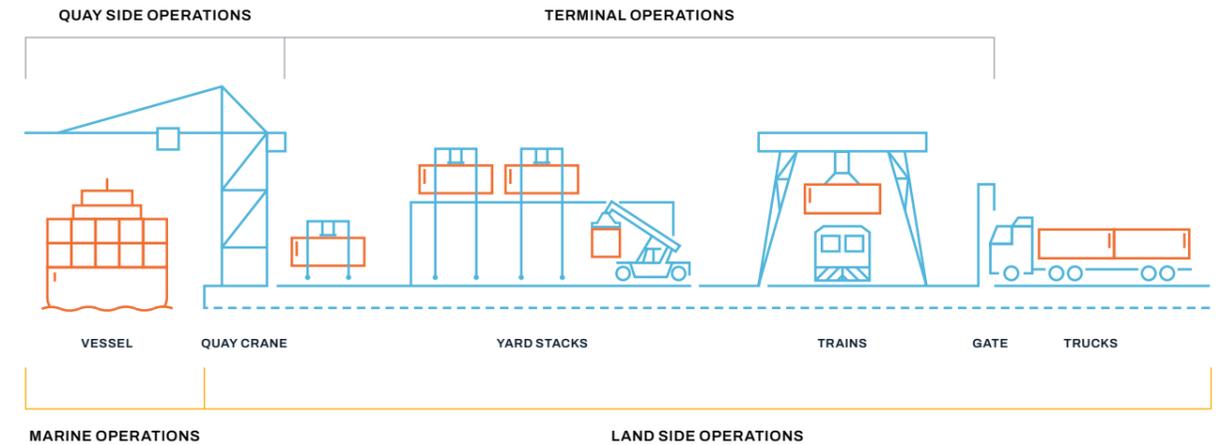
Handling one-third of Australia's container volumes, and hosting Australia's largest common user bulk liquids facility, Port Botany operates in support of the people and businesses of NSW.

Port Botany connects NSW to other States and the rest of the world. Its: short and deep shipping channel; ability to handle large cargo vessels; 24/7 operations; on-dock port rail; and rail, road and pipeline connections; make it a highly efficient and effective gateway for goods and products.



4.1

Containers



Port Botany is NSW's container port and will continue to be the primary container port over the next 40 years.

The key drivers of container growth are domestic demand, population growth, the strength of the NSW economy, the value of the Australian dollar, levels of domestic manufacturing, construction activity, government trade policies and the location of key distribution centres.

KEY

● Examples of types of imported items



Containerised imports consist of goods that are used as inputs into domestic business processes (e.g. machinery) and parts or consumption goods for sale to the local market (e.g. electronics, furniture). Containerised exports are driven by regional agricultural commodities (e.g. grains, cotton, meat) but also includes items manufactured domestically.

WHAT'S IN THE BOX?

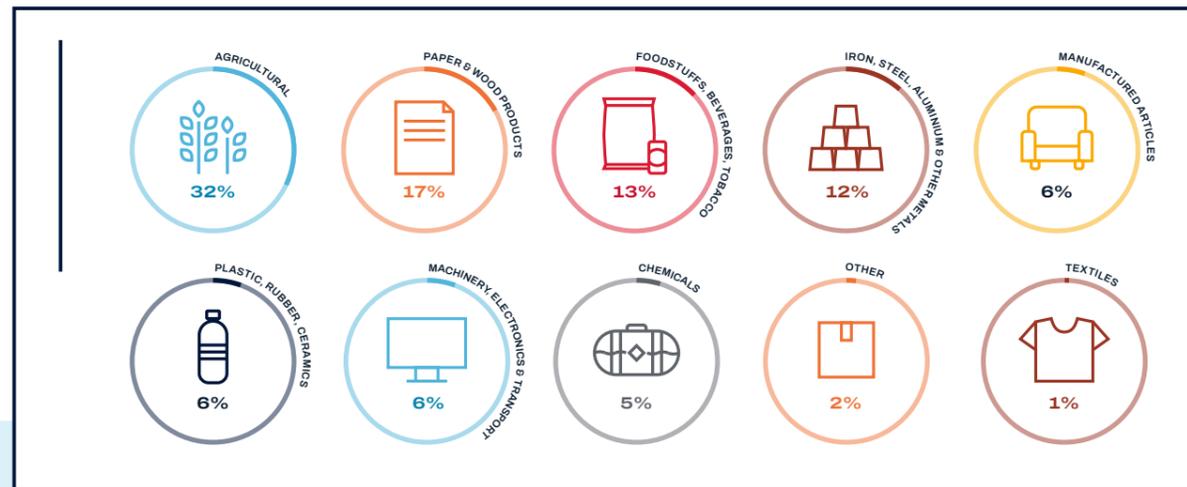
IMPORTS

Full Container Imports (FY22): 1.3m TEU



EXPORTS

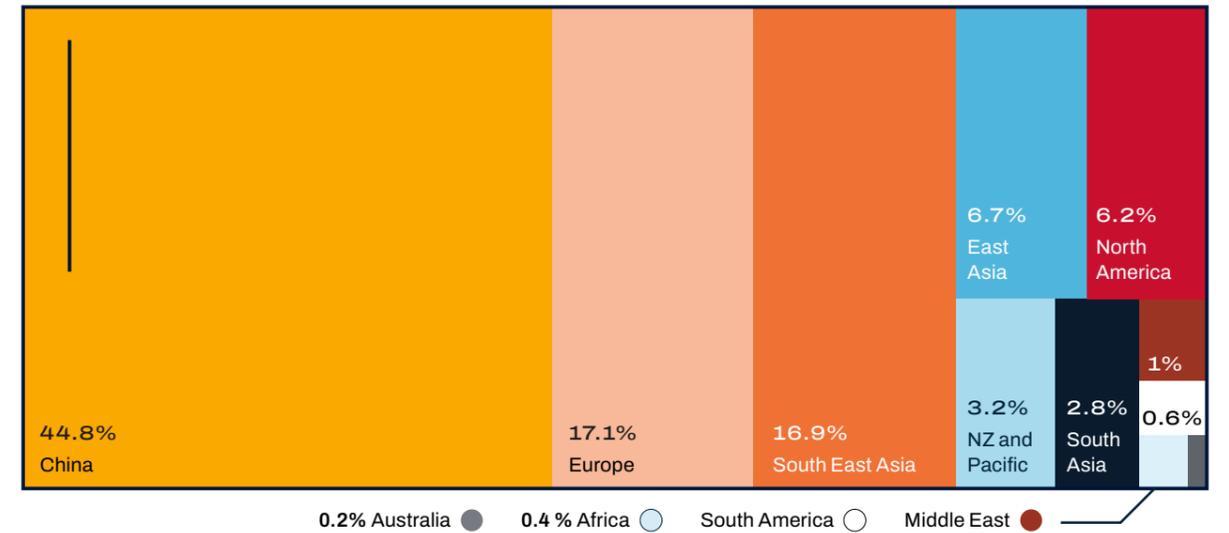
Full Container Exports (FY22): 0.42m TEU



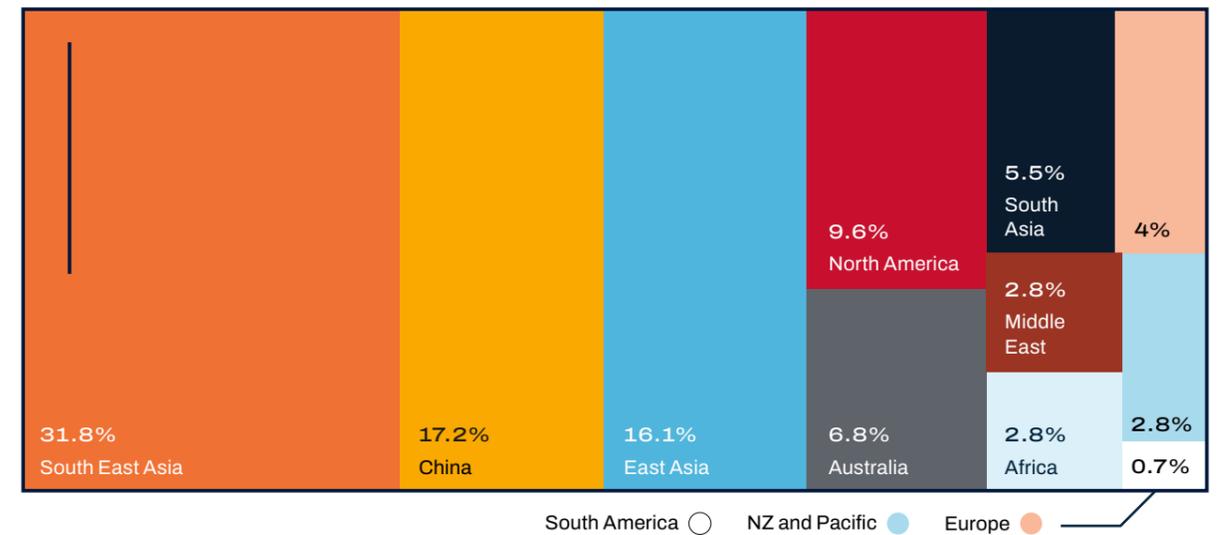
NSW imports substantially more full containers than it exports, reflecting the demand for goods and products from overseas to meet business and consumer needs. For every ten full import containers, only four full containers are exported, with the remaining six containers exported empty. Empty container parks are required to store the surplus empty containers prior to their transport back overseas.



IMPORT CONTAINER ORIGINS



EXPORT CONTAINER DESTINATIONS



WHAT THE FUTURE HOLDS

A productive, efficient port requires port infrastructure capacity and operational productivity to grow in line with trade demand.

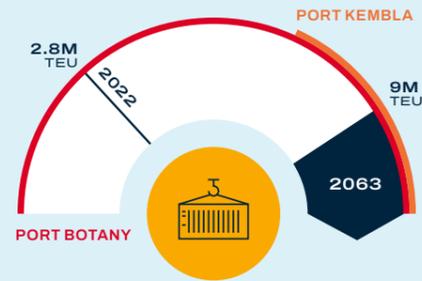
Container trade demand in NSW is projected to increase from 2.8 million TEUs to over 9 million TEUs in 2063.

To meet demand, investment in infrastructure and terminal operating equipment at Port Botany is required and the Port Kembla container terminal will be developed as Port Botany nears capacity.

Productivity and capacity at the Port Botany container terminals can be optimised through improved land utilisation. Additional equipment, increased technology, operational enhancements, expanded rail capacity and berthing infrastructure for larger ships will all be required.

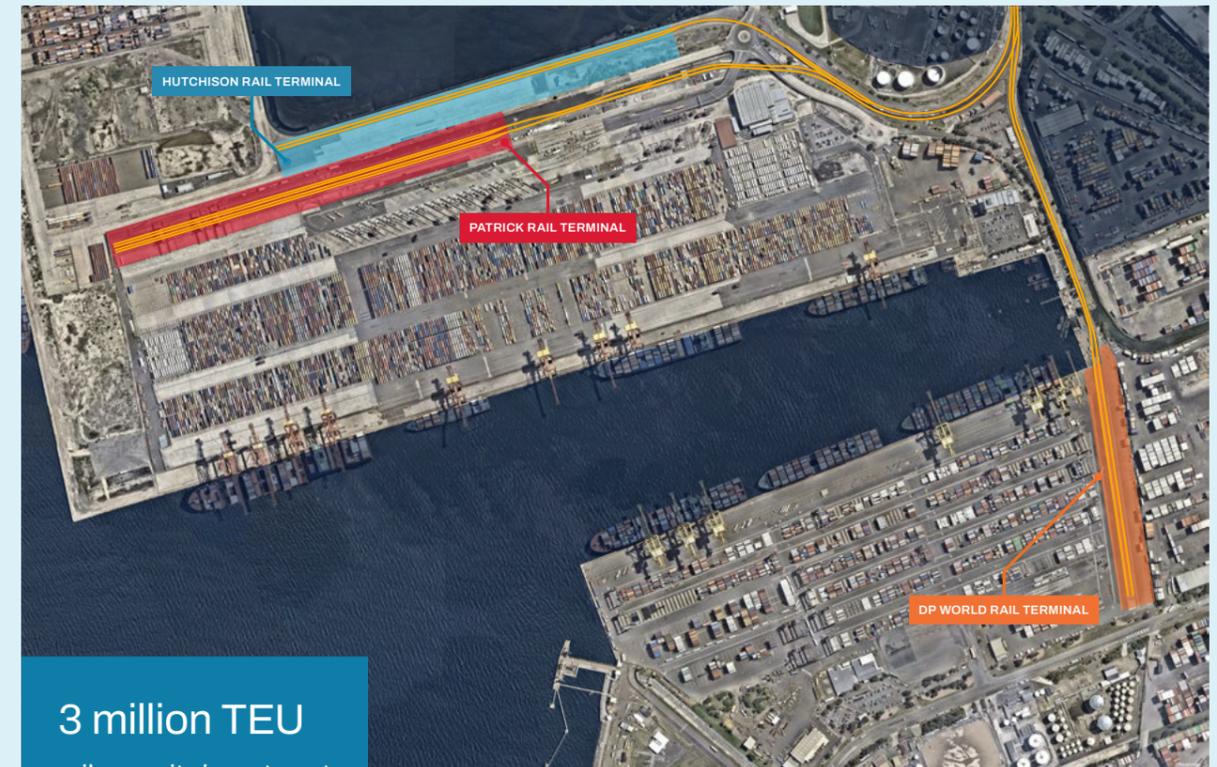
The number of empty containers exported from NSW will increase to 8 in every 10 (from the current 6 in 10), unless NSW can leverage domestic manufacturing opportunities that result in additional export trade.

Catering for the growing number of empty containers requiring storage prior to export will require: empty container storage facilities at Port Botany to be optimised; new empty container storage capacity to be introduced; use of rail to return empty containers to the container terminal, allowing empty containers to be stored inland from the port; and ensuring prompt export of empty containers by shipping lines.



Required actions:

- Invest in infrastructure and terminal operations at the Port Botany container terminals to optimise capacity, in line with trade demands.
- Invest in a container terminal at Port Kembla to handle forecast container volumes as Port Botany nears capacity.
- Complete on-dock port rail capacity improvements at Port Botany to deliver 3 million TEU rail capacity at the port.
- Increase empty container storage capacity at and around Port Botany and optimise existing empty container facilities and supply chains.
- Encourage the prompt return of empty containers overseas to minimise land storage requirements.
- Increase two-way loading of trains through return of empty containers to intermodal terminals for rail transport to Port Botany.
- Seek opportunities to use empty containers for exports such as through supporting domestic manufacturing.



3 million TEU
rail capacity investment
at Port Botany

Port Botany is the only port in Australia with on-dock port rail at all three of its container terminals. It is connected by dedicated freight rail to a network of intermodals. Every 1 million TEU transported by rail reduces truck movements at the port by 900 trucks per day and rail produces fewer CO2 emissions than truck for the same mass of cargo. Moving more freight by rail to and from the port supports the sustainable transport of containers and reduces road congestion.

Through strategic planning and investment, we are working to increase rail capacity and improve rail efficiency at Port Botany. Our long-term goal is to move 3 million TEUs per year by rail.

Together with our stevedores, we are delivering a staged rail investment program to increase total on-dock rail capacity from around 1 million TEU to 3 million TEU.

The first stage, which is almost complete, involves a \$190 million investment at Patrick Terminals – Sydney AutoStrad to deliver a 1 million TEU capacity on-dock rail terminal, capable of servicing 4 x 600 metre trains concurrently using automated technology. When complete this will double Port Botany's current rail capacity and will speed up train turnaround times to benefit customers.

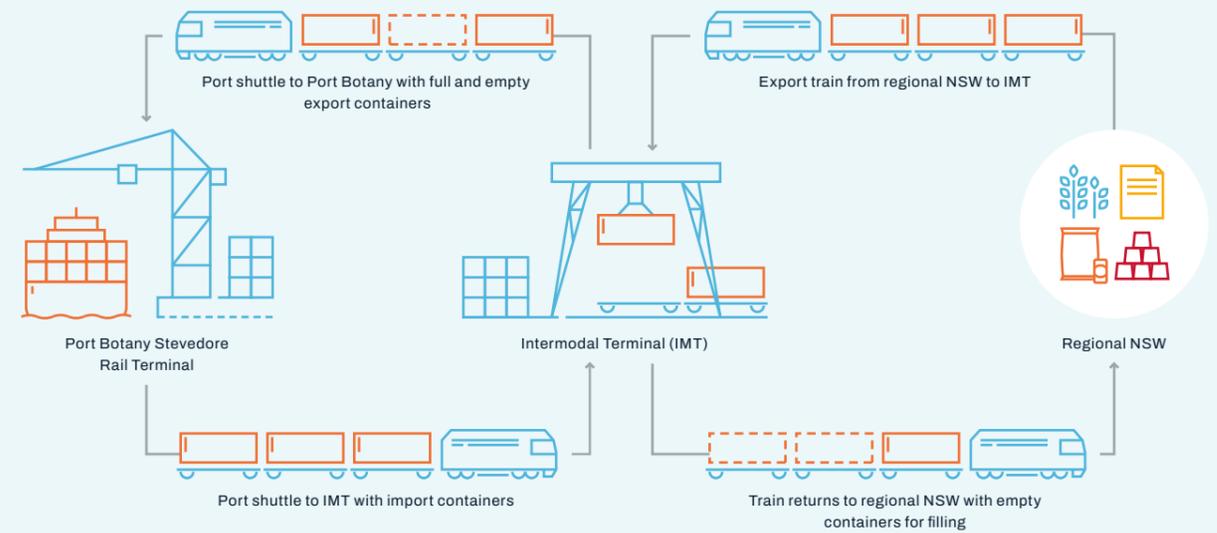
We will partner with the other stevedores to create 1 million TEU capacity rail terminals at each of their stevedoring terminals over the medium term.



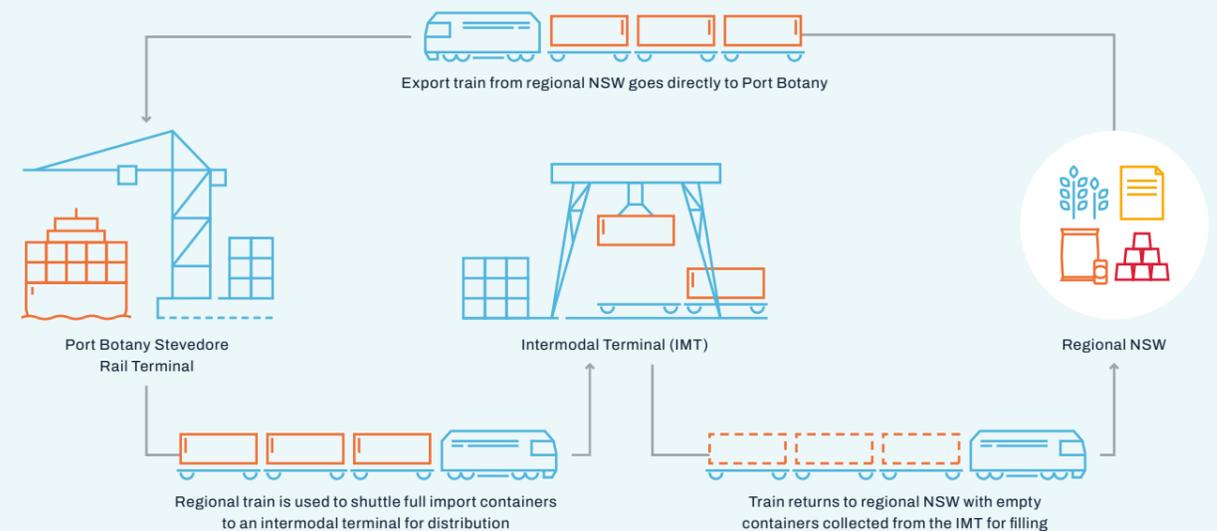
Increasing the two-way loading of trains

Increasing the number of containers carried by port trains is critical to growing the total volume of containers moved by rail. This will be assisted by using rail to transport empty containers to the port from intermodal terminals. Options to do this include:

- Consolidating export cargo at a metropolitan intermodal terminal:** Export trains from regional NSW would terminate at an intermodal terminal in Greater Sydney where the cargo would be loaded onto a metropolitan shuttle to the port. Regional trains would return to regional NSW with empty or full containers. This avoids the extended train journey to the port, allows faster cycle times for regional trains, increases flexibility and resilience to shipping schedule disruptions, and maximises two-way utilisation of trains.



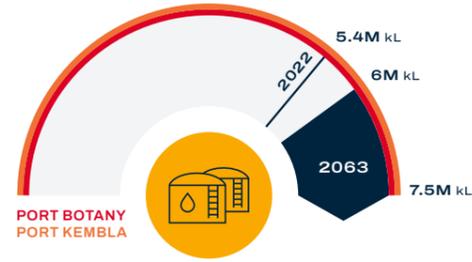
- Utilising regional trains to collect full imports:** Regional trains filled with exports would collect full imports from the port after dropping off full exports. The full import containers are transferred to an intermodal terminal in Greater Sydney to exchange them for empty containers for the return journey to regional NSW.



KEY Empty container Full container

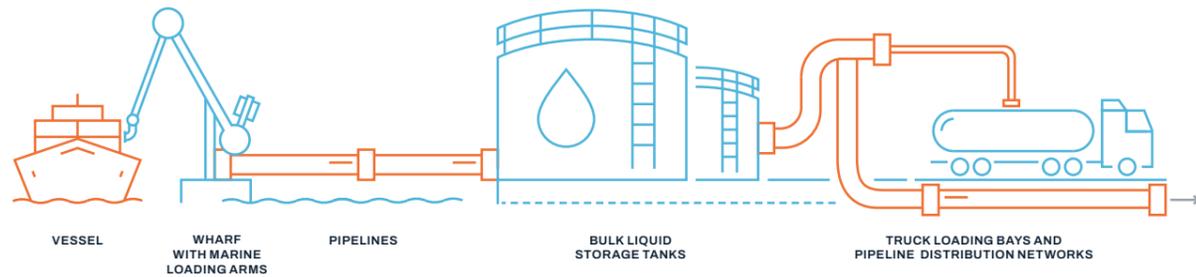
4.2

Bulk liquids and gas



MARINE OPERATIONS

LAND SIDE OPERATIONS



Bulk liquid and gas products play an important role for consumers and industries across NSW.

Port Botany handles approximately 5.5 billion litres of bulk liquids and gas annually.

Refined petroleum is the largest volume handled at the port, comprising diesel, unleaded petrol and jet fuel to fuel vehicles, machinery, vessels and aeroplanes. It comprises around a third of NSW's fuel supply, making the port critical to national fuel security and productivity.

Bitumen is imported for pavement and road surface construction. The port handles liquid chemicals used in domestic manufacturing processes to make detergents, plastics, soap products, paint and other products.

Bulk gas handled at the port is propane (LPG), which is used as feedstock for plastics manufacturing and fuel for heating, cooking, barbeques and the autogas industry.

Port Botany's infrastructure for the handling, storage and transport of bulk liquids and gas includes two dedicated bulk liquid berths, above-ground storage tanks and a gas storage cavern 130 metres underground.

Bulk liquids and gas are primarily distributed from Port Botany by truck, with some aviation fuel and LPG distributed by pipeline. Port Botany has fuel pipeline connectivity to Sydney Airport, Silverwater and Newcastle, however this is subject to securing access. Port Botany has dedicated pipeline connectivity for the transfer of LPG and ethylene to the nearby Botany Industrial Park for the manufacture of plastics and related products.

WHAT THE FUTURE HOLDS

Future bulk liquid and gas product types and volumes will change with new technologies, decarbonisation efforts and the extent of domestic manufacturing in Australia. This creates challenges for reliably forecasting future demand and fuel types.

Overall there will continue to be demand for fuels and chemicals, with potential for existing Port Botany infrastructure to be repurposed to handle future sustainable fuels.

Greater accessibility to the existing fuel pipelines from Port Botany and/or additional pipeline capacity to Sydney Airport would enable additional fuel transport by pipeline, reducing the number of trucks required to transport the fuel from Port Botany.

Western Sydney Airport is expected to open by 2026. At full operational capacity, the airport could require 50 to 65 B-double fuel tanker deliveries per day, which would add to congestion on Sydney's road network and increase vehicle emissions.

The opportunity for a dedicated fuel pipeline to Western Sydney from Port Botany, would enable efficient, safe and cost-effective transportation of fuel in large quantities to Western Sydney and Western Sydney Airport and reduce fuel trucks on roads.

Required actions:

- Support the changing fuel needs of NSW towards a decarbonised future including through provision of port infrastructure and the adaptive reuse of existing infrastructure at Port Botany for future sustainable fuel handling and storage.
- Work with stakeholders on the opportunity for additional fuel pipeline access/capacity to Sydney Airport from Port Botany and a fuel pipeline to Western Sydney / Western Sydney Airport from Port Botany, to enable efficient, safe and cost-effective transport of fuel in large quantities and reduce fuel trucks on roads.

KEY

- Sydney metropolitan pipeline
- Sydney airport aviation fuel pipeline
- Port Botany pipeline corridor
- LPG and chemical connection
- Bulk liquid berths



4.3

Vessels and shipping channel

There are more than 2,200 ship movements to/from Port Botany each year, the equivalent of seven ships arriving or departing the port each day.

The port's deep water shipping channel and short transit to and from berths ensures efficient port access.

The Port Botany shipping channel has not required maintenance dredging since it was originally constructed in the 1970s however annual seabed levelling is generally undertaken within Brotherson Dock to flatten high spots created through container vessel movements and associated services, such as towage.

PORT BOTANY CONTAINER PORT CONNECTIONS



Required actions:

Undertake seabed levelling at Port Botany as required to maintain channel and berth depths and undertake deepening as required.

Container vessels

Container vessels operate on regular cycles to scheduled ports. Port Botany has 37 services with almost all calling weekly, providing regular connections for importers and exporters with a wide range of trading partners. Ports with smaller container volumes are unable to provide this level of service or global connectivity.

Container vessels typically call at each of the container ports on the east-coast of Australia - Brisbane, Botany and Melbourne. This is because the large distances between the major population centres on the east-coast makes distributing containers overland from a port to an interstate city centre more expensive.

The largest container vessel to call Port Botany has a capacity of close to 11,000 TEU, while the median size container vessel is around 5,500 TEU.

The size of container vessels to call at Australian ports is related to container volume, vessel availability and capability of ports across the entire shipping route. Australia handles about 8 million TEU per year, compared with global volumes of about 850 million TEU per year, reflecting the relatively small size of the Australian container market by global standards. As such, container vessels servicing Australia are appropriately much smaller than other regions.

Shore power

Shore power allows vessels to plug in to mains power instead of using their engines at berth. This has the potential to reduce greenhouse gas emissions where renewable energy sources are used.

There are a range of challenges in delivering shore power including: installation cost; cost competitiveness of electricity supply; electricity network capacity; vessel compatibility; terminal operation impacts; system maintenance and operation requirements.

We will continue to investigate the opportunity for shore power to reduce emissions and mitigate vessel noise when in port.

Required actions:

Continue to investigate the feasibility of shore power for vessels, to reduce emissions and mitigate vessel noise when in port.



WHAT THE FUTURE HOLDS

Port Botany is ready to handle vessels of at least 15,000 TEU capacity today. We expect these vessels will be the largest to service the east-coast of Australia over the next 20 years.¹

Larger capacity container vessels can offer cost savings for the ocean transport leg of a container's journey through economies of scale only where a larger vessel can be filled with cargo. Where there is insufficient volume to fill a ship, reduced service frequency may occur in order to increase vessel utilisation.

Container vessel cost savings can however be offset or reversed where significant waterside and landside infrastructure investment at ports is required to cater for larger ships, making the overall transport cost more expensive for shippers. This would be the case where container vessels 14,000 TEU or larger are prematurely introduced into east-coast Australian ports prior to sufficient volume demand.¹

Investment in additional berthing infrastructure and depths at Port Botany will be required to meet future container vessel size growth, in line with demand.

As ships get larger, the number of ships that can fit on the same length of wharf reduces. Extending the southern wharf of Brotherson Dock would align quay length between the three container stevedores, allowing each to service at least three larger ships at a time. This would benefit importers, exporters and consumers.

Two bulk liquid berths will continue to operate at Port Botany following any wharf extension, either in their existing location if possible or through construction of replacement berths further south along the revetment wall.

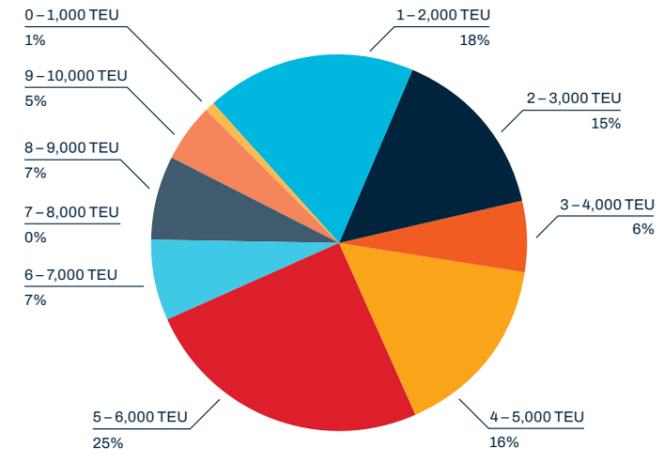
¹ Drewry analysis for NSW Ports (2022)

Required actions:

- Invest in additional berthing infrastructure and depths at Port Botany to meet growing container vessel sizes, in line with demand.
- Extend the southern wharf of Brotherson Dock, Port Botany, to align quay lengths across the three container stevedores and construct replacement bulk liquid berths if required.

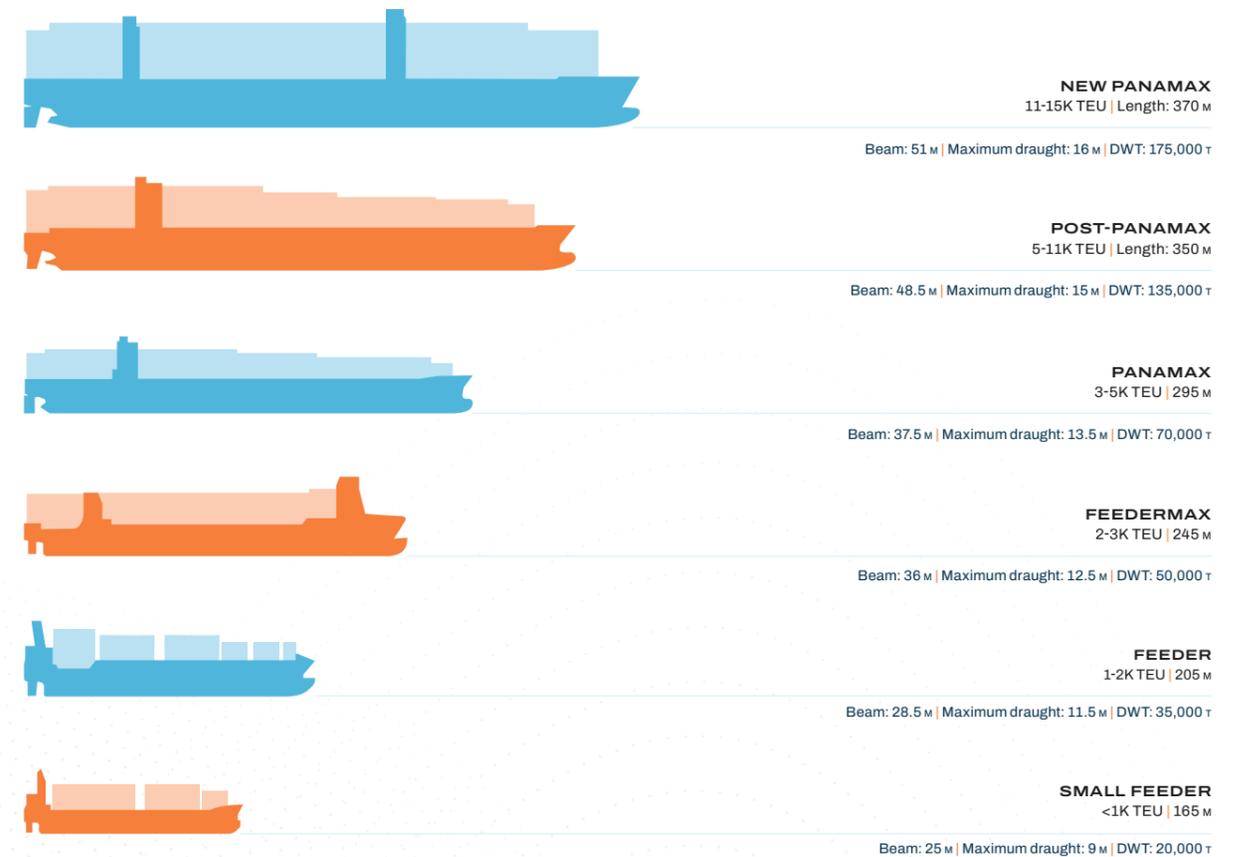


CONTAINER VESSEL SIZES AT PORT BOTANY (FY22)



The majority of vessels currently visiting Port Botany are in the 4000-6000 TEU capacity range. Maximum vessel sizes visiting Port Botany today are up to 11,000 TEU. There remain a number of smaller vessels visiting Port Botany as these visit Pacific Islands and New Zealand ports which only require smaller capacity vessels.

CHANGING CONTAINER VESSEL SIZE (MAX)



Note: typical dimension indicated. Dimensions will vary. DWT = deadweight.

Bulk Liquid and Gas Vessels

Bulk liquid and gas vessels calling at Port Botany range from small tankers to Long Range 2 tankers and Large Gas Carriers. Trade growth will largely be catered for within this range of vessels, with more of the larger vessels expected to visit the port.

CHEMICAL AND BITUMEN CARRIERS



MEDIUM RANGE TANKER (MR)
LOA 172-190 M

Beam: 32 M | Draught: 6.5 M | DWT: 45,000 T



SMALL TANKER
LOA 180 M

Beam: 17.5 M | Draught: 10 M | DWT: 22,000 T

GAS CARRIERS



LARGE GAS CARRIER
LOA 225 M

Beam: 36 M | Draught: 12.5 M | DWT: 70,000 T



SMALL GAS CARRIER
LOA 100 M

Beam: 18 M | Draught: 6.5 M | DWT: 20,000 T

LIQUID FUEL CARRIERS



LONG RANGE 2 TANKER (LR2)
LOA 245 M

Beam: 42 M | Draught: 15.5 M | DWT: 110,000 T



LONG RANGE 1 TANKER (LR1)
LOA 228 M

Beam: 32 M | Draught: 13 M | DWT: 75,000 T



MEDIUM RANGE TANKER (MR)
LOA 172-190 M

Beam: 32 M | Draught: 6.5 M | DWT: 45,000 T

Note: LOA = length overall of a vessel. DWT = deadweight. Typical dimension indicated. Dimensions will vary.

Port services

Port services are critical to a port's productivity as all freight movement is subject to their efficient operation.

Pilot, tug and lines boats services in Port Botany need to be adequately resourced to service forecast growth.

The Hayes Dock Services Area will be developed to deliver additional tug berthing facilities at Port Botany.

Customs and biosecurity services within the port will need systems and resources that facilitate trade growth without delaying cargo movement.

A dynamic vessel scheduling system should be introduced to improve vessel arrival planning, reduce vessel wait times and reduce vessel fuel consumption.



PILOTS

A licenced navigational guide with thorough knowledge of a particular section of a waterway, whose occupation is to guide ships into and out of port.



TOWAGE SERVICES / TUG BOATS

Special purpose vessels used for manoeuvring ships in and out of ports, and to and from berths.



LINE SERVICES

Specialised crews to handle mooring lines from vessels.

Required actions:

- Ensure biosecurity and customs resources and systems for Port Botany respond to growing trade volumes to facilitate efficient cargo flow.
- Implement a dynamic vessel scheduling system at Port Botany to improve vessel arrival planning, reduce vessel wait times and reduce vessel fuel consumption.
- Ensure tug, pilot and lines services at Port Botany are adequately resourced to service forecast demand.
- Deliver additional tug berthing facilities at Port Botany, in line with demand.

5

PORT KEMBLA GLOBAL GATEWAY

Port Kembla will continue to grow and diversify its import and export trade and be a critical part of NSW's green energy future.

29km of rail lines and sidings within the port, providing access to metropolitan and regional NSW.

Operates 24 hours a day, seven days a week.

Connected to Greater Sydney and regional NSW by road and rail.

Located close to Greater Sydney, reducing transport distances and emissions.

Capacity for growth including through additional land and berths in the Outer Harbour.

Capability to handle large cargo vessels.

Premium shipping access with a short, deep water shipping channel that minimises vessel transit time and contributes to port efficiency.

Located within the Illawarra Renewable Energy Zone (REZ) and adjacent to the proposed Illawarra offshore wind zone.

Excellent supply of surrounding industrial land to separate port and industrial operations from housing and other sensitive uses.



Motor Vehicles & Machinery



Bulk Agriculture



Bulk Liquids



Construction Materials



Minerals



Project Cargo



Port Kembla is surrounded by industrial lands and separated from sensitive land uses such as residential development.

State and local policy must aim to retain and enhance these industrial lands and to avoid residential encroachment.



Catering for growth

Port Kembla is NSW's motor vehicle import port and an international trade gateway for bulk agricultural, construction and mining industries.

Through its diversified trade, Port Kembla is essential to regional NSW, the Illawarra and Greater Sydney. It services growing demand for population-driven trades such as vehicles and construction materials. It will be the site of the State's next container terminal once Port Botany nears capacity and will be a critical part of NSW's green energy future.

Port Kembla's expansion and diversification will support NSW's growth.

Its: short and deep shipping channel; ability to handle large cargo vessels; 24/7 operations; excellent supply of surrounding industrial land; proximity to the population centre of Greater Sydney; and rail and road connections make it an efficient and effective trade gateway.

WHAT WE HEARD

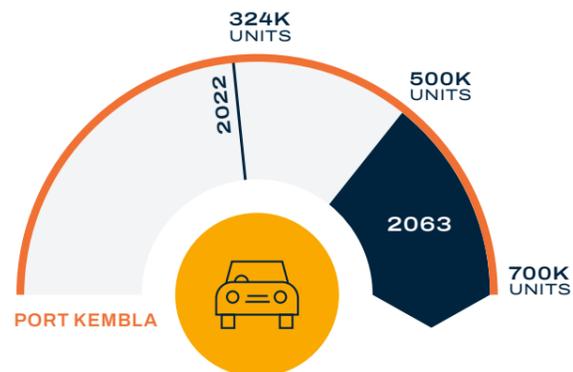
There is strong support to develop and diversify Port Kembla for port trades.



5.1

Motor vehicles and machinery

Motor vehicle and machinery imports include cars, trucks, buses, emergency services vehicles and machinery used in construction, mining and farming. Port Kembla currently handles 390,000 vehicles and pieces of machinery each year through a purpose-built roll-on/roll-off terminal.



WHAT THE FUTURE HOLDS

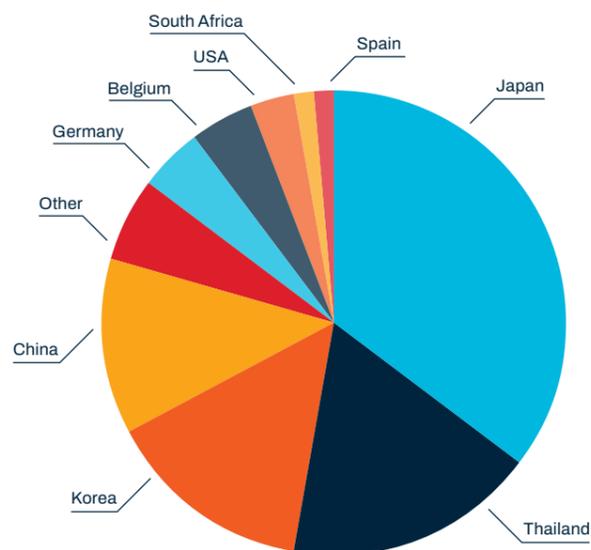
Vehicle import volumes will be influenced by many factors including: the NSW economy; population growth; vehicle emission regulations driving stock renewal; new technologies such as electric or hydrogen cell vehicles; domestic manufacturing of electric vehicles; and greater industrial, farming and construction activity.

The number of vehicles owned per household will be influenced by higher density neighbourhoods, proximity to mass transit, ride sharing, autonomous taxis and bicycle riding.

Forecasting future vehicle import volumes is therefore challenging. Overall, growth in vehicle and machinery imports is expected over the next 40 years.

Improvements to existing berths and optimising land use will be necessary to cater for forecast trade growth. Biosecurity and customs resources also need to respond to growing vehicle imports to ensure efficient cargo flow.

TOP CAR IMPORT PORTS OF ORIGIN (FY22)



Required actions:

- Ensure port infrastructure and land capacity at Port Kembla is capable of handling growing vehicle and machinery imports.
- Ensure biosecurity and customs resources and systems respond to growing vehicle and machinery imports to facilitate efficient cargo flow.

5.2

Project and general cargo

Port Kembla handles a range of project and general cargo such as onshore wind farm components, tunnel boring equipment, heavy and light rail carriages, steel and transformers. Movement of this type of cargo is increasing off the back of high investment in renewables and NSW Government-led infrastructure construction.

Much of the project cargo is oversize and/or over-mass compared to typical transport movements. On-dock port rail allows cargo to also be moved by rail.

WHAT THE FUTURE HOLDS

As Australia moves to reduce greenhouse gas emissions, demand for renewable energy project cargo will increase. Project cargo types will be expanded to include components for the development of offshore wind farms.

As the size of project cargo increases, such as wind towers and blades, transport routes need to be reviewed and constraints addressed. Key intersection gateways to Port Kembla will require augmentation including the intersection of Tom Thumb Road and Springhill Road.

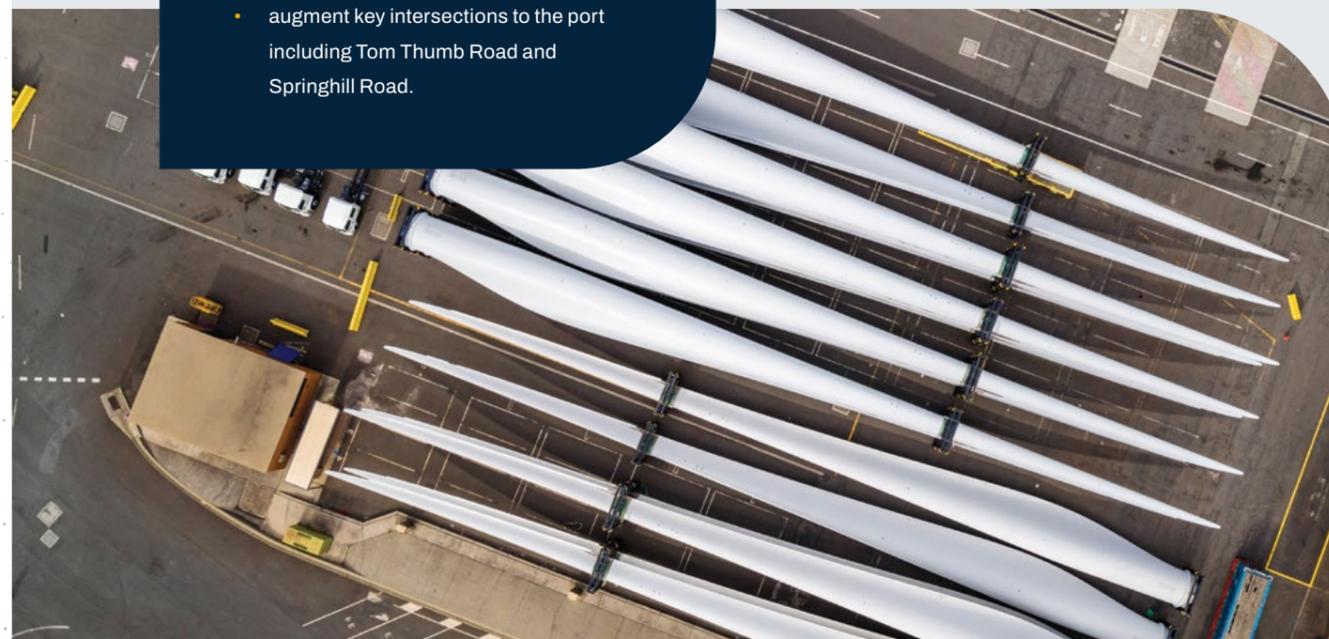
With wind tower diameters increasing from 4.5 to 5.5 metres in the short term and to 6.5 metres in the longer term, the bridge heights over the Princes Highway to Mount Ousley (5.0m to 5.4m) will be exceeded. Use of Corrimal Street for wind towers exceeding the bridge height limits will be required.

Movements of oversize/over-mass loads also need to be more efficient with permits allowing multiple movements per day under the direction of certified transport controllers rather than emergency services.

Required actions:

To support project cargo transport to/from Port Kembla:

- assess existing oversize and overmass road transport limitations and develop options for alternate routes;
- implement improvements to cargo transport and transport permit processes including use of certified transport controllers;
- augment key intersections to the port including Tom Thumb Road and Springhill Road.

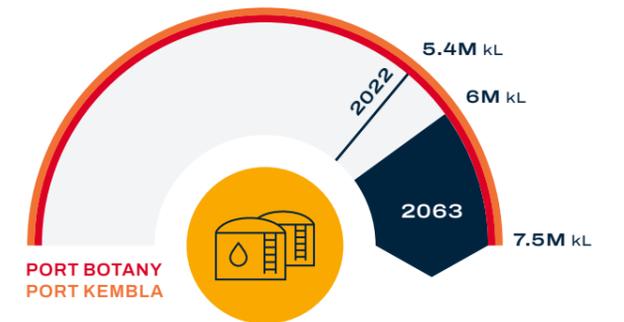




5.3

Bulk liquids and gas

Port Kembla handles a range of bulk liquid products including diesel and lube oils for vehicles, machinery and equipment and sulphuric acid, imported and distributed for industrial and power generation customers.



WHAT THE FUTURE HOLDS

The Port Kembla Liquefied Natural Gas (LNG) import terminal, once operational, will see imports of LNG into the port to support NSW's gas needs. Future bulk liquid product types will change with new technologies and decarbonisation efforts. The LNG terminal development, and the potential for future sustainable fuels (such as biofuels, sustainable aviation fuel and hydrogen), could result in a significant increase in bulk liquid and gas volumes handled at the port.

Port Kembla could support fuel supply to Western Sydney, including aviation fuel to the new airport and motor vehicle, machinery and equipment fuel for local distribution.

This will require additional fuel storage infrastructure at Port Kembla and a future pipeline connection.

Required actions:

- Support the changing fuel needs of NSW towards a decarbonised future including through provision of port infrastructure for future sustainable fuel handling and storage (such as biofuels, sustainable aviation fuel and hydrogen).
- Work with stakeholders on the opportunity for a fuel pipeline to Western Sydney from Port Kembla, to reduce fuel transport by truck to Western Sydney and supply Western Sydney Airport.

5.4

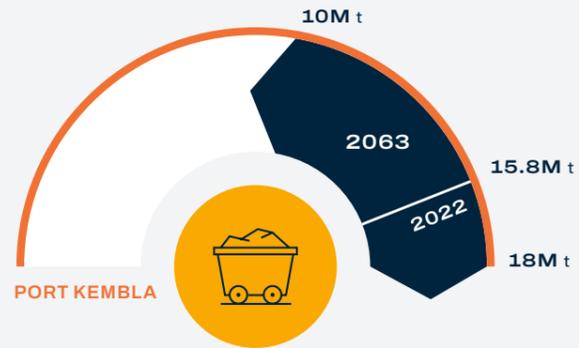
Bulk minerals

Bulk mineral trades through Port Kembla include iron ore, coal and limestone as inputs to steel making at the BlueScope Steelworks, and the export of commodities such as coal, coke, copper concentrates and gold ore. Metallurgical (steel making) coal is around 94% of Port Kembla's coal exports.

Almost all copper concentrate and around half of all coal exports are delivered to the port by rail.

BlueScope's Steelworks, located at Port Kembla, is the largest manufacturer and supplier of flat steel in Australia by volume. It manufactures slab, hot rolled coil and plate products.

Several coal mines in the Illawarra and surrounds service BlueScope Steelworks and export through Port Kembla.



WHAT THE FUTURE HOLDS

We expect a diversification in the types of minerals handled at Port Kembla over the next 40 years as metals such as lithium, cobalt, scandium and rare earth elements increase to support demand for battery development and renewable energy generation.

Additional bulk handling infrastructure and rail sidings required to handle these trades may be required in the future.

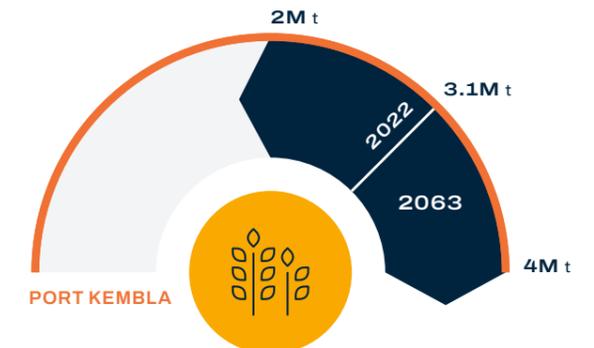
Required actions:

Support future requirements for handling critical minerals, such as those required for battery development and renewable energy generation, through provision of port infrastructure and land capacity at Port Kembla.

5.5

Bulk agricultural products

Port Kembla is the largest grain export port in NSW. Bulk grain exports and fertiliser imports make up most of Port Kembla's agricultural trade.



WHAT THE FUTURE HOLDS

Agricultural export volume will depend on yields, which are influenced by climatic conditions and technology, as well as domestic and international demand. Climate change could result in longer periods of high or low yields resulting in more volatile volumes of agricultural commodities.

Port Kembla has sufficient grain receipt and storage capacity at the two existing terminals to handle increased volumes of grain. Both terminals have rail receipt facilities, with almost all grain arriving by rail. With improved ship loading rates, port infrastructure will be able to meet future demand.

Required actions:

Continued enhancement of the rail network is required to improve efficiency and resilience for regional exporters to connect to Port Kembla.



5.6

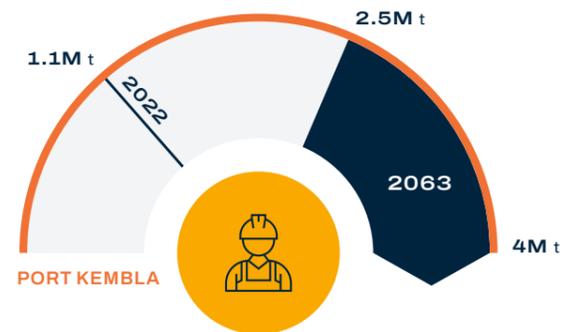
Bulk construction materials

Port Kembla handles cement and gypsum. Cement clinker is imported by ship and is ground to powder on site. Powdered cement is also imported by ship and stored in repurposed grain storage silos. Cement product leaves Port Kembla by truck or rail and is an input to concrete.

Port Kembla has current capacity to provide 1.7 million tonnes per annum of powdered cement — enough to build Warragamba Dam four times over every year.

Some cement is transported by rail from Port Kembla to a rail receival terminal in Clyde. Approximately 350 rail wagons carrying cement are moved each month saving about 4,200 truck movements on the roads of the Illawarra and southern Sydney every year. The ability to transport increased volumes of cement by rail is limited by the lack of rail receival locations in Greater Sydney and availability of paths on the rail networks.

The ability to move bulk construction materials by rail from Port Kembla to Western Sydney will enhance the productivity and sustainability of these supply chains. It will reduce the growth of trucks on the road network and vehicle emissions and improve safety. To achieve this however requires the NSW Government to identify and plan for rail receival sites for construction materials in Western Sydney.



Required actions:

- Cater for growing cement and gypsum volumes and the future import of other construction materials (such as sand and aggregates) through provision of port infrastructure and land capacity at Port Kembla, to support NSW's infrastructure and housing construction needs.
- Plan and deliver rail based receival facilities in Western Sydney for bulk construction materials, to support the movement of construction products by rail from Port Kembla, reducing the growth of trucks.

WHAT THE FUTURE HOLDS

Demand for construction material imports is linked to population growth and the need for housing and infrastructure, together with availability of local sources and adoption of more sustainable products such as low carbon and recycled products. Growth in cement and gypsum volumes through Port Kembla is expected, together with diversification of construction material imports. Future import trades could include sand and aggregate.

Future demand will be catered for through additional storage facilities and berth infrastructure.

Moving bulk construction materials by rail from Port Kembla to Western Sydney will enhance the productivity and sustainability of these supply chains and support growth. It will reduce the growth of trucks on the road network and vehicle emissions and improve safety. To achieve this however requires the NSW Government to identify and plan for rail receival sites for construction materials in Sydney.



5.7

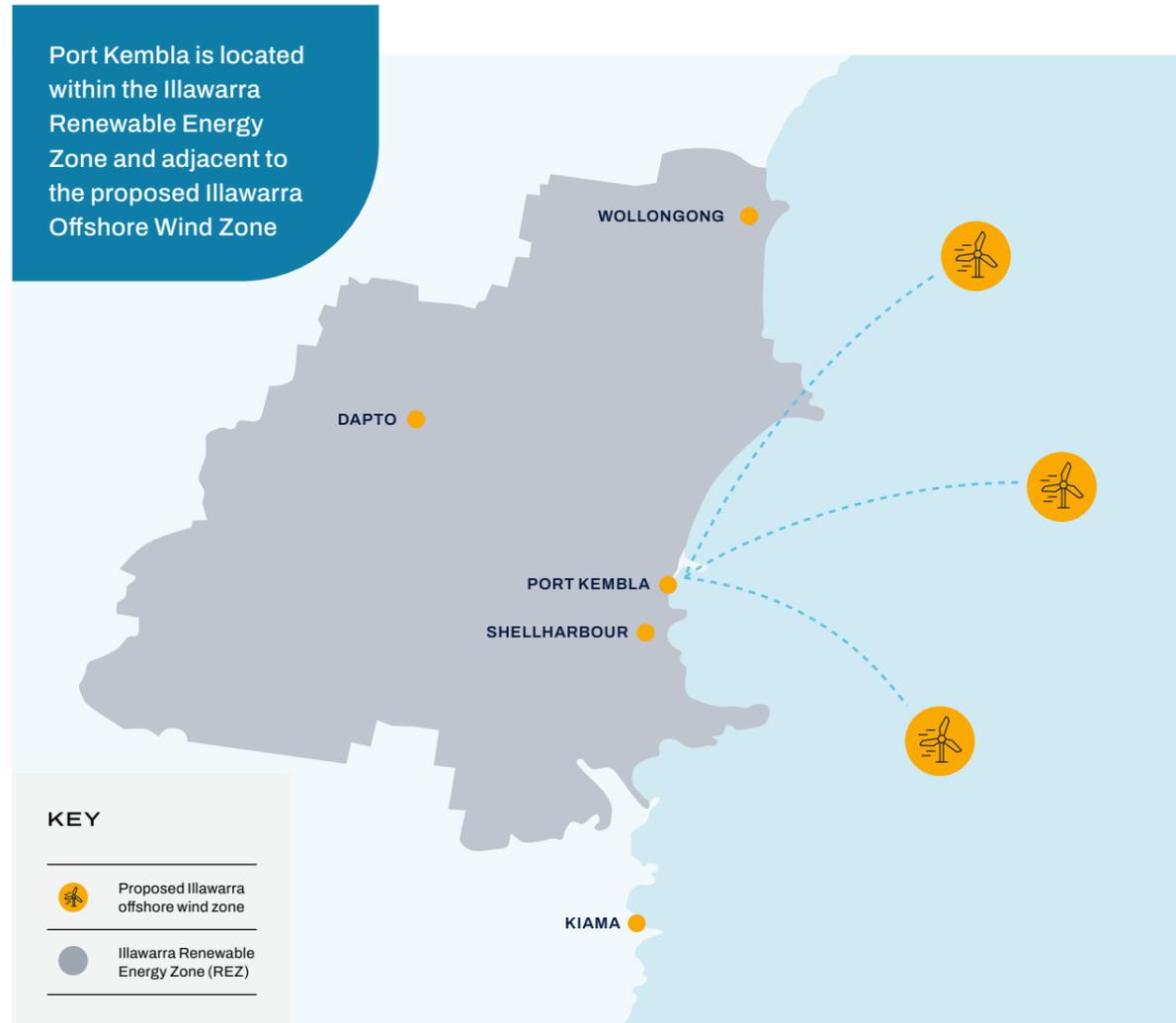
Green energy

Port Kembla is ideally located to support renewable energy industries and projects. Its proximity to a large population base in Greater Sydney and the Illawarra, as well as surrounding industrial and manufacturing activities, will underpin the demand for renewable energy consumption. The availability of large expanses of industrial lands surrounding the port, separated from urban areas and sensitive uses, will support the establishment of renewable energy industries.

The Illawarra Renewable Energy Zone (REZ) covers 7,000 square kilometres, which includes the port, making it a prime location for large-scale renewable energy projects.

Port Kembla will also support the establishment and growth of hydrogen industries, as part of the Illawarra Hydrogen Hub identified in the NSW Government Hydrogen Strategy, helping to reduce carbon emissions in hard-to-abate sectors, improving energy security and growing export opportunities.

Port Kembla's Outer Harbour Development will provide new wharves and land to cater for future trade growth. It is required to support construction and delivery of offshore wind installations in the proposed Illawarra offshore wind zone.



ARTIST IMPRESSION OF POTENTIAL PORT KEMBLA OFFSHORE WIND TERMINAL



Required actions:

With Government support, transform Port Kembla into a world-class green energy support port through:

- development of the Port Kembla Outer Harbour offshore wind port facility in time to support the delivery of offshore wind projects; and
- delivering infrastructure required to support green energy fuels and products eg. hydrogen.

5.8

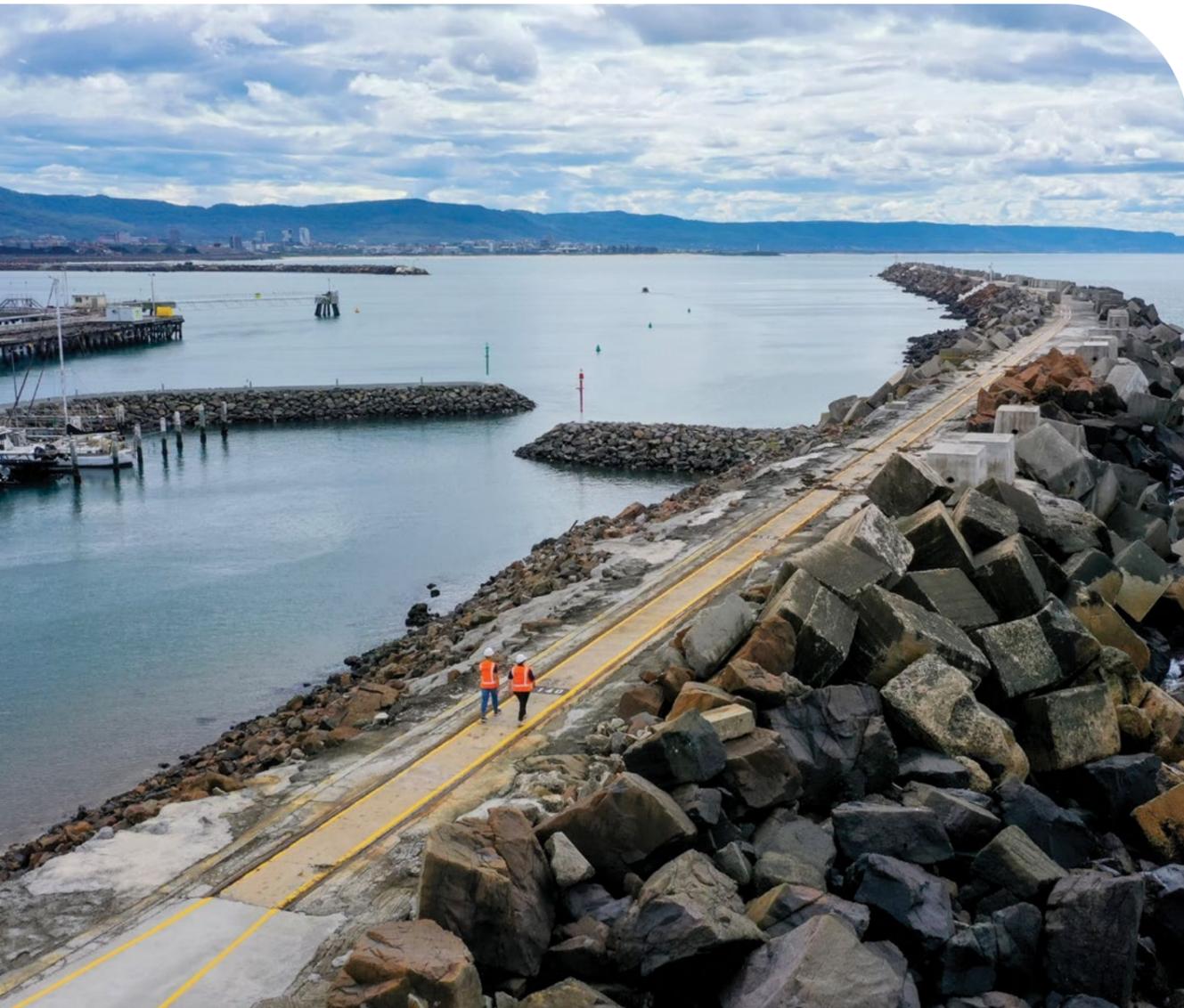
Port Kembla container terminal

Required actions:

Transition the Port Kembla offshore wind port facility to service the growth of NSW's container trade as Port Botany nears capacity (beyond 2045).

The timing of a container terminal operation at Port Kembla will align with Port Botany nearing capacity. We will transition the Port Kembla Outer Harbour to service the growth of NSW's container trade in line with demand (beyond 2045).

Utilising the same or an expanded footprint as for offshore wind, a container terminal with deep water berths and on-dock rail will be established.



POTENTIAL OUTER HARBOUR DEVELOPMENT LAYOUTS

Note: Options are conceptual only and will be subject to further design development.



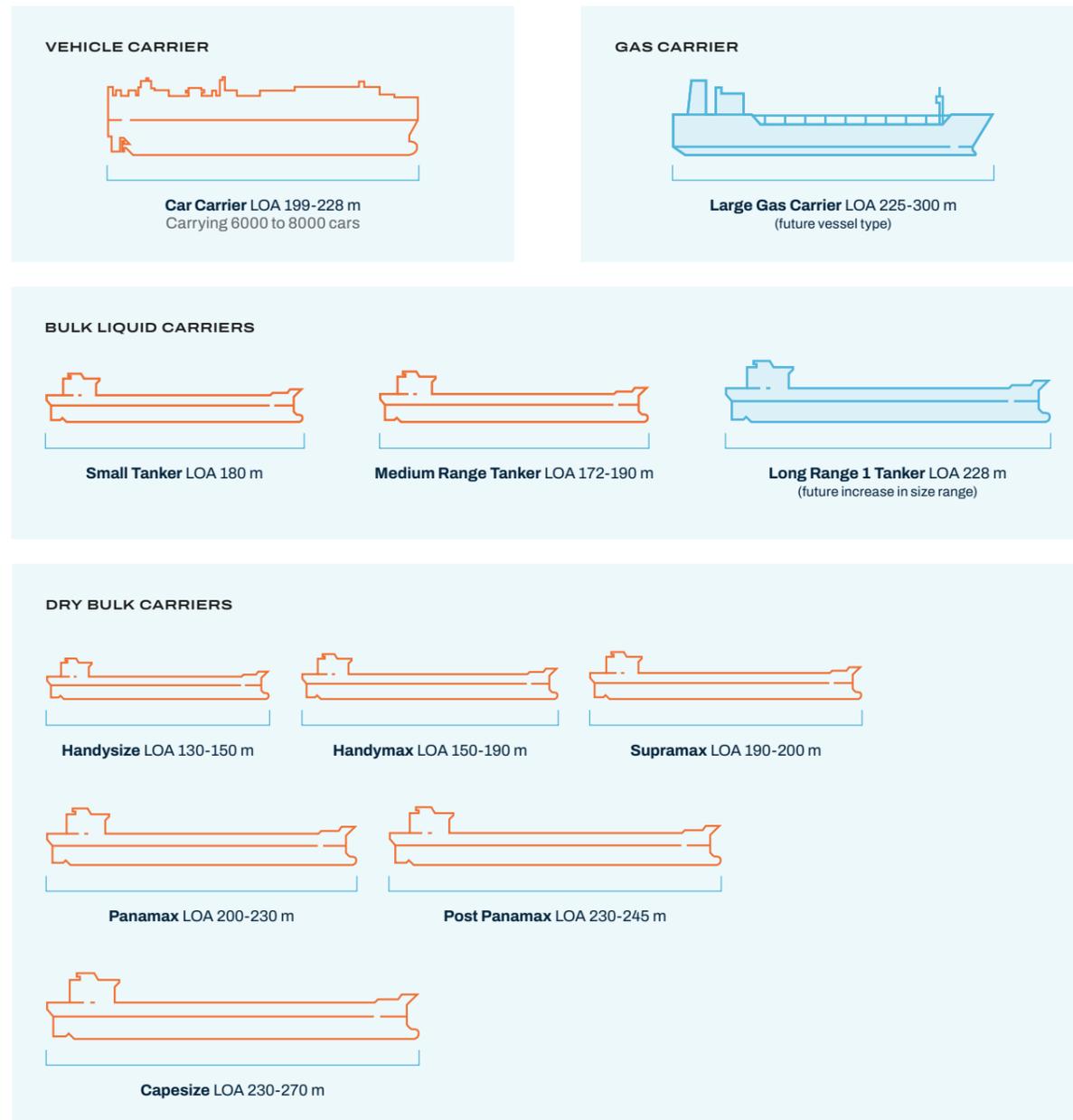
In 2022, the Australian Government announced Port Kembla as one of three preferred locations for a future east-coast naval defence facility. In April 2023, a new Australian Government announced that it would develop a process to consider all feasible options for an east coast naval defence facility and that a decision on the location for this facility would not be made until late in this decade. No information has been released on the potential location for the facility within the Port Kembla region nor the infrastructure and security requirements for the facility. Given the significance of the commercial port in supporting the future trade needs and economic growth of NSW, and the scarcity of port land, any defence facility must not compromise capacity or operational efficiency of the commercial port and therefore must not be located within the current or future commercial port footprint.

5.9

Vessels and shipping channel

There are more than 2,000 ship movements at Port Kembla each year, the equivalent of about five ships arriving or departing the port each day. The port's deep water shipping channel and short transit to and from berths ensures efficient port access.

PORT KEMBLA VESSEL SIZES



Note: LOA = length overall of a vessel

The types of vessels calling at Port Kembla include car, dry bulk, bulk liquid, and break bulk carriers.

Vessel size depends on a range of factors including the type and volume of cargo, vessel availability, vessel charter rates, and capability of ports visited on the journey. Maximising shipment volumes and fully utilising the available vessel's capacity is most cost-effective.

Over the next 40 years, we expect an increase in vessels and new types of vessels as new trades are introduced. The liquified natural gas (LNG) import terminal will introduce gas vessels to Port Kembla, the offshore wind port facility will add additional vessels and movements as wind turbines are towed to sea, and a future container terminal will introduce container ships to the port. We have previously welcomed cruise ships into Port Kembla, which may return as the industry grows.

In a scenario of significant growth, Port Kembla could see a doubling of current vessel movements.

A dynamic vessel scheduling system should be introduced to improve vessel arrival planning, reduce vessel wait times and reduce vessel fuel consumption.

Port Kembla's Inner and Outer Harbours require only annual seabed levelling to redistribute sediment that has accumulated in areas in order to restore and optimise depths.

Deepening works are typically required when constructing new berths, such as for the LNG import terminal and the proposed Outer Harbour Development offshore wind/container terminal.

PORT SERVICES

Pilot, tug and lines boat services in Port Kembla need to be adequately resourced to service forecast growth. Increased vessel movements could necessitate additional tug boats at Port Kembla. There is capacity to accommodate two additional tug boats in the tug harbour, when required.

As vessel movements increase, pilot and lines services resources will be needed at a level that ensures efficient port operations.

Customs and biosecurity services within the port will need systems and resources that facilitate trade growth without delaying cargo movement.

Required actions:

- Undertake seabed levelling at Port Kembla as required to maintain channel and berth depths and undertake deepening as required.
- Implement a dynamic vessel scheduling system at Port Kembla to improve vessel arrival planning, reduce vessel wait times and reduce vessel fuel consumption.
- Ensure tug, pilot and lines services at Port Kembla are adequately resourced to service forecast demand.
- Ensure biosecurity and customs resources and systems for Port Kembla respond to growing trade volumes to facilitate efficient cargo flow.
- Deliver additional tug berthing facilities at Port Kembla, in line with demand.

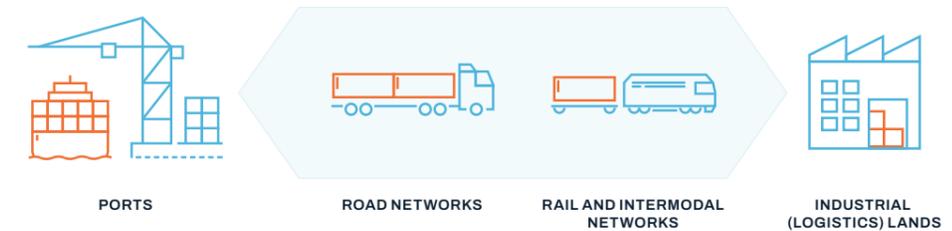
6

THE FREIGHT NETWORK

Freight network performance, connectivity and resilience are critical to efficient port operations.



Port performance is integrally linked to performance of the broader supply chain, including road and rail connectivity and efficiency. Industrial lands are also critical to support the movement of goods in the supply chain.



6.1

Freight rail

An extensive rail network extends from Port Botany and Port Kembla through metropolitan Sydney and across regional NSW.

Ongoing investment in rail freight infrastructure and operational and regulatory improvements are essential to sustainably cater for NSW's trade growth.

Parts of the metropolitan rail network are shared lines between passenger and freight trains. These shared lines are subject to curfew periods for freight trains during peak commuter periods. To increase the usage and productivity of rail for freight, improved metropolitan network access for freight trains is required including investigating ways to remove or reduce peak period curfews.

Port Botany Rail Network

Port Botany has the highest volume of containers transported by rail of all ports in the country, at around 400,000 TEUs per year. Port Botany is the only container port in Australia with on-dock port rail at all three of its container terminals. Port Botany benefits from a dedicated freight rail line between Macarthur and the port (56km), unimpeded by passenger services through the Sydney metropolitan area and linking intermodal terminals.

The majority of containers currently transported by rail are exports from regional areas. In order to increase the rail mode share, we need to drive more imports on to rail. Our long-term goal is to move 3 million TEUs per year by rail. Every one million TEU transported by rail reduces truck movements at the port by 900 trucks per day.

Port Kembla Rail Network

Port Kembla is connected to the Greater Sydney rail network to the north via the T4 Illawarra Line, a freight and passenger shared line. It is also connected to the regional rail network to south west NSW via the Moss Vale-Unanderra freight line and to Bomaderry to the south via the shared line. Within the Port, there is 29 kilometres of rail infrastructure including sidings and loops.

Commodities moved by rail to/from Port Kembla include grain, coal, copper concentrate and cement.

Our Ports are connected by an extensive rail network through metropolitan Sydney and across regional NSW.



Junee North Triangle

Reinstatement of the north fork at the junction of the Junee to Griffith Line would allow for more efficient movement of freight between the Riverina region and Port Botany and Port Kembla. Trains heading north to the ports would experience improved productivity and efficiency through time savings for regional exporters.

Inland Rail Interface

Inland Rail has the potential to be far more than just a Brisbane to Melbourne link — it can be part of a broader network solution that will provide greater supply chain options to regional exporters and enable economic development along the corridor and its wider catchment area.

To optimise the Inland Rail investment, it needs to be connected to, and integrated with, the existing NSW regional rail network at junctions such as Junee, Stockinbingal, and Narromine.

WHAT THE FUTURE HOLDS

Rail will play an important role in the decarbonisation of supply chains as shifting movements from road to rail will be a 'quick win' for supply chain operators in achieving lower emissions for the movement of goods

As automation and technology uptake in rail operations increases it will assist with safer, faster rail operations and servicing. This may include automated loading and unloading of trains, automatic decoupling of wagons and driverless trains.

Continued enhancement of the rail network will be required to improve productivity and capacity to effectively cater for forecast demand. Increased freight access to shared passenger / freight rail and interoperability of rail systems across the NSW rail network and with the future Inland Rail will be required.

WHAT WE HEARD

People raised concerns about the potential traffic related impacts of port operations. Moving more freight by rail will help to reduce truck movements, road congestion and greenhouse gas emissions.

Required actions:

- Improve metropolitan rail network access for freight trains on shared freight / passenger lines.
- Deliver interoperability of rail systems across the NSW rail network and with the future Inland Rail.
- Deliver targeted enhancements to the regional rail network to improve efficiency and resilience for regional exporters to connect to Port Botany and Port Kembla including:
 - Integrating the NSW rail network with Inland Rail at junctions such as Junee, Stockinbingal and Narromine.
 - Delivering the Junee North Triangle.
 - Upgrading key regional rail lines to 25 tonne axle loads such as Griffith to Stockinbingal.
- Deliver rail capacity investments including upgrades and new infrastructure to cater for rail growth and build supply chain resilience.

Intermodal terminals

Intermodal terminals (IMTs) are inland rail terminals that allow the transfer of freight from train to truck and vice-versa. NSW's freight supply chains are supported by a well-connected network of intermodal terminals for efficient distribution of freight in Greater Sydney and with regional NSW.

Sydney is unique in having a network of nearby metropolitan container intermodal terminals, connected to the port by dedicated freight rail. This 'port shuttle' rail system has been planned and developed over the past 25 years to cater for increased container trade growth in a city environment.

The Sydney IMT network can currently handle about 1.5 million TEU annually.

Required actions:

- Invest in terminal operations and equipment at existing intermodal terminals to grow capacity, in line with trade demands. This includes growing the capacity of the Enfield Intermodal Terminal.
- Deliver the Mamre Road intermodal terminal, with capacity of at least 0.5 million TEU and ideally 1 million TEU, and the Western Sydney Freight Line connection.
- Extend biosecurity and customs clearance resources and processes to container intermodal terminals to allow the intermodal terminals to become international trade gateway destinations.
- Plan and deliver rail based receival facilities in Western Sydney for bulk construction materials (such as cement, gypsum, sand and aggregate) and the Maldon-Dombarton rail line, to support the movement of construction products by rail from Port Kembla and reduce the growth of trucks.

WHAT THE FUTURE HOLDS

To achieve our target of moving 3 million TEU by rail in the future, total Sydney IMT and rail network capacity also must be 3 million TEU.

This requires investment in terminal operations and equipment at existing IMTs to grow capacity, as well as the delivery of the Western Sydney Freight Line and the planned Mamre Road Intermodal Terminal to a capacity of at least 0.5 million TEU and ideally 1 million TEU.

The future container terminal at Port Kembla will connect with the metropolitan IMTs via the proposed Maldon-Dombarton rail line.

Biosecurity and customs clearance resources and processes will need to extend off-port to allow intermodal terminals to act as international trade gateway destinations, allowing for the rapid transfer of containers from the port by rail to the intermodal terminals after being unloaded from the ship.

Moving more bulk construction materials by rail from Port Kembla in the future will enhance the productivity and sustainability of these supply chains. It will reduce the growth of trucks on the road network and vehicle emissions and improve safety.

There are existing bulk material rail IMTs at Rooty Hill, Clyde, Enfield, St Peters and Glenlee. To cater for future construction material demand, such as cement, gypsum, sand and aggregate, additional bulk material IMTs in Western Sydney are required, connected to Port Kembla via the proposed Maldon-Dombarton rail line.

This requires the identification and planning of new rail receival sites in Western Sydney and their rail connections to Port Kembla.

Growing freight rail capacity and resilience — recent developments

Rail infrastructure improvements support the ambition to move more containers by rail and reduce greenhouse gas emissions in port supply chains.

PORT BOTANY RAIL DUPLICATION

This project, due for completion in 2024, will double the capacity for port shuttle services to Port Botany (to 45 trains per day), creating unprecedented rail access to Port Botany.

CABRAMATTA LOOP — SOUTHERN SYDNEY FREIGHT LINE

This project, due for completion in 2024, will increase reliability and capacity from 24 to 36 trains per day, servicing the new Moorebank IMT.

NORTHERN SYDNEY FREIGHT LINE

Stage 1 improvements to the Northern Sydney Freight Corridor increased the corridor's capacity from 29 to 44 freight trains daily, improving port access for exporters in Northern NSW.



Required actions

Key rail infrastructure required to be delivered to cater for port rail growth, improve supply chain productivity and build supply chain resilience includes those outlined below.

1 Deliver the Western Sydney Freight Line

The Western Sydney Freight Line will support freight movement to and from the ports. It will enhance connectivity to the St Marys intermodal terminal and improve productivity for regional export trains from western NSW by removing them from the metropolitan passenger network in major centres such as Parramatta, Westmead and Lidcombe.

The Western Sydney Freight Line is needed to connect the new Mamre Rd intermodal terminal to Port Botany and beyond to regional NSW. It must connect to the Main West Line at its western end.

An initial step is to protect the corridor for the Line.

2 Improve Resilience on the Main West Line

Improvements are required to the Main West Line to address reliability and resilience of this crucial piece of infrastructure linking Sydney to the Central West. Improvements include additional sidings, improved signalling, and mitigations from extreme weather events.

3 Upgrade the Moss Vale-Unanderra Line

Enhanced rail freight capacity, including additional sidings, as well as resilience improvements will improve network reliability and rail access to the ports from southern and south-western NSW.

4 Enhance the Northern Sydney freight corridor

Further improvements to increase freight capacity to improve port access for exporters in Northern NSW.

5 Complete the Maldon-Dombarton Line

A direct link from Port Kembla to the Main South Line will support the growth of south west Sydney, reduce truck movements and improve network resilience and productivity. It will connect a future container terminal at Port Kembla with the metropolitan intermodal network.

6 Increase Southern Highlands freight capacity

The separation of freight and passenger services between Macarthur and Moss Vale will improve network capacity and reliability.

7 Construct the Lower Hunter freight corridor

A dedicated freight corridor to bypass inner Newcastle, enabling additional freight train movements to improve port access for exporters in Northern NSW and removing freight trains from urban areas around Newcastle.

8 Construct the Outer Sydney Orbital

A dual road and rail corridor will service the growth of Greater Sydney and enable freight movement to the Western Sydney Freight Line.



6.2

Road network

Road connections servicing our ports are shared with multiple users. As city ports, the efficiency of freight movements are influenced by peak road user periods and road disruptions.

Port Botany road network

Port Botany is located in proximity to the wider Sydney motorway network — the M5 to the south-west, the M8 connecting to the M4 to the west, and the M1 connecting to the M2 to the north — making it well connected for freight distribution.

Trucks access Port Botany via Foreshore Road or Beauchamp Road and Denison Street. These two road access connections must remain accessible to all port trucks into the future to ensure resilience and reliability of port access.

Port Botany's container terminals have world class truck turnaround times, with minimal truck queuing, managed under a regulated booking and access system. The average time taken for a container truck to be serviced at Port Botany, including queuing time, was 31 minutes in FY22. This outperforms other Australian ports and ports globally.

A truck rest area, with amenities, is available for container trucks that arrive early for their booking at the container terminal (within a prescribed early arrival period). Opportunities to use this area for other port trucks should be explored to optimise its utilisation.

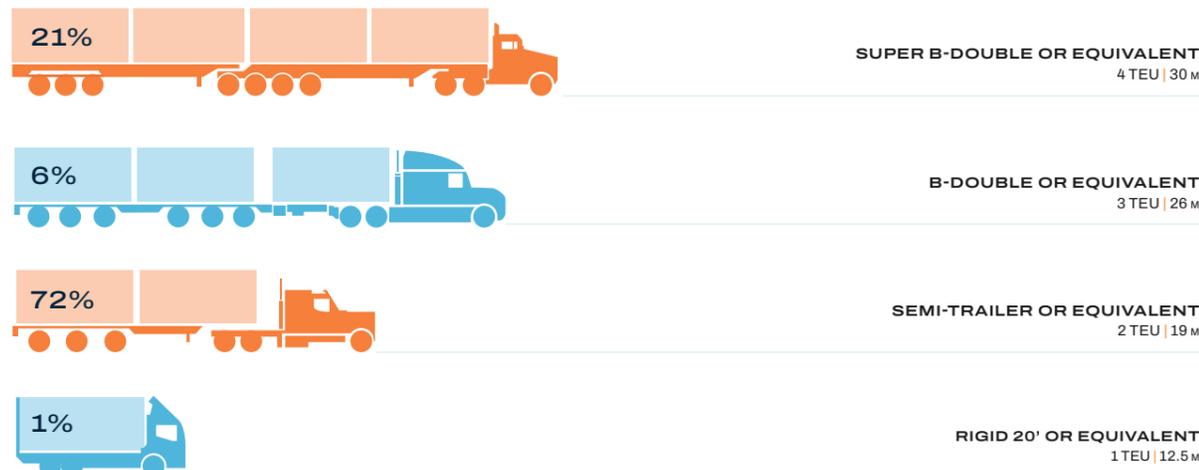
Around 4,700 trucks access Port Botany on a typical weekday. As trade volumes grow, truck numbers will also increase. Reducing the growth in truck numbers requires:

- increasing the volume of containers moved by rail
- using higher capacity trucks (i.e. larger trucks that can carry more containers per trip)
- increasing the utilisation of container trucks (i.e. ensuring trucks are loaded on the inbound and outbound port journey)
- increasing access to the broader bulk liquid pipeline distribution networks

Increasing the number of truck movements across the night and on weekends will also assist in minimising the contribution of trucks on roads in peak commuter periods and will optimise the use of existing road infrastructure capacity, which is underutilised during the night time. Achieving this requires all parts of the supply chain to be operating during the same periods.

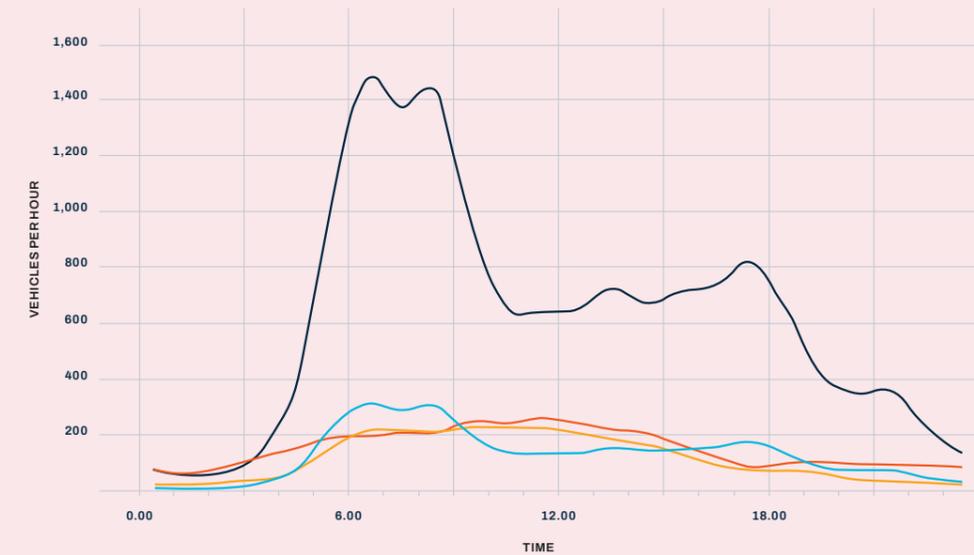
With productivity improvements and greater use of rail, truck volumes are forecast to increase to around 5,700 trucks on a typical weekday by 2063. Without growth in rail use, truck volumes could increase to 8,000 trucks on a typical weekday by 2063.

CONTAINER TRUCK TYPES AT PORT BOTANY



VEHICLES TURNING FROM GENERAL HOLMES DR INTO FORESHORE RD BY TIME-OF-DAY

Foreshore Road is the primary access road to Port Botany. Most vehicles on Foreshore Road are cars associated with morning and evening peaks. On a typical weekday, light vehicles make up over 70% of all movements on Foreshore Road. Large heavy commercial vehicles are more evenly spread across the 24 hour period compared to light vehicles which are associated with peak period commuter movements.



- Cars
- Light commercial vehicles — including vans, utes, and mini-buses
- Small heavy commercial vehicles — including cement mixers, garbage trucks, tow trucks, not associated with port freight movements
- Large heavy commercial vehicles — including container trucks, tankers, associated with port freight movements

Required actions:

Protect the remaining truck access connections at Port Botany (Foreshore Road and Beauchamp Road / Denison Street) and Port Kembla (Masters, Springhill and Five Island Roads) from restrictions to port trucks and avoid high non-port related traffic generating developments from being developed around these access connections such as high density residential, large scale retail, bulky goods retail and large scale activities and entertainment.



Port Kembla road network

Road access to Port Kembla is via Masters Road, Springhill Road and Five Islands Road, which link Port Kembla to the M1 and broader state motorway network. These road access connections must remain accessible to all port trucks into the future to ensure resilience and reliability of port access.

The Port currently receives an average 800 trucks per day. Subject to future trade volumes, port trucks are forecast to grow largely driven by the growth of motor vehicle, construction materials and container trades.

Upgrades to the intersection of Springhill and Masters Road may be required to support future growth. Growing rail movement of freight will reduce the growth of trucks.

WHAT THE FUTURE HOLDS

Road freight operators continuously seek to improve the efficiency of their operations and drive down costs by using higher productivity vehicles and leveraging technology such as more fuel-efficient vehicles, GPS tracking and optimised routing.

The coming decades are likely to see increasing levels of automation and decarbonisation and the introduction of new modes of transport, including robot and drone delivery.

Autonomous technology is expected to be deployed in phases on public highways and roads, led initially by semi-autonomous technology.

It is estimated that automated trucks will have 70% fewer collisions, reduce transport costs by 29-45%, and increase truck utilisation from current levels of 29% to 78%.¹

¹ L.E.K. Consulting Australia. *Future of Freight for Sydney's Trade Gateways*. August 2021.

Remaining truck access connections at Port Botany (Foreshore Road and Beauchamp Road / Denison Street) and Port Kembla (Masters Road, Springhill Road and Five Islands Road) must remain accessible to all port trucks into the future, without restriction, and cater for port growth to ensure resilience and reliability of port access.

Developments around these access roads must not impede future port road access capability and efficiency and must recognise the importance of ongoing port access and growth requirements. High non-port related traffic generating developments such high density residential, retail and bulky goods retail must be avoided unless new road capacity is introduced.

Required actions

Key road infrastructure required to be delivered to cater for port growth, improve supply chain productivity and build supply chain resilience includes those outlined below.

GREATER SYDNEY

1 Deliver the Missing Link — Sydney Gateway to Port Botany

This is the highest road priority for Port Botany. Completing the Missing Link between the Sydney Gateway and Port Botany, which includes port precinct intersection upgrades, will optimise freight access to the entire motorway network, reducing travel time and cost.

The Foreshore Road and General Holmes Drive intersection is considered the highest priority as the key constraint to traffic flow given peak period impacts of commuter traffic. An intersection upgrade that facilitates traffic flow directly to/from the M5 East and separately to the M4 via Sydney Gateway is essential to improving productivity and capacity. This intersection upgrade can be delivered in two stages: Stage 1 being a short-term at-grade solution by 2026 and Stage 2 being a longer-term grade separated solution by 2036.

The intersection of Foreshore, Botany and Penrhyn Roads also requires upgrade to improve safety, performance and long term capacity for freight and logistics activities in and around the port.



2 Widen the M7 Motorway

Widening of the M7 between the M5 interchange at Prestons and the Westlink M7 bridge at Richmond Road in Oakhurst/ Glendenning to create three lanes in each direction will increase freight handling capacity to the growing employment lands of Western Sydney.

3 Improve capacity of A3 Corridor

Improvements to the A3 from the south of Hurstville to the M1 at Pymble will facilitate movements to and from Enfield Intermodal Logistics Centre.

4 Deliver the M6 Motorway link

Proposed twin 4 kilometre tunnels linking the M8 Motorway at Arncliffe to President Ave at Kogarah will improve access to Port Botany from the south.

5 Upgrade M4 Motorway at Mamre Road

Upgrades to the M4 and Erskine Park Road will improve access to the Mamre Road industrial precinct and intermodal terminal.

6 Deliver the M12 Motorway to the Western Sydney Aerotropolis

The new M12 Motorway will connect to Sydney's Motorway network via the M7 at Cecil Hills, providing additional network capacity to service the new industrial lands in Western Sydney.

7 Construct the Outer Sydney Orbital

A dual road and rail corridor will service the growth of Greater Sydney.

8 Construct the Canal Road Access Ramps to Sydney Gateway

Access ramps to Sydney Gateway from Canal Road will improve road access between Port Botany and industrial lands in the Inner West including the Cooks River Intermodal Terminal, removing heavy vehicle movements from the Mascot town centre.

ILLAWARRA

9 Improve capacity of Picton Road

Picton Road is a major arterial road that runs from the Hume Highway at Picton in the south to the Great Western Highway at Wallgrove in the north. Wilton and Greater Macarthur Growth Areas are expected to deliver an additional 60,000 homes by 2040. Combined with an increase in trade through Port Kembla, capacity improvements to Picton Road will be required.

10 Wind turbine access improvements

A strategic review of the Port Kembla Precinct and regional road network is required to identify requirements for accommodating the movement of wind towers from the port.

10 Port precinct intersection upgrades

Upgrades to the intersection of Springhill and Masters Road may be required to support future growth of the region and port.

11 Widen the M1 at Mt Ousley

Following the completion of the Mt Ousley Interchange and the upgrade of Picton Road, the southbound lanes of the M1 at Mt Ousley will require widening to three lanes to match the new infrastructure. This will improve reliability and resilience for southbound movements to Port Kembla.



6.3

Industrial land requirements

The freight and logistics supply chain requires well-located, large parcels of land for warehouses, depots and logistics activities. Sufficient supply of well located industrial land in Greater Sydney will reduce the cost of moving freight and increase efficiency and productivity while minimising traffic, emissions and amenity impacts.

Containers are moving further west

Industrial land availability and logistics costs impact on Sydney's competitiveness as a business and manufacturing centre.

The availability of large-lot industrial zoned land in Greater Sydney determines where container imports are unpacked. These sites provide the necessary infrastructure for containers to be received and processed, and for goods to be distributed to their final destination.

The availability of large parcels of industrial zoned land has moved further west. This trend is expected to continue as new areas of land are rezoned for industrial purposes adjacent to the Western Sydney Airport.

Around 74% of import containers are delivered within a 40km radius of Port Botany. This compares to 81% in 2014. Over 90% of import containers are delivered within 50km of Port Botany. There has been an increase in containers heading further west, with a 179% increase in containers destined for the 40–50km zone from Port Botany between 2014-22.

The closer the industrial lands are to the end consumers, the cheaper the landside transport costs, as illustrated below.

Appropriately zoned and located industrial lands are required in urban areas to service growing populations and subsequent consumer demand.

Scenario	Description	Cost
Base case: Direct journey Port Botany to Alexandria (approx. 12km)	Container goes from Port Botany to Alexandria for unpacking and goods distribution.	\$122.82
Scenario 1: Port Botany to Alexandria via Auburn (approx. 50km)	Container unpacking location is moved to Auburn, and goods destined for Alexandria now travel via Auburn rather than direct.	\$561.01 – a 357% increase on the base case.
Scenario 2: Port Botany to Alexandria via Erskine Park (approx. 100km)	Container unpacking occurs at Erskine Park before the goods are transported to Alexandria.	\$1,006.80 – a 720% increase on the base case.

Supporting liveable cities

Remaining industrial land must be retained

A mere 4% of all land in eastern Sydney (east of the A3 road corridor) and only 8% in Greater Sydney is zoned for industrial uses. Existing industrial land supply is expected to be exhausted by around 2040. It is critical that land use policy protects existing industrial land whilst making provision for additional, well-serviced, industrial land zones.

The new employment lands in Western Sydney surrounding the airport must supplement existing supply in the east, not replace it.

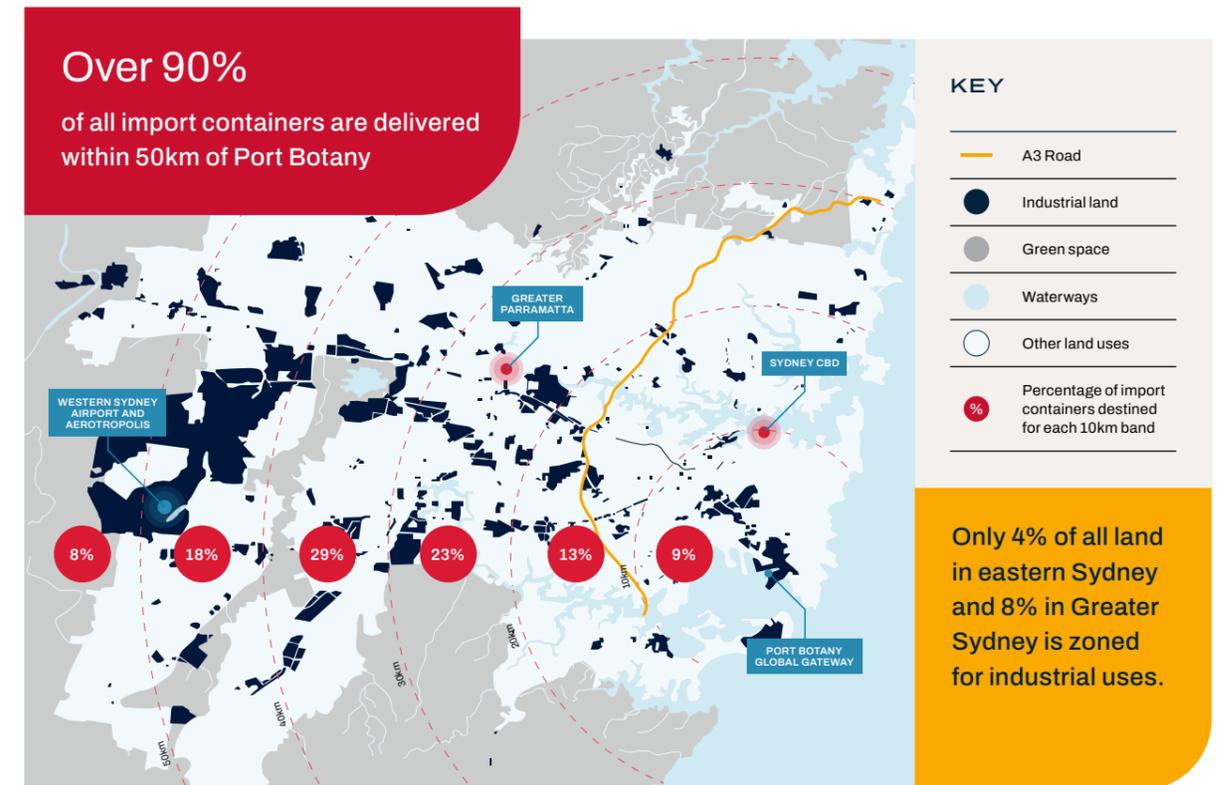
Customer expectations of direct and on-demand deliveries can not be serviced from industrial lands in Western Sydney alone due to travel distances and road congestion. Industrial lands in the Port Botany precinct and the Inner West are required to service this need for Sydney's eastern suburbs and the central business district.

Increasing direct-to-door deliveries and technology changes will require industrial lands spread throughout all urban areas of Greater Sydney. These lands will support consolidation centres, dark stores and staging / recharging locations for robots and drones used for deliveries as they can not travel long distances.

Retaining the existing industrial lands spread throughout Greater Sydney will be essential for cost-effective liveable cities.

Industrial lands in the Illawarra are also facing increased pressure as businesses struggle to find suitable industrial land in Greater Sydney. The amount of industrial land in the Illawarra is substantial however it must also be protected from rezoning to preserve future productivity requirements.

2022 IMPORT DESTINATIONS AND EXISTING INDUSTRIAL LANDS



Industrial lands must be allowed to operate more efficiently.

This can be achieved through adoption of technology and reduction / removal of planning constraints such as throughput limits and curfews.

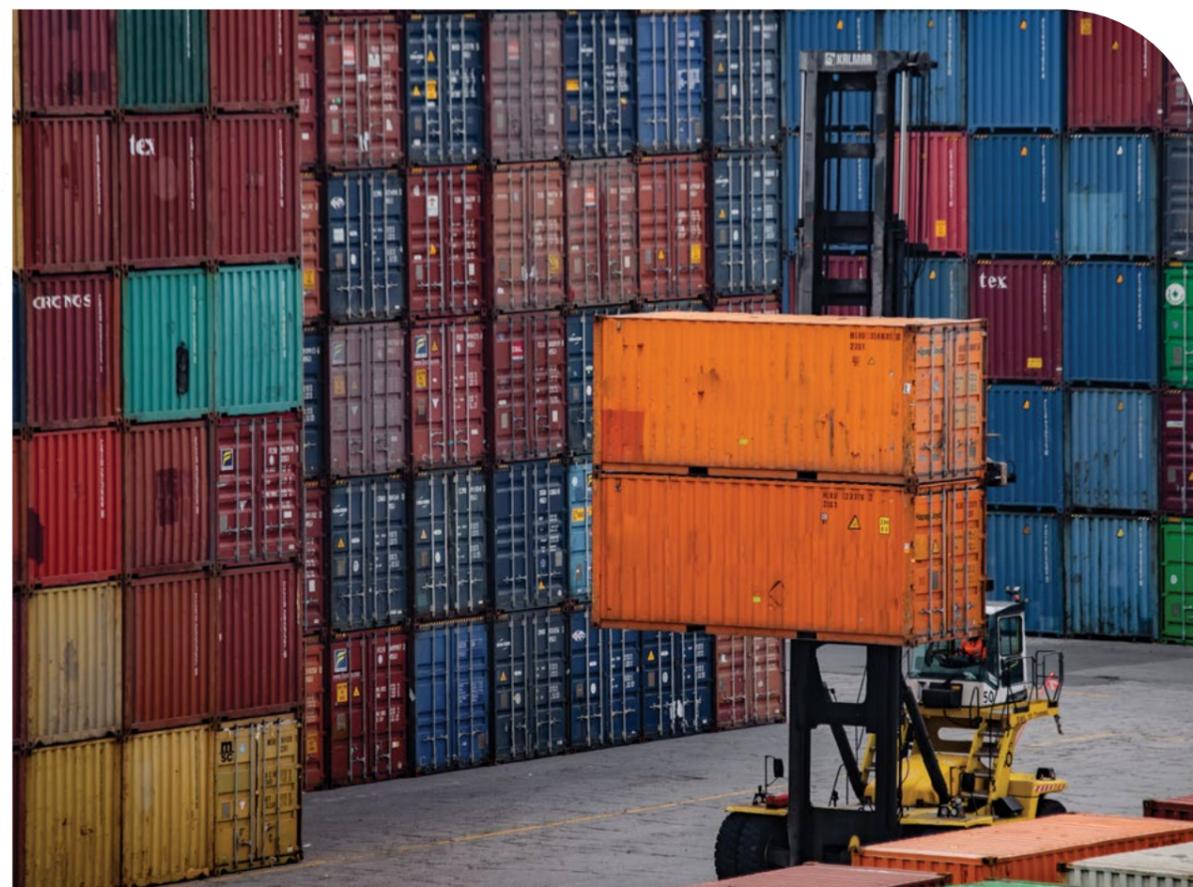
Increased operational automation and technology in the freight and logistics industry has seen innovations such as robotics and high-bay warehousing, which allow increased operational capabilities within a reduced footprint.

Port and freight operations generate traffic and noise. State and local planning policy needs to address interface issues with surrounding landuses without jeopardising the productive and efficient use of scarce industrial lands.

This can be achieved by:

- Ensuring appropriate buffer zones are in-place to separate industrial activities and residential developments.
- Introducing State-wide minimum building design standards for all residential and sensitive use developments in urban areas to mitigate amenity impacts on the community from economic generating activities such as ports, transport and logistics operations and industrial activities. This will have the added benefit of mitigating impacts from other economic generating businesses such as restaurants and entertainment venues and the broader night time economy.

Mitigating amenity impacts will allow more productive utilisation of industrial lands and avoid the imposition of constraints, throughput limits and curfews. The consequence of constraints is to drive up costs through inefficiencies which are passed on to consumers and businesses and impact on NSW's economic competitiveness. It also results in less efficient use of existing infrastructure for example, roads could be used by more trucks and delivery vehicles at night instead of during commuter periods — this would reduce congestion, defer road capacity investment needs and reduce vehicle emissions.



Many ports around the world are under pressure from urban encroachment. Long term strategic planning is required to protect the operating environments of ports and mitigate amenity impacts to the surrounding community. Major city ports such as Rotterdam and Antwerp in Europe have successfully retained large areas of surrounding industrial land, creating significant economic benefit to their national economies and achieving opportunities for growth. By contrast, Sydney has allowed its industrial land to be rezoned and/or subdivided into small land sizes that are not suitable for major port, freight and logistics activities. The erosion of large parcels of industrial land around Port Botany and within Greater Sydney needs to stop and where possible be reversed to sustainably cater for the future trade needs of NSW.

PORT INDUSTRIAL LAND COMPARISONS

Key Port Comparator	Antwerp	Los Angeles	Rotterdam	Vancouver	Botany
Population (2019, million)	1.2	10.0	1.0	2.6	5.3
Port land area (km ²)	112	30	60	15	2.8
Available industrially zoned land area within 5km of port boundary (km ²)	High (30+)	Medium (c.10-15)	High (30+)	Low (<5)	Low (<5)
Proximity to city centre (km)	3.0	20.0	6.1	2.3	10.5
Throughput (millions of TEUs, 2019)	11.9	9.3	14.8	3.4	2.5

Source: L.E.K. Consulting Australia. Future of Freight for Sydney's Trade Gateways. August 2021

Required actions:

- Retain industrial land in Greater Sydney and the Illawarra and expand supply, particularly in Western Sydney, to meet the growing freight task.
- Prevent the subdivision of large parcels of industrial land into small lots of a size unsuitable for port and major freight and logistics activities and encourage the consolidation of small industrial lots into larger land parcels.
- Optimise the use of scarce port and logistics lands by providing approvals and permits for increased freight handling density, throughput and capacity and 24/7 operations.
- Ensure planning and regulatory approvals do not impose curfews and caps on freight, logistics and industrial activities, other than by justified exceptions, to make efficient use of scarce lands and existing infrastructure.
- Ensure State and local planning policies support buffer zones between industrial lands and residential developments to ensure continuity and efficiency of the freight task and local amenity.
- Implement State-wide minimum building design standards for residential and sensitive use developments in urban areas to mitigate amenity impacts on the community from economic generating activities such as ports, transport and logistics operations and industrial activities, in order to facilitate efficient and productive supply chains.

7

SUMMARY OF
KEY ACTIONS

NATION

Cater for the trade needs of NSW and Australia



Action	Lead
Monitor trade growth and trends and align port capacity to growth needs and new trade requirements.	NSW Ports
Support the changing fuel needs of NSW towards a decarbonised future including through provision of port infrastructure and the adaptive reuse of existing port infrastructure for future sustainable fuel handling and storage (such as biofuels, sustainable aviation fuel and hydrogen).	NSW Ports / Port Operators
Work with stakeholders on the opportunity for additional fuel pipeline access / capacity to Sydney Airport from Port Botany and a fuel pipeline to Western Sydney from Port Botany / Port Kembla, to enable efficient, safe and cost-effective transport of fuel in large quantities to Western Sydney and Western Sydney Airport and reduce fuel trucks on roads.	NSW Ports / Government / Airport Operators
With Government support, transform Port Kembla into a world-class green energy support port through: <ul style="list-style-type: none"> development of the Port Kembla Outer Harbour offshore wind port facility in time to support the delivery of offshore wind projects; and delivering infrastructure required to support green energy fuels and products eg. hydrogen. 	NSW Ports / State and Australian Governments / Port Operators
Ensure biosecurity and customs resources and systems for the ports respond to growing trade volumes to facilitate efficient cargo flow.	Australian Government
Extend biosecurity and customs clearance resources and processes to container intermodal terminals to allow the intermodal terminals to become international trade gateway destinations.	Australian Government
Improve supply chain data collation and performance analysis to identify constraints and priorities for productivity investments.	Australian Government
Develop and implement a centralised trade system to bolster supply chain productivity, commencing with a Single Maritime Window as required under Australia's international obligations by January 2024.	Australian Government
Ensure national coordination of regulations and standards for ports and port supply chains and coordination with international approaches, to avoid creating competitive disadvantages to a port, State or the nation.	Australian and State Governments
Provide long term, dependable planning for ports and port supply chains to promote business investment.	Australian, State and Local Governments
Seek opportunities to use empty containers for exports such as through supporting domestic manufacturing.	State and Australian Governments / Industry

LAND USE

Ensure the efficient and responsible use of land and infrastructure



Action	Lead
NSW Ports to achieve net zero scope 1 and 2 greenhouse gas emissions by 2025 and work with port operators, port users, suppliers and Government to reduce our scope 3 emissions.	NSW Ports / Port operators / Government
Ongoing assessment of potential impacts of climate change and resilience on port land and infrastructure and identification and implementation of required actions.	NSW Ports
Optimise the use of scarce port and logistics lands by providing approvals and permits for increased freight handling density, throughput and capacity and 24/7 operations.	Local and State Governments
Implement a dynamic vessel scheduling system at the ports to improve vessel arrival planning, reduce vessel wait times and reduce vessel fuel consumption.	Port Authority
Undertake seabed levelling at the ports as required to maintain channel and berth depths and undertake deepening as required.	NSW Ports
Continue to investigate the feasibility of shore power for vessels, to reduce emissions and mitigate vessel noise when in port.	NSW Ports
Encourage the prompt return of empty containers overseas to minimise land storage requirements.	Shipping lines

MOVEMENT

Grow the volume of freight moved by rail and improve the efficiency of road connections



Action	Lead
Complete on-dock port rail capacity improvements at Port Botany to deliver 3 million TEU rail capacity at the port.	NSW Ports and Container Stevedores
Increase two-way loading of trains through return of empty containers to intermodal terminals for rail transport to Port Botany.	Logistics operators
Improve metropolitan rail network access for freight trains and deliver interoperability of rail systems across the NSW rail network and with the future Inland Rail.	State and Australian Governments
<p>Deliver key rail infrastructure to cater for port rail growth, improve supply chain productivity and build supply chain resilience:</p> <ul style="list-style-type: none"> • Improve resilience on the Main West Line • Upgrade the Moss Vale-Unanderra Line • Enhance the Northern Sydney Freight Corridor • Complete the Maldon-Dombarton Line • Increase Southern Highlands freight capacity • Construct the Lower Hunter Freight Corridor • Construct the Outer Sydney Orbital 	State and Australian Governments
<p>Deliver targeted enhancements to the regional rail network to improve efficiency and resilience for regional exporters to connect to the ports including:</p> <ul style="list-style-type: none"> • Integrating the NSW rail network with Inland Rail at junctions such as Junee, Stockinbingal and Narromine • Delivering the Junee North Triangle • Upgrading key regional rail lines to 25 tonne axle loads such as Griffith to Stockinbingal 	State and Australian Governments
<p>Deliver key road infrastructure to cater for port growth, improve supply chain productivity and build supply chain resilience:</p> <ul style="list-style-type: none"> • Deliver the Missing Link – Sydney Gateway to Port Botany (including intersection upgrades at General Holmes Drive / Foreshore Road and Botany/Foreshore/Penrhyn Roads) • Widen the M7 Motorway • Improve capacity of the A3 Corridor to support access to/from the Enfield Intermodal Logistics Centre • Deliver the M6 Motorway link • Upgrade the M4 Motorway at Mamre Road • Deliver the M12 Motorway to the Western Sydney Aerropolis • Construct the Outer Sydney Orbital • Construct the Canal Road access ramps to Sydney Gateway • Improve capacity of Picton Road • Wind turbine access improvements from Port Kembla • Widen the M1 at Mt Ousley • Upgrade Masters Road and Springhill Road intersections 	State and Australian Governments
<p>To support project cargo transport to/from Port Kembla:</p> <ul style="list-style-type: none"> • Assess existing oversize and overmass road transport limitations and develop options for alternate routes • Implement improvements to cargo transport and transport permit processes including use of certified transport controllers • Augment key intersections to the port including Tom Thumb Road and Springhill Road 	NSW Ports / State and Local Governments

PLACE

Protect our ports, freight-related lands and freight transport routes



Action	Lead
Retain industrial land in Greater Sydney and the Illawarra and expand industrial land supply, particularly in Western Sydney, to meet the growing freight task.	State Government
Prevent the subdivision of large parcels of industrial land into small lots of a size unsuitable for port and port supply chain activities and encourage the consolidation of small industrial lots into larger land parcels.	Local and State Governments
Ensure State and local planning policies support buffer zones between industrial lands and residential developments to ensure continuity and efficiency of the freight task and local amenity.	Local and State Governments
Implement State-wide minimum building design standards for residential and sensitive use developments in urban areas to mitigate amenity impacts on the community from economic generating activities such as ports, transport and logistics operations and industrial activities, in order to facilitate efficient and productive supply chains.	Local and State Governments
Ensure planning and regulatory approvals do not impose curfews and caps on freight, logistics and industrial activities, other than by justified exceptions, to make efficient use of scarce lands and existing infrastructure.	Local and State and Australian Governments
Protect the remaining truck access connections at Port Botany (Foreshore Road and Beauchamp Road / Denison Street) and Port Kembla (Masters, Springhill and Five Island Roads) from restrictions to port trucks and avoid high non-port related traffic generating developments from being developed around these access connections such as high density residential, large scale retail, bulky goods retail and large scale activities and entertainment.	Local and State Governments

CAPACITY

Grow freight handling capacity



Action	Lead
Invest in infrastructure and terminal operations at the Port Botany container terminals to optimise capacity, in line with trade demands.	Container Stevedores
Invest in a container terminal at Port Kembla to handle forecast container volumes as Port Botany nears capacity.	NSW Ports / Port Operators
Invest in additional berthing infrastructure and depths at Port Botany to meet growing container vessel sizes, in line with demand.	NSW Ports / Port Operators
Extend the southern wharf of Brotherson Dock, Port Botany, to align quay lengths across the three container stevedores and construct replacement bulk liquid berths if required.	NSW Ports
Increase empty container storage capacity at and around Port Botany and optimise existing empty container facilities and supply chains.	NSW Ports / logistics operators
Support NSW's trade growth and diversification through provision of port infrastructure and land capacity at Port Kembla to: <ul style="list-style-type: none"> Cater for growing vehicle and machinery volumes. Support future requirements for handling critical minerals, such as those used in battery development and renewable energy generation. Cater for growing cement and gypsum volumes and future import of other construction materials (such as sand and aggregates) to support NSW's infrastructure and housing construction needs. 	NSW Ports / Port Operators
Invest in terminal operations and equipment at existing intermodal terminals to grow capacity, in line with trade demands. This includes growing the capacity of the Enfield Intermodal Terminal.	Intermodal Terminal Operators
Deliver the Mamre Road Intermodal Terminal, with capacity of at least 0.5 million TEU and ideally 1 million TEU, and the Western Sydney Freight Line connection.	State Government
Plan and deliver rail based receival facilities in Western Sydney for bulk construction materials (such as cement, gypsum, sand and aggregate) and the Maldon-Dombarton rail line, to support the movement of construction products by rail from Port Kembla and reduce the growth of trucks.	State Government
Deliver additional tug berthing facilities at the ports, in line with demand.	NSW Ports / Tug Operators
Ensure tug, pilot and lines services at the ports are adequately resourced to service forecast demand.	Tug Operators, Lines Providers, Port Authority

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