future transport 2056

NSW Draft Freight and Ports Plan

"A plan for moving goods in an efficient, safe and environmentally sustainable manner, providing successful outcomes for communities and industry"

NSW GOVERNMENT

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1. Introduction

Figure 1: New South Wales' freight and port network is fundamental to our economy

1.1 A New Freight and Ports Plan

Meeting the needs of our NSW freight customers

New South Wales' freight and ports network is fundamental to our economy. The State's future economic growth and prosperity are built on the safe, efficient and reliable movement of goods. Delivering a more efficient transport system that facilitates this reliably is fundamental to the economic prosperity of the State, and achieving savings for consumers of those goods.

Our ports, roads, rail and aviation customers value efficient and productive networks and regulatory arrangements so that they can move high volumes of goods quickly, safely and cost effectively to markets, all the time.

In the next 40 years, freight volumes are estimated to double in the Greater Sydney area and grow by a quarter in Regional NSW. Our major commercial ports at Port Botany, Port Kembla and Newcastle are managing increasing volumes of imported and exported goods which require faster, more efficient road and rail access channels with our Sydney and Regional NSW markets.

With a growing population and increasing freight task, we need to provide innovative solutions to the demands placed on the freight transport network to address issues such as congestion, journey and access times and safety risks.

We will create a future transport system that meets the needs of our freight customers by:

- continuing to invest in road and rail infrastructure to provide greater access on the networks
- facilitating the introduction of new technologies to drive efficiencies on the network
- utilising dynamic network management that prioritises vehicles depending on productivity, type of use and time of day
- reforming road, rail and maritime regulations to harmonise cross border regulatory regimes that will drive economic efficiencies.

- investing and managing infrastructure that separates freight from passenger movements in congested corridors - especially near trade gateways.

Figure 2: The State's future economic growth and prosperity are built on the safe, efficient and reliable movement of goods

Planning for NSW Freight and Ports

Acknowledging the contribution of the freight task to the economy and to all consumers of goods, the NSW Government is developing a NSW Freight and Ports Plan. This Plan will be guided by the 2013 NSW Freight and Ports Strategy, which was to be reviewed at five year intervals. The Plan will recognise the significant infrastructure changes that have occurred and are in the pipeline across NSW, recognise the advancements by industry in investing and implementing greater efficiencies across their transport operations, update industry trends and expectations and link in to the NSW Government's broader Future Transport 2056 Strategy and the State Infrastructure Strategy.

The starting point is this draft Plan which is the result of a preliminary consultation process, engaging over 500 industry stakeholders between May and August 2017. This preliminary consultation identified opportunities for further investigations around:

- priority plan areas, the underlying infrastructure investment proposals and long term "visionary" planning opportunities
- opportunities for partnering between industry and government to identify investment opportunities and better freight outcomes
- identifying the need for reform to state and national road, rail and maritime regulations.

The draft Plan examines:

- the current state of freight in NSW including the broad range of freight, supply chain and freight issues confronting the industry
- opportunities and challenges for each of the freight commodity sectors
- potential priority action areas and infrastructure initiatives to be confirmed

- how the industry consultation will be undertaken to get your feedback to finalise the Plan.

Figure 3: The draft Plan sets the vision, directions and outcomes framework to guide transport investment over the longer term

Next steps and the Future Transport 2056 Strategy

This draft provides a critical opportunity for industry stakeholders to influence the final NSW Freight and Ports Plan. A series of consultation, engagement and feedback opportunities will be undertaken. When final, the Plan will support Transport for NSW's Future Transport 2056 Strategy.

The final Plan will reinforce the importance of NSW freight and ports to the national economy and will ensure that our freight and port system is well positioned to respond to emerging national and international markets and opportunities.

1.2 What is different and better about this Plan?

An integrated approach

The NSW Freight and Ports Plan will support Transport for NSW's Future Transport 2056 Strategy and will provide direction to business and industry for managing and investing in freight into the future.

In developing this Plan, an integrated approach has been adopted, with close alignment with the State Infrastructure Strategy, Future Transport 2056 Strategy, Regional and Greater Sydney Services and Infrastructure Plans and the issue-specific and place-based plans. The Draft Freight and Ports Plan is one of these issue-specific Plans that form part of Future Transport.

The State Infrastructure Strategy provides independent advice from Infrastructure NSW on the needs and strategic priorities for infrastructure and investment across NSW.

The Draft Future Transport 2056 Strategy sets the vision, directions and outcomes framework to guide transport investment over the longer term. The Services and Infrastructure Plans set the customer outcomes for Greater Sydney and Regional NSW for the movement of people and freight, to meet customer needs and deliver responsive, innovative services. These Plans define the network required to achieve the service outcomes, enhancements, maintenance and renewal, and future corridors for investigation and protection.

This Draft Plan is a more detailed issues-based plan that will help to implement the Strategy across NSW. It will reinforce the importance of freight and ports in NSW to the national economy and will ensure that NSW's freight and port system needs are well positioned to respond to emerging national and international markets and opportunities.

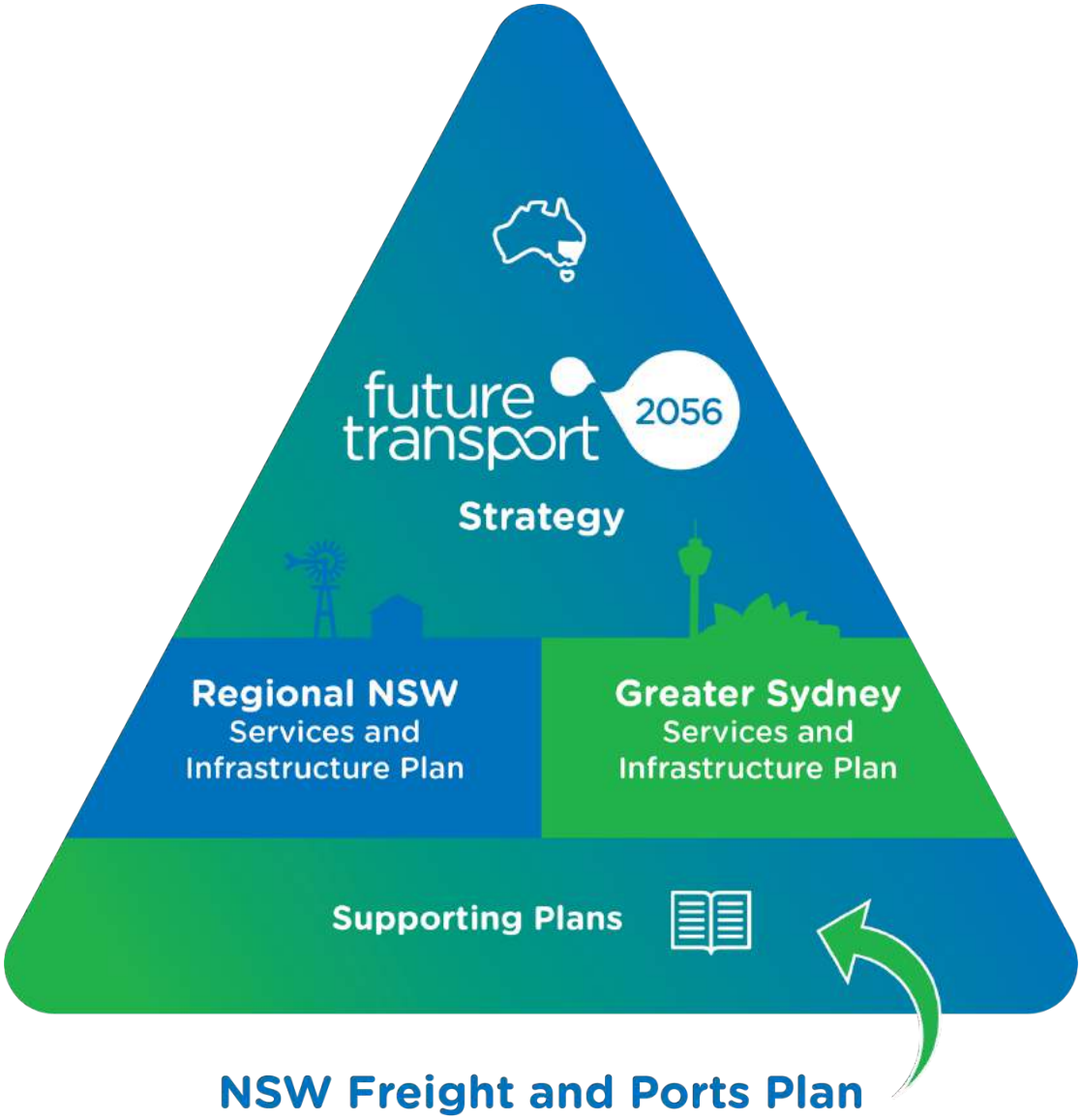


Figure 4: Overview of Future Transport 2056

NSW Freight and Ports Plan is one of the issue-specific and placed-based supporting Plans that supports the Future Transport 2056 Strategy.

These Plans are central to delivering strategic priorities for NSW, including the Premier's stated priorities:

- grow the economy, accelerating major project assessments and delivering strong budgets
- build infrastructure and deliver better services, improving road travel, reliability and on time public transport running
- create safer communities, reducing road fatalities by at least 30% by 2021 based on 2010 levels.

1.3 Alignment with the Future Transport 2056 Strategy

Draft Future Transport 2056 Strategy

The Draft Future Transport 2056 Strategy, released October 2017, sets the vision, state wide directions and headline initiatives that will deliver the following six priority outcomes:

Figure 5: The six priority outcomes outlined in the Draft Future Transport 2056 Strategy

Delivering on the Strategy

With a growing population and increasing freight task, we need to provide more innovative solutions to the demands placed on the freight transport network to address issues such as congestion, journey and access times and safety risks.

This Draft Plan describes how we will meet future freight transport demands, addressing current and emerging trends, challenges and opportunities so that our investment and policy decisions reflect the freight transport network requirements, and are aligned with decisions made across the network.

Moreover, the integration of this Draft Plan with the broader Strategy will ensure that transport infrastructure and land use planning is better aligned, and deliver improved outcomes for customers and the people of NSW.

This Plan will be finalised after based on a comprehensive stakeholder consultation process. Through the consultation process, we will develop industry and government delivery standards and implement a reliable and meaningful target-based performance system to measure and report on delivering our commitments.

Figure 6: Oxley Highway to Kundabung: Aerial view of the new bridge over the Hastings River near Port Macquarie.

1.4 About this Draft Plan

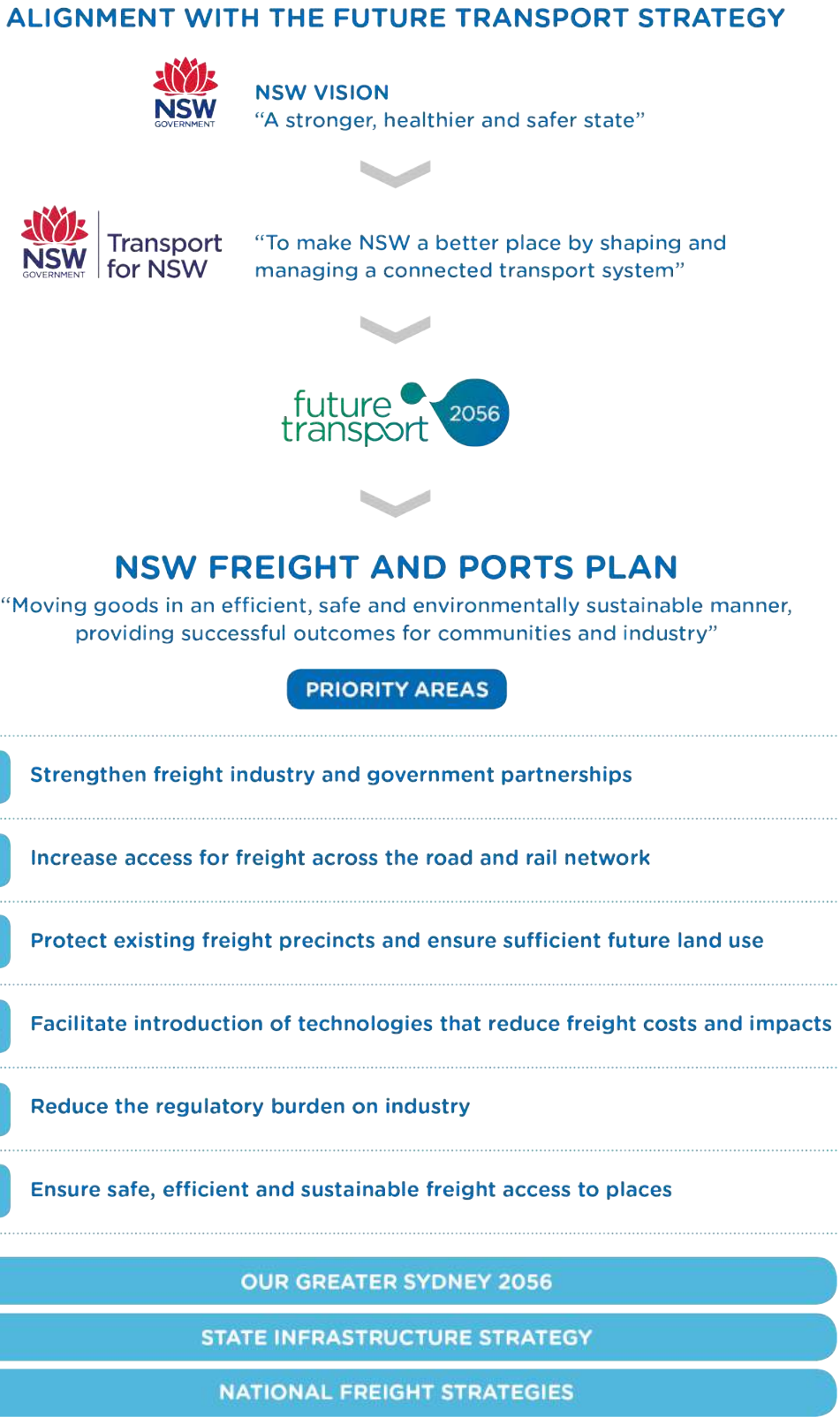


Figure 7: Alignment with the Future Transport 2056 Strategy

The Plan will provide investment planning guidance considerations and will give industry direction about investment initiatives, areas of reform and other initiatives that encourage our industry stakeholders to work collaboratively with the NSW Government in formulating these decisions.

The NSW Freight and Ports Plan is also being developed in line with the commitment in the 2013 NSW Freight and Ports Strategy to "reissue the NSW Freight and Ports Strategy in five years' time or earlier if required". Significant investment in state infrastructure announced by the NSW Government, recent commitments from the Commonwealth to build both Inland Rail and the Western Sydney Airport, the establishment of the national rail and heavy vehicle regulators and the work of the Greater Sydney Commission all have an influence on the freight and ports sectors in NSW and necessitated the reissue of the previous Strategy.

Combining these developments to reflect changes in demand for key commodities, strong economic growth, shifting technological, economic, demographic and social trends, a NSW Freight and Ports Plan is needed to highlight the strategic direction the NSW Government will take.

The NSW Freight and Ports Plan will:

- provide a strategic planning approach to freight investment – helping identify appropriate modes and routes
- provide clarity to industry – allowing them to plan their transport operations and investments
- ensure the implications of emerging technologies are recognized and accommodated accordingly to maximise the benefits of such changes
- identify areas where efficiencies can be obtained – reduce red tape
- facilitate safe and reliable operations of the port, road and rail networks - to meet our state's transport freight needs
- manage projected population growth and intensive urbanisation – which will place pressure on the current transport network
- set targets agreed with industry to measure performance – provide regular reports against key performance indicators
- deliver on the Future Transport 2056 Strategy – synchronising transport planning with environmental and urban planning to support robust sustainable growth.

This draft Plan collates key insights from industry and government on the current and future freight and ports environment, documents the opportunities and challenges and articulates key priority action areas for testing with stakeholders. This draft Plan is designed to provide the platform for consultation to inform the development of the final NSW Freight and Ports Plan.

Figure 8: The Draft Plan addresses the challenges, trends and opportunities facing the freight and ports industry

1.5 How this Plan has been developed

Preliminary consultation with our stakeholders

Between May and August 2017, the Freight Industry Branch, Transport for NSW, consulted over 500 stakeholders from industry and local government to start the conversation and seek feedback about the shape and direction of the Plan. The intention was to seek representation from stakeholders across all aspects of the supply chains about the development of the initial draft. Through the consultation process, we gathered feedback about:

- the drivers for updating and refreshing the 2013 Freight and Ports Strategy
- the objectives of the Plan to ensure it aligns with industry and government (state and federal), freight and port supply chain and related modal logistic frameworks
- the challenges, trends and opportunities facing the freight and ports industry in 2017 and beyond
- the visionary framework approach to be included in the development of the Plan's investment setting to ensure the Plan has a lens on the short, medium and long term
- the technology opportunities to be investigated and assessed
- the priority action areas to guide the development of the Plan and the future consultation on the draft Plan (**Refer Appendix C** for stakeholder feedback themes and links to priority areas)
- the nature, timing and format of the consultation process for the review and feedback submissions on this draft Plan to develop a final industry-endorsed Plan.

Figure 9: The final Plan will provide a framework for all levels of government to guide policy, planning, regulation and investments

The outcome: A draft document to shape the consultation with stakeholders to develop a final, endorsed Plan

As a result of the preliminary consultation we reviewed and incorporated stakeholder feedback into the draft Plan. The preliminary consultation identified opportunities for further, more robust consultation to confirm:

- priority plan areas, the underlying infrastructure investment proposals and long term "visionary" planning opportunities
- opportunities for partnering between industry and government to identify better freight outcomes
- reforms to state and national road and rail regulations.

This draft Plan is the basis for further stakeholder and community engagement to gather submissions, to help inform and update the Plan.

1.6 Scope and purpose

Section 2.1 of this document provides a snapshot of the size of the freight task in NSW. Freight is worth $66 billion to the NSW economy. Freight in Greater Sydney is expected to **double** over the next 40 years and increase by 25% in Regional NSW over the same period. ***Therefore, it is important that we get the Plan right – it is vital to our consumers and our freight industry operators and employees.***

The NSW Freight and Ports Plan, once finalised, will guide how ***government, industry and the community will work together*** and provide a framework for all levels of government to guide policy, planning, regulation and investments, with the aim of ***providing a network to move goods in an efficient, safe and environmentally sustainable manner, providing successful outcomes for communities and industry.***

Having a NSW Freight and Ports Plan ensures that policy, planning, investment and regulatory reform is:

- guided by clear objectives and performance based targets

- "moving goods in an efficient, safe and environmentally sustainable manner, providing successful outcomes for communities and industry"
- in alignment with an overarching strategy for whole-of-transport
- targeted towards priority action areas which address key challenges
- monitored for performance and progress towards achieving its objective.

Having your say

This draft Plan is designed to provide the platform for consultation with industry and key stakeholders to inform the development of the final NSW Freight and Ports Plan. Transport for NSW has developed six Priority Action Areas to guide the development of the Plan. These will form the basis for the consultation process with early consultation to be undertaken in the form of face-to-face briefings and round table discussions commencing in the final quarter of 2017.

The draft Plan will be released to broader community and stakeholder groups to review and provide feedback through a public consultation period. Following public consultation, all responses will be considered for the final NSW Freight and Ports Plan.

The final NSW Freight and Ports Plan is scheduled to be released in 2018 as part of the Future Transport 2056 Strategy.

Working together

Figure 10: Working together with industry and key stakeholders

1.7 Building on our achievements of the 2013 NSW Freight and Ports Strategy

The ***NSW Freight and Ports Strategy*** was released in December 2013 and was the first strategy of its kind in the State's history. The Strategy set key objectives and initiatives, and established the direction of freight planning in NSW. Key achievements from the 2013 NSW Freight and Ports Strategy include:

- Lifted grain volumes on prescribed trucks through mass concessions of up to 5% via the Grain Harvest Management Scheme
- Upgraded 350km of roads, 37 bridges and 98 culverts in two rounds of Fixing Country Roads
- Awarded $15m of funding for 10 Fixing Country Rail pilot projects
- Committed $400m to eliminate infrastructure connectivity constraints on the country rail network
- Established the Cargo Movement Coordination Centre (CMCC) to make freight movement more efficiently at Port Botany which has increased the rail mode share of containers and reduced delivery times.

Figure 11: The 2013 NSW Freight and Ports Strategy

Figure 12: Key initiatives implemented by the 2013 NSW Freight and Ports Strategy

1.8 Outcomes delivered by the 2013 NSW Freight and Ports Strategy

In delivering on the tasks identified in the 2013 Freight and Ports Strategy, the NSW Government has delivered real benefits including:

- 'Fixing Country' Roads, Rail and Truck Washes programs, increasing connectivity across different network operators, levels of governments and modes.
- A greater focus on industry structural changes and flow-on transport implications.
- Advances in corridor planning, including identifying potential corridors for protection which enable future separate freight and passenger flows in Western Sydney and greater rail freight capacity in the Lower Hunter Valley.
- Establishment of a specialised freight and servicing team to work with all relevant industries and businesses accessing key urban centres.
- The strategy 'set the scene' when the Commonwealth announced their Western Sydney Airport commitment. Transport for NSW identified the need to address ground and aviation fuel needs around Badgerys Creek, and is studying potential for pipelines with fuel import terminals.

Key Initiatives implemented include:

Grain Harvest Management Scheme

This lifts grain volumes on prescribed trucks through mass concessions of up to 5%.

This has saved 5,600 truck trips in its first year, delivering cost savings to farmers, and delivering improved road safety through reduced heavy vehicle movements.

Safety, Productivity and Environment Construction Transport Scheme

This voluntary scheme has increased environmental and safety standards for heavy vehicles, and improved the efficiency of transporting construction material by allowing trucks to operate at greater load limits and has increased access to the metropolitan roads network.

Fixing Country Truck Washes

By committing $10 million to improve washout facilities for truck operators, the NSW Government has boosted safety, efficiency and bio-security for the state.

Livestock Loading Scheme

This scheme allows eligible vehicles to carry a greater number of animals in each movement.

This has enhanced productivity for the livestock industry, and delivered improved safety for drivers on regional roads by reducing truck movements.

Fixing Country Rail

This program funds rail infrastructure enhancement projects that eliminate connectivity constraints on the regional rail network, and reduce the cost to market for regional businesses. $400m is committed to the program from NSW Restart, with $150m allocated in round one. Four pilot projects are complete and six are in delivery.

Outcomes of the Pilot projects have resulted in:

- Over 4km of new rail provided on the Country Rail Network
- Reduced loading cost for 350,000 tonnes of freight, mainly grain and cotton
- Average savings per tonne of $7.50
- Average train loading times reduced by 7 hours

Figure 13: Better country roads result in more efficient, faster and safer freight movements

Fixing Country Roads

Better country roads result in more efficient, faster and safer freight movements. This has led to lower transport costs to markets making NSW a more attractive location to do business.

Fixing Country Roads is a program designed to unlock the economic potential of Regional NSW. The program provides targeted funding for projects on Council managed roads and bridges that provide benefits to the movement of freight.

Fixing Country Roads aligns with and complements the Fixing Country Rail program in reducing the cost to market for regional businesses.

The NSW Government has reserved up to $543 million for the Fixing Country Roads program as part of regional infrastructure deliverables within the *Rebuilding NSW State Infrastructure Strategy 2014*.

The first two rounds of Fixing Country Roads have committed $155 million in funding to date for 151 projects across Regional NSW. Round three will provide an additional $100 million for projects in regional NSW.

Cargo Management Co-ordination Centre

The Cargo Management Co-ordination Centre (CMCC) was established in 2014 and works with road carriers, rail operators, stevedores and related supply chain stakeholders to maximise use of existing network capacity and continuously improve the efficiency of cargo movement through Port Botany, Port Kembla and regional NSW.

The CMCC focuses on key supply chain interfaces – ports, roads, rail and intermodal terminals – for bulk commodities (such as grain and coal) and container freight. It is working to reduce cargo movement costs and lift productivity at all key supply chain interfaces.

Initiatives such as the CMCC's truck marshalling area, the Port Botany Data Performance Data Mobile App and the establishment of the Port Botany Rail Optimisation Group (which provides a forum for rail stakeholders to identify options to improve the efficiency of rail movements at Port Botany working collaboratively with

industry), rail mode share has increased from 13.5% in FY14/15 to 20.8% for YTD August 2017. More containers on rail mean fewer trucks on the road.

The Rail Optimisation system will allow Port Botany rail stakeholders to have better visibility of available capacity in the network to boost efficiency.

The Draft NSW Freight and Ports Plan supports the initiatives identified in the Draft Regional NSW Services and Infrastructure Plan. These include:

- Last Mile Productivity Program*
- Heavy vehicle rest areas*
- Fixing Country Roads Program*
- Fixing Country Rail Program*
- Port Efficiency, Access and Integration Package*.

* Indicates multi-period potential initiatives

Figure 14: More containers on rail mean fewer trucks on the road

1.9 Outcomes delivered by the 2013 NSW Freight and Ports Strategy - key road investments

Pacific Highway

Almost 500km of highway between Hexham and the Queensland border is now four lanes divided with the rest being built or being prepared for construction.

Pacific Highway duplication project from Newcastle to the Queensland border that has received $11.4 billion since 1996 from the Australian and NSW Governments. Fatalities have halved in recent years, and driving time as been cut by an hour and 45 minutes between Hexham and Tweed Heads. Since 2013 the major projects which have been completed are the Bulahdelah bypass, Kempsey bypass, Nambucca to Urunga, Frederickton to Eungai, Sapphire to Woolgoolga and Tintenbar to Ewingsdale. These improvements support regional development and provide:

- safer travel
- reduced travel times with improved transport efficiency
- more consistent and reliable travel
- Improved amenity for local communities.

Figure 15: Woolgoolga to Halfway Creek, section of Woolgoolga to Ballina upgrade.

WestConnex

- WestConnex is part of an integrated transport plan to keep Sydney moving – easing congestion, creating jobs and connecting communities. The new motorway provides crucial support for Sydney's long-term economic and population growth and enables more efficient freight movements.
- WestConnex has widened the M4 between Parramatta and Homebush, bypassing 28 sets of traffic lights on Parramatta Road. Further WestConnex has improved the road surfaces and provided new access points to the new M4 between Parramatta and Homebush.
- Further to this WestConnex will double road capacity along the M5 East corridor with the New M5 underground tunnels running between St Peters and Kingsgrove. These underground tunnels will be joined via the M4–M5 Link tunnel to form a seamless motorway without traffic lights.
- WestConnex will also benefit the freight industry by providing a western bypass of the Sydney central business district (CBD) and provide connections to the Western Harbour Tunnel, Beaches Link and Sydney Airport via Sydney Gateway.

Great Western Highway

- The Australian and NSW Governments have invested $250 million to upgrade the Great Western Highway between Katoomba and Lithgow.
- Improvements along the Great Western Corridor include Katoomba to Mount Victoria road safety upgrades, Mount Victoria village safety upgrades and Hartley Valley to Forty Bends road safety improvements. These safety improvements, including numerous four lane upgrades, have resulted in more efficient movement of freight across the Great Dividing Range from the Central West to Sydney.

Hume Highway

- Full duplication from Sydney to Albury was completed in 2013 with the opening of the Holbrook bypass
- The completed 800km highway provides a safer and more efficient trip for road freight between Sydney and Melbourne with improved travel times
- The construction of 26 major bypasses has removed large trucks from local roads and towns, reducing noise and other traffic impacts on local communities.

2. The state of freight and ports in NSW

2.1 Overview of freight in NSW

Figure 16: Freight Task in NSW

2.2 Greater Sydney freight overview

Growing demand is the main driver of freight in NSW.

Manufacturing

Manufacturing accounted for approximately 57% of the freight task in Greater Sydney in 2016, with 132.8 million tonnes per annum transported (including food and beverage). The volume will increase to 230 million tonnes by 2056, an increase of 73% from 2016.

Food and beverage manufacturing

Food and beverage product manufacturing, which is a subset of manufacturing, generated around 23.5 million tonnes of this task (or 17.7%, excluding movements in the form of wholesale or retail products).

Construction materials

Construction materials include inbound flows of raw materials (bitumen, aggregates, sand, etc.) and outbound flows associated with concrete. In 2016, Greater Sydney consumed approximately 41 million tonnes of construction material which translates to more than 5,500 trips per day on the network.

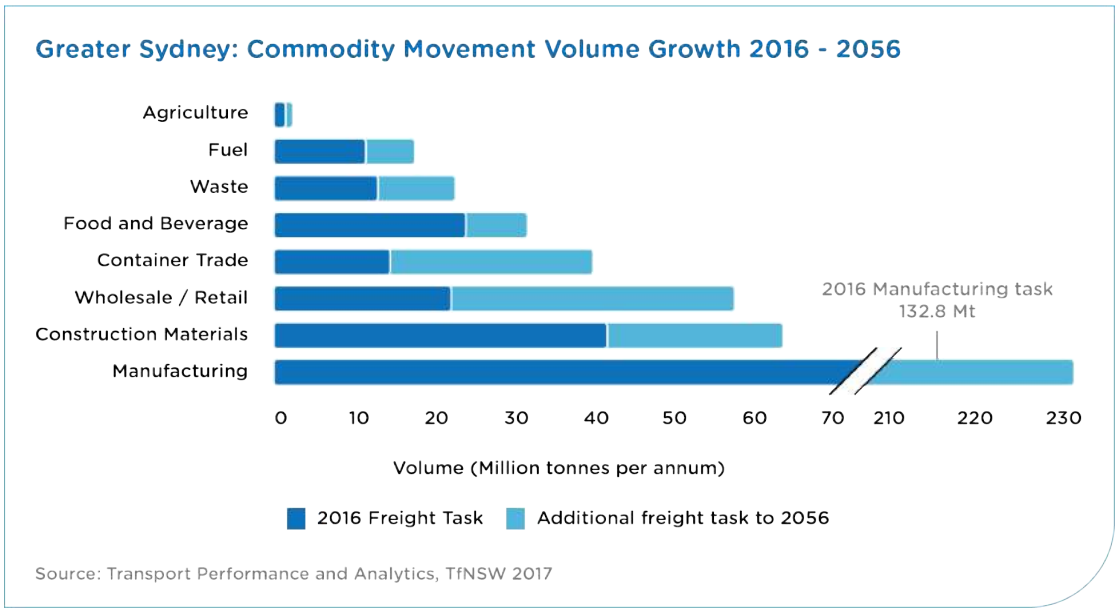


Figure 17: Commodity Movement Volume Growth 2016-2056 for Greater Sydney

2.3 Regional NSW freight overview

The movement of coal dominates regional freight volumes.

Coal

Coal is the largest volume freight commodity in regional NSW, making up around 90% of the total freight task with demand for the Hunter Valley's premium quality thermal coal contributing a significant share of the coal freight task. Over the next 40 years, coal is projected to represent approximately 79% of the total growth in freight by volume in regional NSW. Coal volumes are projected to grow at a slower rate than previously projected in the 2013 Freight and Ports Strategy (2% p.a. in 2013 compared to 0.5% p.a. in 2016).

Grains

The volume of grains is projection to grow at a long term average of 1.1% per annum. Grains are expected to account for 10% of total regional growth over the next 40 years. Approximately 73% of this growth is expected to be for the domestic market, particularly for livestock feedlots.

Livestock

The volume of livestock transported is projected to grow at an average annual rate of 2.6%, with livestock is expected to account for 5% of total freight growth over the next 40 years.

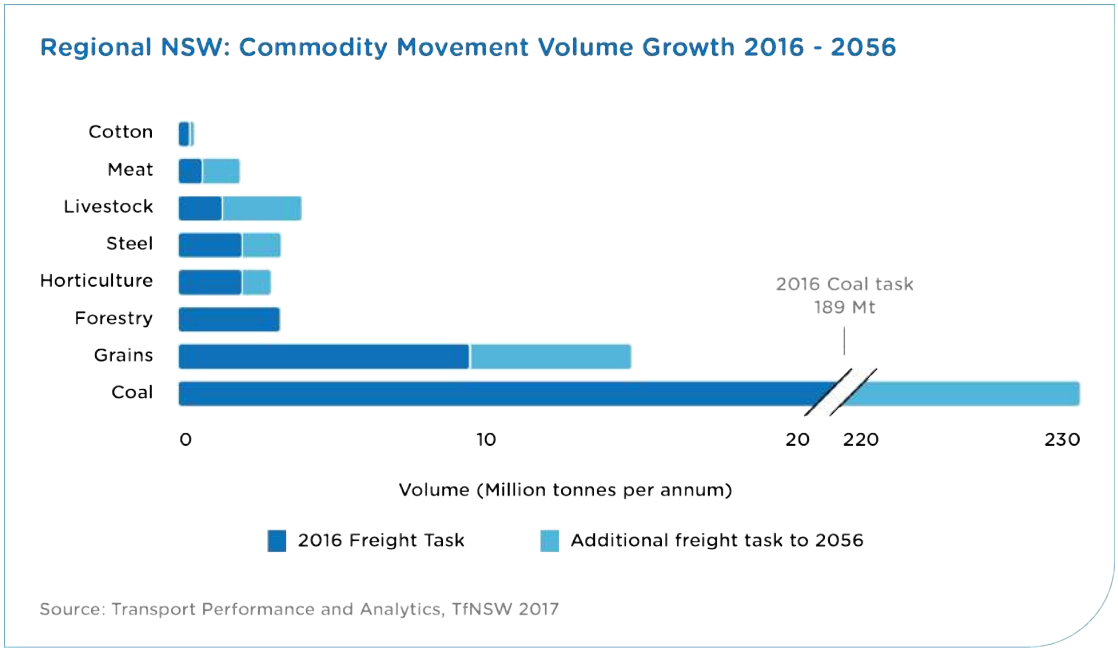


Figure 18: Commodity Movement Volume Growth 2016-2056 for Regional NSW

2.4 Key trends

Key trends driving and impacting freight demand.

Figure 19: Access to and from freight facilities such as ports is becoming constrained

Service expectations

There is an increased consumer expectation of services being available 24/7 and for product delivery to be quicker – such as through 'same day delivery'.

These service expectations are already having an impact and will continue to have an impact on demand for freight, particularly in the last mile delivery segment. The expansion of services to 'anywhere delivery' and more flexible options will place more pressure on the cost structures and competitiveness of service providers.

Population growth

Population growth in Greater Sydney and Regional NSW will mean there is an increase in consumer demand, which in turn will increase the freight task. The geographic locations of this growth will also influence the origin and destination of freight flows.

Urban encroachment

Planned residential and commercial developments are encroaching on key industrial freight generating precincts and corridors, resulting in restricted access to key freight corridors and limited ability to meet future demand.

Developments around key freight precincts change traffic patterns increase congestion, and create barriers to 24/7 operations. A related challenge is the need to plan for and protect rail and road corridors, as well as industrial, intermodal, warehousing and distribution lands, to efficiently service the areas of city growth.

Heavy vehicle regulations

There is increasing demand for the use of heavier and longer vehicle combinations, which needs to be balanced against safety and community expectations. Restricted access for heavy vehicles on the network limits productivity and results in longer journeys, or use of less productive vehicles to carry freight and more vehicles.

Decline in manufacturing

There is now a greater reliance on imports, reducing the freight task for local manufactured goods but increasing the demand for containerised freight movements from the port to the warehouse facilities. The changing nature of goods produced into the future will have associated effects on the required freight task.

Growth in agriculture demand

The increase in export demand for NSW agricultural products is increasing the freight access required between regional centres and gateway ports.

Last mile challenges – reduce freight access

First and last mile challenges impact on road freight both in Regional NSW and in Greater Sydney. Parts of the regional road network under-perform due to infrastructure limitations resulting in bottlenecks and an inadequate heavy vehicle network access.

A key trend impacting last mile demand is technology. For example, purchasing white goods on line alters distribution patterns by taking retailer out of the equation. While not significant in volume terms, this has implications for land use and road use.

In Greater Sydney, the removal of loading zones and reductions in parking capacity in CBD areas affects the efficient delivery of goods. Restrictions on movement of trucks to retail and commercial precincts limits out of hours deliveries. Business practices and planning approvals are also constraints. Increased freight demand, combined with urbanisation will see this existing challenge exacerbated.

This issue can be compounded by the fact that freight corridors often pass through multiple jurisdictions, with a number of various road managers making it difficult to approve travel routes.

Access to key freight facilities

Access to and from freight facilities such as intermodal terminals and particularly ports are becoming constrained by both road and rail. Congestion and constraints on the supporting land transport network can reduce the performance of ports and intermodal terminals.

Urbanisation

The United Nations forecasts that by 2050, around 93% of Australians will be living in cities, up from 77% in 1950. There are two distinct trends: low density growth on the urban fringe and high-density growth in and immediately around city centres.

The need to operate on smaller congested networks within urban areas will continue to increase the need for more innovative last mile delivery options, and require the transfer of freight to rail or smaller vehicles from restricted Higher Productivity Vehicles on urban fringes and at intermodal terminals.

Personalisation of consumer demand

There is increasing demand for more personalised consumer goods and services. In terms of goods, businesses have begun to postpone production until the latest point possible to allow for individual customisation. This impacts on supply chain planning, with companies not necessarily having full visibility of products in the supply chain, and the ability to maintain an appropriate level of inventory across all retail channels.

Competition for rail access

Freight movement by rail is constrained on many key corridors by having to share infrastructure with passenger rail, particularly those with suburban and intercity services. Sharing of the rail corridors compromises the network's ability to fully meet customer needs, reducing the ability to deliver increased off-peak passenger frequencies, or increased freight capacity to support long-term needs.

Demographic change

The overall demand for goods will increase as the population grows, but the distribution of demand will also change depending on the spatial concentration of households. While urbanisation trends will mean that challenges are likely to remain more acute in cities, ageing will also mean rising demand in other parts of NSW.

Technology innovation

The pace of technology change is having a significant impact on productivity and supply chain efficiencies. To ensure NSW maintains a competitive advantage, new technologies will need to be trialled and investments made that deliver improved efficiencies and lower costs. Partnerships between government and industry are becoming increasingly important to ensure new technologies deliver system integration across modes and logistics chains.

2.5 Ports in NSW

Role of NSW Government in ports

The NSW Government has an overarching role to ensure the efficient movement of freight in NSW and ensure reliable access to ports. The private sector has the role of commercial management of NSW's major ports – Port Botany, Port Kembla as well as the Port of Newcastle.

Port Authority of NSW

The Port Authority of NSW is a State owned Corporation that is responsible for the commercial management of Port Jackson (Sydney Harbour), Port of Yamba and the Port of Eden.

The Port Authority of NSW is also responsible for the port safety aspects of all shipping using Port Botany, Port Jackson, Port Kembla, Newcastle, Eden and Yamba under the Port Safety Operating Licence. This includes:

- Harbour masters and marine pilotage
- Navigation services (including vessel traffic services)
- Marine pollution and emergency response
- Dangerous goods management.

Transport for NSW is working with industry and the Port Authority of NSW to maximise coastal shipping at Glebe Island by promoting the integration of a construction materials facilities into part of the footprint of the Bays Precinct. The facility will be capable of receiving sand, cement and aggregate by ship to allow for the on-site batching of concrete.

The Port Authority owns and operates two cruise terminals on Sydney Harbour. The NSW Government has invested more than $135 million in new cruise facilities and infrastructure over recent years to ensure Sydney can continue to cater for and attract cruise ships from around the world, especially next generation cruise ships that can bring up to 5,000 passengers to our shores.

Transport for NSW

Transport for NSW drives strategies to improve freight efficiency to and from NSW's ports. Through the Cargo Movement Coordination Centre, Transport for NSW works with industry to optimise how cargo moves through Port Botany, Port Kembla and Regional NSW including Port Botany road and rail access.

Transport for NSW also ensures that there are appropriate mechanisms in place to maintain high standards of marine safety and environmental protection in the trading ports and coastal waters of NSW. This includes performing essential safety functions for smaller regional ports when required for trading and cruise vessel visits.

The NSW Government is committed to delivering a Cruise Development Plan to address short, medium and long-term options to resolve capacity and infrastructure constraints in Sydney Harbour and support regional growth in the cruise industry. The Government established a Cruise Industry Reference Group in 2017. The

Reference Group investigated a range of options to support the growth of the cruise industry in NSW. The NSW Government will carefully consider recommendations from the Reference Group in developing its Cruise Development Plan.

Figure 20: NSW Ports

Port Botany

Port Botany is the state's primary container port, and the largest bulk liquid and gas port in Australia. Annually it contributes $3.2 billion to NSW's Gross State Product, and generates 21,000 jobs.

Port Botany handles 98% of NSW's consumption of LPG, 90% of bulk chemical products, and 100% of the state's bitumen product.

Container trade at Port Botany for the 2016-17 financial year grew by 4.6% compared to the previous financial year, at 2.43 million twenty-foot equivalent units (TEU's). Full container exports grew by 13% compared to the previous year, driven largely by cereals and grain, cotton and miscellaneous manufactured articles such as furniture and building materials.

Road and rail access constraints at Port Botany must be addressed and capacity must be improved to meet future needs.

The NSW Government recognises the importance of the dedicated rail freight line to Port Botany.

Figure 21: Port Kembla

Port Kembla

Port Kembla is NSW's largest vehicle import hub and grain export terminal, and the second largest coal export port. Annually it contributes $760 million to NSW's Gross State Product, and generates 5,200 jobs.

Port Kembla will act as a progressive overflow facility for Port Botany once its operational capacity has been reached. This is expected to occur after 2040, with Port Kembla requiring development to increase its capacity to accommodate the overflow.

NSW Ports has continued investment in port infrastructure, with Stage 1A of the Port Kembla Outer Harbour expansion completed. This has provided an additional 6.9 hectares of port land for handling and processing of bulk cargo.

The NSW Government supports the use of rail for the movement of freight. While there is sufficient rail capacity in the short to medium term, freight rail access to Port Kembla is recognised by Infrastructure Australia as an initiative of national priority.

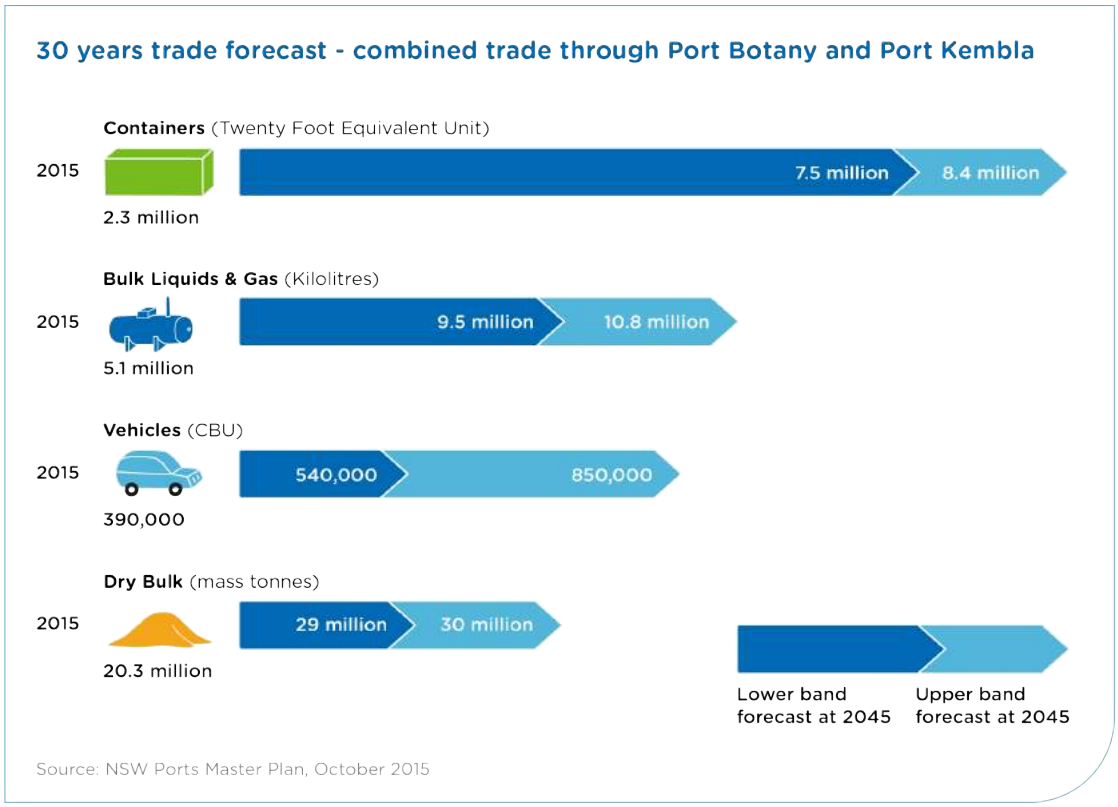


Figure 22: 30 years trade forecast – combined trade through Port Botany and Port Kembla

Port of Newcastle

The Port of Newcastle is the world's largest coal export port, and one of Australia's largest ports with 168 million tonnes handled in 2016. In addition to coal, other cargoes include alumina, petroleum, fertilisers, grains, cement, steel and cruise ships.

The Port of Newcastle will continue to be the primary coal export facility for NSW, and will continue to diversify into other commodities including fuel.

The value of cruising to the Hunter region has been estimated at approximately $11 million per year, and is set to grow. The Newcastle cruise terminal has already been announced and is funded.

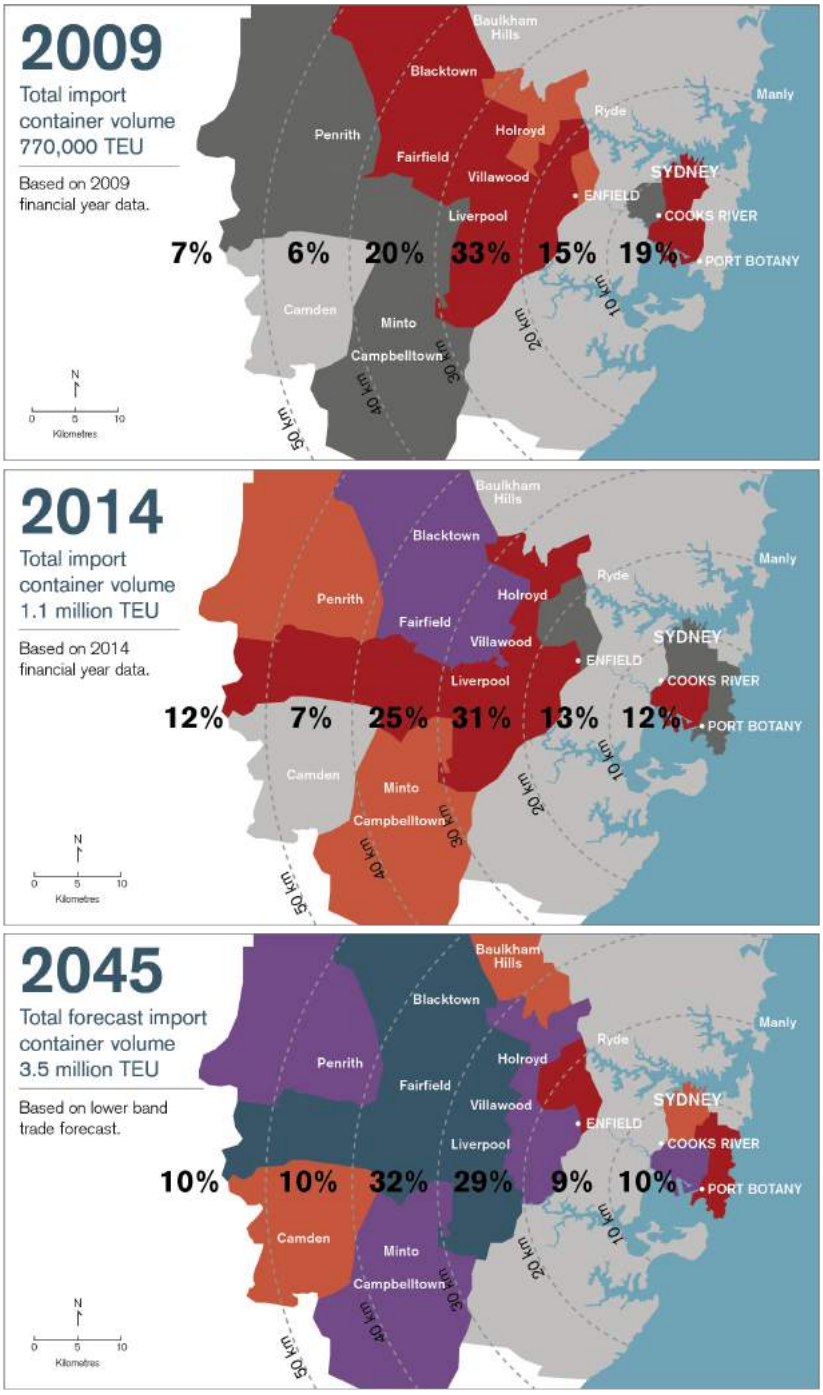
Two hundred hectares of vacant port land is available for future port capacity development, representing over 25% of total land holdings at the Port of Newcastle. The growth and diversification of the Hunter region will stimulate a requirement to expand the port's facilities.

Improved road and rail connections, from regions such as the Central West and Orana and New England North West feed into the Port of Newcastle and will contribute to growth.

Import Containers

The delivery of import containers will continue to have a significant impact on the Sydney road and rail freight delivery system over the next 30 years.

Over 80% of import containers through Port Botany are delivered within a 40 kilometre radius of the Port and this will remain over the next 30 years.



KEY

- Greater than 170,000 TEU
- 80,000 to 170,000 TEU
- 45,000 to 80,000 TEU
- 30,000 to 45,000 TEU
- 20,000 to 30,000 TEU
- 0 to 20,000 TEU
- % percentage of imported containers within 10 kilometre radius bands.

Note: Distribution mapped by local government area.

Source: NSW Ports Master Plan, October 2015

Figure 23: Distribution of import containers

Economic Role of Regional Ports

The contribution of the coastal harbour assets to the NSW economy has been valued at around $6.7 billion over a 10-year period. The most significant industry sectors are commercial fishing and aquaculture at $844 million, commercial boating at $50 million, boating at over $3.1 billion and tourism at $2.9 billion.

NSW Regional Ports Strategy was recently prepared by the Department of Industry - Lands to guide the operations, management and future investment in regional ports.

To support the important role that regional ports play for local industries, the NSW Government has undertaken a series of targeted investment initiatives to improve freight productivity in Regional NSW.

Programs such as Bridges for the Bush, Fixing Country Roads and Fixing Country Rail can support regional ports to deliver huge benefits to the efficient movement of people and freight across regional areas.

These connections help move freight from paddock and factory to their customer and ports faster. This reduces costs, enabling NSW producers and manufacturers to compete nationally and internationally.

The NSW Government will continue to invest in Regional NSW to support local industries. Specific investment initiatives being investigated for Regional NSW are outlined in Chapter 5.

Port of Eden

The Port of Eden is the southernmost deep water harbour in NSW on the Sapphire Coast. Its harbour, Twofold Bay, is the third largest natural harbour in the world. The Port of Eden services the needs of regional industries, including fishing, forestry exports and, is an emerging cruise ship destination, whilst playing an important role for the Royal Australian Navy.

The Port of Eden Infrastructure Improvement Program is delivering new boating infrastructure to improve maritime safety in Twofold Bay. The NSW Government has also committed $32 million for the Breakwater Wharf Extension Project, which will increase the size of cruise ships able to be accommodated. An additional $10 million is coming from the Commonwealth with $2 million from Bega Valley Shire Council.

An additional $10 million has already been provided by the NSW Government for the Safe Harbour project which will provide safer anchorage for local and visiting vessels within Snug Cove in addition to protecting the existing Port infrastructure.

Port of Yamba

Operating on a 24/7 basis, Port Yamba is Australia's easternmost sea port located at the mouth of the Clarence River.

The Port of Yamba serves the Northern Rivers region and is the home port of the state's second largest fishing fleet, handling a range of commodities.

It is currently the smallest port in NSW, with only 18 trading vessel visits for 2015-16. Although Yamba has the potential to have a greater role as an export point for the agricultural and fisheries production of northern NSW, it is not currently viable to substantially expand port facilities.

Coastal Shipping

The NSW Government understands that further investigation is warranted to assess the feasibility and viability to expand NSW inter and intra state coastal shipping, with particular regard to alleviating potential road and rail freight network constraints.

The challenges to freight cargo from inland or regional NSW, for example to coastal destinations, place substantial demand on the existing road and rail infrastructure network, as well as raise changes in the areas of road congestion and fatalities.

Such an investigation will factor in the economic constraints, such as coastal freight pricing, infrastructure requirements and investment by industry.

Figure 24: Intermodal terminals play a critical role in the transport of containerised and bulk freight

2.6 Intermodal terminals

Intermodal terminals will enable growth in rail movements

Intermodal terminals (IMTs) play a critical role in the transport of containerised and bulk freight, facilitating improved productivity and efficiency across the network, and acting as a key enabler for increasing rail share. By facilitating landside efficiencies, IMTs also ease capacity constraints at NSW ports and the surrounding road network resulting from growing containerised freight volumes.

Many IMTs provide integrated services to meet the needs of road and rail operators and sustain long-term growth. For example, the Enfield Intermodal Logistics Centre in Sydney includes an intermodal terminal, freight forwarding, import/export and transport distribution facilities with warehousing being developed.

Within Sydney and Newcastle, these intermodal facilities are operated by freight forwarders and transport operators at strategic locations. In regional areas, the terminals have generally evolved around pre-existing rail infrastructure with few greenfield sites being developed as intermodal terminals.

There are currently 45 sites identified as intermodal terminals in NSW, with 32 operational, one under development, nine proposed (in planning) and three currently non-operational. There are four operational ‘border’ sites in Goondiwindi (QLD), Merbein

(VIC) and Wodonga (VIC) which attract freight from NSW. There is also a proposed 'border' site at Fyshwick (ACT) and a non-operational terminal at Kingston (ACT).

There are currently 18 sites identified as intermodal terminals in Greater Sydney, Newcastle and Illawarra, with 14 being operational, 2 proposed (under construction) and one currently non-operational. Moorebank Logistics Park is currently under construction in western Sydney, and will provide an integrated service offering including IMEX and interstate terminals, warehousing, retail and service offerings, and rail connection to the Southern Sydney Freight Line which also provides dedicated freight rail access all the way to Port Botany. See IMT maps on following page.

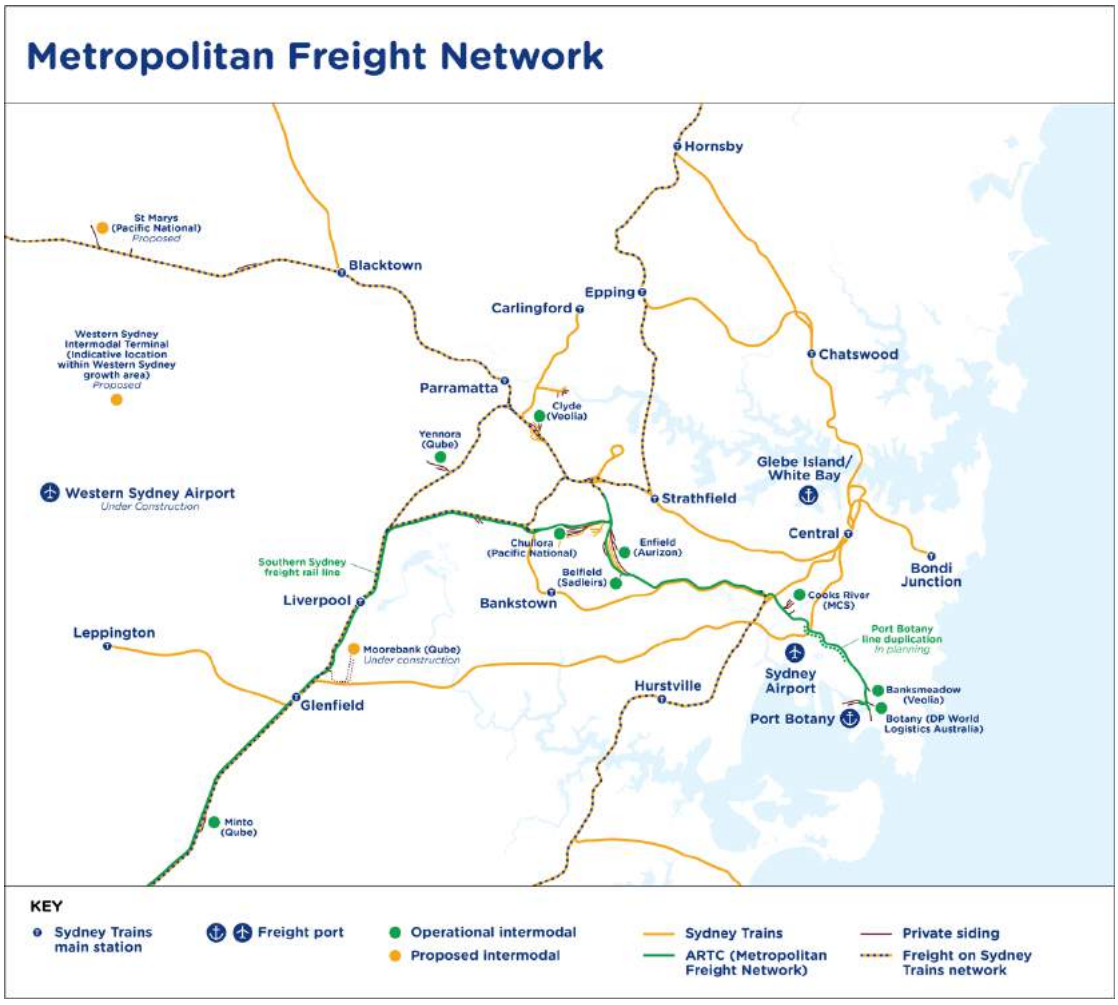


Figure 25: Metropolitan Freight Network

Role of Inland Rail (also see section 2.9)

The Inland Rail project, once constructed, may encourage the development of new IMTs in regional areas where the new alignment could allow the operation of longer or heavier trains. A key focus for NSW is to ensure that Inland Rail optimises the movement of freight in Regional NSW through efficient linkages to NSW ports and the development of economically sustainable freight hubs by the private sector at appropriate locations along the route.

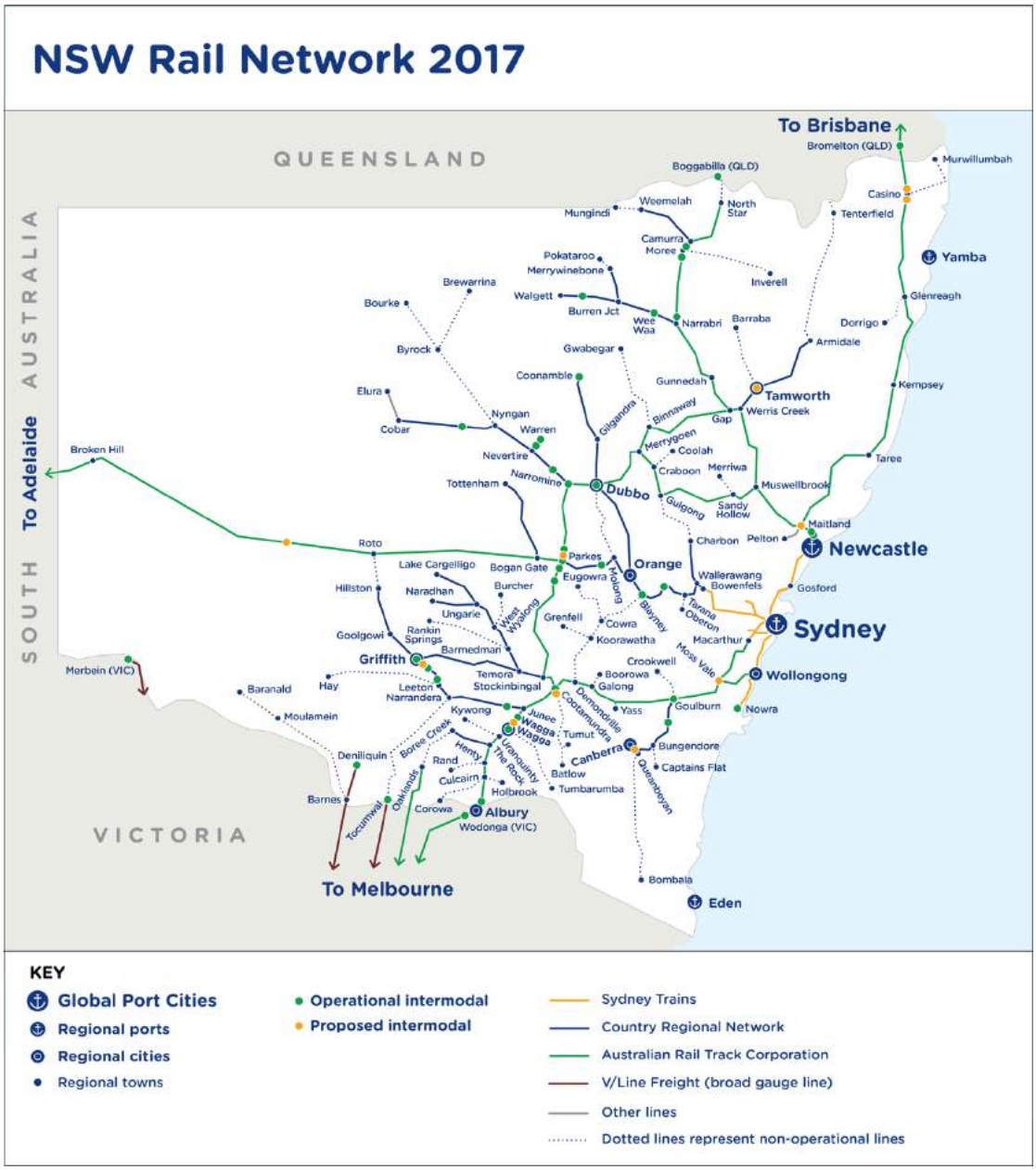


Figure 26: NSW Rail Network 2017

2.7 Transport regulation and reform

Enhancing freight productivity through reform.

National laws and state regulation should ensure that safety, consistency and economic productivity are safeguarded.

As part of the national microeconomic reform agenda driven by the Council of Australian Governments (COAG), we have worked closely with the Commonwealth and other jurisdictions on the establishment of four national transport regulators (see below) established to harmonise regulatory regimes, drive economic efficiencies and improve safety.

Office of the National Rail Safety Regulator

The Office of the National Rail Safety Regulator became operational from 20 January 2013, and was established to resolve inconsistent regulatory practices between the states and territories, which were constraining rail transport operators.

The Rail Safety Regulator provides regulatory oversight of rail safety in every Australian State and Territory. Jurisdictions continue to fund the National Rail Safety Regulator as the Regulator progresses towards 100% cost recovery by industry. NSW industry will contribute 41% in 2017-18 with the NSW Government contributing the remainder.

The NSW Government participates in National Rail Safety Regulator-led policy reviews and the maintenance of the Rail Safety National Law. Transport for NSW is also an accredited operator and must comply with requirements under the Rail Safety National Law.

National Heavy Vehicle Regulator

The National Heavy Vehicle Regulator (NHVR) administers one set of laws for heavy vehicles under the National Heavy Vehicle Law, delivering a comprehensive range of services under a consistent regulatory framework.

The law commenced on 10 February 2014, and applies to the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria. The law establishes a national scheme to facilitate and regulate the use of heavy vehicles in a way that promotes safety, manages the impact of heavy vehicles on the environment, road infrastructure and public amenity, promotes productivity and efficiencies, and encourages innovative and safe business practices.

Under current arrangements, the NHVR deals exclusively with some regulatory programs such as accreditation under the National Heavy Vehicle Accreditation Scheme and Roads and Maritime Services deals exclusively with matters such as registration and licencing. Roads and Maritime Services also performs a range of services on behalf of the national regulator, across areas such as compliance and enforcement, vehicle standards, road access and permits. Under the Heavy Vehicle Charging methodology, since 2016-17 the NHVR's funding comes from industry via heavy vehicle regulatory charges.

Heavy Vehicle Road Reform

In addition to the establishment of national regulators, the Heavy Vehicle Road Reform is a national reform led by the Commonwealth aimed at linking heavy vehicle user needs with the level of service they receive, the charges they pay and the investment of those charges back into heavy vehicle road services.

NSW is collaborating with the Commonwealth and other jurisdictions on potential trials of heavy vehicle charging. This could test different elements of HVRR, including funding, technology, hypothecation of revenue (as revenue is directed back into service delivery on the road), and enhanced access for Higher Productivity Vehicles. It would also provide an opportunity for the freight industry to obtain a practical understanding of the reform, and to share its views with the NSW Government.

Increase access for freight across the road and rail network

We will increase access on the shared network and provide dedicated freight priority on selected sections of network.

To meet the growth in freight demand, increased safe access to both the road and rail network between key freight facilities, gateways and corridors is essential. Current restrictions result in longer travel distances, increased journey times or a number of freight movements on the network, exacerbating existing constraints issues.

Transport for NSW will:

- expand the road and rail network to improve connectivity and accessibility for high productivity vehicles and efficient rail wagon loading
- explore the implementation of dedicated freight lanes on key freight corridors on the strategic road network, outside of peak periods, to help to improve safety, and support efficient, reliable freight movements
- pursue opportunities to provide dedicated rail networks for passengers and freight, to reduce sharing of busy rail corridors which reduces the ability to deliver increased off-peak passenger frequencies or increased freight capacity to support long-term needs
- build strategic road freight networks in partnership with local government.

The draft NSW Heavy Vehicle Access Policy Framework, is a key document that has been developed by Transport for NSW to lead the change to enable road freight to fulfil its role in the increasing freight task. The draft Framework outlines a strategic network approach to open access for higher productivity vehicles and promotes optimizing trade-offs between road safety, environmental amenity and freight productivity. It will be an important tool to guide road manager's access decisions, road planning and road infrastructure spending for priority freight corridors.

The effective staging of full segregation of the rail network presents the opportunity to ensure that the busiest freight corridors are given greater capacity. These corridors include those between intermodal terminals, international gateways and links to regional areas.

Australian Maritime Safety Authority

Transport for NSW is engaging with national regulator Australian Maritime Safety Authority (AMSA) on maritime matters, contributing to AMSA's working groups in the formulation of national regulations and international conventions for shipping.

National Transport Commission

The NTC is an independent advisory body that consists of Commonwealth, state and territory ministers responsible for transport and infrastructure.

The council contributes to the national reform agenda and has the current strategic reform priorities:

- sustainable funding for transport and infrastructure
- embracing innovation and technology in transport and infrastructure
- productive and liveable cities and regions
- maximising freight productivity.

2.8 Technology

Transport is a technology business.

Demand for freight is driven by:

- a combination of economic, spatial and behavioural factors
- the capacity, availability and cost of transport
- the organisation of logistics systems and supply chains.

The way that some of these factors may change in the future is important to understanding which technologies can become more mainstream and impact on the way freight markets operate.

Initiatives that improve the efficiency of existing assets are set to become increasingly important as geographical constraints limit options for new assets. The adoption of emerging technologies will play an essential role in harnessing these efficiencies and many are already being used by industry.

Equally, technology will also change the demand for freight. Increasing use of online retail and on demand delivery has caused a dramatic growth in urban **last mile delivery**.

RECENT AND EMERGING TECHNOLOGY WITHIN THE SUPPLY CHAIN

Waterways and Ships

- Robotics and automation
- Autostrads
- Automated navigation on approaches
- Automated vessels

Rail

- Automatic train control (eg. ETCS)
- Integrated systems
- Reduce LCL (less than container load)

Trucking

- Connected and autonomous vehicles
- Truck platooning
- Machine to Machine (M2M) / Telematics

Warehouses

- Robotics and automation
- Augmented reality (AR) and 3D printing
- Wearable (tracking device) technologies
- Mobile Manufacturing

Last-Mile

- Connected and autonomous vehicles
- Drones
- GPS tracking direct to vacant bays/parking

Figure 27: Recent and emerging technology within the supply chain

Investigating technology of relevance to our freight customers

Investigations being undertaken as part of developing the Plan

In developing the final Plan, we will investigate various types of technology that support service and infrastructure improvements across the network.

The most relevant of these to our freight customers are:

- Intelligent transport systems (ITS) - are systems in which information and communication technologies are applied in the field of road transport, including road-side infrastructure, which support truck platooning vehicles and users
- Cooperative – ITS technology that enables vehicles to wirelessly communicate with other vehicles, infrastructure, docks and kerbside loading zones or other parts of the road network
- Connected and automated vehicles - automated vehicles that employ connected ITS to communicate with nearby vehicles, infrastructure.

Data is essential

Data is essential in improving freight performance by providing input into sophisticated systems that manage network operations and prioritise traffic movements.

Freight customers will also harness data and analytics to improve efficiency and competitiveness. Load sharing applications and platforms will combine freight loads from different network users to maximise capacity utilisation of each vehicle.

Role of the NSW Government

It is the Government's role to support and advocate for the development and implementation of transport or mobility technologies including providing expertise and leading the discussion, research and debate with industry.

The Government will work with industry stakeholders to identify how industry can invest in technology capability that serves to improve its freight operational productivity.

2.9 Inland Rail in NSW

A project that will provide a new north-south rail connection between Brisbane and Melbourne.

Inland Rail is an opportunity to create three potential regional freight interchanges connecting to our commercial ports.

A key focus for NSW is to ensure that Inland Rail optimises the movement of freight in Regional NSW through efficient linkages to Port Botany, Port of Newcastle and Port Kembla.

This will provide additional opportunities for the ports and the development of economically sustainable freight hubs by the private sector at appropriate locations along the route.

Once constructed, the Inland Rail project may also encourage the development of new IMTs in regional areas where the new alignment could allow the operation of longer and/or heavier trains.

The proposed Inland Rail is a 1,700km line connecting Tottenham in Victoria to Acacia Ridge in Queensland, through NSW. The Commonwealth has committed $8.4 billion to deliver the Inland Rail on top of a previously committed $900 million. The Commonwealth, through the Australian Rail Track Corporation (ARTC) is delivering the project and is inviting the private sector's involvement in the design and construction with the line expected to be operational in 2025.

ARTC says Inland Rail "will transform the way we move goods between Melbourne and Brisbane, connecting our farms, mines, cities and ports to global markets. It will support Australia's four richest farming regions, provide supply chain benefits and substantial cost savings for producers. This transformational rail project will bring lower costs and greater efficiencies to freight customers and will ultimately deliver more produce and goods to consumers along the eastern seaboard, create long-term jobs, boost regional economies, and help businesses grow".

The NSW Government is working collaboratively with the Commonwealth and ARTC to deal with a large number of complex issues.

To ensure early benefits to NSW and its economy, Transport for NSW is providing ARTC with technical advice as it prepares to deliver its "brownfield" priority projects of Narromine to Parkes and Narrabri to North Star.

The final NSW Freight and Ports Plan will reflect the final arrangements agreed with the Commonwealth and ARTC. The Plan will also consider the infrastructure investment requirements to address implications for the East-West rail implications such as network upgrades to key rail hubs and junctions.

Figure 28: NSW Inland Rail

2.10 NSW Air Freight Task

Western Sydney Airport – future freight needs

The Commonwealth has announced it will build the Western Sydney Airport. A new government-owned company, WSA Co. has been established to develop the airport by 2026.

Planning for the Western Sydney Airport freight task has been underway for several years. The freight task is not limited to air cargo, but includes the retail, food and beverage, construction and waste movements associated with a major airport.

The importance of the freight planning at and around the WSA precinct cannot be understated. The WSA is the foundation for the development of an 'aerotropolis'. The success of a WSA-based metropolis depends to a large degree on having an integrated freight transport network to support it.

The key priorities for Transport for NSW are:

- preserving land for future transport corridors now (road and rail) to ensure land is available, affordable and free from encroachment from incompatible land uses
- enabling the development of a fuel pipeline to the new airport and surrounding precincts
- planning an effective sub-regional road network with access to an adequate supply of light industrial land near the airport
- shifting as much passenger and freight activity as possible onto rail to free up capacity for essential road freight, construction and high occupancy passenger vehicles
- ensuring connections between Sydney's current and future airports support the efficient assembly and trans-shipment of goods.

Figure 29: 2016 Western Sydney Airport Plan

Transport for NSW will work with the Commonwealth and WSA Co. and our stakeholders to ensure NSW interests are advanced and to secure the best network and commercial outcomes for NSW.

Sydney Airport and Regional NSW Airports

As Sydney Airport handles around half of Australia's international air freight movements and is forecast to grow, demand for industrial land located near the airport is also expected to grow. There is a requirement to ensure that an efficient and mutually supportive relationship exists between the airport and the surrounding industrial land uses.

The NSW air freight task is a small but economically significant part of the NSW economy. A diverse range of products travel by air, including medical supplies, high end electronic equipment, seafood, fresh fruit and vegetables.

Air freight is moved in two ways: either using specialist freight aircraft, or within the belly-holds of passenger aircraft. Some 80% of all air freight handled at Sydney Airport is carried in the holds of passenger aircraft.

Domestic air freight movements are vital to business and industry in regional areas. However, given the small size of passenger planes that serve regional centres many industries rely on specialist, just in time, air freight services. In contrast to the sea port, the operating curfew at Sydney Airport does not support the efficient use of off-peak capacity at the airport or on the road network.

Sydney Airport, as the primary point of arrivals and departures, handles half of Australia's international air freight and approximately one third of domestic air freight. Although passenger craft are increasing in size and number, their capacity to carry freight has stabilised due to the configuration of modern aircraft and the way they carry passengers and luggage.

Overall, the air freight task is small compared to the total volumes of freight moved within NSW. However, in terms of value, air freight carries a higher proportion relative to the task.

2.11 Safe and efficient movement of goods

Importance of integrated safety outcomes

Future freight tasks are expected to grow with increased population, construction and consumption of goods, with road freight remaining the dominant transport mode for most commodities. This will result in more heavy vehicles mixing with other vehicles and transport users on the road. As such the NSW Government must investigate opportunities to improve the safety of these vehicles.

Providing **separation of heavy vehicle freight movements** from other network users will improve safety for all users. For road space allocation, priority will be given to the most efficient use which may include freight vehicles (large and light commercial) or bus and other public transport vehicles contributing to better manage freight demand, and improving both freight efficiency and safety. Increasing use of rail for the freight task will also better separate freight movements from the bulk of passenger travel that occurs on our roads, which can better manage risk and provide improved safety outcomes.

Technology will play an important role in supporting safer freight efficiency and access. For example, heavy vehicle platooning may enable safe freight movements, when it can be verified that technology can ensure public safety.

Specific vehicle safety technologies also provide enormous potential to improve safety, especially Electronic Stability Control (particularly for hauling units), Roll Stability Systems (particularly for trailers), and systems that eliminate driver blind spots (particularly in Greater Sydney where heavy vehicles will mix with more vulnerable road users such as pedestrians and cyclists).

The Draft Future Transport 2056 Strategy includes a **vision that by 2056, technology and safety will be in-built to all networks, delivering zero trauma on all parts of the transport system**. This starts with a 30% reduction in road fatalities and serious injuries by 2021. To achieve this, a Road Safety Plan 2021 is being developed. The Road Safety Plan will adopt the Safe Systems approach, which involves all elements of the transport system (infrastructure, vehicles, speeds and user behaviour) working together to ensure safety. The Plan will help embed Safe System principles across the Future Transport 2056 Strategy and supporting Plans, including the NSW Freight and Ports Plan.

3. Opportunities and challenges

Figure 30: A Road Safety Plan 2021 is being developed to address integrated safety outcomes

3.1 2016 mode shares by freight commodity group

Road is the predominant mode of transport for most commodity groups except for coal which primarily uses rail.

There are policy and infrastructure investment opportunities to deliver modal switch, reducing freight costs and road network congestion (e.g. more containers and manufactured goods on rail, fuel pipelines).

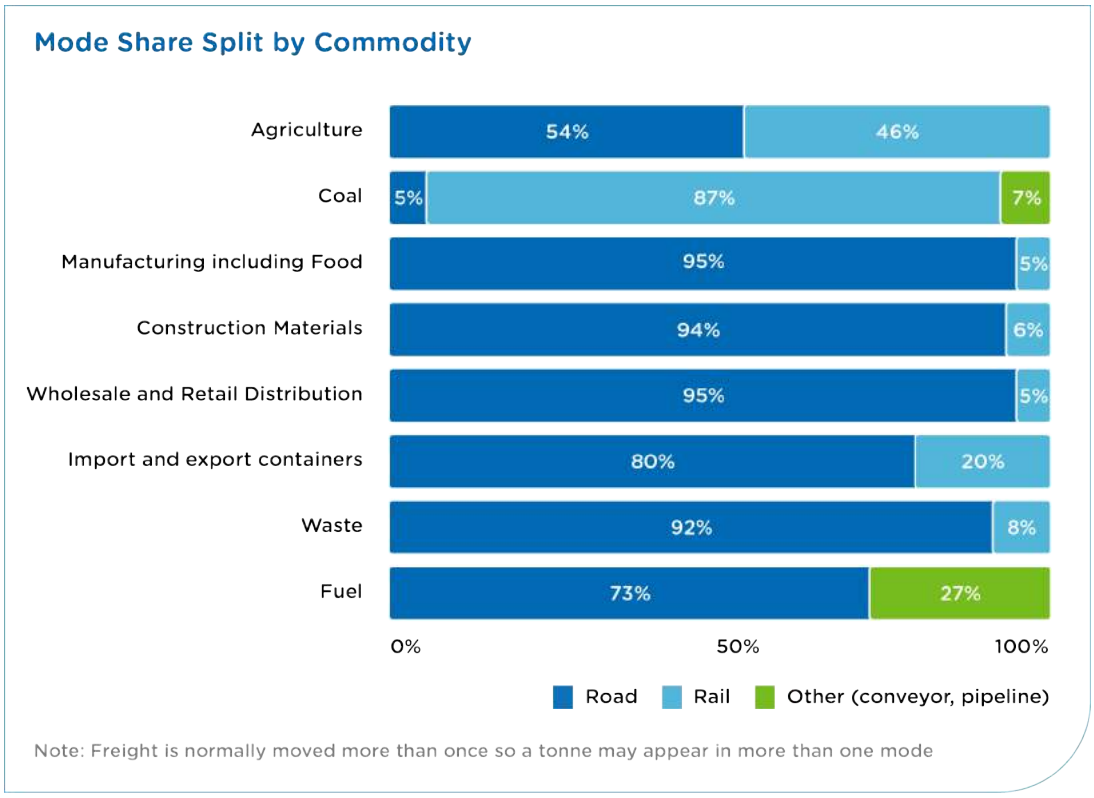


Figure 31: Mode Share Split by Freight Commodity Group

Commentary on Figure 29: Mode Share Split by Commodity

- **Agriculture and Livestock** - Both rail and road networks play an important role in the transport of these products for both domestic use and export. Grain and cotton already utilise rail for long distances from upcountry consolidation points to ports and domestic markets. Livestock and meat however are highly dispersed and require timeliness of delivery. Continued separation of freight from passenger rail and improved efficiency in the rail system at ports will increase the appeal of rail for exports of these commodities over time.
- **Coal** - Rail dominates in the transport of coal from mines to port for export. The overwhelming majority of the coal task already utilises the dedicated rail network (Hunter Valley Coal Chain). However, coal originating from the western coalfields (around Lithgow) must traverse the shared Sydney Trains metropolitan rail network to reach Port Kembla and Port of Newcastle, thus facing potential path capacity limitations. This trend is set to continue and will require continuing efforts to ensure separation of this freight task with passenger rail over time.
- **Manufacturing (incl. Food)** - Much of the manufacturing activities occur in small and medium sized facilities so the vast majority of manufactured goods are moved by road and consumed within NSW. There are opportunities over time for improved rail share once efficient intermodal terminals are in place supporting major, future city hubs.
- **Construction materials** - The high road mode share for construction materials is the result of the location of existing freight infrastructure (rail and sea) against sources of supply. It is expected over time that new sources of supply will require increasing travel distances and will drive a shift towards more cost efficient rail transport and coastal shipping. As regional quarries are increasingly replacing exhausted metro quarries, rail movements are being mandated and favourably adopted within the supply chain of new developments, avoiding some of the severe impacts which occur with road only supply chains.
- **Wholesale and retail distribution** - Road currently dominates the transport of products for wholesale and retail distribution. The end delivery points for these products are too highly dispersed to make rail a viable option for the current supply chain. There are opportunities over time for improved rail share once efficient intermodal terminals are in place supporting major, future city hubs.
- **Import and export containers** - Rail mode share has improved off a historically low base and, with further investment in the rail network and new intermodal terminal capacity such as at Moorebank, it will continue to grow. Road will continue to dominate the modal share in the city-urban environment for the foreseeable future, due to the disaggregated nature of this delivery task.
- **Waste** - Waste is predominately handled by road at present, however this is an area for increased rail utilisation as investments into metro consolidation points occur and make it more viable to transport from metro consolidation points to regional landfills and processing plants. Investigations into potential for co-location of waste transfer and processing facilities with rail is a consideration moving forward.

- **Fuel** - The movement of fuel is currently dominated by road. The dangerous nature of fuel makes it difficult to move by rail given that pipelines have proven to be very effective from import terminal to inland depots. Road distribution is extremely well suited to deliveries to the dispersed end users. New pipeline corridors would reduce distances travelled by road tankers, particularly through some of the most congested parts of the Sydney Metropolitan network.

3.2 Opportunities and challenges by commodity

The network issues and challenges affect the key commodities in different ways.

These are outlined in the following pages.

OVERVIEW AND OPPORTUNITIES / CHALLENGES FOR EACH SUPPLY CHAIN

COAL

Approximately 189Mt per annum of coal was transported across NSW in 2016. Coal is the largest freight supply chain in NSW.

The Central West is also an important source, with freight flowing through the Sydney network to either Port Kembla or Newcastle. Power stations in Lithgow and the Hunter region are another significant component of the current supply chain. Coal is anticipated to account for approximately 79% of the growth in regional freight by volume over the next 40 years.

- The key challenges for coal emerge from the expected growth in output, with transport distances increasing from the port and the opportunity through infrastructure investment to improve accessibility and capacity.
- Access to Port Kembla is congested due to competition with passenger rail as the route progresses via the Sydney metro network to the Illawarra line. This will worsen as metropolitan passenger services grow. Pursuing opportunities to separate freight and passenger rail will alleviate this impact.

The use of dedicated freight lanes on key freight corridors on the strategic road network outside of peak hours has the potential to deliver improved freight outcomes, road safety, and reliability. Exploring opportunities to preserve dedicated freight corridors, separate freight and passenger movements where possible and ensure appropriate planning for freight movements will help alleviate some of these challenges.

TfNSW will continue to support the Hunter Valley Coal Chain Coordinator for the major coal tasks and continue to seek ways of separating freight and passenger trains in the more complex and constrained networks (such as the Western Sydney Freight Line.

OVERVIEW AND OPPORTUNITIES / CHALLENGES FOR EACH SUPPLY CHAIN

MANUFACTURING INCLUDING FOOD

Sydney is Australia's main industrial city, with the NSW manufacturing sector contributing almost $33 billion, or 6% to the state economy in 2015-16.

Manufacturing accounted for approximately 57% of the freight task in Greater Sydney in 2016, with 132.8 million tonnes per annum transported (including 23.5 million tonnes of food and beverage manufacturing products). This freight task is projected to grow at 1.7% annually over the next 40 years.

- Planned residential and commercial developments are encroaching on key industrial freight generating precincts and corridors, resulting in more expensive supply chains, and reduced amenity for the developments.
- Non-industrial developments around key freight precincts changes traffic patterns and causes congestion for freight vehicles.
- There is increasing demand for the use of heavier and longer vehicle combinations. These are currently only allowed on a permit basis due to safety concerns and the inability of parts of the network to accommodate these vehicles.

The use of dedicated freight lanes on key freight corridors on the strategic road network outside of peak hours has the potential to deliver improved freight outcomes, road safety, and reliability.

Exploring opportunities to preserve dedicated freight corridors, separate freight and passenger movements where possible and ensure appropriate planning for freight movements will help alleviate some of these challenges.

OVERVIEW AND OPPORTUNITIES / CHALLENGES FOR EACH SUPPLY CHAIN

CONSTRUCTION MATERIALS

In 2016, Greater Sydney consumed approximately 41 million tonnes of construction materials. This translates to more than 2 million heavy vehicle trips on the network every year – or approximately 15,000 trips per day. Quarry products account for approximately 50% of construction material demand by volume. This freight task is projected to grow at 1.1% annually over the next forty years.

- The haulage distance for quarry products is increasing in length as suppliers look further from Sydney for new source materials. The increasing travel distance involved in the supply chain is driving a shift towards more cost efficient rail transport. The Sydney Construction Material Supply Chain Investigation highlighted that for major quarries supplying Sydney, transport by rail is approximately 35% cheaper than by road.
- Wider use of rail network is restricted by limited rail access to quarries. This lack of access to quarries is compounded by the limited availability of rail adjacent to industrial land in Sydney to enable a receiving site to be developed. This has increased pressure on port receiving locations for construction materials delivered by ship.

There are opportunities for coastal shipping to play an increasing role in facilitating a least cost pathway and reducing unit costs for the transport and construction industries in Sydney's greater metropolitan area. Opportunities to improve accessibility within Greater Sydney will result in a more efficient, safer movement of construction materials.

Investment in dedicated freight lines such as the Western Sydney Freight Line would support the transport of quarry products into the Sydney metropolitan area. Preservation of locations suitable for rail sidings by the private sector will enable reception of product in the metropolitan area. Retention of Glebe Island as a construction materials hub, services by coastal shipping, will support CBD construction. Expanded use of HPV's to support the construction task and reduce truck movements by increasing payloads is another opportunity, as is amending planning approval frameworks to alter delivery hours to improve the efficiency of transport of construction materials and reduce congestion.

OVERVIEW AND OPPORTUNITIES / CHALLENGES FOR EACH SUPPLY CHAIN

WHOLESALE AND RETAIL DISTRIBUTION

Groceries and consumer goods represent approximately 21.7 Mt per annum (2016), across distribution from wholesaler, and distribution from retailer warehouses. This freight task is projected to grow at 2.4% annually over the next forty years, driven by population which is expected to grow from 7.7 million to 9.4 million by 2031, as well as increased wealth and expectations of consumers in terms of quality and quantity.

This increased freight demand is compounded by an increase in the complexity of the transport task, with changing buying patterns of consumers and businesses causing an increase in the frequency of smaller deliveries, as well as increased demand through reverse channel logistics. Growth of e-commerce shopping has led to an increase of local last mile deliveries.

- Long term trends away from local manufacture to IMEX (Imports and Exports) flows through ports are resulting in changes to pathways.
- There is an increasing need for land use planning for industrial and freight precincts to include implementation of direct connectivity with road and rail networks. Protection of land for freight precincts and corridors is needed for long term planning and availability. There is an opportunity for the Transport for NSW to work in collaboration with local councils to improve the efficient transport of goods.

There are opportunities to co-locate shopping activities (such as shops of click and collect boxes) with Passenger railway stations and public transport interchanges, to make better use of off-peak infrastructure and reduce travel demand in the last mile and improve the safety and sustainability of urban centres. There is strong evidence of growing demand for smaller, light freight vehicles in the last mile and Transport for NSW will need to carefully balance policy and regulation responses around vehicle size limitations, access timing and pricing, and technology responses to assist consumers and the economy in a rapidly changing environment.

OVERVIEW AND OPPORTUNITIES / CHALLENGES FOR EACH SUPPLY CHAIN

IMPORT AND EXPORT CONTAINERS

Approximately 14.2 million tonnes (2016) of container trade, or 2.36 million TEU's, currently move through Port Botany. Over 80% of import flows are de-containerised in Sydney before distribution as they contain items such as food and beverages or consumption goods, such as clothing and electronics. Export flows are dominated by commodities such as cotton from Narrabri/Moree and the Riverina; meat and wine from the Riverina and the Central West, and grains from across the state.

Food is the largest area of containerised import growth, with a rate of 4.6% per annum projected over the next 40 years. This represents over half of the projected growth in containerised imports through Port Botany over this period.

- There is currently high demand for land within the Port Botany precinct to store both full and empty containers. An inland terminal is needed to function effectively as empty container parks and deliver empty containers direct to the stevedores to ease demand on congested port land. Duplication of the Port Botany Rail Line will be important to facilitate growth in rail services to meet future intermodal capacity.
- Access to and from Port Botany is constrained both on the road and rail side. While truck movements inside the Port are handled efficiently, there is congestion on the supporting road network. There is an opportunity to upgrade Port Botany supply chain co-ordination with the whole port community.

The dominance of road in the mode share is the result of a number of factors, including past under-investment in rail and intermodal infrastructure in previous decades and current road pricing and port handling policies which give road transport a competitive advantage. Recent initiatives are resulting in an increased mode share to rail. Continued future investments in the metropolitan rail network, particularly through the early delivery of the Western Sydney Freight Line and parts of the Outer Sydney Orbital, will ensure development of urban centres (in particular Western Sydney) are supported by both road and rail infrastructure. These two projects also offer substantial benefits to the passenger rail task and the quality of life of urban centres in Western Sydney (such as Parramatta and Blacktown).

OVERVIEW AND OPPORTUNITIES / CHALLENGES FOR EACH SUPPLY CHAIN

WASTE

Approximately 12.6 Mt per annum of waste products across household and commercial origin were transported within Greater Sydney in 2016, representing approximately 5% of the total freight task in Greater Sydney. The volume of waste product requiring transport is expected to grow at a compound annual growth rate of 1.4% over the next forty years, driven by population growth and urban renewal.

Waste volumes include municipal solid waste, construction and demolition waste, commercial and industrial waste. Construction and demolition waste currently represents 48% of all waste volume in Greater Sydney, and has the highest projected growth rate of all waste categories of 1.5% per annum to 2056.

- The freight task for waste is becoming increasingly challenging with an increase in resource recovery, and increasing haul distance as most landfill sites are becoming exhausted.
- There is an opportunity for greater collaboration with Local Government to identify and implement efficiencies in both waste management and the associated transport task.

The current mode share for waste and recycling materials is based on the limited opportunities to co-locate processing facilities and landfill sites with rail infrastructure. Early identification of land suitable for waste transfer stations and investment in the rail freight network are essential to the sustainability and safety of the waste task.

TfNSW is also working the Environmental Protection Authority (EPA) and the Greater Sydney Commission (GSC) to enable more efficient disposal of waste and to reduce waste production and haulage in all three of the sub-supply chains.

OVERVIEW AND OPPORTUNITIES / CHALLENGES FOR EACH SUPPLY CHAIN

FUEL

Imported fuel arrives primarily through Port Botany, Gore Bay (Greenwich) and Port Kembla. Distribution of fuels from port terminals is dominated by pipeline, whereas the majority of the inland transport is achieved almost exclusively by road transport through a limited number of intermodal terminals.

Approximately 11.2 Mt per annum (2016) of fuel is transported within NSW, with an annual growth rate of 1.1% projected over the next 40 years to 17.2 Mt per annum (2056). The largest end users of fuel are households, airports, mining and the road freight transport service sector. Together, these account for nearly 90% of the fuel demand in NSW, with households alone accounting for over 40% of the fuel demand.

- Restrictions on the transport of dangerous goods in tunnels limit the road access for fuel on both the existing strategic road network, as well as the emerging strategic road network.
- Some substitution of road transport via new fuel pipelines could reduce the number of new fuel truck trips, particularly to Western Sydney.
- A reliance on fuel transportation by heavy vehicles could generate congestion problems at the airport site, contribute to delay costs along key freight corridors, and increase safety risks for road users.

Expanding the NSW pipeline network is the safest and most efficient infrastructure response for the future. Transport for NSW has established a fuel pipeline corridor framework.

This framework will identify and evaluate potential pipeline corridor options for industry and community consultation. TfNSW are already investigating a pipeline corridor from Port Botany to Western Sydney Airport and for the Hunter (Port of Newcastle) to Orana in Central Western NSW.

The changing role of renewables may create challenges in the long term.

OVERVIEW AND OPPORTUNITIES / CHALLENGES FOR EACH SUPPLY CHAIN

AGRICULTURE AND LIVESTOCK

Approximately 1.3 Mt per annum (2016) of agricultural and horticultural products are transported within the Greater Sydney area. In Regional NSW approximately 9.2 Mt per annum of grains, 2.7 Mt per annum of food and related products, and 1.4 Mt of livestock were transported in 2016. These volumes represent the total volume of products moved and there can be significant variations from year to year due to variable production, impacting on export volumes.

- Restricted access for heavy vehicles on portions of the network limit productivity and result in longer journeys, or use of less productive vehicles to carry freight. Parts of the first and last mile network have poor performance and cause bottlenecks due to low capacity, and an inadequate heavy vehicle network.
- The sharing of rail infrastructure between freight and passenger rail is an existing issue that will be exacerbated with the expected increase in passenger trains. The cross border movement of livestock and grain supply from Regional NSW to Queensland, and the movement of agricultural production to Victoria currently face the challenge of disparate vehicle standards.

There is an opportunity for continued investment in the network, improved accessibility for higher productivity vehicles and regulatory reform to address these challenges.

Agricultural products travel by road, rail, air and sea. Despite a relatively high rail mode share, almost all agricultural products will travel on the road for at least part of their journey. The rail task is comprised of grains carried in wagons, and containerised goods (such as cotton, rice, timber, paper, wine and increasingly, grains). Air freight is a small but rapidly growing part of the agricultural (and livestock) task. The agricultural and livestock industry will require continued investment in road and rail capacity and maintenance, combined with regulations that enhance the safety and productivity of the industry.

4. Priority Action Areas

PRIORITY ACTION AREAS

1 **Strengthen freight industry and government partnerships**
Identify opportunities for industry and government to work together to harness opportunities and address challenges that will improve freight outcomes for all stakeholders

2 **Increase access for freight across the road and rail network**
Improve reliability of freight movements by providing greater access to the shared road and rail networks, and ensure that on our busiest freight corridors the rail network will support 24/7 access for freight.

3 **Protect existing freight precincts and ensure sufficient future land use**
Maintain and enhance access to existing freight precincts to improve the efficiency of the supply chain, protect corridors and land for freight activities, and take account of freight in future strategic planning activities.

4 **Facilitate introduction of technologies that reduce freight costs and impacts**
Create new opportunities to improve the customer experience, efficiency and the sustainability of the freight transport system by facilitating the introduction of new technology.

5 **Reduce the regulatory burden on industry**
Implement better regulation and enforcement in partnership with the national transport regulators, and ensure that regulations are not a burden to the efficiency of freight across the supply chain and to the implementation of new technology.

6 **Ensure safe, efficient and sustainable freight access to places**
Ensure an efficient, safe and effective freight network to meet the need of our three growing cities, balancing the expected growth of the freight task with the broader safety, environmental and amenity objectives for the transport network.

Figure 32: Priority Action Areas

4.1 Strengthen freight industry and government partnerships

We will work with industry to harness good ideas, and enable investment in strategic initiatives that benefit NSW to happen sooner.

NSW has a long history of successfully partnering with industry to deliver initiatives that provide mutual benefit to our industry partners, as well as the people of NSW. Engagement with industry is facilitated through existing formal arrangements, such as the NSW Freight Advisory Council (FAC), and through informal engagements with industry, including industry peak bodies, modal network managers, and key freight-using industries.

Transport for NSW will:

- collaborate with our industry partners for their valuable input and expertise to deliver our transport initiatives as efficiently as possible. Working together means that we can increase our capability and deliver the most effective solutions to the challenges we face
- provide timely and relevant information about our major projects and upcoming opportunities to our industry partners and suppliers. We will continue to do this with regular engagement opportunities, industry briefings and creating a culture of collaboration and open communication.
- continue to encourage industry to approach government with innovative infrastructure or service delivery solutions, where these have not been previously identified.

The direction for this Priority Action Area is to identify opportunities for industry and government to work together to harness opportunities and address challenges that will improve freight outcomes for all stakeholders.

4.2 Increase access for freight across the road and rail network

We will increase access on the shared network, and provide dedicated freight priority on selected sections of network.

To meet the growth in freight demand, increased safe access to both the road and rail network between key freight facilities, gateways and corridors is essential. Current restrictions result in longer travel distances, increased journey times, or number of freight movements on the network, exacerbating existing constraint issues. Transport for NSW will:

- expand the road and rail network to improve connectivity and accessibility for high productivity vehicles and efficient rail wagon loading
- explore the implementation of dedicated freight lanes on key freight corridors on the strategic road network, outside of peak periods, to help to improve safety and support efficient, reliable freight movements
- pursue opportunities to provide dedicated rail networks for passengers and freight, to reduce sharing of busy rail corridors which reduces the ability to deliver increased off-peak passenger frequencies and increased freight capacity to support long-term needs

- build strategic road freight networks in partnership with local government.

The effective staging of full segregation of the rail network presents the opportunity to ensure that the busiest freight corridors are given greater capacity. These corridors include those between intermodal terminals, international gateways, and links to regional areas.

The direction for this Priority Action Area is to improve reliability of freight movements by providing greater access to the shared road and rail networks, and ensure that on our busiest freight corridors the rail network will support 24/7 access for freight.

4.3 Protect existing freight precincts and ensure sufficient future land use

We will improve access to existing freight precincts, and protect the land necessary for future precincts to underpin the value of these facilities.

The performance of port and intermodal terminals and surrounding precincts is strongly linked to the performance of the supporting freight transport network. Encroachment of urban development around key freight precincts such as Port Botany has seen an increase in congestion on already constrained freight corridors. This results in increased costs and declining productivity, acting as a restriction on business operations.

Transport for NSW will:

- act to secure sufficient land for freight precincts, as well as identify and protect transport corridors to lower costs of development and maximise development potential
- looks at strategies to address urban encroachment
- plan for future growth in movement of goods across NSW, and within both Greater Sydney and regional areas, improving the efficiency of supply chains and overall freight productivity.

The direction for this Priority Action Area is to maintain and enhance access to existing freight precincts to improve the efficiency of the supply chain, protect corridors and land for freight activities and take account of freight in future strategic planning activities.

"Ports and associated freight precincts are of the utmost economic and social importance to New South Wales."

4.4 Facilitate introduction of technologies that reduce freight costs and impacts

We will shape and provide the most customer-centric, innovative and, digitally-enabled transportation system in Australia.

NSW is already leading the way in this area. For example, enrolment in the Intelligent Access Program (IAP) is a road condition for Higher Mass Limits (HML) vehicles operating in this state. It uses satellite tracking and wireless communication technology to remotely monitor where, when and how heavy vehicles are being operated on the road network in exchange for increased access and productivity.

NSW has developed the largest Cooperative Intelligent Road Transport System (CITS) test facility in the Southern Hemisphere. Located in the Illawarra region, CITS allows vehicles to communicate with other vehicles and infrastructure, such as traffic signals, that are fitted with the same system. Drivers then receive alerts about upcoming hazards that could cause a crash.

Transport for NSW will:

- develop and connect real-time digital information, navigation, payment and engagement platforms that are simpler to understand, easier to use and can give personalised services relevant to individual industry needs and preferences
- pursue national standards for the road infrastructure, systems and regulatory frameworks needed to adopt greater levels of vehicle automation earlier, and identify how best to deliver the benefits that autonomous vehicles can bring
- create intelligent transport networks, managed with data, that enable increasingly efficient, flexible and dynamic service delivery with improved safety, access, reliability and responsiveness
- continue to enhance freight data and models, in collaboration with industry and technology partners to support the delivery of innovative solutions to improve freight efficiency.

We will adopt the practices of technology leaders in other sectors. Innovative solutions will be co-developed with a broad range of industry partners. Where needed to enable early and safe adoption, planning and regulatory frameworks will be adjusted, and rules and standards amended.

The direction for this Priority Action Area is to create new opportunities to improve the customer experience, efficiency and the sustainability of the freight transport system by facilitating the introduction of new technology.

Figure 33: We will reduce the regulatory burden on industry to minimise the cost of moving goods.

4.5 Reduce the regulatory burden on industry

We will reduce the regulatory burden on industry to minimise the cost of moving goods.

Disparate regulations and excessive red tape for the freight industry increase the cost, and often add to the complexity of moving goods across NSW.

Transport for NSW will:

- work with industry to identify where specific regulations can be eased without impacting on safety or amenity, reducing the cost of moving goods in NSW
- pursue harmonisation of access arrangements across state borders to make transportation easier, and reduce the regulatory burden on industry
- pursue harmonisation within NSW, to encourage regional shire councils to allow access for Higher Productivity Vehicles.

The direction for this Priority Action Area is to implement better regulation and enforcement in partnership with the national transport regulators, and ensure that regulations are not a burden to the efficiency of freight across the supply chain and to the implementation of new technology.

"Disparate access arrangements across state borders, and even across regional shires increases the complexity of the freight task."

4.6 Ensure safe, efficient and sustainable freight access to places

We will provide a safe, efficient and sustainable transport system connecting our three cities and key centres. The Movement and Place Framework uses five tiers to improve network performance, safety and place-making. These tiers are:

- motorways
- movement corridors
- vibrant streets
- places for people
- local streets

The provision of effective tiered transport infrastructure and services within and between the three cities in Greater Sydney (Sydney, Parramatta and Western Sydney Airport) is essential to ensuring that freight movement is optimised, and residential amenity is protected.

Transport for NSW will:

Explore the implementation of initiatives to facilitate freight access to key urban centres including:

- efficient ways of moving freight through the five network tiers
- managing freight movement through places with better land use integration and planning
- maximising the potential of the latent capacity in the network throughout the 24 hour period
- ensuring access to network information to assist efficient freight planning
- promoting alternative last mile modes that are safe, sustainable and efficient within urban centres
- investigate key arterial road and country rail branch lines to establish ways to better connect important regional centres

The direction for this Priority Action Area is to ensure an efficient, safe and effective freight network to meet the need of our three growing cities, balancing the expected growth of the freight task with the broader safety, environmental and amenity objectives for the transport network.

"A simpler system that optimises the movement of people and goods, delivering safer and better journeys for customers."

5. Investment initiatives and investigations

5.1 Overview

The NSW Freight and Ports investment initiatives and investigations align with the Future Transport Services and Infrastructure Plans' outcomes.

Supporting the Future Transport 2056 Strategy will be Services and Infrastructure Plans that set customer outcomes and define the network required to achieve those customer outcomes.

The investment initiatives are aligned to the outcomes set out in the Services and Infrastructure Plans and will deliver upon the six Priority Action Areas outlined in Part D.

These investment initiatives will be the subject of further development and consultation with community, local government and industry stakeholders.

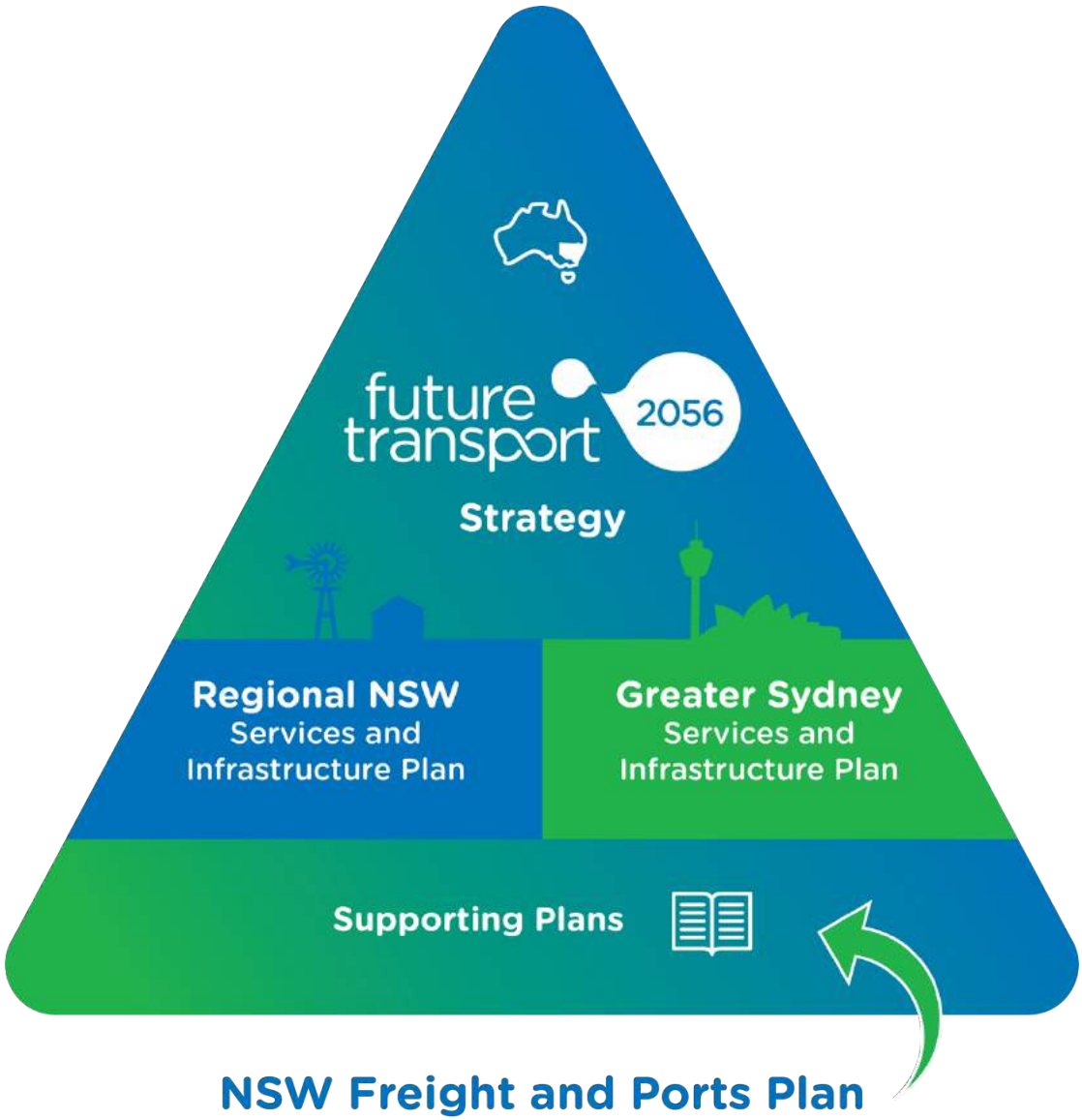


Figure 34: Overview of Future Transport 2056

A flexible, agile investment approach

Our investment approach is designed to be flexible, responding to change and uncertainty.

The draft timeframes are indicative, based on preliminary evidence, of when potentially these initiatives may need to be implemented or committed. Capital constraints will mean that initiatives will need to be prioritised and business cases for investment confirmed.

Further investigation of all initiatives in the final Plan will be undertaken within the next 10 years to ensure any major impacts in growth patterns or use are considered.

5.2 Greater Sydney Initiatives

0-10 Year Initiatives: Committed

- **Western Sydney:** Protect corridors for a future Western Sydney Freight Line, Outer Sydney Orbital Freight Line and Western Sydney Fuel Pipeline, and secure supporting, connected intermodal terminal precincts
- **International Trade Gateways:** Detailed planning to support the Port Botany Precinct and Kingsford Smith Airport as primary international trade gateways
- **Cargo Movement Coordination Centre:** Continue to improve freight rail and road efficiency and reliability through the port interface, including implementing the recommendations of the Port Botany Rail Operations Group
- **Moorebank Intermodal Terminal:** Construction of road infrastructure to support the intermodal terminal following operational start in late 2018 or early 2019
- **Freight Sustainability and Resilience:** Continue delivery of the Freight Noise Attenuation Plan
- **WestConnex:** Complete construction
- **Sydney Gateway:** Start construction
- **Central and East Sydney:** Complete Airport East road infrastructure upgrade and remove General Holmes Drive level crossing
- **NorthConnex:** Complete construction
- **Western Sydney Airport:** Support Commonwealth delivery of the Western Sydney Airport and identify supply chain efficiencies for NSW to capitalise on the investment.

Figure 35: Committed Initiatives (0-10 years) for Greater Sydney

0-10 Year Initiatives: We plan to investigate

- **Port Botany Precinct Planning:** Completion of the duplication of the Port Botany Rail Line and capacity upgrades to Foreshore Road at Port Botany. Investigation of truck only lanes in the Port Precinct
- **Freight Technology Improvements:** Identify and implement technology solutions to improve the efficiency of freight movements in Metropolitan areas, with a view to increasing the mode shift to rail over time
- **Freight Sustainability and Resilience:** Identify constraints to the ongoing performance of freight networks due to a changing environment, and community expectations
- **Metropolitan Rail Transfer Station:** Support the development of an Intermodal terminal to handle bulk waste and recycling materials originating in the growing Sydney metropolis
- **Fixing Metropolitan Roads:** Development of a grant funding initiative to resolve last mile freight constraints on key metropolitan council managed roads
- **Port Botany Rail Line Duplication:** Completion of duplication of the final 3kms of single line track
- **South Coast Rail Enhancement:** Providing additional capacity on the Main South and Illawarra rail lines
- **Southern Sydney Freight Line:** Construction enhancements to provide additional capacity to support expected growth in freight traffic
- **Freight Innovation Projects:** Investment in new technology and trials that deliver system integration, efficiencies and improved safety.
- **Additional cruise ship capacity:** Investigate improving ferry and ground transport connections to White Bay cruise terminal.
- **Northern Sydney Freight Corridor:** Supporting separation of freight and passenger trains by investing in freight capacity between Sydney and the Central Coast.

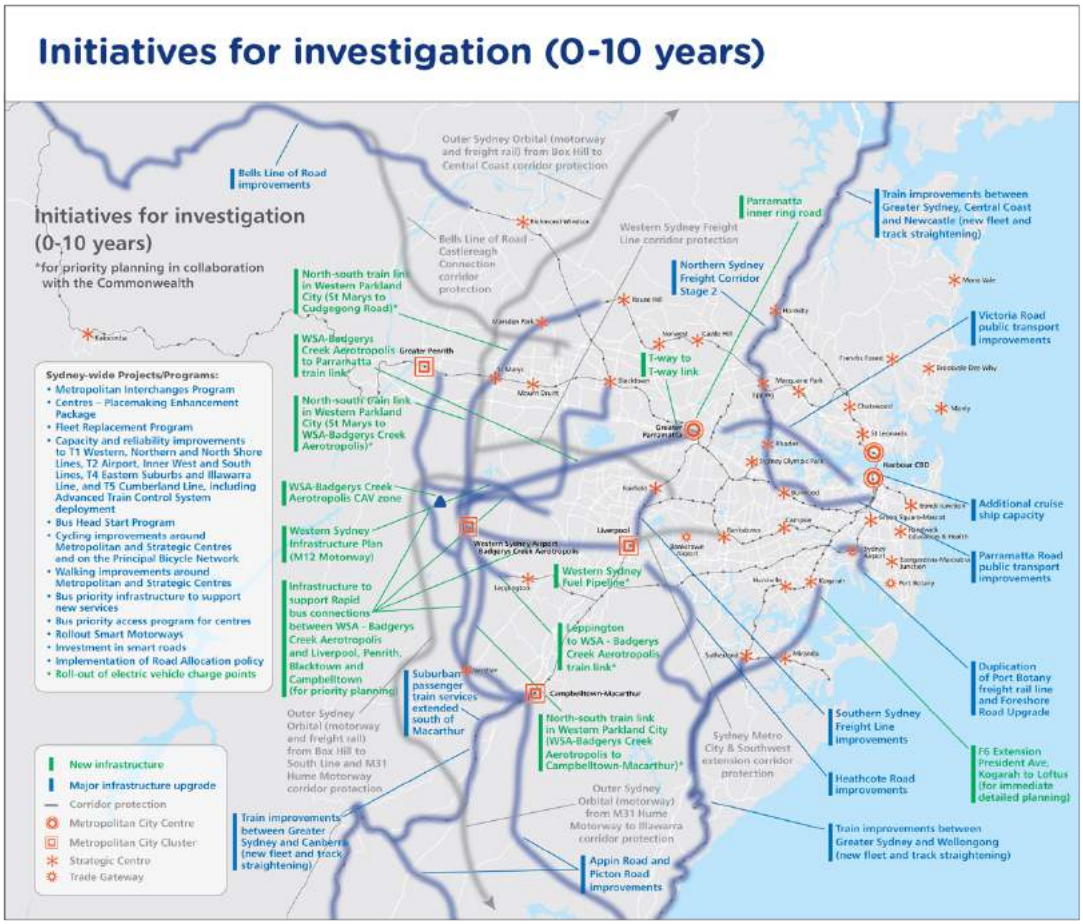


Figure 36: Initiatives for Investigation (0-10 years) for Greater Sydney

10-20 Year Initiatives: We plan to investigate

- **Outer Sydney Orbital:** Construction of Stage 1, including dedicated freight rail to connect the National Land Transport Network with intermodal terminal precincts
- **Dedicated Freight Network Expansion:** Construction of the Western Sydney Freight Line and Intermodal, part of the Outer Sydney Orbital and Western Sydney Fuel Pipeline
- **Freight Rail Capacity Enhancements:** Providing additional or dedicated capacity for freight in the Southern Highlands, Illawarra and Main West rail lines
- **Northern Sydney Freight Corridor:** Completion of Stage 2 works
- **Shared Network Improvements:** Enhancements to the shared rail network to improve efficiency of freight and passenger train services
- **Southern Sydney Freight Line:** Construction enhancements to provide additional capacity to support expected growth in freight traffic
- **Freight Innovation Projects:** Investment in new technology and trials that deliver system integration, efficiencies and improved safety.

Figure 37: Initiatives for Investigation (10-20 years) for Greater Sydney

20+ Year vision initiatives

- **Automation:** Investigation of the potential for automation of freight movements between ports and inland terminals
- **Freight Separation:** Continuing to plan for the separation of freight from passenger tasks on key shared networks to optimise performance for both freight and passenger services
- **Outer Sydney Orbital:** Completing the full Outer Sydney bypass, including dedicated freight rail to connect with intermodal terminal precincts.
- **Address long term capacity constraints to Port Botany and South East:** Investigation of new train and road links to address longer-term capacity constraints on selected corridors.

Figure 38: Visionary Initiatives (20+ years) for Greater Sydney

5.3 Regional NSW Initiatives

0-10 Year Initiatives: Committed

- **Fixing Country Roads:** Provide grant funding to regional councils to improve connectivity and productivity for freight movements on local and regional roads to state highways and key freight hubs. Strategic investment in regional network capacity enhancements to deliver infrastructure that meets the rail operator requirements
- **Fixing Country Rail:** Upgrading the regional rail network to improve the productivity and competitiveness for NSW exports and reduce costs for domestic supply
- **Higher Productivity Access Initiatives:** Continue to support and develop initiatives to improve efficient and higher mass limit freight movement in regional NSW. Current industry-focussed initiatives include Harvest Management Schemes and the Livestock Loading Scheme
- **Bridges for the Bush:** Construct Bridge replacements to remove significant freight pinch points on the state road network
- **Pacific Highway:** Complete dual carriageway construction
- **Inland Rail:** Support Commonwealth delivery of the Inland Rail project and identify supply chain efficiencies for NSW to capitalise on the investment
- **Main West Capacity Enhancements:** Complete Stage 1 and 2 construction projects.
- **Eden Cruise Terminal development:** extend the Eden Breakwater Wharf to enable cruise ships of up to 325 metres to berth
- **Newcastle Cruise Terminal development:** Complete construction of the Newcastle Cruise Terminal building and associated facilities.

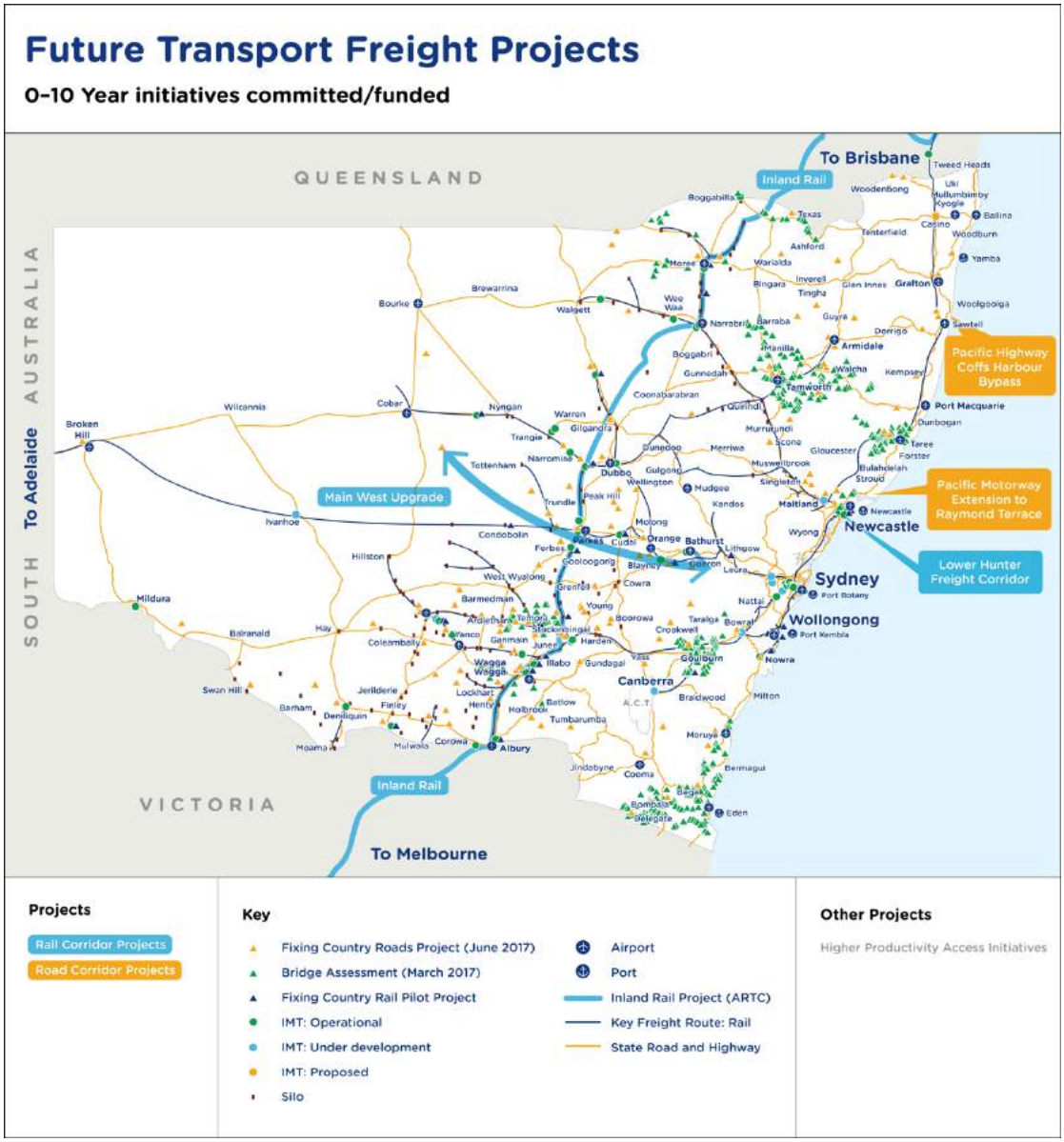


Figure 39: Committed Initiatives (0-10 years) for Regional NSW

0-10 Year Initiatives: We plan to investigate

- **Freight Innovation Policies:** Supporting the introduction of modern, safer HPVs on to the road network and new technology locomotives and rolling stock to the rail freight network
- **Automation:** Investigating and conducting automation trials for freight vehicles operating on remote or isolated networks for instance, platooning and automated vehicles.
- **Lower Hunter Freight Rail Corridor:** Protection of the corridor to improve freight efficiency and capacity. A freight rail bypass of Newcastle city will ameliorate noise and level crossing impacts
- **Freight Technology Improvements:** Identifying and implementing technology solutions to improve the effectiveness of regional freight services, with a view to increasing the mode shift to rail over time
- **Freight Sustainability and Resilience:** Identifying constraints to the ongoing performance of freight networks due to a changing environment and community expectations. Investigating the feasibility for a Hunter to Orana Fuel Pipeline including market testing
- **Port of Newcastle:** Supporting private sector investment in the development of the Kooragang Island Terminal 4 at Newcastle
- **Inland Rail:** delivering NSW infrastructure to support early benefits to the state from Commonwealth delivery of the Inland Rail project
- **Newell Highway Upgrades:** Constructing upgrades for connectivity safety and capacity. Investigate where PBS 3A capacity can be increased west of the Newell Highway, especially where it supports Inland Rail Project
- **Golden Highway Corridor Upgrades:** Completing construction.

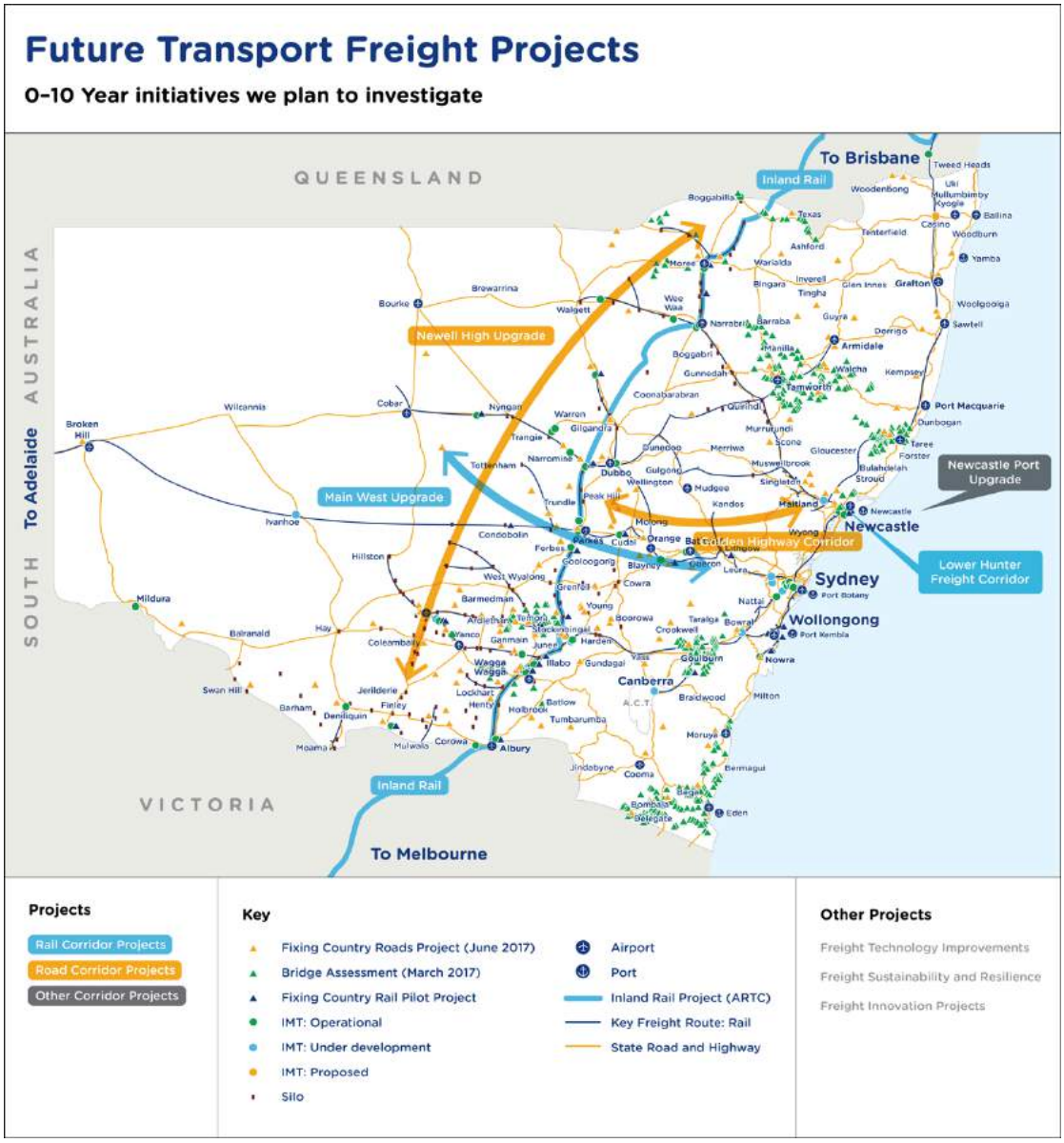


Figure 40: Initiatives for Investigation (0-10 years) for Regional NSW

10-20 Year Initiatives: We plan to investigate

- **Inland Rail:** Identifying supporting infrastructure needed to fully integrate NSW regional supply chains and the planned Inland Rail project
- **Lower Hunter Freight Corridor:** Constructing the Lower Hunter Freight Corridor
- **Hunter-Orana Fuel Pipeline:** Investigating pipeline construction to serve Regional NSW fuel needs
- **Freight Rail Capacity Enhancements:** Strategic investment in regional network capacity enhancements to deliver infrastructure that meets the requirements of operators e.g. Liverpool Range rail access improvements
- **Freight Sustainability and Resilience:** Identifying constraints to the ongoing performance of freight networks due to a changing environment and community expectations. Investigate the feasibility for a Hunter to Orana Fuel Pipeline including market testing
- **Great Western Highway:** Planning capacity enhancements crossing the Blue Mountains
- **Coastal Shipping:** Investigating port enhancements to support coastal shipping
- **Freight Innovation Projects:** Supporting the introduction of modern, safer HPVs on to the road network and new technology locomotives and rolling stock to the rail freight network.

Figure 41: Initiatives for Investigation (10-20 years) for Regional NSW

20+ Year vision initiatives

- **Freight Separation:** Continuing to plan for the separation of freight from passenger tasks on key shared networks to optimise both
- **Alternate freight modes:** Investigating the potential for air and marine networks for domestic freight flows
- **Outer Sydney Orbital - Illawarra Connection:** in future - M31 future investigations will identify a connection between the M31 Hume Motorway and the Illawarra to improve freight capacity and reliability
- **Outer Sydney Orbital - Central Coast Connection:** future investigations will identify a connection between Box Hill and the Central Coast to improve freight capacity and reliability.

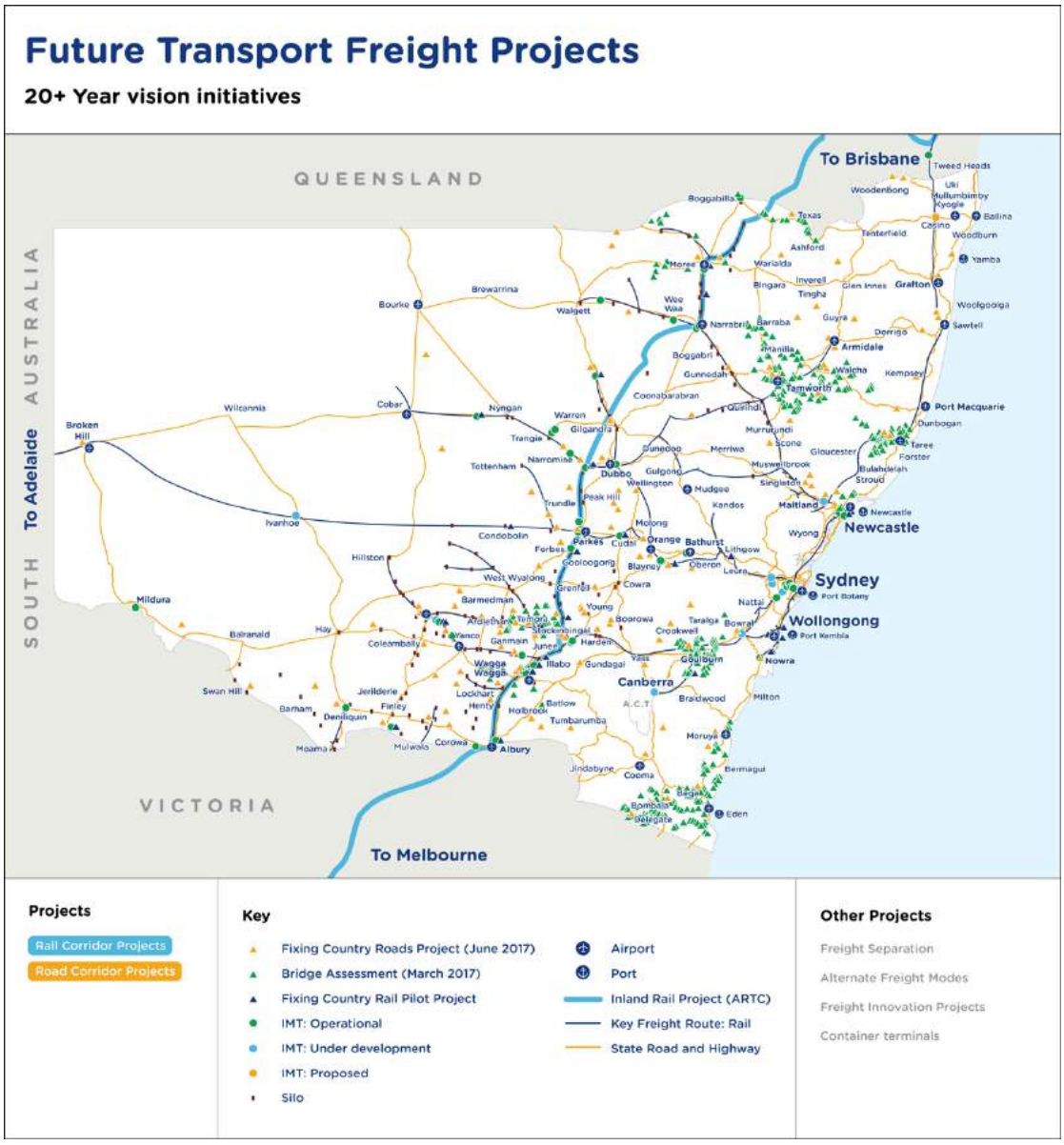


Figure 42: Visionary Initiatives (20+ years) for Regional NSW

6. Consultation and next steps

Figure 43: Road Freight, Griffith

6.1 Next steps

Engaging and consulting

Industry and local government consultation

Early consultation is already underway, with further consultation with industry and local government to be undertaken using this draft plan as a platform.

This engagement will be in the form of face-to-face briefings, round table discussions, webinars and submissions.

Developing the NSW Freight and Ports Plan

In parallel with the consultation and the public comment processes there are a number of activities we need to continue to be able to develop the NSW Freight and Ports Plan. These are outlined on the following page.

ENGAGING AND CONSULTING

1. **Data Collection**
   Providing additional evidence based data modelling to evaluate feedback submissions from industry and government
2. **Challenges and Opportunities**
   Ensuring we have captured and explained all challenges and opportunities
3. **Priority Action Areas**
   Confirming the Plan's Priority Action Areas
4. **Strategies, Action and Projects**
   Working with Future Transport to develop Services and Infrastructure Plans for Greater Sydney and Regional NSW
5. **Options Analysis**
   Understanding which strategies, actions and projects will best deliver on the Priority Action Areas
6. **Stakeholder Consultation**
   This draft Plan provides a platform for further robust consultation to inform the development of the final Plan
7. **Performance Measurement Framework**
   Developing measures and performance targets and accountability for delivery to drive improvements in outcomes
8. **Implementation and Governance**
   How we will work with government, industry and the community to deliver the NSW Freight and Ports Plan
9. **Finalise the plan**
   Presenting the NSW Freight and Ports Plan to support your interests

Figure 44: The Engaging and Consulting Process

6.2 Timeline for consultation

Pathway to the final NSW Freight and Ports Plan

Public Comment Period

The broader community and stakeholder groups will have the opportunity to review and make comments on the draft NSW Freight and Ports Plan through a public comment period until 25 March 2018.

Following the public comment period, all responses will be considered and the draft will be updated to incorporate this feedback where appropriate. The final NSW Freight and Ports Plan is scheduled to be released in 2018 to align with the overarching Future Transport 2056 Strategy.

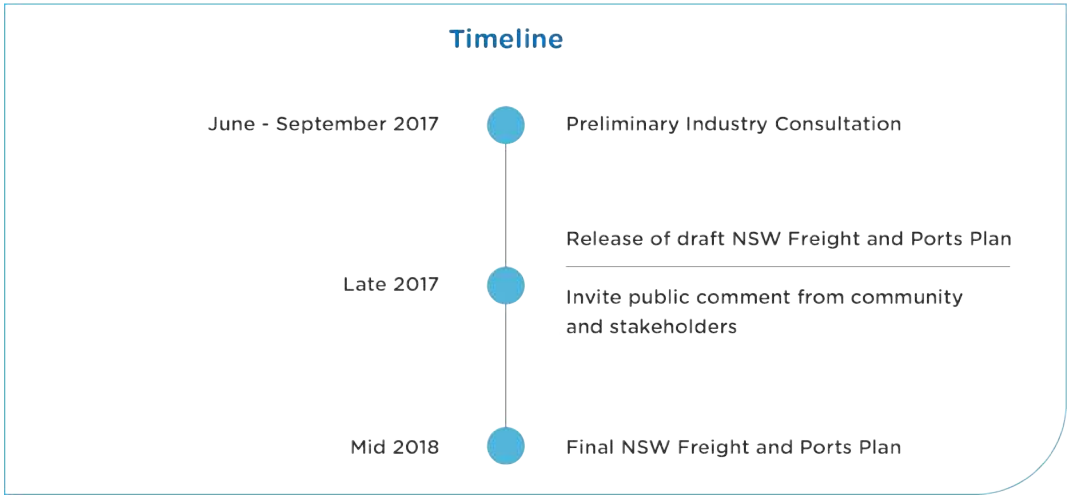


Figure 45: Timeline for Consultation

7. Glossary and appendices

7.1 Glossary

Term	Explanation
B2C	Business to consumer
Disruption	Disruption from a technological perspective is the introduction of new technology that bypasses the support network for existing technology
ETCS	European Train Control System
FMCG	Fast-Moving Consumer Goods – Typically sold in supermarkets and discount stores
GVA	Gross Value Added
HML	High Mass Limits – a scheme allowing heavier vehicles enrolled in the Intelligent Access Program to be loaded above General Mass Limits
HVCC	Hunter Valley Coal Chain
IMEX	Import / Export Terminal
IMT	Intermodal Terminal – An area of land used to transfer freight between at least two modes of transport
ITS	Intelligent Transport Systems
LCV	Light Commercial Vehicle – commercial carrier vehicles generally with a gross vehicle weight of up to 4.5 tonnes
Mode Share	The percentage of trips made by a particular mode of transport (e.g. road, or rail)
Mt	Megatonne (i.e. one million metric tonnes)
Mtpa	Million tonnes per annum – unit of measurement for annual freight volumes
PBS	Performance Based Standard – Alternative approach for Heavy Vehicle configuration and route assessment
TEU	Twenty-foot Equivalent Unit – The international unit of measure used for standardising container throughput numbers

7.2 Appendix A

Status update of 2013 Strategic Action Programs

Status Update

The 2013 Freight and Ports Strategy was a 20-year road map, with strategic actions aligned accordingly.

We are currently four years into this 20-year road map, and the following progress has been made against these actions.

We will continue to report on strategic actions to be carried forward to the NSW Freight and Ports Plan. In many instances, the strategic actions will require ongoing activity on behalf of Transport for NSW.

Figure 46: Regional road freight

STRATEGIC ACTION PROGRAM 1 – NETWORK EFFICIENCY

Complete | In progress | Ongoing | Not carried forward

Task 1A-1	Establish and manage freight network performance indicators
Task 1A-2	Analyse the role of freight transport in the NSW economy
Task 1A-3	Maintain a single agency for streamlined data collection and strategic analysis
Task 1A-4	Develop purpose designed cargo movement models
Task 1A-5	Promote efficient movement of general road freight
Task 1B-1	Build the case for off-peak freight handling for planning purposes
Task 1B-2	Support the growth of off-peak freight movement through industry informed policy development
Task 1B-3	Identify the infrastructure and regulatory requirements for off-peak freight handling
Task 1C-1	Maintain dialogue with national regulators to support the interests of freight
Task 1C-2	Improve cross border freight flows
Task 1D-1	Develop national heavy vehicle charging and investment reforms
Task 1D-2	Provide necessary infrastructure to support High Productivity Vehicle access
Task 1D-3	Improve access for High Productivity Vehicles on State and local roads
Task 1D-4	Incorporate freight considerations into managed motorway access decisions
Task 1D-5	Manage oversize and overmass heavy vehicle movements
Task 1E-1	Conduct NSW Rail Access review
Task 1E-2	Secure current and future freight capacity requirements on the shared network
Task 1F-1	Understand the landslide movements which support efficient air cargo logistics
Task 1F-2	Incorporate the value of air cargo in planned infrastructure upgrades for the Port Botany and Sydney Airport precinct
Task 1F-3	Work with the Sydney Airport Corporation and Commonwealth to ensure a consistent approach to strategic airport planning
Task 1G-1	Improve the understanding of the role of coastal shipping in the NSW freight task
Task 1G-2	Work with industry in expanding the use of coastal shipping
Task 1H-1	Establish a NSW Cargo Movement Monitor
Task 1H-2	Improve network connectivity between networks and key freight precincts

Figure 47: Strategic Action Program 1 – Network Efficiency

STRATEGIC ACTION PROGRAM 2 – NETWORK CAPACITY

Complete | In progress | Ongoing | Not carried forward

Task 2A-1	Establish corridors to meet long term freight needs of NSW
Task 2B-1	Connect and complete Sydney's motorway network
Task 2B-2	Prioritise road infrastructure investments
Task 2C-1	Separate passenger and freight movements with network enhancements and rail alignments
Task 2C-2	Complete the Northern Sydney Rail Corridor
Task 2C-3	Ensure that there is sufficient rail infrastructure capacity from mine to port to meet coal demand
Task 2D-1	Develop a Port Botany growth plan
Task 2D-2	Develop a Port of Newcastle growth plan
Task 2D-3	Develop a Port Kembla growth plan
Task 2E-1	Foster intermodal terminals in metropolitan areas
Task 2E-2	Support the operation of regional intermodal terminals
Task 2F-1	Adopt a best practice reform model for regional infrastructure
Task 2G-1	Evaluate freight infrastructure through an investment framework
Task 2G-2	Maintain a program of projects for freight investment
Task 2G-3	Fund the infrastructure program

Figure 48: Strategic Action Program 2 – Network Capacity

STRATEGIC ACTION PROGRAM 3 – NETWORK SUSTAINABILITY

Complete | In progress | Ongoing | Not carried forward

Task 3A-1	Integrate land use planning and freight logistics
Task 3A-2	Enable efficient freight access
Task 3B-1	Recognise costs of congestion
Task 3B-2	Mitigate noise from freight operations
Task 3B-3	Mitigate emissions from freight operations
Task 3C-1	Support National Rail Safety Regulation
Task 3C-2	Improve heavy vehicle safety
Task 3C-3	Enhance port safety
Task 3C-4	Manage the transport and storage of dangerous goods
Task 3D-1	Develop strategies to attract and retain skilled workers

Figure 49: Strategic Action Program 3 – Network Sustainability

7.3 Appendix B

Regional NSW Services and Infrastructure Plan / NSW Freight and Ports Plan

ALIGNMENT OF OUTCOMES WITH PRIORITY ACTION AREAS

Draft Regional NSW Services and Infrastructure Plan	Draft NSW Freight and Ports Plan – Priority Action Areas					
Outcomes	1 Strengthen freight industry and government partnerships	2 Increase access for freight across the road and rail network	3 Protect existing freight precincts and ensure sufficient future land use	4 Facilitate introduction of technologies that reduce freight costs and impacts	5 Reduce the regulatory burden on industry	6 Ensure safe, efficient and sustainable freight access to places
A safe transport system for every customer with zero deaths or injuries on the network by 2056	✓	✓		✓		✓
A transport system which is resilient to significant weather events including floods, fog and bush fires		✓		✓		
Customers enjoy improved connectivity, integrated services and better use of capacity		✓		✓		✓
The appropriate movement and place balance is established enabling people and goods to move efficiently through the network whilst ensuring local access and vibrant places		✓	✓			✓
Increased accessibility to employment and services such as health, education, retail and cultural activities within Regional Cities and Centres	✓	✓		✓		
A transport system that adapts and embraces new technology	✓			✓	✓	
Changes in land use, population and demand, including seasonal changes, are served by the transport system			✓			
Flexible services are an integral part of the transport system helping to deliver the most appropriate type of service for customer needs				✓	✓	✓
Support the development of the Global Gateway Cities of Newcastle and Canberra	✓	✓		✓		✓
Improved efficiency of the network to/from/within the two Satellite Cities of Greater Sydney by 2056 - Gosford and Wollongong		✓	✓	✓	✓	✓

Figure 50: Alignment of Outcomes with Priority Action Areas