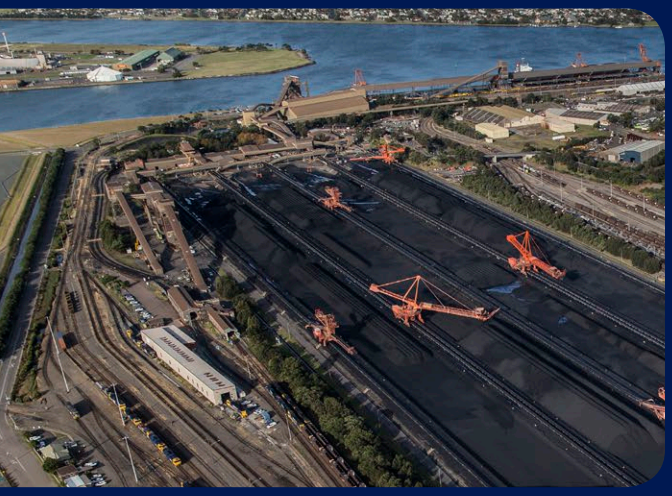
NSW FREIGHT AND PORTS STRATEGY

November 2013

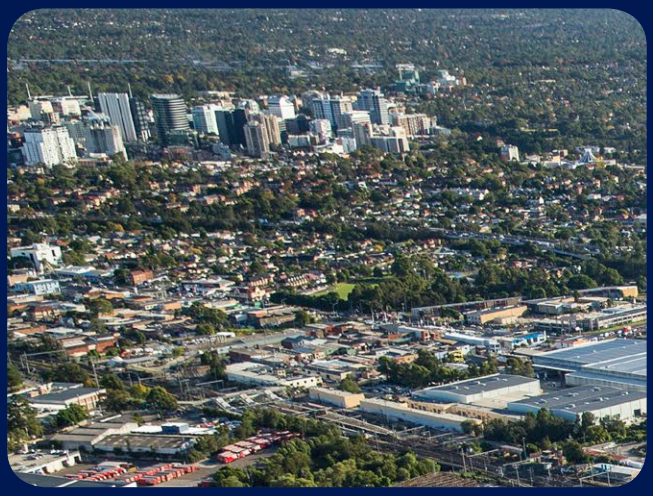


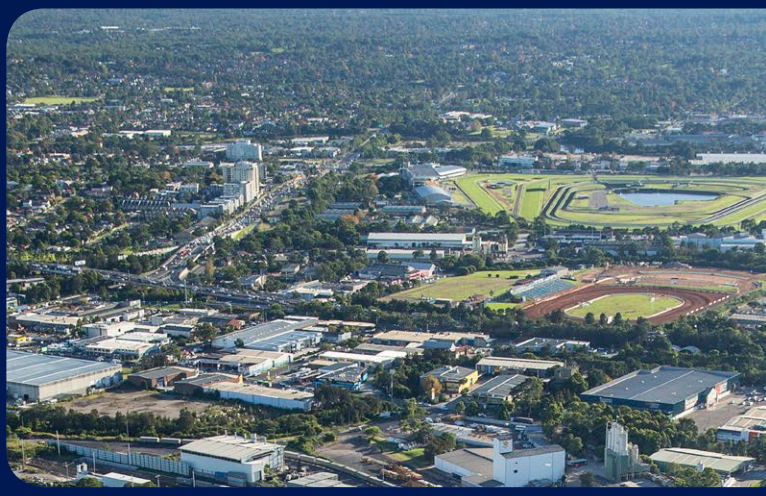




NSW NOW The new state of business

NSW GOVERNMENT





NSW Freight and Ports Strategy
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Transport for NSW
18 Lee Street
Chippendale NSW 2008

www.transport.nsw.gov.au

MINISTERS' MESSAGE

The release of the final NSW Freight and Ports Strategy is an important milestone for NSW. The first of its kind delivered by a NSW Government, the Freight and Ports Strategy is the 20 year road map that will ensure freight is at the forefront of our economy.

In December we released the NSW Long Term Transport Master Plan, the first integrated transport strategy we have had in NSW. It brings together land use planning with transport planning and integrates planning for freight and passenger movement, as well as all modes of transport.

The scale of the freight task over the next 20 years warrants decisive action by government. The expected doubling of freight volumes through NSW to nearly 800 million tonnes by 2031 requires a strategic focus to ensure policy, infrastructure and land-planning initiatives deliver a freight network where capacity and performance can meet demand.

An efficient and effective freight network is the cornerstone of economic productivity and growth. It reduces the cost of everyday goods and services, underpins the strength of our economies, and generates vital employment. Freight matters to every person in the State.

Underpinning this Strategy is the need to address the significant challenges NSW will face in the next 20 years amidst the doubling of the State's freight task. These challenges include: increasing the efficiency of the existing network infrastructure, expanding network capacity to support economic growth, funding infrastructure construction and funding the growing operations and maintenance task in line with increasing utilisation of the network.

Concurrently the needs of industry, community expectations and sound environmental management practices must underpin our decisions. This Strategy is the NSW Government's call to action in developing, implementing and evaluating programs to meet these challenges through an integrated and collaborative approach across all levels of government and industry.

The NSW Government has partnered with industry and the community to develop the Freight and Ports Strategy. A four month consultation period following the draft Strategy's release in November 2012 was instrumental in strengthening this Strategy, ensuring valued perspectives on key issues raised such as air freight, coastal shipping, regional road freight productivity and infrastructure funding were integrated in the final version.

On behalf of the NSW Government, we thank the community, freight industry and government departments from local, state and federal jurisdictions for their valued contribution to the development and delivery of the final Freight and Ports Strategy.

Gladys Berejiklian
Minister for Transport

Duncan Gay
Minister for Roads and Ports

NSW NOW
The new state of business

CONTENTS

The Central Tablelands Livestock Exchange (CTLX) is located 10km south of Blayney near Carcoar on the Mid Western Highway (B64). The CTLX equips the Central Tablelands with a state of the art livestock auction facility that provides a competitive market for buyers and sellers. CTLX is one of the most advanced livestock facilities in Australia today. It provides separate cattle and sheep selling pavilions with capacity to hold 26,000 sheep and 3,900 cattle undercover. The renewal of ageing regional infrastructure with efficient best practice facilities and infrastructure will ensure the competitiveness of NSW business. Investment by business needs to be supported with a transport network that does not constrain operations and eliminates unnecessary costs.

FOREWORD

It's all about logistics

The movement of freight is a basic element of logistics. In NSW, the freight movement task is mainly undertaken on a shared transport network where the movement of freight and the movement of people compete for space. As government primarily provides the physical network, and access to it, there is an inexorable link between the actions of government and the performance of logistic tasks across the economy.

The bulk commodities that are exported, the containers that carry general goods, the food people consume and the clothes they wear, all at some time, use the railways, roads, airports and waterways that are also used by travellers for work and recreation. There are some parts of the network, such as rail lines in regional NSW, that are used specifically for the movement of grain and coal. However, the interaction of the movement of freight with the movement of people generally happens across the network.

The scale of the transport management task is formidable. In NSW, 67 billion tonne kilometres of freight is moved annually and the value of the products carried exceeds $200 billion. Transport of freight is critical to the State economy and the efficiency of the transport network contributes to the success and growth of NSW as well as being significant to maintaining national defence interests and capability. Conversely, inefficiencies, friction and capacity constraints in the transport network add costs for manufacturers, producers and consumers.

An efficient transport network is a basic requirement for economic growth. Regardless of the commodity or industry, the ability to get goods to market at the right time and sell them at the right price is a cornerstone of a free market economy. This Strategy aims to support and promote effective and efficient freight movement by rail, road, sea and air.

This document explains how Transport for NSW will work with commercial interests and across government to provide an efficient network and a framework for managing growth. It highlights short, medium and long term tasks to improve freight movement on the network. This Strategy will inform government and commercial investment decisions across all modes of transport and allow for the alignment of purpose.

The role of government in the freight task focuses on delivering network capacity to enable supply chain efficiency. This includes removing obstacles for achieving best practice, creating capacity and, where necessary, becoming involved in the marketplace to ensure the network operates efficiently.

These actions will have to be achieved within available public funds, influenced by fiscal trends and the cost of infrastructure. Government can facilitate private investment, and will continue to balance the needs of industry and productivity with public amenity. It will concentrate on reducing network congestion and mitigating any noise and pollution impact on communities and the environment.

In addition to funding, the transport network also needs land. Future transport corridors, and land for logistics facilities, need to be protected. Knowing the capacity of the current network, and forecasting where and when growth will occur, will lead to the identification of areas where network expansion is required. The task will then be to coordinate planning between government and to reserve land to ensure network capacity is available in the right place and at the right time.

In other words, it's all about logistics.

Logistics is much more than transport.

When measured in 2011 freight and logistics contributed approximately $58 billion (14%) of the NSW Gross State Product.

1 INTRODUCTION

1.1 Economic context

Economic impact

Freight and logistics are an indispensable component of economic activity. An estimate of the proportion of Gross State Product (GSP) attributable to logistics significantly understates its contribution to the whole economy, as logistics is a facilitator or enabler of almost all economic activity. New industries are dependent upon efficient and low cost transport, and improved logistics can transform the economy.

The direct contribution of the freight transport industry can be quantified, but it is a fraction of the entire logistics sector. Direct measures of how logistics contributes to the economy are difficult to determine. Nevertheless, the freight transport industry remains a starting point on which broader estimates are based.

Data from the Australia Bureau of Statistics (ABS) reveals that:

- 128,000 people are directly employed in freight transport in NSW
- 3.6 per cent of the State is employed in freight transport
- NSW freight transport has an annual turnover of $21.2 billion and a Gross Value Added (GVA) of $13 billion, or 3.1 per cent of the GSP.

Although easily derived, these figures distinctly underestimate the size of the logistics industry in two ways.

Firstly, ABS estimates do not include transport activities that are embedded within other industries, such as the movement of freight by in-house services. In NSW, this in-house activity is generally agreed to cover about two fifths of the total freight market and can be captured with a multiplier of about 1.7.

Secondly, logistics is much more than just transport, with general agreement in previous studies that the entire logistics sector accounts for 2.2 to 2.5 times the freight transport component.

Applying these multipliers yields an estimate that GVA for freight and logistics in NSW was 13.8 per cent of GSP or $58 billion in 2011.

Using the same multiplier for employment increases the number of **people working in logistics in NSW to 500,000, or nearly 14 per cent of NSW employment**. Even these estimates do not capture the $8.8 billion spent on construction of roads, bridges, railways, harbours, and warehouses and the resulting economic activity that this construction generates.

Key drivers of demand

The largest NSW logistics task is the movement of goods within the state, which accounts for 62 per cent of freight volume and is dominated by coal and aggregates. Exports account for 15 per cent of freight volume, while movements of manufactured goods into and out of NSW account for nine and 11 per cent of freight volume respectively. Imports, at two per cent of freight volume, make up the rest of the NSW transport task.

The major driver for the movement of goods is demand, both domestic and international. The key indicators of the freight task are therefore the export of goods and State Final Demand (SFD) for goods.

For more than two decades, these indicators have shown a very high correlation with the gross value added by transportation. They have grown at average annual rates of 3.2 per cent over this period, compared to 3.4 per cent average growth for gross value added in the NSW transport, postal and warehousing industry. Annual growth in exports of goods and SFD are forecast to average nearly 4.0 per cent over the next five years.

CASE STUDY ① CASELLA WINES

Based at Yenda, 16 kilometres east of Griffith, Casella Wines is Australia's largest wine exporter. The winery employs over 500 people and exports approximately 10 million cartons of wine to over 50 countries around the world. The business has an annual revenue of $344 million, of which 85 per cent is export revenue.

The scale of the Casella Wines' production and logistics operation is significant to the Riverina and NSW. During harvest, over 250 trucks a day from across NSW, Victoria and South Australia deliver grapes to the winery. Some 160,000 tonnes of grapes are crushed and processed at the winery annually. This equates to 10 per cent of the entire Australian grape crush. To fulfil the demands of its international customer base, the company requires a world-class supply chain.

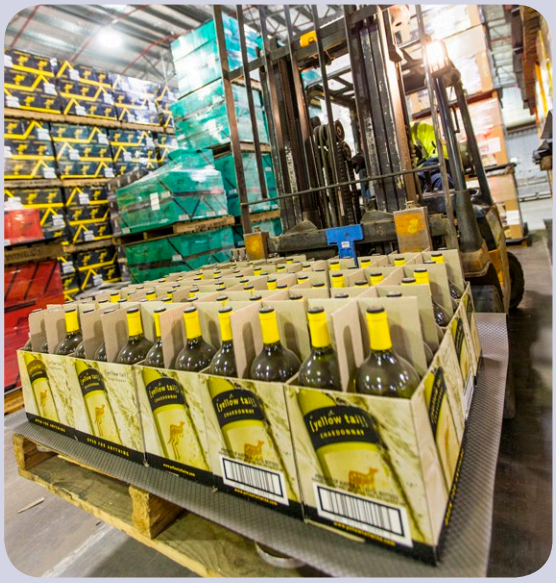
To meet this challenge Casella Wines has teamed with suppliers to fulfil production material requirements, invested in state of the art production and packaging equipment at Griffith and established cost effective and efficient transport solutions for product delivery. The company's latest bottling line is capable of bottling, boxing and palletising 36,000 bottles per hour.

On average, 35 twenty foot equivalent units (TEU) of bulk and bottled wine leaves Casella Wines every day, destined for the international market. Of the 12,775 TEU shipped annually, 79 per cent is destined for the US, where the Casella Wines' Yellow Tail brand is the most imported wine in the country. The bottled and bulk wine is exported via the Griffith intermodal terminal owned and operated by Patrick Logistics, with all the TEU moving through the Port of Melbourne.

The scale and interstate contestability of Casella Wines' freight task highlights the challenges faced by users of the NSW transport network. The market is highly competitive with wines from Italy, France, Spain, Chile and South Africa vying for consumer attention. Coupled with economic factors such as the high Australian dollar, Casella and other Australian exporters need to optimise supply chain efficiency to remain cost competitive.

Currently road transport operators hauling grapes to Casella Wines are hindered by High Productivity Vehicle access restrictions at various source locations through regional NSW. Minimising barriers to highly productive use of the road network would allow industry to reduce operational costs by moving more freight with fewer trucks.

Additionally the majority of Casella's export product initially travels 18 kilometres by road through the Griffith urban area and several school zones to reach the intermodal terminal for transfer to rail. The relocation of the intermodal terminal out of the built up area will mitigate noise and interaction with light vehicle traffic and reduce the impact on residents' homes.



Like other exporters in the Riverina, Casella Wines is positioned halfway between the international port gateways of Port Botany and Melbourne. The preferred export route is currently to Melbourne, because of efficient terminal-to-port rail corridors that allow timely freight rail movement at a lower cost.

Such decisions deprive the NSW Government and industry of revenue and employment opportunities generated from these freight activities. Only by expanding network capacity between regional areas and ports can Port Botany offer exporters a cost effective rail freight option to deliver their goods to market.

Effective land use planning is critical to increasing the attractiveness of NSW's rail freight network to industry. For example the development of an intermodal terminal closer to the Casella Wines facility and free of the current constraints would maximise connectivity between the company's freight point of origin and export market. If this facility was connected to the Sydney-bound Cootamundra rail line, Port Botany would have enhanced viability as an export hub.

Land use decisions that optimise the State and national freight networks, while achieving sustainability by minimising social impacts, will add value to the NSW economy.

Benefits of efficient logistics

Improvements in logistics have enabled increases in both the value and volume of freight transported. Lower costs have enabled new online markets to develop and greatly increased the output in others that rely upon improvements in coordination for just-in-time delivery.

Online trading has expanded rapidly, aided in part by improvements in freight and logistics that have lowered the cost of transporting goods direct to the customer. This has enabled smaller online operators, which are characterised by low volume and low cost freight requirements, to compete with established bricks and mortar retailers in a way that was impossible a decade ago.

Logistic management also enabled the Hunter Valley Coal Chain (HVCC), the largest coal chain operation in the world, to rapidly increase efficiency and output through a centrally managed coordinator tasked with minimising total logistics costs and maximising volumes.

With 40 different coal mines, owned by 11 coal producers, operating 30 different loading points, delivering coal along rail lines up to 450 kilometres in length to three different port terminals, the HVCC was not naturally efficient. It had suffered from a lack of congruence between mines' requirement for additional capacity and contracts with rail service providers for loading and shipping capacity.

The HVCC is now considered to be world leading and is expected to enable a threefold expansion in outputs from 68 million tonnes in 2000 to 205 million tonnes by 2014.

1.2 Purpose of the NSW Freight and Ports Strategy

The NSW Freight and Ports Strategy is a core component of the State's overall strategic planning framework. It supports the goals identified in NSW 2021 to:

- Rebuild the economy
- Return quality services
- Renovate infrastructure
- Strengthen our local environment and communities
- Restore accountability to government.

The *NSW Transport Administration Act 1988* was amended in November 2011 to create a single transport authority with responsibility for overseeing the entire transport system. The Act includes objectives focused on freight and economic development. This Strategy is the road map to meeting those legislative objectives.

This Strategy also responds to Infrastructure Australia's National Port Strategy and the National Land Freight Strategy. In addition, this Strategy is consistent with the objectives of the NSW Long Term Transport Master Plan.

This Strategy will provide a framework for industry, all levels of government and stakeholders to guide investment and other decisions to enhance freight logistics in NSW.

The NSW Freight and Ports Strategy identifies where government intervention is justified to enhance productivity and economic efficiency by addressing problems with the operation of markets and institutions, and balancing competing interests and impacts. Government intervention can be in the form of the provision of physical infrastructure, coordination and control, market structure reforms, co-investment with the private sector, regulartory reform and other economic incentives.

Having a NSW Freight and Ports Strategy means that any government intervention in the market is:

- Guided by a clear aim and achievable objectives
- Proportional and accurately targeted
- Monitored for performance and progress in achieving its objectives.

The NSW Government plays a key role in balancing the need for improved strategic planning, investment, coordination and regulation of freight movement with the need to minimise the impact of freight movement on local communities, the environment and other transport users.

A strategy for integrated planning and investment in the NSW transport network has many benefits. For example, it provides a framework for agreement on the long term investment needs to deliver essential network capacity, efficiency and compatibility with the wider national network so that competitiveness is not hindered by network constraints.

1.3 Strategy framework

Aim and objectives

The aim of the NSW Freight and Ports Strategy is to provide a transport network that allows the efficient flow of goods to their market.

In 2013, congestion and inefficiencies are evident in all network modes with the people of NSW paying the costs, both directly and indirectly. Providing a network that eliminates or at least minimises congestion will support economic growth and productivity and encourage regional development.

In support of this aim, Transport for NSW has developed freight specific objectives which reflect the importance of the freight transport network for a competitive and productive NSW economy, as well as the need to integrate freight transport with other productive and non-productive activities and land uses.

The objectives are:

- **Delivery of a freight network that efficiently supports the projected growth of the NSW economy**
- **Balancing of freight needs with those of the broader community and the environment.**

These objectives are to be taken in the context of a wider set of considerations for this Strategy, including the need for alignment with related strategies and plans such as NSW 2021, the NSW Long Term Transport Master Plan and the National Transport Policy Framework. This Strategy will also inform the development of Regional Transport Plans that will include further attention to regional freight needs.

The maintenance of existing partnerships with industry and government, as well as enabling the creation of new and sustainable commercial relationships, is pivotal to this Strategy.

NSW Freight and Ports Strategy framework

The NSW Freight and Ports Strategy has been structured into three 'Strategic Action Programs' that target specific challenges associated with the forecast doubling of the NSW freight task by 2031.

The aim, objectives and challenges of this Strategy, as well as the Strategic Action Programs, are illustrated in the framework diagram shown in Figure 1. It should be noted that many of the challenges and actions within this framework are linked, and these interdependencies are recognised in this Strategy.

Challenges

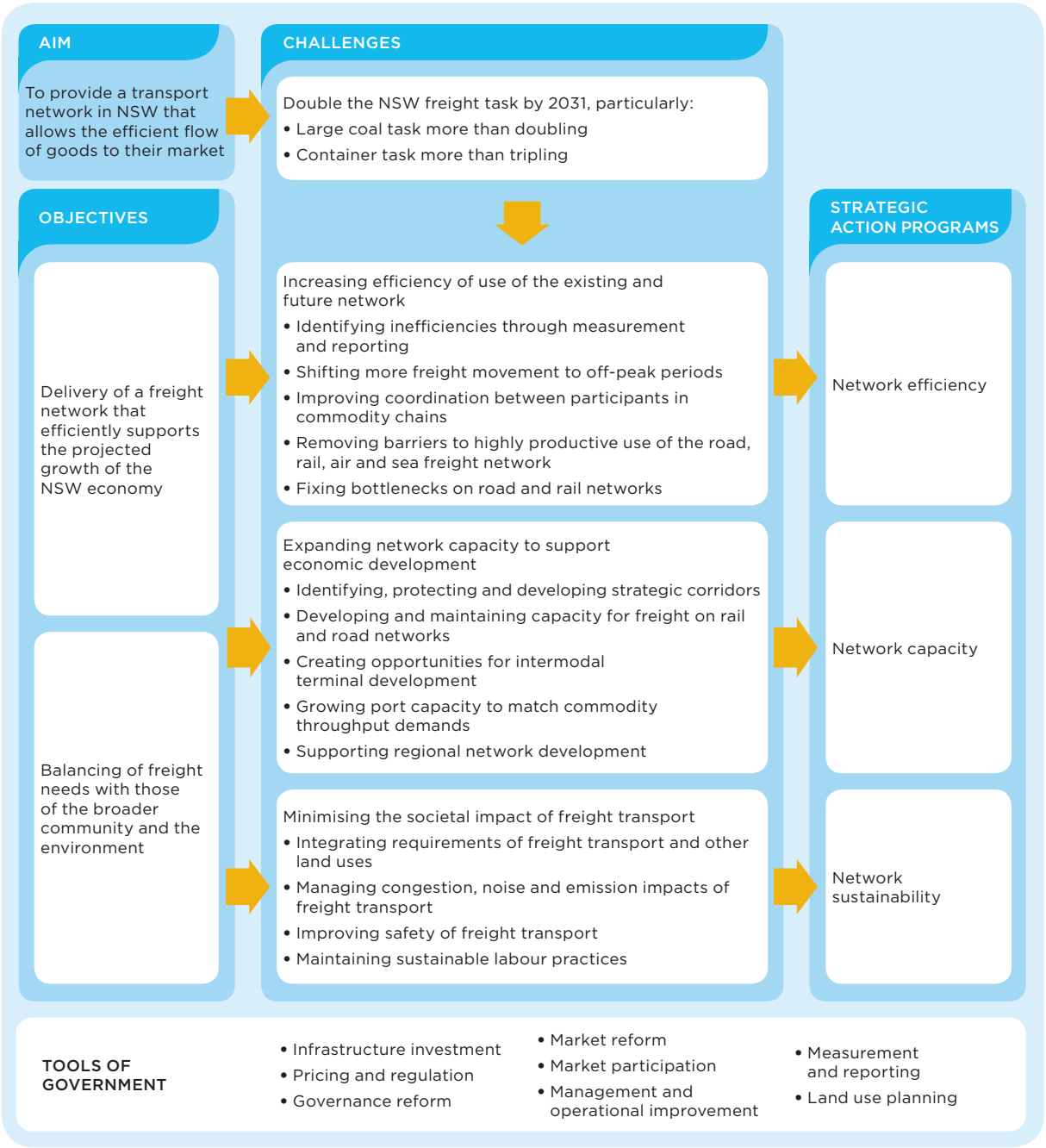
For the purposes of this Strategy, 'challenges' are defined as the targeted outcomes that need to be achieved in order to meet the objectives. The challenges associated with increases in freight volumes in NSW in the next 20 years are significant. They relate broadly to efficient network usage, network capacity expansion and sustainability. Within each of these broad challenges fall several more specific challenges that will need to be met in order to achieve the objectives. As shown in Figure 1, each set of challenges will be addressed by a Strategic Action Program.

Expectations

The NSW Government has a range of tools at its disposal to use in meeting the challenges of the freight task. The NSW community expects that any government involvement in the transport network is transparent, represents value for money and avoids unintended commercial consequences and social impacts, such as congestion and noise.

In turn, the expectation from government is that users of the transport network comply with transport and network regulations and perform their work efficiently, so that network performance is optimised. The shared goal is to create maximum economic value for NSW enterprises and the community.

Figure 1 NSW Freight and Ports Strategy framework



The NSW Government expects that the freight and logistics sector communicate demand forecasts to help inform government decision making in addition to the following:

- Create value for the economy through innovation
- Apply best practice methods in using the network
- Comply with regulation and pricing mechanisms, and where appropriate, cooperate with other network users so that finite network capacity is optimised.

NSW transport planning framework

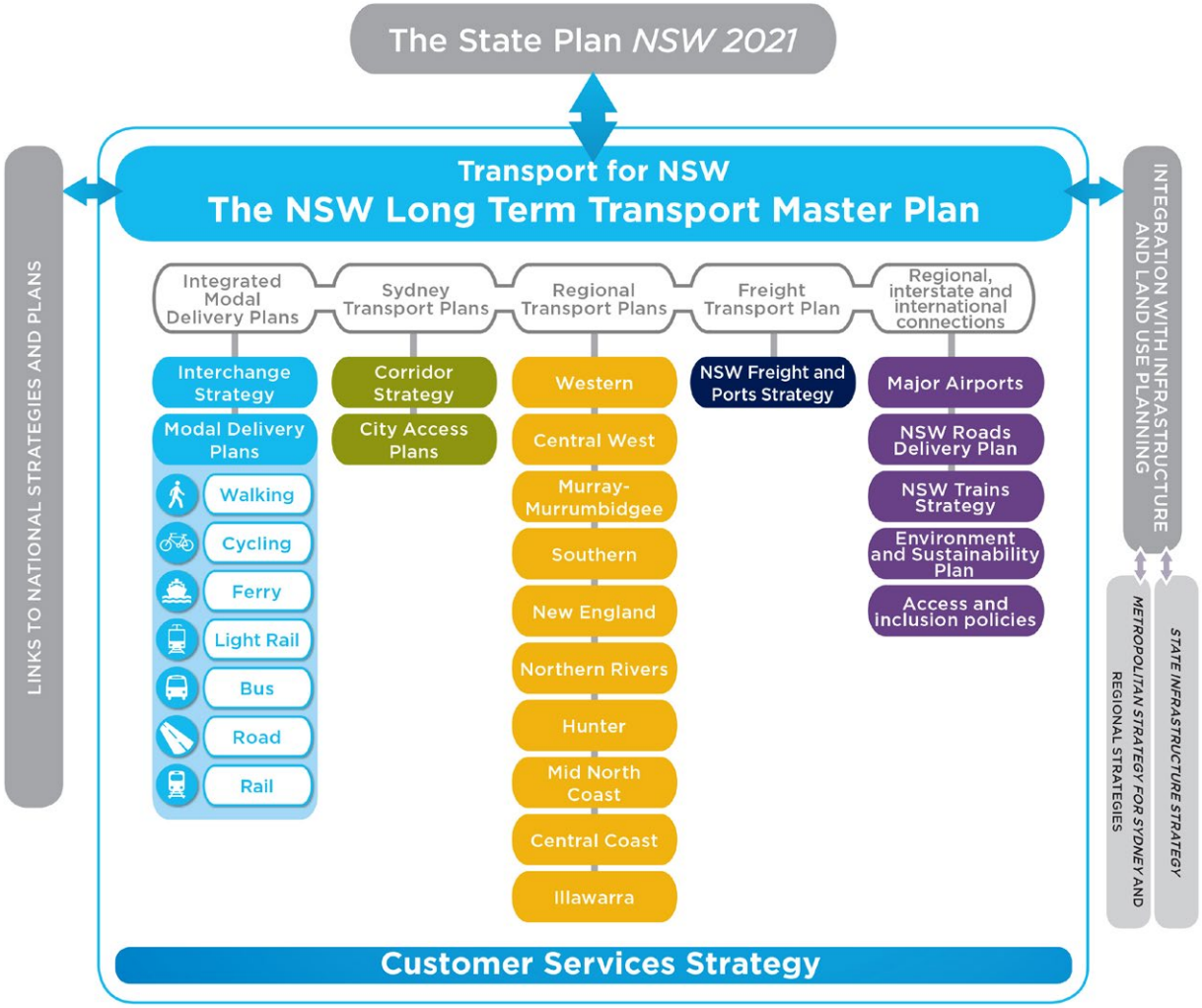
A 20 year timeframe, with 2011 as the base year, is used in developing Transport for NSW plans. The 2011 to 2031 timeframe has been used to develop volume forecasts referred to in this Strategy.

The Freight and Regional Development Division has developed the NSW Freight and Ports Strategy. The basis of this Strategy is previous work undertaken by transport agencies in NSW, as well as contemporary input from industry and stakeholders. A series of industry and public consultations was undertaken, as well as the review of submissions provided as part of the development of the NSW Long Term Transport Master Plan.

Decisions that impact the State's freight network are made as part of the NSW Government budget planning process.

The integrated planning process is shown in **Figure 2**.

Figure 2 The NSW transport planning framework. The NSW Freight and Ports Strategy provides specialist freight and logistics input to the NSW Long Term Transport Master Plan.



1.4 Development and implementation of the NSW Freight and Ports Strategy

Action prioritisation

The NSW Freight and Ports Strategy comprises three Strategic Action Programs, 19 Actions and 49 underlying Tasks. In order to ensure a high level of effectiveness and efficiency in implementing this Strategy, Actions have been prioritised according to the following criteria:

- Positioning to address objectives, challenges and demand requirements
- Targeted outcome (size, nature and timing of impact)
- Linkages and dependencies (potentially resulting in the creation of portfolios of related work)
- Difficulty and timing of implementation
- Cost and funding requirements.

The final section of this document incorporates this prioritisation (see Chapter 5).

Targets and measurement

In implementing this Strategy, Transport for NSW will develop a range of Key Performance Indicators (KPIs) that will provide the basis for ongoing assessment of network performance. The KPIs will draw upon those already established within some sectors of the transport and logistics industry, such as container movements by road and rail through Port Botany, as well as new indicators that measure network efficiency and capacity.

Historically, performance indicators have been established and monitored by individual organisations or groups of organisations. There have been few indicators related to overall supply chain efficiency. This segmentation has resulted in decisions being made on limited inputs, with few indicators shared between industry participants. Transport for NSW will build a single performance management framework, incorporating micro and macro level indicators.

An effective framework of targets and measures will provide a snapshot of freight network capacity, industry performance within key supply chains and the effectiveness of the State's freight transport operations for different modes. One of the key challenges in establishing the measures will be for all participants in the supply chain, and across industry, to share information which will enable decision making that benefits the freight industry and communities.

Updating this Strategy

This Strategy is built on a strong evidence base including advice from industry, local government and freight specialists. The Strategic Action Programs and tasks identified in this Strategy nominate a range of policy approaches and tools to ensure the transport network allows optimal performance by all users. Measurement and communication of performance are critical to continual improvement of and gaining maximum utility from the network.

There will be a continuous evolution of this Strategy through periodic review and assessment of Strategic Action Programs to ensure they remain relevant and on schedule. The process will encompass ongoing engagement with industry and government agencies. Monitoring and review of this Strategy is addressed further in Chapter 5.

The NSW road network is shared between bicycles, pedestrians, passenger vehicles, buses, light commercial vehicles, construction vehicles, and heavy trucks. Congestion, particularly during peak periods, is often incorrectly attributed to freight movements rather than passenger vehicles.

1.5 Strategic Action Programs summary

Strategic Action Program ① – Network efficiency

ACTION 1A Identify freight movements and network demand

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

ACTION 1B Shift more freight movements to off-peak periods

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

ACTION 1C Develop a seamless interstate freight network

Task 1C-1 Maintain dialogue with national regulators to support the interests of freight

Task 1C-2 Improve cross border freight flows

ACTION 1D Improve productivity of the road freight network

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

ACTION 1E Improve productivity of the rail freight network

Task 1E-1 Conduct NSW Rail Access Review

Task 1E-2 Secure current and future freight capacity requirements on the shared network

ACTION 1F Maintain productivity of the air freight network

Task 1F-1 Understand the landside 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 the Australian Government to ensure a consistent approach to strategic airport planning

ACTION 1G Facilitate the use of coastal shipping

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

ACTION 1H Improve efficiency of landside cargo transport in regional and urban areas

Task 1H-1 Establish a NSW Cargo Movement Coordinator

Task 1H-2 Improve network connectivity between networks and key freight precincts

Strategic Action Program 2 – Network capacity

ACTION 2A Identify and protect strategic freight corridors

Task 2A-1 Establish corridors to meet long term freight needs of NSW

ACTION 2B Develop and maintain capacity for freight on the road network

Task 2B-1 Connect and complete Sydney's motorway network

Task 2B-2 Prioritise road infrastructure investments

ACTION 2C Develop and maintain capacity for freight on the rail network

Task 2C-1 Separate passenger and freight movements with network enhancements and rail alignments

Task 2C-2 Complete the Northern Sydney Freight Corridor

Task 2C-3 Ensure that there is sufficient rail infrastructure capacity from mine to port to meet coal demand

ACTION 2D Develop effective port growth plans to meet freight volume growth

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

ACTION 2E Foster intermodal terminal network development

Task 2E-1 Foster intermodal terminals in metropolitan areas

Task 2E-2 Support the operation of regional intermodal terminals

ACTION 2F Coordinate regional infrastructure and service provision

Task 2F-1 Adopt a best practice reform model for regional infrastructure

ACTION 2G Develop and maintain projects to support network capacity

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

Strategic Action Program 3 – Network sustainability

ACTION 3A Embed freight requirements in planning schemes

Task 3A-1 Integrate land use planning and freight logistics

Task 3A-2 Enable efficient freight access

ACTION 3B Manage congestion, noise and emission impacts of freight transport

Task 3B-1 Recognise costs of congestion

Task 3B-2 Mitigate noise from freight operations

Task 3B-3 Mitigate emissions from freight operations

ACTION 3C Prioritise safety of freight transport

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

ACTION 3D Support the growth of the transport and logistics workforce

Task 3D-1 Develop strategies to attract and retain skilled workers

In 2011 the volume of freight moved on the NSW transport network was 409 million tonnes.

By 2031 the volume to be moved is forecast to grow to 794 million tonnes.

Network capacity and performance must develop ahead of demand.

2 UNDERSTANDING THE CURRENT AND FUTURE FREIGHT TASK

2.1 Double the volume of freight in 20 years

Freight growth

By 2031, the freight task in NSW is projected to nearly double to 794 million tonnes. This projected increase highlights the need for the NSW Freight and Ports Strategy to ensure that the network keeps pace with growth, and that this growth is sustainable for the long term prosperity of the State.

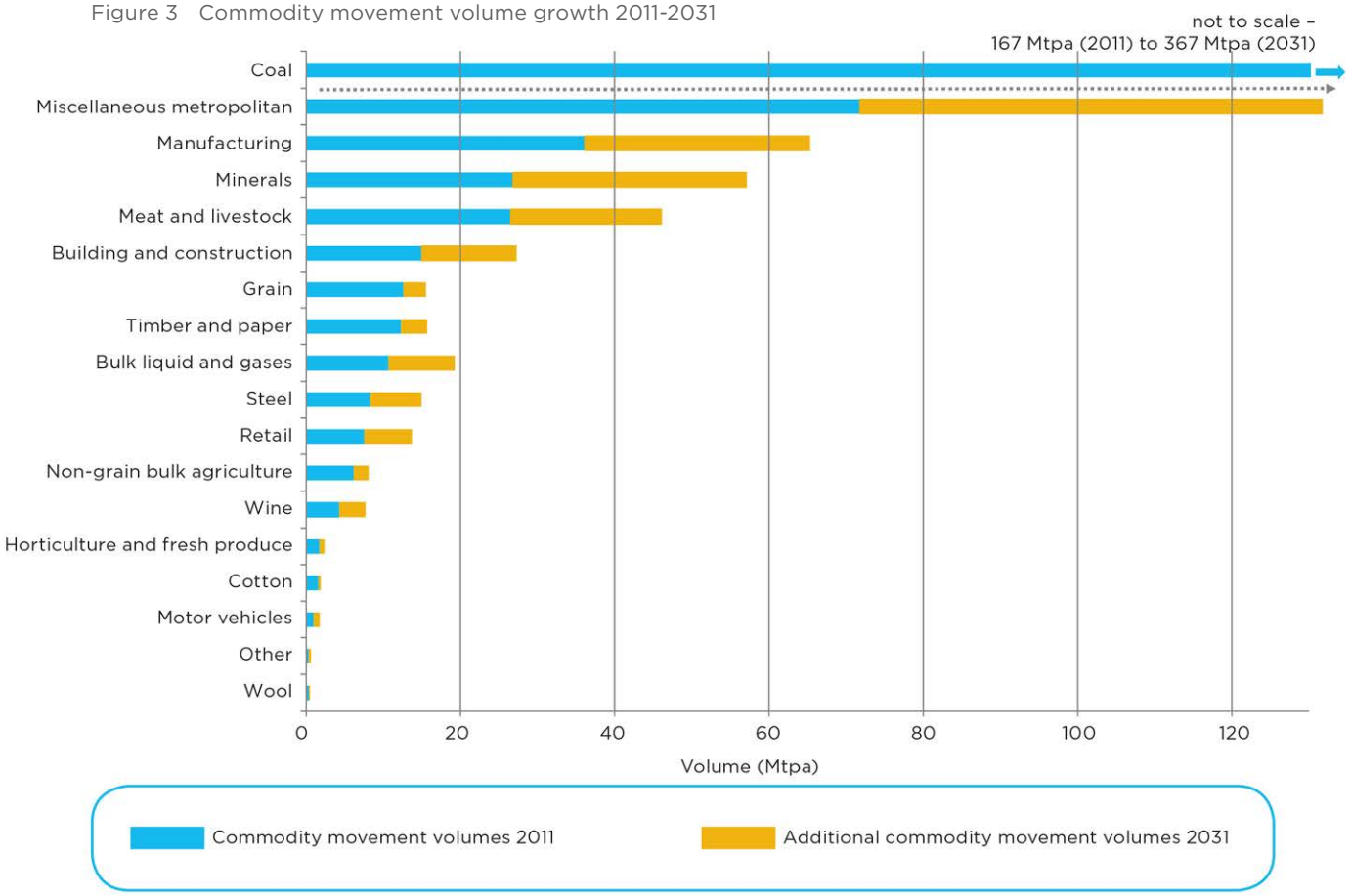
The volumes of all commodities demanding capacity on the freight network are expected to grow as population and economic activity increase across NSW. Mining represents almost half of the current task. Around 167 million tonnes of coal were produced in NSW in 2011, growing to around 367 million tonnes by 2031.

Coal is expected to remain the single largest freight task in NSW, followed by manufactured products. All other commodities are forecast to grow between two and three per cent per annum. The forecast growth in 17 supply chains is shown in Figure 3. These supply chains were the focus of reference groups consulted during the preparation of this Strategy.

The implications of this growth for ports, road and rail networks, intermodal terminals and freight corridors are significant. Capacity across the freight network varies, but key parts of the network are already under pressure to match demand.

Opportunities exist to shift more freight onto rail and this remains an important priority for the NSW Government. The movement of freight by rail is forecast to increase under the influence of the coal task and the planned increase of containers on rail to and from Port Botany.

Figure 3 Commodity movement volume growth 2011-2031

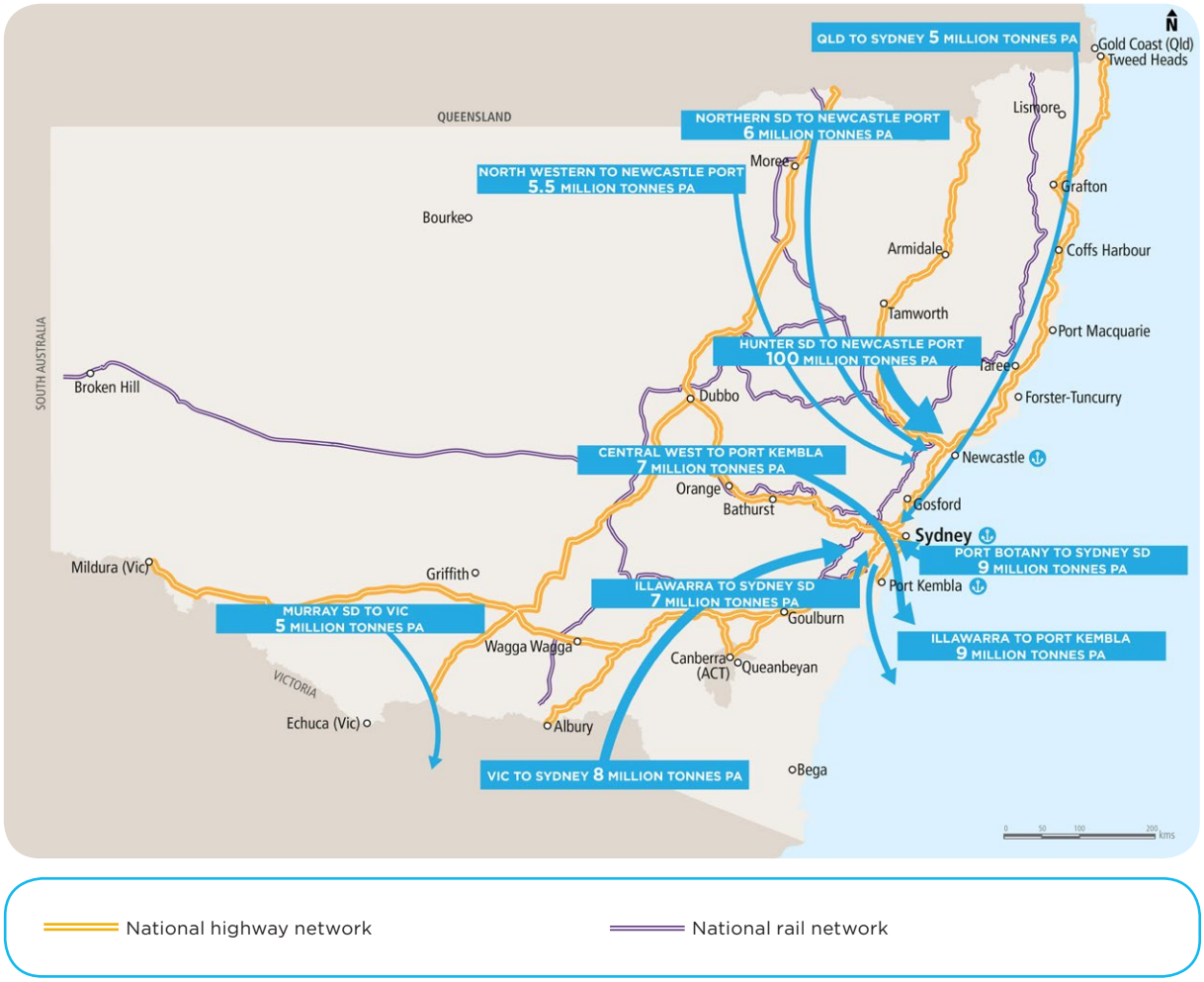


Freight movements

Transport for NSW has identified over 72 different commodities transported in NSW. Industry advice, together with data from State and national sources, has been modelled to establish a picture of movements between origins and destinations across regions in NSW by Statistical Local Area (SLA), including the:

- Hunter, where significant volumes of coal are moved to Newcastle Port and several other important commodities are produced.
- Central West, where mining and agricultural production (especially grain) dominate the transport network.
- Sydney metropolitan area, where export and import products, typically in containers, are transported through Port Botany. Products can range from agricultural exports to imported consumer goods, such as electronics and whitegoods.
- Illawarra, where Port Kembla is a major trading port, exporting coal and grain among other products, and importing motor vehicles.
- South West, which is a major producer of food, such as fruit, grains, rice and wine. In this region, producers can make a choice between transporting products south to Melbourne or north to Port Kembla or Sydney.

Figure 4 Top 10 NSW inter regional freight flows 2011



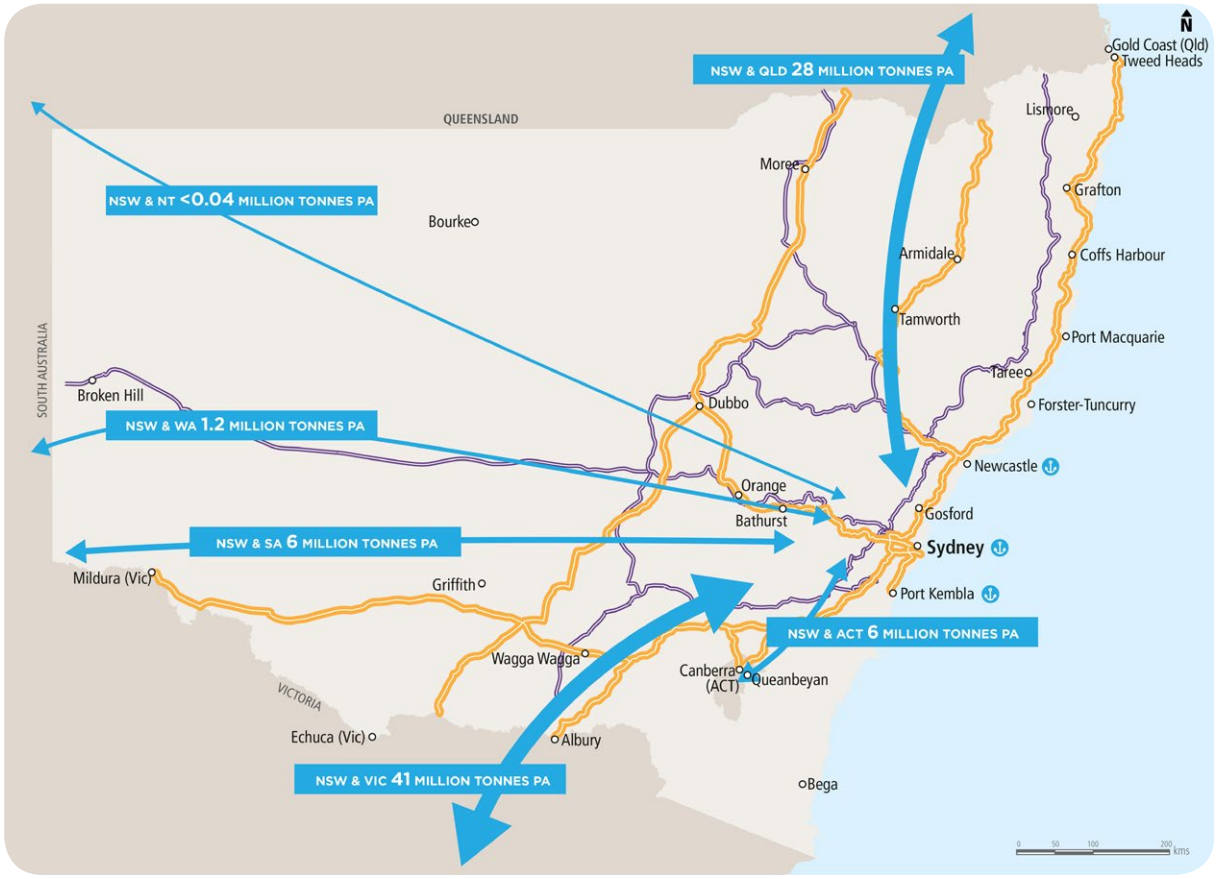
- North West, which is also a major agricultural production area with products such as grain and cotton. Again, this region can make transport choices between moving north to Brisbane or south to Newcastle or Sydney.

There are also many interregional movements in NSW, particularly around metropolitan Sydney and coal movements to power stations near Lithgow and the Central Coast. See Appendix A for further information on commodity flow by SLA.

The major NSW freight flows in 2011 are shown in Figure 5, with approximately 81 million tonnes moved almost entirely by road. The mode share for the total interstate freight task is 92 per cent by road and eight per cent by rail.

Figure 5 shows how the interstate freight task is distributed, with the largest task between NSW and Victoria at approximately 41 million tonnes of total flow. The majority of interstate flows between NSW and Victoria begin or end in Sydney. Interstate freight accounts for approximately 20 per cent of the total NSW freight task.

Figure 5 Interstate freight movements 2011



National highway network

National rail network

Note: Interstate movements make up approximately 20 per cent of the total NSW task

Freight Corridors

Corridor planning underpins our existing and future transport networks. Corridors connect freight activity precincts to meet future demands by enabling the development of new network capacity. Corridor identification is based on forecast demand and informed by land use planning in our urban and regional areas. New corridors can also overcome existing constraints that limit further expansion of existing road and rail networks. Planning for the Western Sydney Freight Line to connect Port Botany with Western Sydney is a good example of where a new corridor will deliver dedicated rail capacity and work to reduce the pressure on Sydney's motorway network.

In NSW, population and economic growth, together with shifting patterns of business, are generating significant increases in freight volumes and changing movement patterns. To ensure the transport network can adequately respond to these demands, it is essential to identify potential new corridors to meet long term growth in the freight task, while also providing opportunities to deliver communication links and connections for water and power.

Dedicated freight rail corridors are being planned to ensure passenger and freight rail demand can be accommodated. Road corridors, including the proposed WestConnex Motorway and the Hume Highway (M31), will also incorporate access for heavy vehicles as a key component. By identifying parts of the NSW road and rail network with a significant freight corridor function, their capacity can be augmented with priority infrastructure development. This work is underway with heavy vehicle rest areas and overtaking lanes on the Newell Highway (A39), and works to upgrade or replace key bridges in regional NSW to improve access for High Productivity Vehicles (HPV).

The need for a freight corridor in the Western Sydney Employment Area has been identified.

Moving freight on road

The NSW road network carried 63 per cent of the total freight task in 2011, or around 256 million tonnes of freight. The importance of road transport for most commodities is shown clearly in Figure 6. The role of heavy vehicles in moving freight across NSW is substantial, and will continue to be so for the foreseeable future, as shown in Figure 7. Efforts to improve NSW roads and increase their capacity to handle heavy vehicles are central to this Strategy.

The most frequently used road corridors in NSW are the Pacific (M1) and Hume (M31) Highways, which carry most of the 81 million tonnes of interstate freight between Melbourne, Sydney and Brisbane. Road corridors including the Newell (A39), Sturt (A20) and New England (A15) Highways support primary industries in western NSW.

As the freight task continues to grow, the capacity of existing roads to support this growth, as part of overall traffic demand, is a distinct challenge. Constraints around heavy vehicle use, particularly on local and regional roads, impact on the efficiency of the road freight task.

Road freight is also increasingly subject to capacity constraints and peak hour congestion in Sydney and other regional centres. The significant growth in freight is projected to impact all key NSW road corridors over the next 20 years, as shown in Figure 7. For many roads in Sydney, such as the M4 and M5 Motorways, available capacity is limited in peak periods.

Figure 6 NSW freight mode share for selected commodities 2011

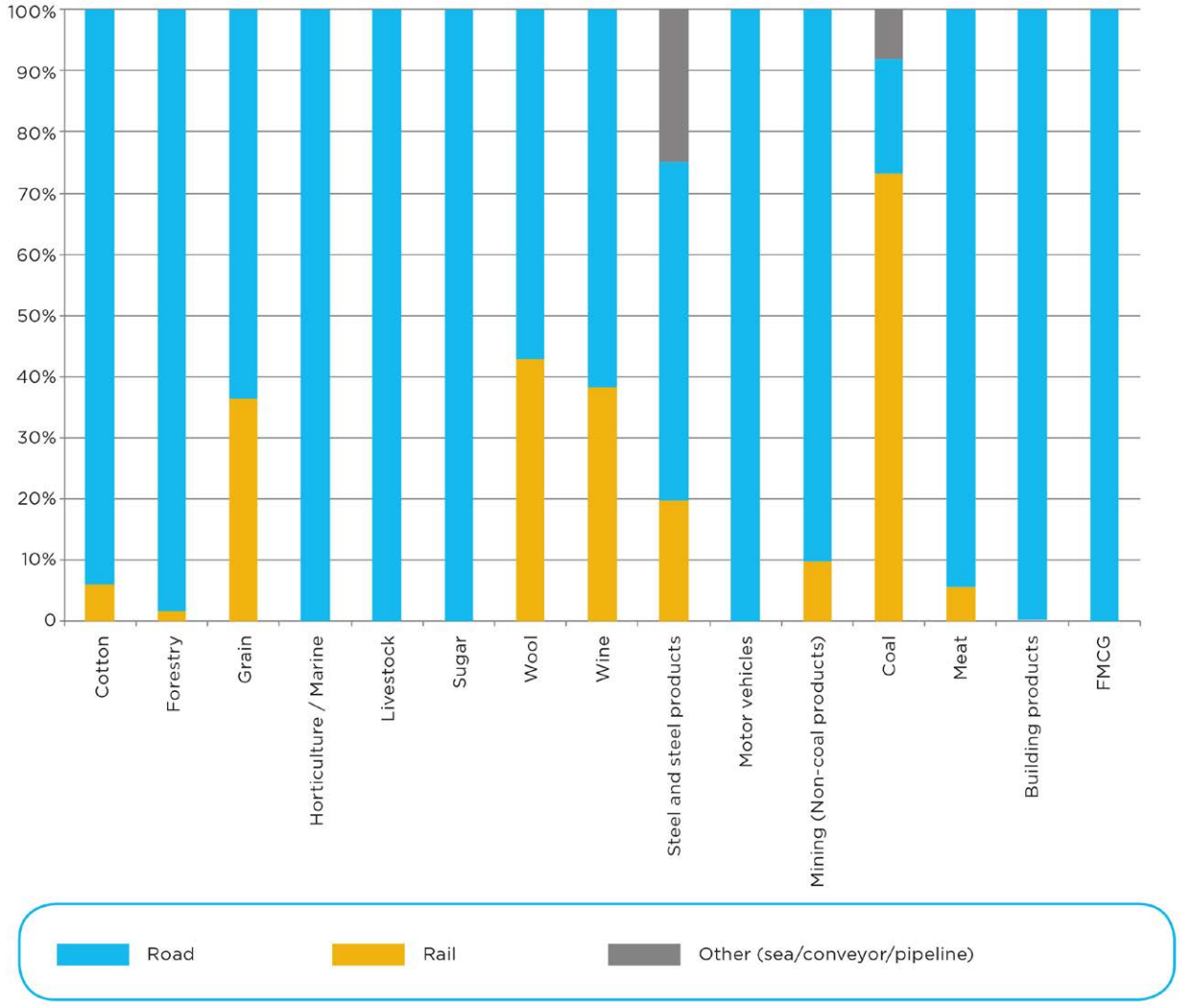
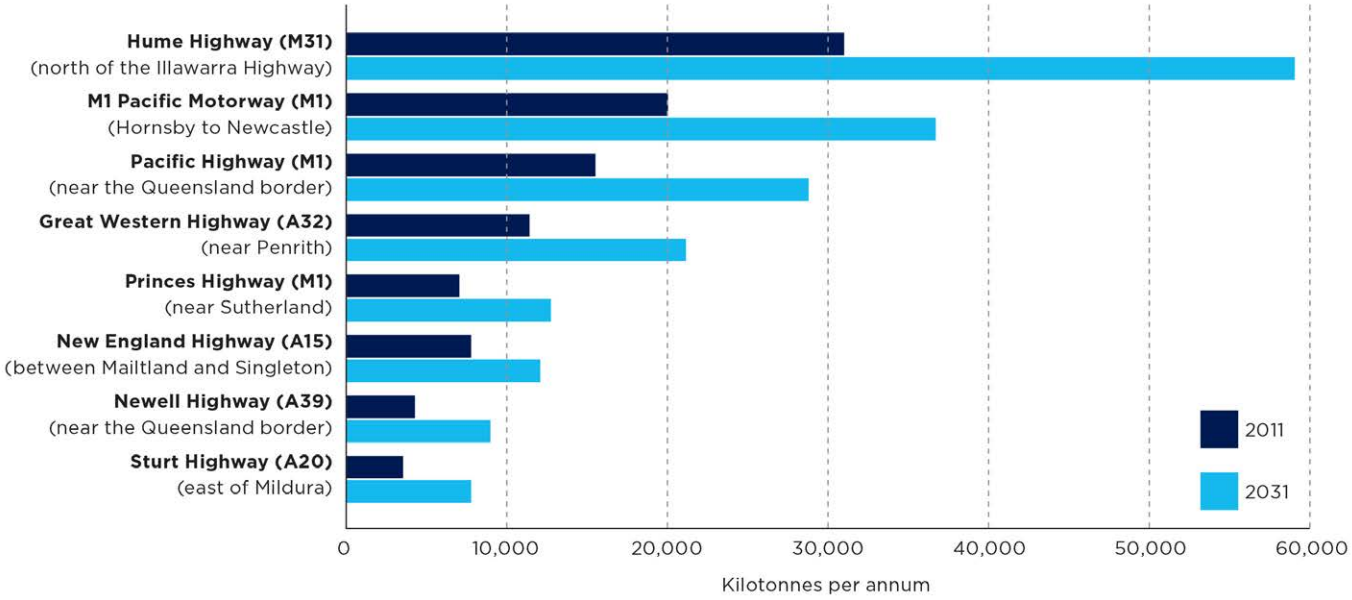
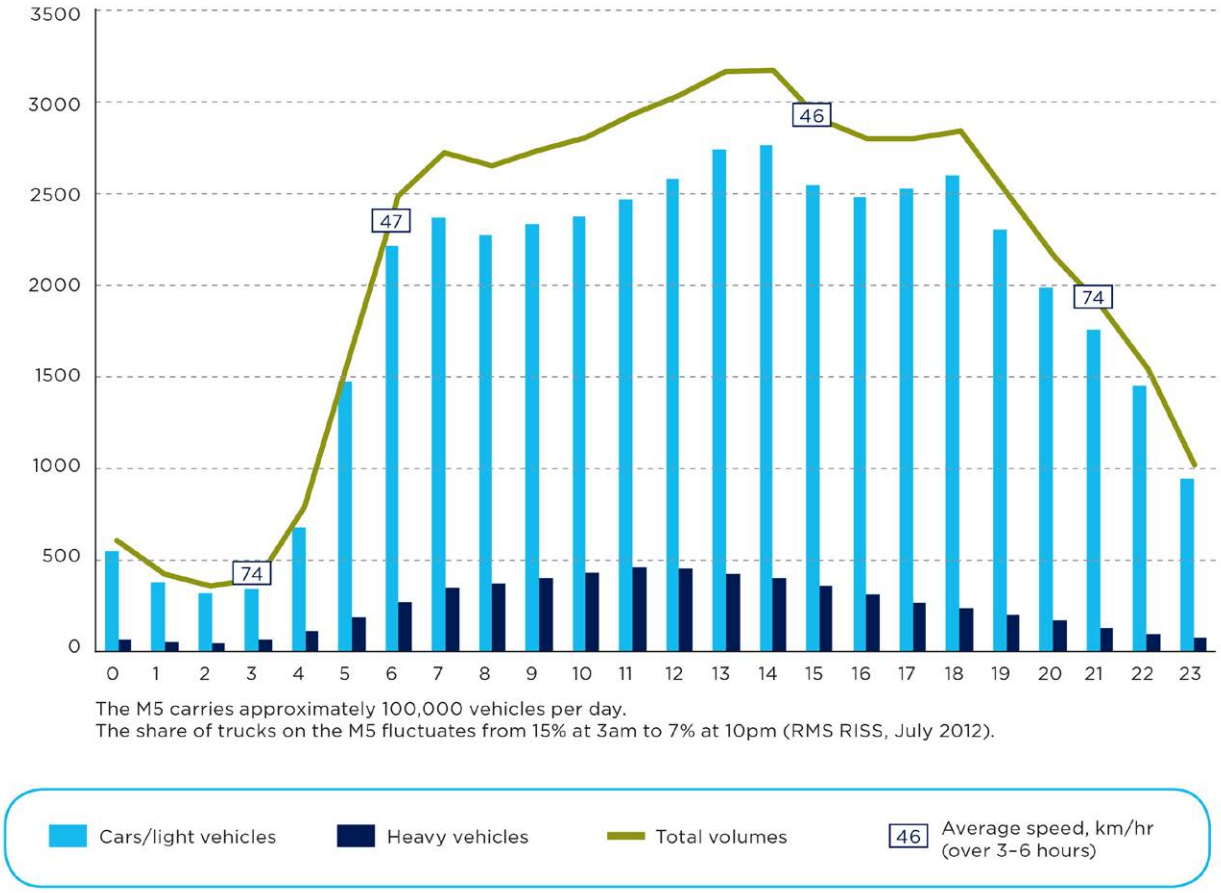


Figure 7 The current and forecast freight task on the key NSW road corridors



By 2031 the container trade at Port Botany is forecast by Sydney Ports Corporation (Sydney Ports) to reach seven million 20 foot equivalent units (TEU), the target mode share is to double the proportion of containers carried by rail by 2020 (NSW 2021 Goal 19).

Figure 8 M5 hourly traffic volumes, average day 2011. West bound lanes of traffic at Kingsgrove weigh-in-motion (WIM) counter



The existing throughput of two million Twenty Foot Equivalent Units (TEU) per annum at Port Botany is projected to increase to a total of seven million TEU by 2031.

However, almost tripling the container task is not likely to mean a tripling in the number of trucks serving the port. Currently Port Botany receives approximately 1,700 trucks per day.

The impact of container port traffic on surrounding roads will depend on factors such as the mode share to rail, the rate of modernisation of the truck fleet, the location and capacity of intermodal terminals, the location and size of major retail and warehousing centres and the management of empty containers.

However, even with the targeted increase in rail mode share, early modelling results indicate the M4 and M5 will not be able to accommodate the additional container traffic when combined with background growth from employment and population by 2031.

The hourly throughput of vehicles on the M5 is lower than capacity for many hours of the day due to congestion, low travel speeds and a break down in optimal flow. Accommodating 20 years of growth in this corridor will require a package of solutions to meet the needs of freight and other road users.

Port deliveries are already moving into the off-peak periods to avoid congestion. Although the M5 is at or near capacity for most of the day, there is still capacity for growth very late at night and very early in the morning.

Actions in the NSW Long Term Transport Master Plan focussing on road upgrades and improved rail operations to support a doubling of freight on rail by 2020 are critical to meeting the forecast growth at Port Botany by 2031.

Moving freight on rail

NSW has suffered from under investment in transport infrastructure, including rail, for the freight task. While a number of rail infrastructure projects have occurred in the last 10 years, the focus has been on coal (driven by concentrated customer demand) and passenger transport (driven by government commitments).

The NSW Government has in place the dual policy objective of increasing the use of rail for the movement of both freight and passengers. In particular, the Sydney metropolitan rail network is an increasingly congested shared network.

During peak commuter periods, regulatory and operational mechanisms require that passenger services are prioritised over freight services. This results in a network that is not performing efficiently and warrants action to improve the performance of the rail freight task.

In 2011, the NSW rail network carried 136 million tonnes of freight (33 per cent of the total State freight task). The movement of coal in the Hunter Valley dominates rail freight activity in NSW. In comparison, other rail corridors carry relatively small freight volumes.

Similar to the road network, significant growth is projected across all key NSW rail corridors over the next 20 years.

In total capacity terms, the rail network has broadly kept pace with growth in freight demand. However, the transport of freight via the shared rail network is limited by the needs of passenger transport, particularly during morning and afternoon passenger peaks.

The dedicated Metropolitan Freight Network (MFN) is currently underutilised, carrying approximately 300,000 TEU compared with the assessed throughput capacity of 1.1 million TEU. The mode share of rail for containers to and from Port Botany has declined from 25 per cent in 2001 to 14 per cent in 2012.

Despite this, there remains pressure on the rail network, given projected growth in freight demand. A comparison of the capacity of the key rail corridors under a 'do minimum' scenario and the projected demand is provided in Figure 10.

By 2031, all key corridors will struggle to meet demand unless action is taken. In particular, by 2031 the MFN will need to carry around two million TEU, which will equate to approximately 25,000 additional train movements each year on that part of the network alone.

Figure 9 Projected freight task growth across NSW rail corridors

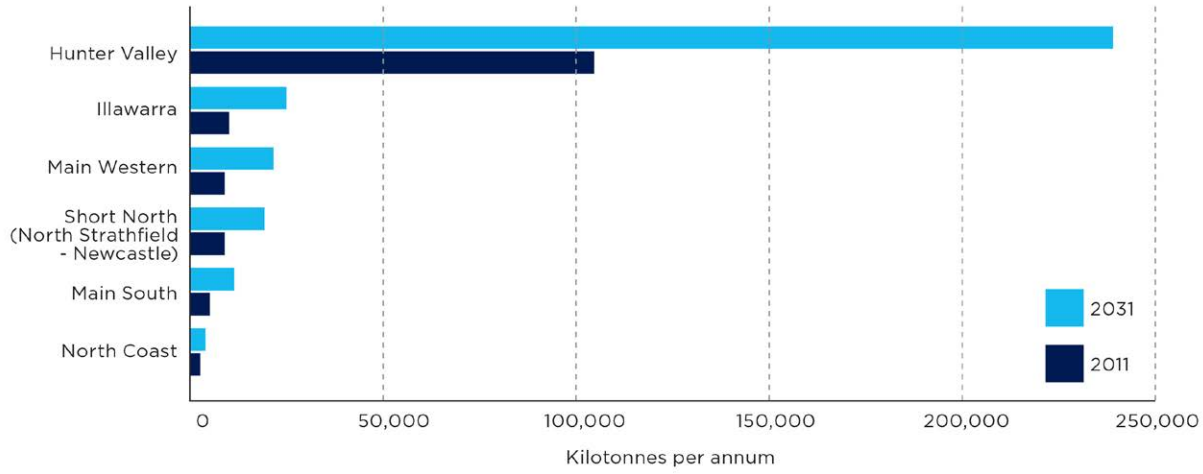
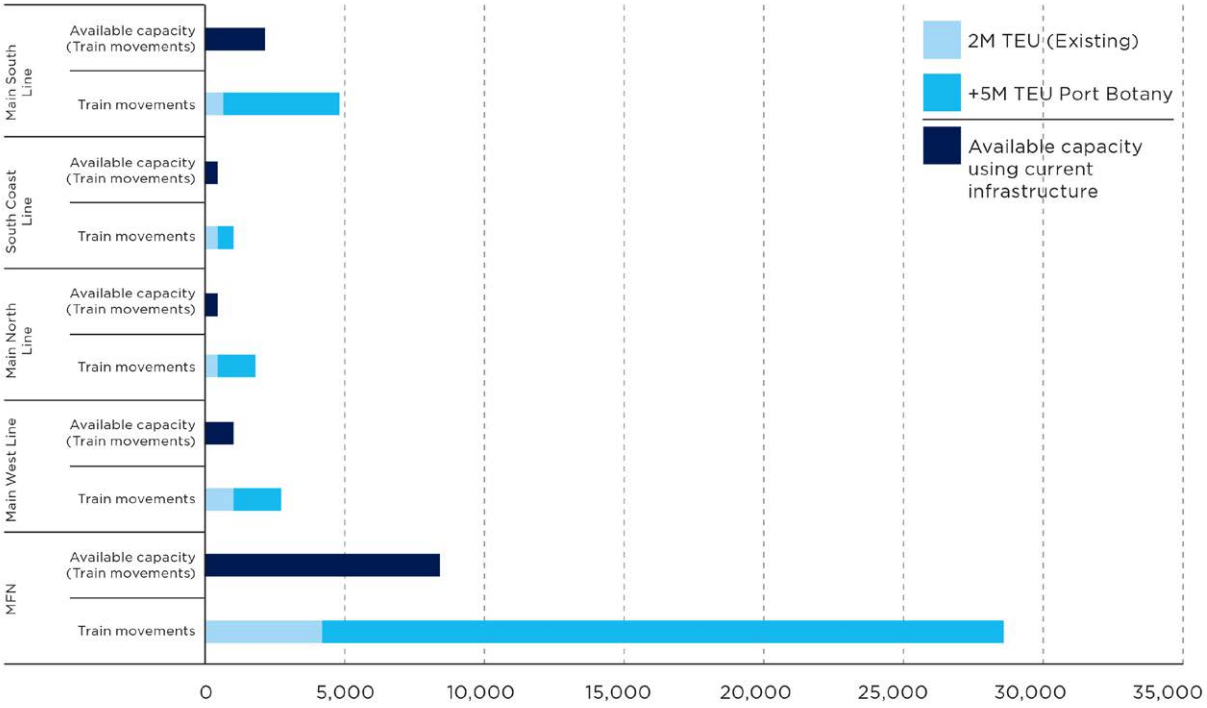


Figure 10 Key rail freight corridors showing estimated annual volume and capacity for container movement to and from Port Botany

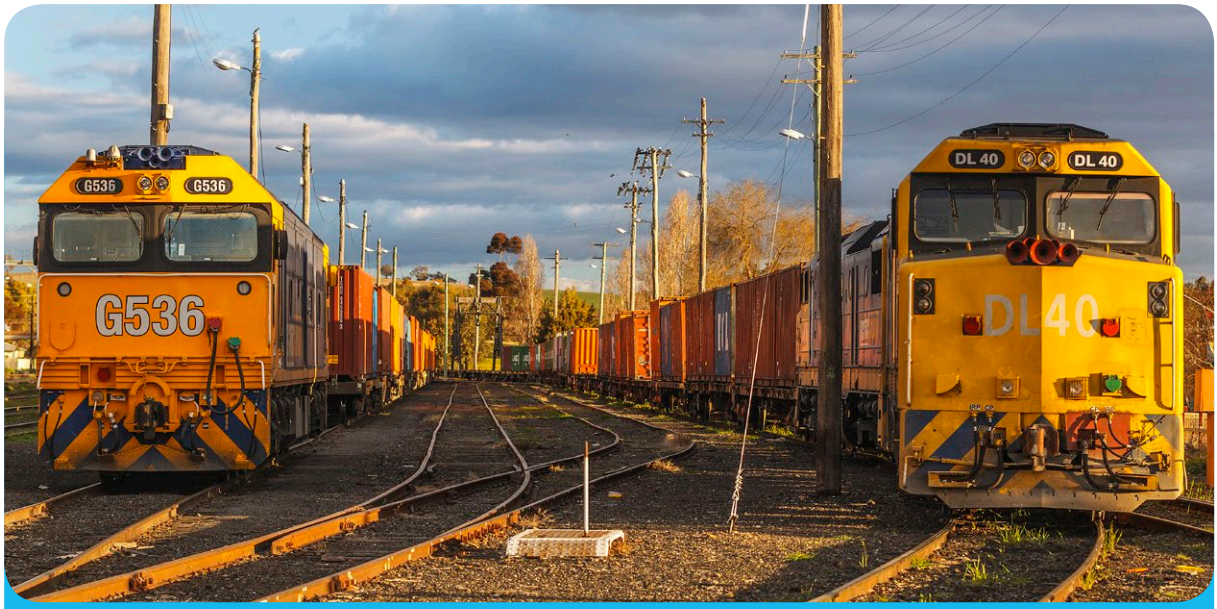


The dark blue bars show the available capacity in train path movements when all other freight and passenger movements are counted.

The light blue bars show the current activity from container train movements in the rail corridor for 2 million TEU per annum at 14% mode share to rail.

The medium blue bars show the additional container train movements needed in the corridor if the total Port Botany container task reaches seven million TEU per annum at 28% mode share to rail.

Currently rail is used for 14 per cent of the container movement task to and from Port Botany. The Metropolitan Freight Network is currently underutilised, with less than 30 per cent of available capacity used for the movement of containers. The reasons for the low mode share relate to reliability, available intermodal terminal capacity, time taken and cost. Infrastructure and operational constraints compound the poor performance of rail to and from Port Botany.



Containerised cargo from regional NSW destined for export is a 'natural' market for rail, provided the network and logistic service providers perform efficiently and are cost effective. This train at Junee is carrying Patrick Port Logistics cargo destined for export through the Port of Melbourne. The cargo origin in Griffith is part way between Melbourne and Sydney, however the cargo moves to Melbourne primarily because of the ease of access for trains to the port precinct. Establishing the NSW Cargo Coordinator seeks to eliminate the inefficiencies and pinch points that hinder the free flow of cargo on the NSW network.

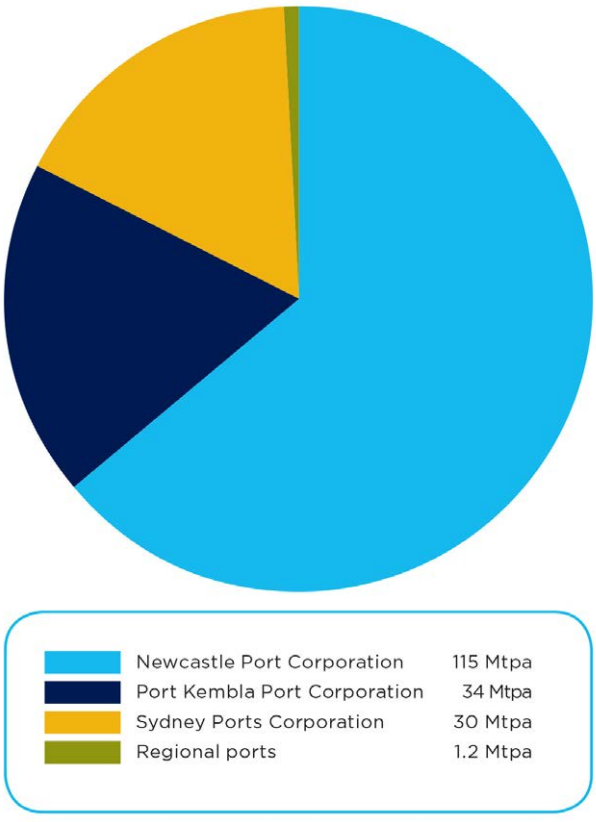
Freight terminal movements

An efficient transport network is characterised by seamless transhipment between modes. The largest and arguably most visible transhipment task occurs in NSW ports.

In 2010-11, NSW ports handled around 179 million tonnes of freight (44 per cent of the total NSW freight task). The Port of Newcastle recorded the greatest volume of seaborne exports, as a result of the dominance of coal in the NSW freight task. Port Botany also accounted for a significant share of the freight task, and is the primary NSW container port, as shown in Figure 11.

The rate of growth in exports through NSW ports has increased by around four per cent in each of the last five years. This increase has been driven by strong growth in coal exports as well as rapid sustained growth in container movements, which has averaged seven per cent growth annually over the last 15 years.

Figure 11 NSW port throughput in 2011 by tonnage

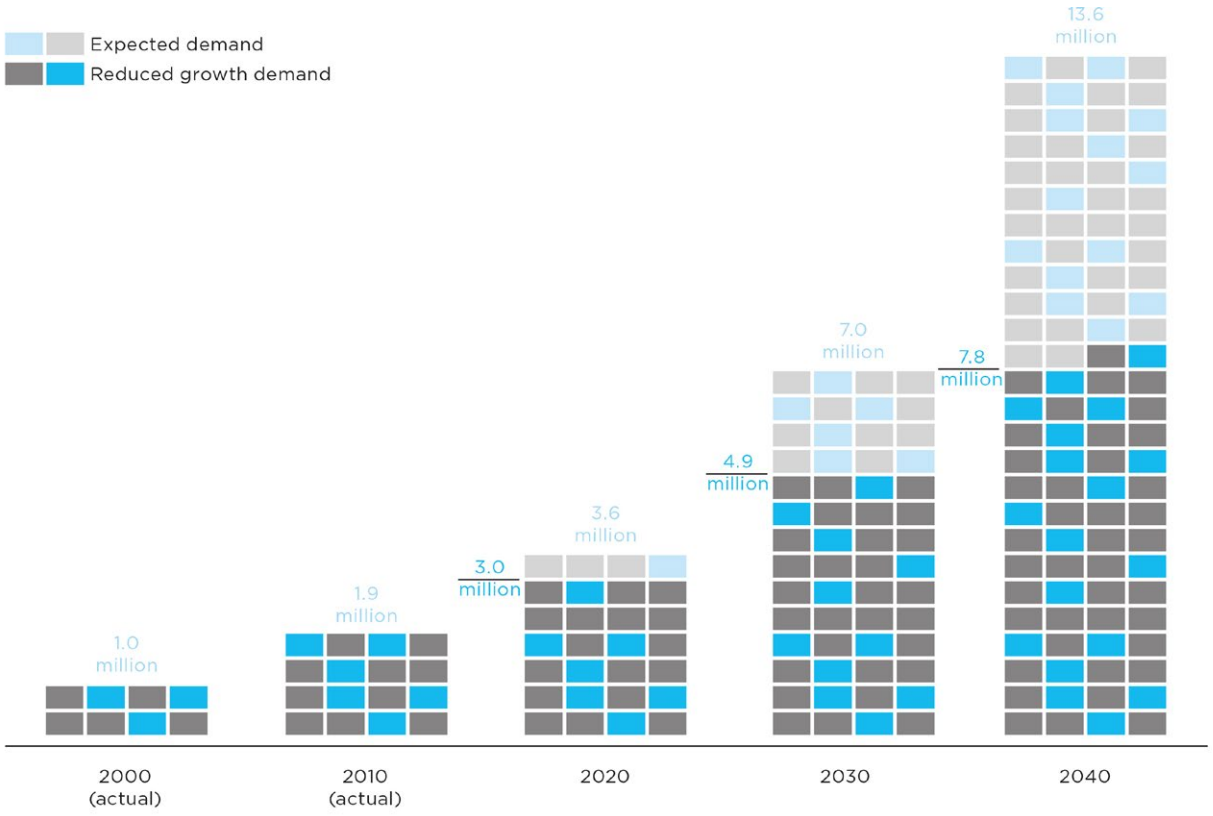


Pressure on port capacity is increasing, particularly at the Port of Newcastle, although the timing of future capacity constraints will depend in part on movements in global coal prices. Recent softening in coal prices has reduced pressure on coal handling services in the short term.

While there is currently significant spare capacity, constraints on container movements at Port Botany will depend on the rate of growth of containers, as well as the productivity levels that can be achieved by the stevedores and overall optimisation of the port. Depending on the rate of growth, from a planning perspective it appears reasonable to expect that Port Botany might approach its natural capacity between 2030 and 2040. New port infrastructure at Port Botany and/or Port Kembla may be required to help relieve these pressures, and will need to be supported by significant land freight network improvements, as discussed in Sections 4.1 and 4.2.

Stacking machines discharge coal onto stockpiles that are grouped into vessel cargo lots. All coal is received by rail at Port Waratah Coal Services' (PWCS) Kooragang terminal and can be blended from different stockpiles to meet customer requirements. PWCS currently accounts for 145 Mtpa of the 211 Mtpa coal export capacity of the Port of Newcastle. Under the Hunter Coal Export Framework, PWCS must provide sufficient terminal export capacity to meet demand from coal producers in a given year.

Figure 12 NSW container volume forecasts 2020-2040 (Source: Sydney Ports 2012)



Ports are the trade gateways to the world. They are economic hubs which facilitate the movement of goods between the landside and the seaside. Planning for the future of ports is essential to ensure they remain competitive and have the capacity to handle the growing trade task.

NSW Transport Network Defence and National Security Requirements

NSW is home to a number of major Australian Defence Forces (ADF) bases hosting both combat, logistic support and maintenance capabilities. Defence bases in NSW include: Royal Australian Navy Fleet Base East at Garden Island in Port Jackson, Defence National Storage and Distribution Centre (DNSDC) at Moorebank, Royal Australian Air Force bases at Richmond and Williamtown, ammunition storage facilities at Orchard Hills, Myambat, Mangalore, Mulwala, and Marrangaroo, and the fleet munitions wharf and storage facility at Eden on the Far South Coast.

Supporting these facilities and capabilities with a productive transport network will ensure national security and contribute to the economy of NSW through enabling and complementary Defence industry, procurement opportunities, employment and Defence personnel and their families forming part of the wider community.

Transport for NSW will work with the Australian Defence Force Joint Logistics Command to incorporate the needs of Defence into the development and operation of the NSW transport network. Particular areas of focus will include the unique Defence transport network requirements such as:

- Enhancing the capacity of NSW-based Defence industry to support ADF operations, maintenance and sustainment
- Port access and landside requirements for naval vessels and commercial charter vessels, including the range of vessels that will be home ported at Garden Island and HMAS Waterhen in Port Jackson

Fleet Base East at Garden Island is primarily used for ship maintenance and repair and incorporates the Captain Cook Graving Dock. Garden Island is one of only two primary Navy repair locations in Australia. Significant Navy future plans for Fleet Base East and Garden Island include initial home-porting with associated System Program Offices (SPO) of three new Air Warfare Destroyers (AWD) and two new Landing Helicopter Dock amphibious vessels (LHD). Sustainment expenditure on the AWDs and LHDs is estimated to be worth up to almost $1B per year for the 35 to 40 year life of these vessels.

- HML access for ADF logistics and combat vehicles to the NSW road network particularly in areas of NSW where it may not be required by industry
- ADF requirements for the movement of oversize overmass (OSOM) vehicles and equipment on the NSW road network through the Defence Road Transport Exemption Framework
- Vehicle and equipment lay down and assembly areas as part of national mobilisation movement plans
- Consideration in road design and construction for OSOM and emergency or expedient aircraft landing areas on NSW State roads
- Movement by rail of ADF vehicles and equipment on the NSW rail network particularly for maintenance and sustainment tasks
- Connection of the ADF freight activity precincts to the State network (Moorebank, Holsworthy, Orchard Hills, Richmond, Williamtown, and Eden)
- The carriage and storage of dangerous goods including incorporating ADF requirements for locations of rest areas for vehicles carrying dangerous goods through NSW.

Development of Surplus Defence Estate Land

Changes in the current disposition of the Defence estate in NSW may provide opportunities for development of the NSW transport network. NSW will engage with the Australian Government to explore opportunities to utilise surplus Defence estate land to enhance the efficiency and capacity of the NSW transport network.

Defence National Storage and Distribution Centre (DNSDC) at Moorebank is the centre of defence joint logistics, providing warehousing, distribution and maintenance services to the Australian Defence Force on a regional and national level. Planning for the relocation of this facility to nearby Holsworthy is underway. The relocation of military facilities from Moorebank to nearby Holsworthy will allow the redevelopment of the Moorebank precinct into an intermodal and warehousing precinct. The Moorebank precinct will provide much needed freight transport network capacity and employment opportunities in South West Sydney.

The WesTrac purpose built facility at Tomago serves the Hunter Valley coal sector, the 23 hectare site was completed in July 2012 and employs over 400 people on site. The facility includes a parts distribution centre, truck servicing centre, component rebuild centre and supporting administration and amenity facilities. Linking the facility to the NSW transport network with HPV access and OSOM routes ensures that the coal mining sector can be supported efficiently.

2.2 The importance of regional freight movement in NSW

Economic growth in regional NSW relies on the movement of goods through efficient and effective transport networks. The ability of NSW producers to move agriculture, industrial products and natural resources to domestic and export markets in a timely and efficient manner directly impacts on productivity and competitiveness – and hence the economic performance of regional NSW.

Regional freight volumes

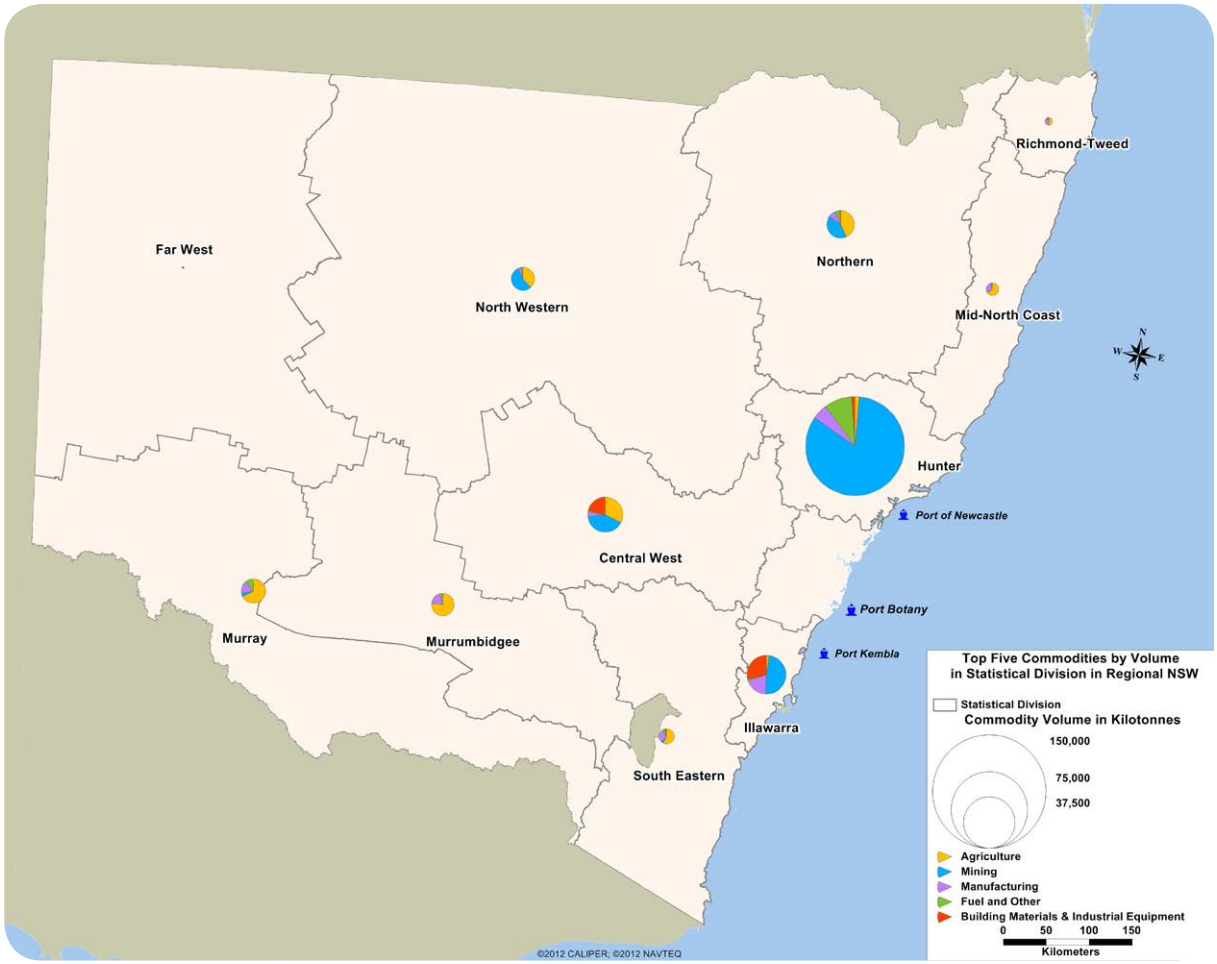
NSW regions play a critical role in the production and movement of goods in the NSW economy. Approximately 260 million tonnes of goods originate from NSW regions with destinations in other NSW regions, metropolitan Sydney, interstate or internationally. This represents around 65 per cent of the total NSW freight task by volume. This compares with the Sydney metropolitan and interstate locations, which generate 15 per cent and 20 per cent, respectively, of the total freight task across NSW.

The largest product category hauled from NSW regions is mining products. Mining products, which almost exclusively comprise coal, account for 60 per cent of the total regional freight task by volume.

260
MILLION

An estimated 260 Million tonnes of goods originate in regional NSW

Figure 13 Major commodity groups by volume in statistical division in regional NSW



Agricultural products (livestock, grain, cotton, meat, wine, forestry) and other products (manufactured items, fuel, chemicals, building and construction products) account for 20 per cent, respectively, of the total regional freight task by volume.

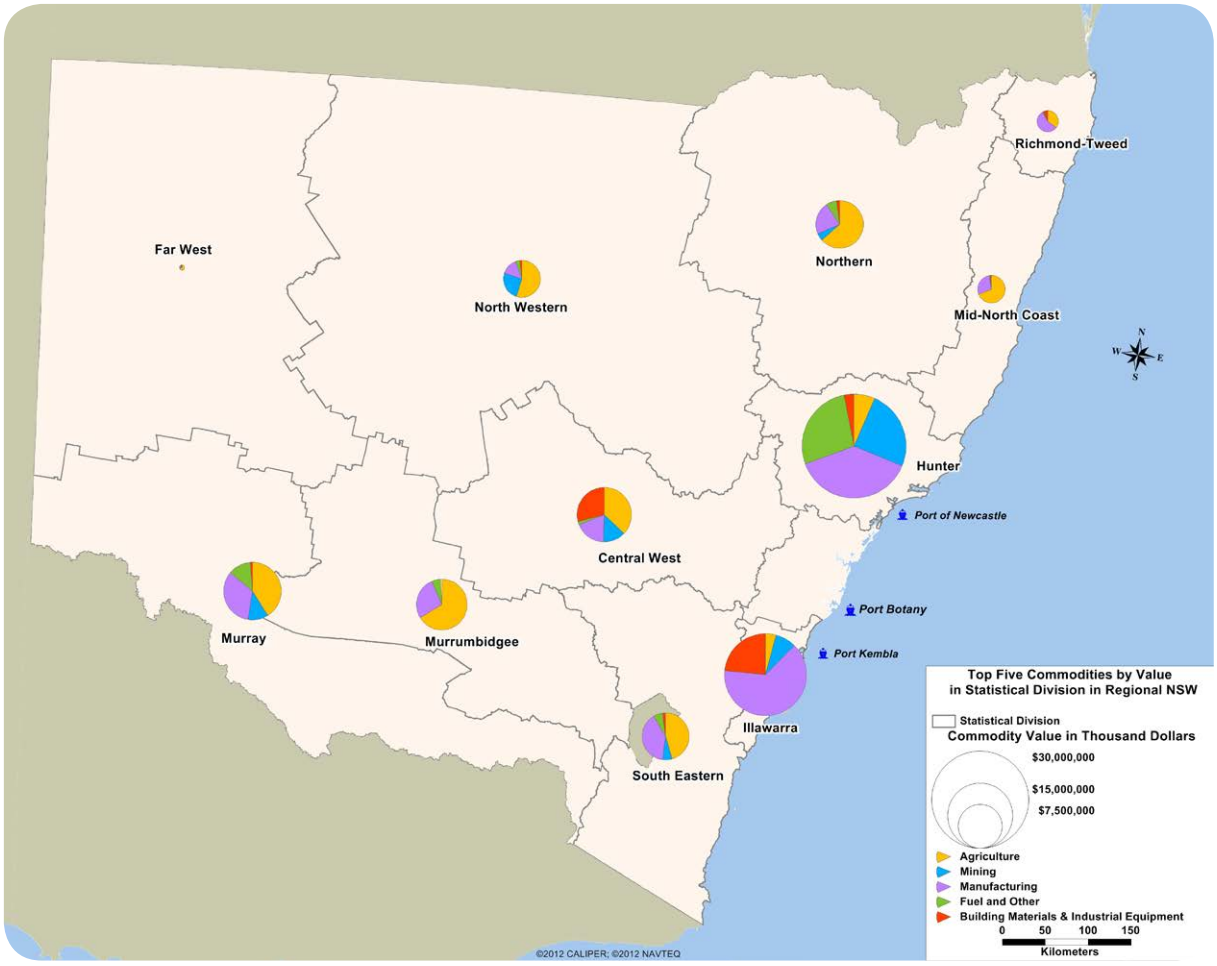
The most significant regions from a freight perspective are the Hunter Valley and Illawarra. Taken together, these regions underpin two thirds of all regional freight volumes in NSW. The Hunter Valley freight task is predominantly characterised by the haulage of coal, which makes up 85 per cent of all freight flows from the region. Since coal is extracted in the region it creates critical value added to the Hunter regional economy in terms of investment, employment and income. In the Illawarra region, mining and building and construction products underpin freight movements. These products constitute 80 per cent of Illawarra regional freight flows.

Agricultural freight movements play a significant role in western, northern and south-western and south-eastern regions of NSW. Agriculture can account for as much as 75 per cent of total freight volumes in these regions.

Regional freight values

The criticality of regional freight flows to NSW on a 'value of product moved' basis is more moderate, albeit still significant, than on a 'volume' basis. For example, approximately 40 per cent of the gross value of all goods moved in NSW is generated from regional NSW. This compares with a regional share of 65 per cent of the NSW freight volume task. The regional share of the total value of goods moved (40 per cent) matches the Sydney metropolitan share (40 per cent) of the total value of goods moved across

Figure 14 Major commodity groups by value in statistical division in regional NSW



NSW. The remaining 20 per cent is attributable to the value of goods moved via NSW to and from interstate locations.

The gap between regional freight volumes and values is attributable to the fact that mining and agricultural products tend to have lower unit values than manufactured products (like whitegoods and passenger motor vehicles). This can be seen in mining and agricultural freight flows, which constitute 15 per cent and 30 per cent respectively of the total value of goods moved in NSW regions. The other 55 per cent of the total value of goods moved in regions is captured by manufactured items. This trend is particularly apparent in the Hunter Valley and Illawarra regions. In the Hunter Valley, coal flows account for 85 per cent of the total freight task in the region, but coal only makes up around 25 per cent of the total value of goods moved in the region.

Similarly, in the Illawarra region, coal accounts for approximately 10 per cent of the total value of goods moved despite it representing 50 per cent of the regional freight task by volume.

Mining and agricultural freight value

of the total value of goods moved in NSW regions

This is primarily due to the influence of higher value manufactured products that originate from the Illawarra, including building and construction products, steel and motor vehicles. However, it should be noted that the motor vehicles which leave the Illawarra region are actually imports rather than locally produced items.

Regional road freight

Given the significant volumes and value of regional commodities moving on the State's transport network, enhancing road freight productivity is critical. HPV are combinations that can move regional freight more efficiently to meet the regional freight task now and in the future.

Cotton seed being loaded for road transport at a gin in Carroll, north west New South Wales. Approximately $1.2 billion worth of cotton originated from the State's north west in 2011-2012

However, there are deficiencies in the assessed capacity and condition of sections of the regional road network to meet current demand, particularly for HPV.

Many roads and bridge structures in regional NSW are aged or of inadequate strength to support HPV. For example, rural highways in NSW have historically been constructed as two-lane roads, built to standards that are now superseded. The introduction of B-doubles and other HPV requires a new standard for roads and bridges. Other deficiencies that prevent access for HPV include number of overtaking lanes, intersections that do not provide appropriate turning circles and storage for long vehicles, availability of rest areas and poor road alignment. In recent years a number of regional roads have been severely impacted by flooding as a result of extreme weather events.

Upgrading of local roads and bridges to cater for HPV access requires significant funds which local councils do not have available. Road funding has not traditionally been based on freight priorities. Many local councils are already unable to fund maintenance of their local roads, let alone additional infrastructure upgrades.

Shortfall in funding is particularly evident in regional councils which face a limited ability to generate own source revenue compared to councils in urban areas. Regional councils generally have a smaller population and smaller rates base. They also do not have access to fines, parking fees and land development revenues that many urban councils can generate.

Economic benefits and efficiency gains of HPV do not automatically flow through to councils in terms of increased revenue to address their impact on local roads. Consequently for many councils, there is no direct incentive to invest proactively for heavy vehicle traffic since there is no direct link between heavy vehicle usage and income for road improvements and maintenance.

The NSW Government is committed to opening up improved HPV access for appropriate freight routes that are of strategic importance, The Newell Highway (A39) is an example of a key inland freight route which would benefit from infrastructure upgrades and enhanced HPV access. Currently, restricted access vehicles such as 26 metres B-doubles are permitted the entire length of the Newell Highway. However, access for B-triples, double road trains and AB-triples is restricted to certain sections of the highway due to road conditions.

The Newell Highway is the main inland north-south connection between Queensland and Victoria and passes through 15 local government areas in NSW. Transport for NSW is working to expand the B-triple network to enable modular B-triples to operate on sections of the Newell Highway, specifically between Narrabri and Goondiwindi, which opens up access to key Queensland freight sites. Work is also progressing on the development of a Newell Corridor Strategy to prioritise the necessary road upgrades to enable HPV access on the entire length of the highway.

Regional rail freight

There is a natural compatibility between regional commodities (such as coal and agricultural products) and freight rail utilisation. Currently, regional rail freight faces a number of key issues that both directly and indirectly influence the capacity and efficiency of the network. In regional NSW a large number of rail lines are the most financially viable means available for conveying grain to port for export and to distribution centres for local consumption.

The seasonal nature of the grain harvest, however, means that volumes can be inconsistent from year to year. As a result, many regional lines may only move small amounts of grain, or in some instances, no grain is moved at all for a number of years. In real terms, many regional lines can for extended periods have unrealised capacity.

During these periods, maintenance must be continually undertaken irrespective of usage. Cost recovery obtained from users of the grain lines remains low. In many instances the rail access fees paid by rolling stock operators to use the rail network can cover as little as one per cent of the total maintenance costs for such rail lines. The NSW Government is required to fund the majority of the maintenance costs for these low volume lines. This practice is not sustainable.

Therefore, it is now necessary to explore other options where the risk and costs associated with low volume rail lines are more evenly shared between parties. The current Cowra Rail Lines (see Case Study 18) project presents such an opportunity to explore new ways of ensuring the ongoing viability of regional rail freight lines.

Another current and future challenge facing regional freight rail is moving both grain and bulk commodities such as coal through the shared Sydney Trains network where rail infrastructure availability places constraints on the train paths available for regional freight services. Given the continuing pressures to provide additional passenger services on the network, it is expected that regional rail freight services will continue to be affected.

For example, regional freight services moving coal from the mines on the Southern and Western Coalfields of NSW to Port Kembla need to access and traverse the Sydney Trains network. Sydney Trains passenger services operating on the Sydney metropolitan network and the Illawarra Line reduce the train paths available for regional rail freight services. Additionally, when events occur involving passenger trains this can result in further delays for regional rail freight services. On the return journey, regional bound freight services experience the impact of these constraints and remain at risk of missing their scheduled departure times from Port Kembla. Such issues continue to limit the efficiency of regional rail services.

Containerised grain moving by rail from the West Tamworth intermodal terminal to Port Botany. Rail freight from regional New South Wales currently faces network constraints such as infrastructure shortfalls and access restrictions associated with operating on a shared network alongside regional rail passenger services.

The use of High Productivity Vehicles in regional NSW, linked to the rail network, supports larger consignments and allows producers such as Griffith's Casella Wines to be a world-class producer in a highly competitive global marketplace.

3 PARTNERSHIP BETWEEN GOVERNMENT AND INDUSTRY

3.1 Summary of engagement process

In formulating the NSW Freight and Ports Strategy, the Freight and Regional Development Division of Transport for NSW conducted extensive consultation with NSW and Australian Government departments, local government organisations, NSW transport operating agencies, specialist transport entities and industry representatives. These engagement activities were instrumental in defining the nature and scope of NSW's freight task, as well as the key issues affecting the network's ability to allow the efficient flow of goods to the market.

A summation of Transport for NSW's consultation with government and freight industry organisations is depicted in Figure 15.

Industry

In the first half of 2012, Transport for NSW met with 15 industry supply chain groups and freight specialists to discuss commodity specific freight concerns that government could address. Significant issues raised included:

- Use restrictions on High Productivity Vehicles
- Low availability of Higher Mass Limits (HML) routes on freight routes
- Decreased supply chain efficiency arising from local government curfews on deliveries and collections
- Regulatory burdens and inconsistencies with oversize, overmass (OSOM) vehicles
- Road connectivity and access issues

Figure 15 Engagement with key industry and government partners on the preparation of this Strategy

- Need for greater industry consultation in key infrastructure investment and land planning decisions
- Limited access to rail freight infrastructure
- Reliability of rail infrastructure and services to meet the freight task
- Port access, efficiency and congestion.

Following the release of the draft NSW Freight and Ports Strategy in November 2012, Transport for NSW again engaged the supply chain groups to discuss how their feedback contributed to the development of the draft Strategy and identified further issues to be considered in the final NSW Freight and Ports Strategy. Vital mechanisms for industry consultation also included the Road Freight Industry Council (chaired by Roads and Maritime Services) and the recently established Rail Freight Industry Group which provides a forum for industry representatives to work with the NSW Government to identify and address operational freight issues on the transport network.

NSW Freight Advisory Council

At a strategic level, the industry led Freight Advisory Council has been instrumental in partnering with Transport for NSW to inform the final NSW Freight and Ports Strategy.

The Hon Duncan Gay, MLC, Minister for Roads and Ports releasing the draft NSW Freight & Ports Strategy to industry representatives on 16 November 2012.

Established in August 2012, the Freight Advisory Council provides expert advice to the Minister for Roads and Ports and Minister for Transport for NSW on strategic issues impacting efficiency and productivity within the freight industry. The eight member council consists of Transport for NSW's Deputy-Director General, Freight and Regional Development and seven senior private sector representatives from major commodity supply chains and logistic providers within the freight industry.

Local government

Transport for NSW convened a Local Government workshop in April 2012 with representatives from the Local Government and Shires Associations of NSW and Regional Organisations of Councils from urban and regional NSW. The workshop brought NSW Government and local government together to address connectivity issues involving High Productivity Vehicle access, curfew hours and other land use planning matters.

This dialogue has also informed the consideration of noise and fuel emissions in this Strategy, as well as congestion and general community perceptions of the role and impact of freight.

Transport for NSW

Transport operating agencies in NSW provided specialist advice to help Transport for NSW understand the current and future freight task. As the managers of the majority of infrastructure and transport assets within the freight network, the agencies informed Transport for NSW on the feasibility of proposed actions for enhancing the freight network, as well as issues relating to regulation and compliance management.

Roads and Maritime Services, as the administrator of the NSW Road Freight Industry Council, also provided Transport for NSW with valuable insight from council members regarding road freight network challenges.

Government

Transport for NSW has worked closely with State Government departments to ensure the NSW Freight and Ports Strategy represents the

themes and objectives of NSW 2021.

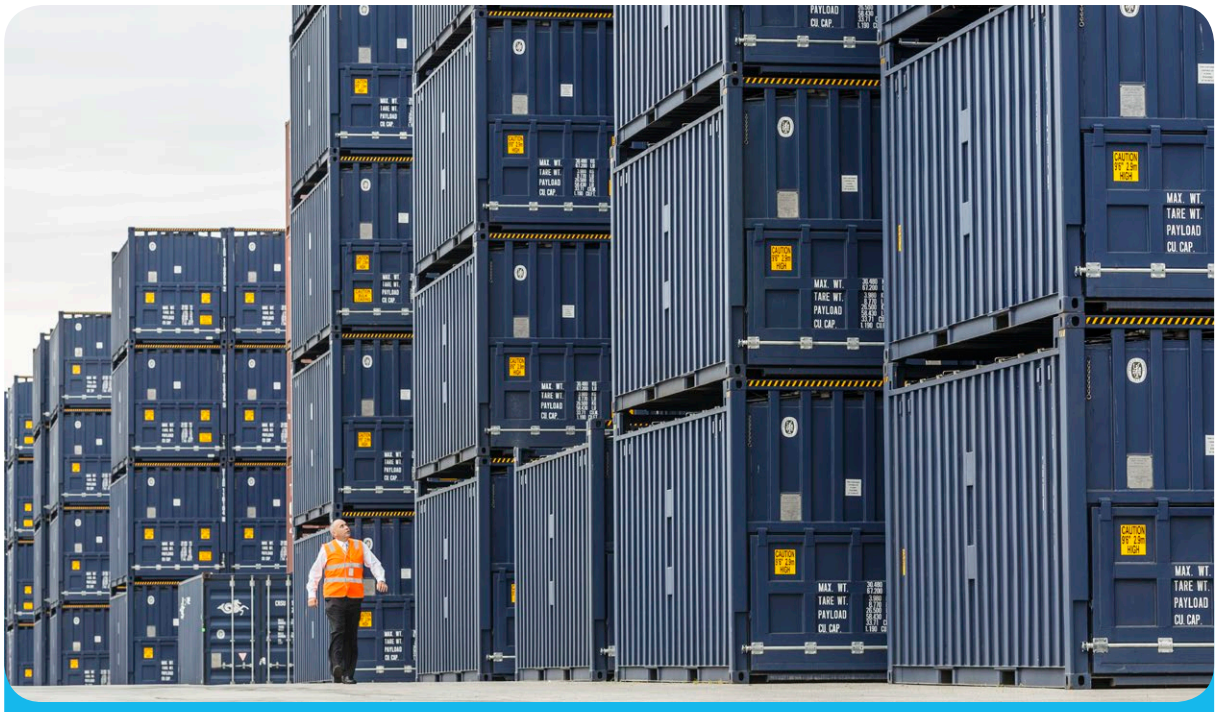
Transport for NSW's plan for an enhanced and integrated freight network has been developed against the backdrop of the Australian Government's freight transport infrastructure planning. Transport for NSW has ensured the NSW Freight and Ports Strategy is aligned with the principles outlined in the National Land Freight Strategy and National Ports Strategy recently developed by Infrastructure Australia. This cooperation is essential to ensure effective NSW and Australian Government partnerships for freight infrastructure funding are maintained.

This Strategy identifies a range of opportunities to foster and enhance effective relationships across government, including:

- Assisting councils to identify and actively plan for increased use of HPV and addressing critical connectivity issues
- Providing further integration of freight needs in local, regional and State land use plans (the NSW Long Term Transport Master Plan provides guidance on freight issues for inclusion in the Sydney Metropolitan Strategy)
- Supporting the Australian Government to maintain dialogue with newly formed national regulators for rail, heavy vehicles and maritime safety
- Identifying projects of significance to the national economy and, subject to available funding, delivering network capacity through a partnership approach such as the Nation Building program.

Defence Significance

- Freight volume and value measures cannot capture the strategic importance to the nation of the NSW transport infrastructure. The NSW transport network supports major defence bases, including the Royal Australian Navy's Fleet Base East at Garden Island, and key strategic Royal Australian Air Force and Australian Army bases and logistic facilities that are vital to the operations, capability and sustainability of the Australian Defence Force.



The Qube Logistics Intermodal terminal at Minto provides a strategic freight link for containers moving between South West Sydney and Port Botany. The annual growth in container traffic through Port Botany tracks ahead of GDP growth and is forecast to be seven per cent per annum, mostly due to growth in imports.

3.2 Progress by industry and government

Investing in infrastructure

Government and industry are investing heavily in new infrastructure to deliver greater capacity across the transport network. Improvements across existing road and rail networks will also unlock greater capacity and performance to meet increasing demands over the next 20 years. These investments include:

- A $1 billion expansion and third container terminal at Port Botany.
- Creation of the Penrhyn Road roundabout as part of the Port Botany expansion, which provides grade separation between trains and trucks near the main terminal entrance. At a total cost of $72 million (including a $10 million contribution towards the access ramp to the Patrick Terminal). The roundabout became operational in late 2012.
- The $700 million long term development program for the Outer Harbour at Port Kembla.
- Further development of the Port of Newcastle, possibly including the T4 coal facility worth in excess of $5 billion.
- Development of an intermodal logistics centre at Enfield.
- Over $1 billion investment to improve capacity on the rail network through Stage 1 of the Northern Sydney Freight Corridor.
- Ongoing and indexed NSW Government funding for the maintenance and upgrade of the Country Regional Network totalling approximately $1.5 billion over ten years. This includes funding for replacement sleepers and upgrade of the Coonamble–Dubbo line.
- Road upgrades across the state, including the Pacific Highway (M1), Great Western Highway (A32) , Holbrook Bypass on the Hume Highway (M31), construction of the Hunter Expressway and Newell Highway (A39) overtaking lane and rest area improvements, and Picton Road safety upgrades.
- To keep rail capacity ahead of market demand for Hunter Valley coal, construction of the Maitland to Minimbah third track, a $362.8 million project.
- To assist in unlocking the coal resources of the Gunnedah basin, $284 million investment in projects to ease congestion over the Liverpool Range.

Achieving a level playing field

Lessening the burden of compliance and reducing regulatory inconsistency is a focus of governments across Australia. Reducing red tape can deliver economic benefits by improving national productivity. The NSW Government is committed to the harmonisation of regulation and maintaining dialogue with newly formed national regulators for rail, heavy vehicles and maritime safety.

Along with supporting these national reforms, the NSW Government has implemented regulatory reforms over the last 12 months covering a range of areas including:

- A boost for NSW-based transport operators under an assistance package announced in July 2012 to encourage freight businesses, jobs and associated registration revenue to stay in NSW. The package includes savings on registration for operators and abolishes stamp duty on the purchase of new truck trailers.
- More than 600 kilometres of the State road network being assessed in the last 12 months as suitable for semi-trailers and B-doubles operating at Higher Mass Limits (HML). Vehicles operating at HML result in greater payloads, efficiencies for transport operators and fewer trucks on the road.
- Improvement in the access restrictions for the movement of livestock, with the NSW Government giving in-principle approval to move to a ‘livestock’ or volumetric-based loading scheme that is more consistent with those in neighbouring states (see Case Study 2).

Figure 16 Current commitments to date on network infrastructure tasks across NSW

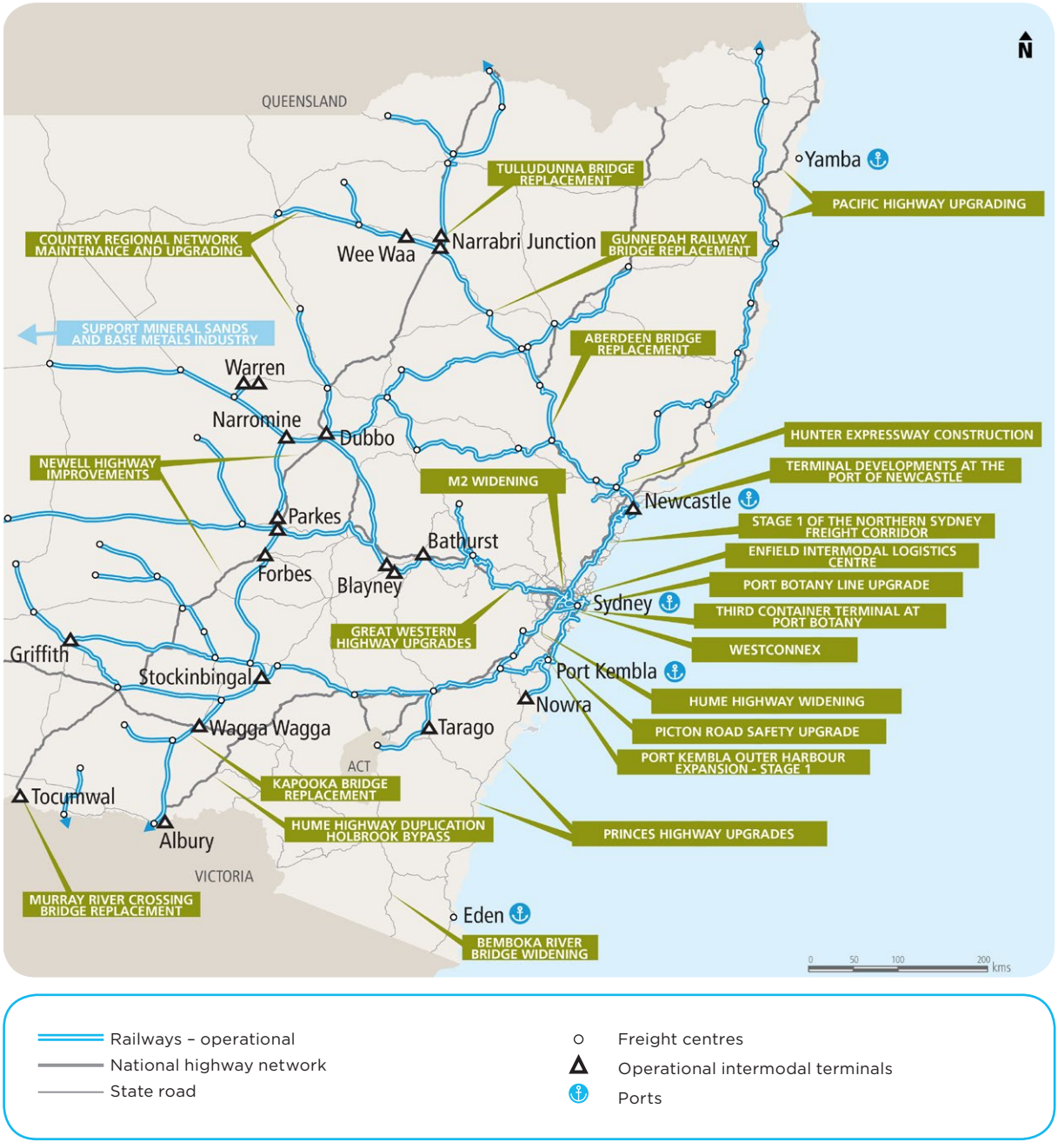
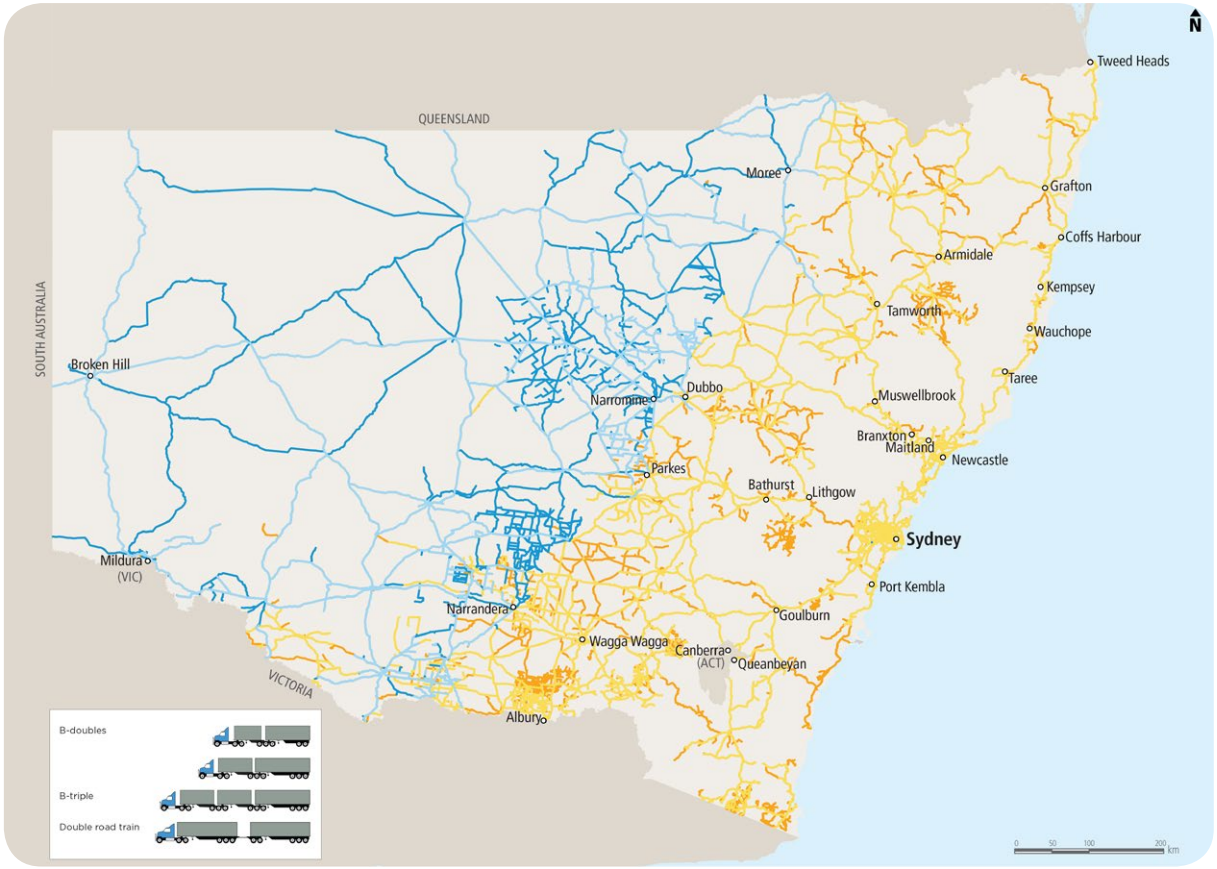


Figure 17 NSW B-double and road train routes 2007 and 2011



B-double routes 2007
Additional B-double routes 2011
Road train routes 2007
Additional road train routes 2011
Freight centres

- Provision of access under the national Performance Based Standards program for rigid trucks hauling quad and quin dog trailers to operate on the current 25 metre B-double routes and, where required, 25 metre HML B-double routes.
- Width concessions for baled agricultural commodities granted in 2012 have been extended up to 2017, facilitating the transport of wool, cotton, hay and straw, which tend to expand during travel and may have some irregularity in sizes.
- Introduction of the Restricted Access Vehicle map service, which is a new interactive map-based resource on the Roads and Maritime Services website. Improvements include fortnightly updating, maps that can be tailored by vehicle type, travel restrictions displays and maps viewable on laptops and tablets wherever mobile coverage is available.
- Wide mobile cranes enrolled in the Intelligent Access Program have been granted the Urban Access Concession, simplifying access procedures to State roads between Williamtown, the Hawkesbury River and Kiama.
- Support for local infrastructure under the NSW Government's Local Infrastructure Renewal Scheme. The first round of applications closed in March 2012, with interest subsidies worth in excess of $64 million over 10 years to 64 councils for 81 projects throughout the State. Around half of these projects relate to roads, bridges and airport upgrades. The scheme has already unlocked more than $394 million worth of investment in local infrastructure.

Meat and livestock processing facilities are critical to the economic vitality of regional NSW. Efficient supply chains create value and ensure competitiveness. The transport network serving regional NSW is a critical part of any supply chain.

CASE STUDY ② RESPONDING TO THE NEEDS OF THE LIVESTOCK INDUSTRY

For many years, Queensland and Victoria have allowed volumetric or welfare loading schemes for the transport of livestock. These schemes allow for statutory mass limits to be exceeded on suitable roads to ensure that livestock is not injured during transport and that optimum loadings can be gained. That is, they are based on a differing access arrangement under similar road transport regulations, and allow for a greater number of animals to be carried in one movement.

In NSW, a B-double vehicle can carry 56 to 60 cattle depending on individual animal weights. In Queensland the same vehicle configuration can carry between 66 and 72 cattle. Industry estimates that the cost of current regulation on the supply chain in NSW is an extra $8 per animal, which translates into nine cents a kilo.

NSW has in the past been reluctant to adopt volumetric or welfare loading of schemes, citing that the benefits gained from increased productivity and enhanced animal welfare did not outweigh the costs in terms of potentially increased damage to bridges and pavements. However, work did proceed in consultation with the livestock transport industry to investigate other options such as enhanced access at Higher Mass Limits (HML) to feedlots, saleyards and abattoirs. A restricted loading scheme that allowed access to concessional mass limits in return for implementing auditable systems for managing vehicle loadings was also considered. This restricted scheme was launched in late 2010. Details of the appropriate vehicle mass limits are shown in Table 1.

Table 1 Vehicle mass limits

Vehicle type	General mass limits (tonnes)	2010 Livestock Scheme (tonnes)	Higher mass limits (tonnes)
19m single trailer combination	42.5	43.5	45.5
25/26m B-double	62.5	64.5	68.0
36.5m B-triple	82.5	84.5	90.5

There was, however, low take up of the scheme due to concerns that the costs of scheme enrolment outweighed the benefits of concessions. Additionally, there was a general resistance to the adoption of HML by the livestock sector due to the costs of route compliance under the Intelligent Access Program, as well as a perceived lack of connectivity to key destinations.

In 2011, negotiations commenced with industry stakeholders when the allowable mass limits for the carriage of livestock were revisited. As a result of these negotiations the NSW Government has given in-principle approval to move to a 'livestock' or volumetric-based loading scheme so that it is more consistent with those in neighbouring states. When implemented, the scheme will result in axle weights similar to higher mass limit loadings and will allow carriers to satisfy animal welfare standards. The key attributes of the scheme are similar to those already in place in Victoria, with the exception of the capping of mass

limits to higher mass limit levels and preventing access to unsuitable bridges. The Victorian Government is currently undertaking a review of its scheme, which will include the possible setting of maximum mass limits.

The NSW volumetric-based loading scheme covers all roads across the State containing infrastructure capable of accommodating livestock vehicles operating at HML. Negotiations are continuing with local government as the authority responsible for a significant part of the road system.

This scheme now provides significant higher productivity benefits for the transport of livestock in and through NSW. Implicit in the scheme's design is the view that productivity benefits flowing through the supply chain will outweigh the costs of additional pavement or other infrastructure damage, while applying an acceptable cap on total possible damage.

In addition, by allowing more livestock on each vehicle, the NSW scheme is expected to result in a significant reduction in the total number of livestock truck movements in NSW, resulting in lower emissions, improved amenity for local residents and road users and improved road safety.

Semi-trailers are commonly used for the transportation of livestock in NSW. Under the new volumetric-based loading scheme, livestock vehicles can operate at HML enabling greater vehicle productivity.


POST
STOP

4 STRATEGIC ACTION PROGRAMS

"The cheapest capacity that you can normally find is latent capacity"

Marius Kloppers, CEO BHP Billiton, 2012

4.1 Strategic Action Program 1 – Network efficiency

Unused capacity is a waste of the investment in network infrastructure. Utilising latent capacity, where it exists, will maximise the return on investment.

Optimising the performance of supply chains is a central issue for industry in all sectors of the NSW economy. The capacity of the transport network needs to be sufficient to allow supply chains to perform. Pinch points, congestion and usage limitations all reduce the ability of businesses to perform. The transport network must keep pace with demand. However, before providing new capacity, Transport for NSW will make best use of the existing network and assets.

The transport network must allow for the efficient flow of goods and enable world-class reliability and sustainability. A transport network that supports NSW business is the basis of economic success. A high performance transport network will act as an economic multiplier and enable the State economy to compete in the global marketplace to its full potential.

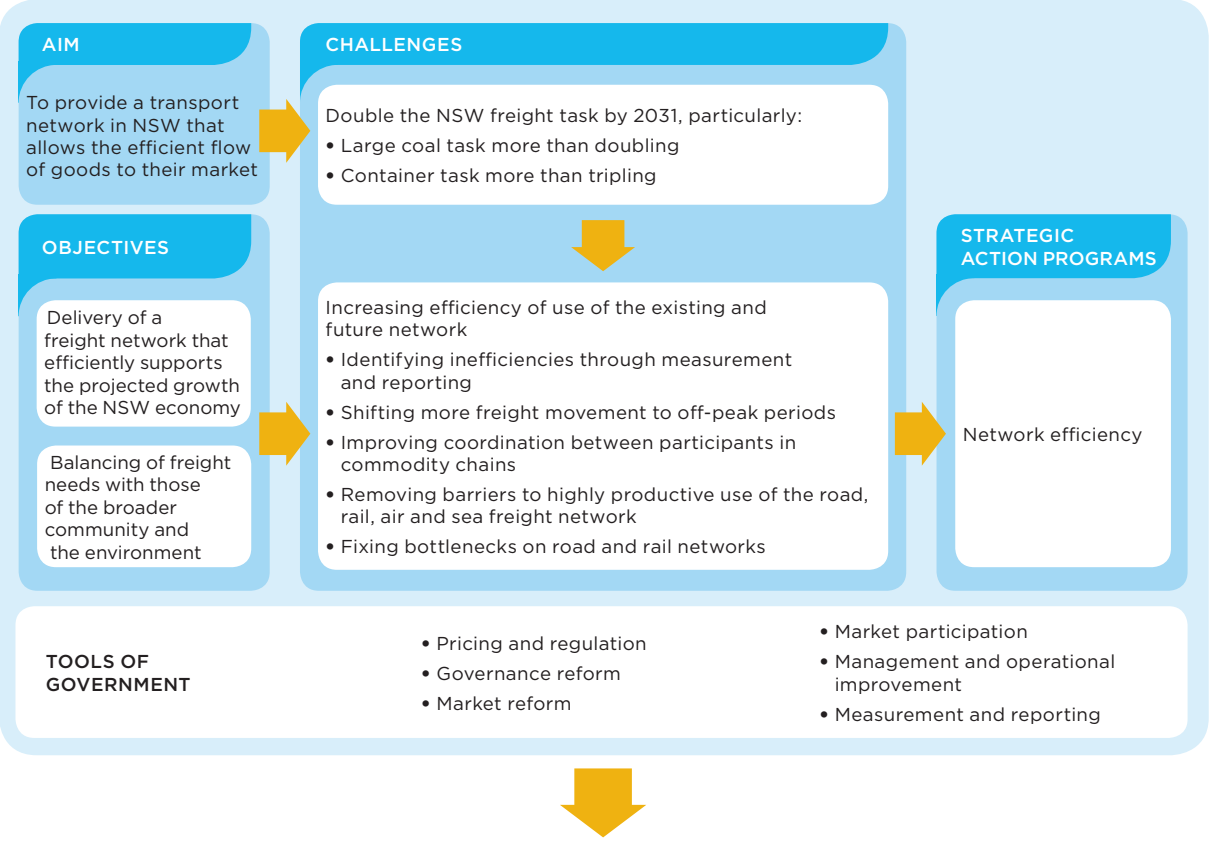
Network efficiency is achieved through the provision of physical infrastructure, control systems, user performance and pricing. Inefficiencies in use of the network create 'friction' and add unnecessary costs, hence the core issue in a supply chain is optimal efficiency. It is estimated that each one per cent increase in freight efficiency saves the national economy $1.5 billion. Given that supply chains can only perform as well as their weakest component, the logistics industry is focused on ensuring that performance, capacity and delivery are brought to the highest possible level across the whole supply chain.

Achieving network optimisation requires governance arrangements to better coordinate supply chains and to measure and report on their performance. It also requires government support to improve the underpinning regulatory environment through the harmonisation of rules and removal of unnecessary impediments.

The NSW Government will support the efforts of industry to improve supply chain performance and coordination. This is central to delivering improved productivity and economic benefits through efficient freight transport.

As shown in the framework for the NSW Freight and Ports Strategy, the Actions in this Strategic Action Programs contribute to a large subset of objectives and challenges. Each of the planned Actions is described in further detail in this section.

Figure 18 NSW Freight and Ports Strategy framework



STRATEGIC ACTION PROGRAM 1: NETWORK EFFICIENCY

ACTION 1A: Identify freight movements and network demand

- Establish and manage freight network performance indicators
- Analyse the role of freight transport in the NSW economy
- Maintain a single agency for streamlined data collection and strategic analysis
- Develop purpose designed cargo movement models
- Promote efficient movement of general road freight

ACTION 1B: Shift more freight movements to off-peak periods

- Build the case for off-peak freight handling for planning purposes
- Support the growth of off-peak freight movement through industry-informed policy development
- Identify the infrastructure and regulatory requirements for off-peak freight handling

ACTION 1C: Develop a seamless interstate freight network

- Maintain dialogue with national regulators to support the interests of freight
- Improve cross border freight flows

ACTION 1D: Improve productivity of the road freight network

- Develop national heavy vehicle charging and investment reforms
- Provide necessary infrastructure to support High Productivity Vehicles access
- Improve access for High Productivity Vehicles on State and local roads
- Incorporate freight considerations into managed motorway access decisions
- Manage oversize and overmass heavy vehicle movements

ACTION 1E: Improve productivity of the rail freight network

- Conduct NSW Rail Access Review
- Secure current and future freight capacity requirements on the shared network

ACTION 1F: Maintain productivity of the air freight network

- Understand the landside movements which support efficient air cargo logistics
- Incorporate the value of air cargo in planned infrastructure upgrades for the Port Botany and Sydney Airport precinct
- Work with the Sydney Airport Corporation and the Australian Government to ensure a consistent approach to strategic airport planning

ACTION 1G: Facilitate the use of coastal shipping

- Improve the understanding of the role of coastal shipping in the NSW freight task
- Work with industry in expanding the use of coastal shipping

ACTION 1H: Improve efficiency of landside cargo transport in regional and urban areas

- Establish a NSW Cargo Movement Coordinator
- Improve network connectivity between networks and key freight precincts

ACTION 1A Identify freight movements and network demand

"Governments must be smarter and focus on evidence-based analysis of what infrastructure is needed and why, rather than on short term political pressures, before giving the green light to projects"

Sir Rod Eddington, Chairman Infrastructure Australia, CEDA, 2012

Identifying inefficiencies through measurement and reporting

Problem description

Understanding the performance of the transport network is central to managing the existing movement of freight. Similarly, having a clear picture of future demand is critical in developing revenue streams to fund network expansion. However, there are currently serious limitations on the data available regarding the freight task on the NSW network.

A single freight performance regime does not presently exist. Different stakeholders in supply chains use different measures to assess performance. The lack of a single set of performance indicators renders it difficult to assess the efficiency of the current network and to quantify required improvements.

In addition, data collection on the performance of the freight network is currently insufficient and handled by multiple agencies, leading to fragmented and inadequate information. Similarly, detailed analysis of the impact of freight on the NSW economy is not currently performed. This means that the contribution of freight to the NSW economy, and the degree of the economy's reliance on freight, are not fully known.

Impact

Due to gaps in knowledge about the performance of the current network and its contribution to the economy, the value of investments and improvements to the network cannot be properly quantified. In other words, the information needed to perform accurate cost benefit analyses when evaluating infrastructure investments is often lacking.

This knowledge gap impacts three main areas. Firstly, it allows some deficiencies in the current network to go unaddressed, since the information needed to identify those deficiencies is not always available. Secondly, the prioritisation of potential infrastructure investments is difficult, as the impact of investments on the network and the broader economy cannot be fully measured. Finally, and arguably most importantly, identifying demand for network capacity is critical in establishing the revenue to fund development and determining when it will be needed.

Transport for NSW recognises that establishing a consistent and reliable freight data resource can improve decision making. The recently established NSW Strategic Freight Model is a major step in addressing this need.

Task 1A-1 Establish and manage freight network performance indicators

In conjunction with users of the network, the Australian Government and other state governments, Transport for NSW will develop macro and micro level indicators of performance for use to measure and report on the efficiency and effectiveness of the freight network.

To assess the performance of the current network and the value of proposed improvements, a set of key performance indicators (KPIs) must be established with stakeholders across the freight transport network. The ideal set of KPIs will effectively link the freight network to the performance of the commodity chain and the economy overall.

KPIs should therefore be focused on the parts of the network that make a particularly large contribution to the NSW economy, such as the Hunter Valley coal chain and Port Botany container chain.

As part of the COAG-endorsed National Ports Strategy and National Freight Strategy, Transport for NSW will work with the BITRE on an expansion of the current "Waterline" series of reported KPIs to provide visibility of landside freight activity.

Once KPIs have been established, a coordinated approach to collection and measurement must be enacted. Similarly, once measured, KPIs must be reported in a consistent manner. This will allow for the best possible analysis of the network's performance, including any areas of deficiency.

Targeted outcome

The establishment of KPIs will ensure government and industry are working to a single performance measurement regime. With the support of stakeholders in the freight transport network, the outcome will be a measurement of performance that is comparable across time periods and network participants.

Effective measurement of KPIs will result in an improved understanding of performance constraints and their impact. This will enable the nature and scale of deficiencies to be identified, and the potential benefit of addressing those deficiencies to be determined.

The measurement of performance is important to unlocking latent capacity in the existing network. By measuring operating efficiency and performance, network coordination and control mechanisms can be used to maintain optimal performance.

The impact that the right measures and performance monitoring systems can have on the operation of a business is demonstrated in Case Study 3.

Task 1A-2 Analyse the role of freight transport in the NSW economy

Transport for NSW will build and maintain a dataset which articulates the value of the NSW freight task, as well as the value created by efficient operation of the freight network.

Thorough economic analysis is necessary to determine the direct and indirect contribution of freight transport to the NSW economy. The direct contribution consists of economic activity within the sector, particularly the Gross State Product and jobs created within the freight transport industry. The indirect contribution consists of the support freight transport provides to other industries, most notably agriculture, resources and manufacturing. This support could, for instance, be quantified through the value of commodities moved. Indirect analysis should be conducted for each of the major commodities moved in NSW.

Once the direct and indirect economic contributions of the sector have been identified, analysis needs to focus on the sensitivity of these contributions to the competitiveness of freight transport in NSW. This analysis should demonstrate the potential of improvements to network efficiency and capacity to create value. It should include changes in production levels in response to the capability of the network to transport commodities.

Targeted outcome

The analysis will provide stakeholders with a clear and shared understanding of the economic importance of freight transport. This will better inform discussion and decision making about for instance, land use and externalities.

More directly, the analysis will inform cost benefit analyses of supply chain efficiency and network capacity investments, providing a full economic view of the value of improvements. This will form the basis of more accurate investment prioritisation.

The M7 is an example of the successful use of data to plan ahead and deliver the right infrastructure at the right time.

CASE STUDY ③ COLLECTION OF ROAD FREIGHT DATA BY THE UK DEPARTMENT OF TRANSPORT

The UK Department for Transport takes a nationally consistent approach to data collection on freight and collects information on the road freight task through two main surveys. The Continuing Survey of Road Goods Transport targets domestic road freight haulage by hauliers in Britain and Northern Ireland, while the International Road Haulage Survey collects data on intercontinental freight transported by British hauliers. Similar survey instruments are used by the two surveys, which provide outputs including the:

- National population of heavy goods vehicles
- Number of new vehicles registered
- Number of road freight operators and other operator characteristics, such as size, employment and finance
- Activities of vehicles, including vans
- Movement of commodities
- Trends in activities and patterns of work.

While aspects of the Continuing Survey of Road Goods Transport are similar to the Survey of Motor Vehicle Use, which is undertaken by the Australian Bureau of Statistics, the former focuses entirely on road freight and provides detailed information on commodity movements. Both the UK surveys are carried out on a continuous basis, with results published annually. The Department for Transport obtains very high response rates to the surveys, mainly because participants are required to complete surveys to comply with operator licensing requirements. The surveys are undertaken according to an agreed European Union approach for gathering road freight statistics.

The two main UK surveys are supplemented with smaller surveys on specific road freight market sub groups, such as foreign registered vehicles operating in the UK. The Department for Transport is one of the few transport agencies in the world which consistently measures and reports environmental performance across different segments of the road freight industry. A number of efficiency studies have also been undertaken within the freight industry environmental program, called ‘Freight Best Practice’.

The first study was undertaken in 1998, and again in 2002, by Herriot Watt University. It focused on the food distribution sector. Using a consistent approach to data collection, similar studies have now been undertaken for other road freight markets, including non food retail distribution, pallet networks, next day parcel delivery services and builders’ merchant services. These studies have provided government and industry with a rich source of data on the relative efficiency of different heavy vehicle fleets, and have been used as inputs to a variety of road freight models. To increase data coverage and reduce costs, the Department for Transport is now moving away from one-off benchmarking surveys and is currently trialing a continuous online benchmarking system.

Task 1A-3 Maintain a single agency for streamlined data collection and strategic analysis

Transport for NSW will ensure the Bureau of Freight Statistics (BFS) can provide a sound basis for freight transport decisions.

The BFS will liaise with and access databases held by the Bureau of Infrastructure, Transport and Regional Economics and the Australian Bureau of Statistics. It will hold all of NSW's available freight data to provide analysis and forecasting of demand for the entire transport network. The BFS will use industry insights, network modelling tools, and strategic modelling and forecasting to provide evidence to support future freight investments.

Data collection and analysis is key to accurate performance measurement, economic analysis and forecasting of demand. Given the currently fragmented approach to this task, the creation of a single statistical agency is a key step in developing knowledge about the freight network.

Targeted outcome

The development of the BFS will provide government and industry with a single, reliable source of data to use when analysing the freight network.

As a result of common and transparent data and modelling, all network participants will be able to engage in more informed decision making. Eliminating double handling and misinterpretation of information can realise tangible benefits, thus improving the underlying value of physical network assets and lowering costs for network users.

The ultimate outcome of the BFS will be the ability to identify network deficiencies and quantify the benefits of infrastructure investments.

Task 1A-4 Develop purpose designed cargo movement models

Transport for NSW is currently building a Metropolitan Cargo Movement Model covering ports, road and rail in and around the Sydney metropolitan area.

The movement of cargo in the Sydney metropolitan area is so complex, and of such critical importance to the NSW economy, that a detailed cargo movement model is needed. This should be an open model of the Port Botany and Port Kembla cargo movement chains from port through to the inland destinations/origins, incorporating metro road and rail as well as Port Botany port interface movements.

Targeted outcome

The outcome will be three detailed and rigorous models (the Sydney Metropolitan Model, Port Botany Port Interface Model and the Illawarra Model) that will support decision making and prioritisation. It will also have the ability to simulate and visualise scenarios in an accessible manner. The model will have the ability to expand to encompass other parts of the State such as the linkages to the Port of Newcastle.

The model will serve four main purposes:

- Identification of bottlenecks, caused by both usage inefficiencies and network limitations, in the current container chain
- Quantification of the potential for efficiency improvements associated with improved coordination between participants or with targeted infrastructure investments
- Assessment of the impact of forecasted demand changes on the ability to move cargo across the network
- Modelling of scenarios on the ability of network capacity expansion options to meet forecasted demand.

This will result in better decision making in the management and development of the metropolitan freight movement task, including:

- Improvements in container chain coordination
- Targeted investments in improving efficiency of usage (such as clearing pinch points in the network)
- Investments in network capacity.

Task 1A-5 Promote efficient movement of general road freight

Transport for NSW will assess the role and needs of general road freight in Sydney.

A variety of light and heavy commercial vehicles traverse the metropolitan area each day. These vehicles connect distribution centres with supermarkets, bulky goods retailers and retail and commercial centres across Sydney.

The Victorian Department of Transport recognised that more needed to be done to understand the patterns of movement for general road freight in urban areas. Initial analysis by the Department of Transport will underpin further work with Transport for NSW to establish a reliable evidence base for general road freight movements in urban and suburban areas.

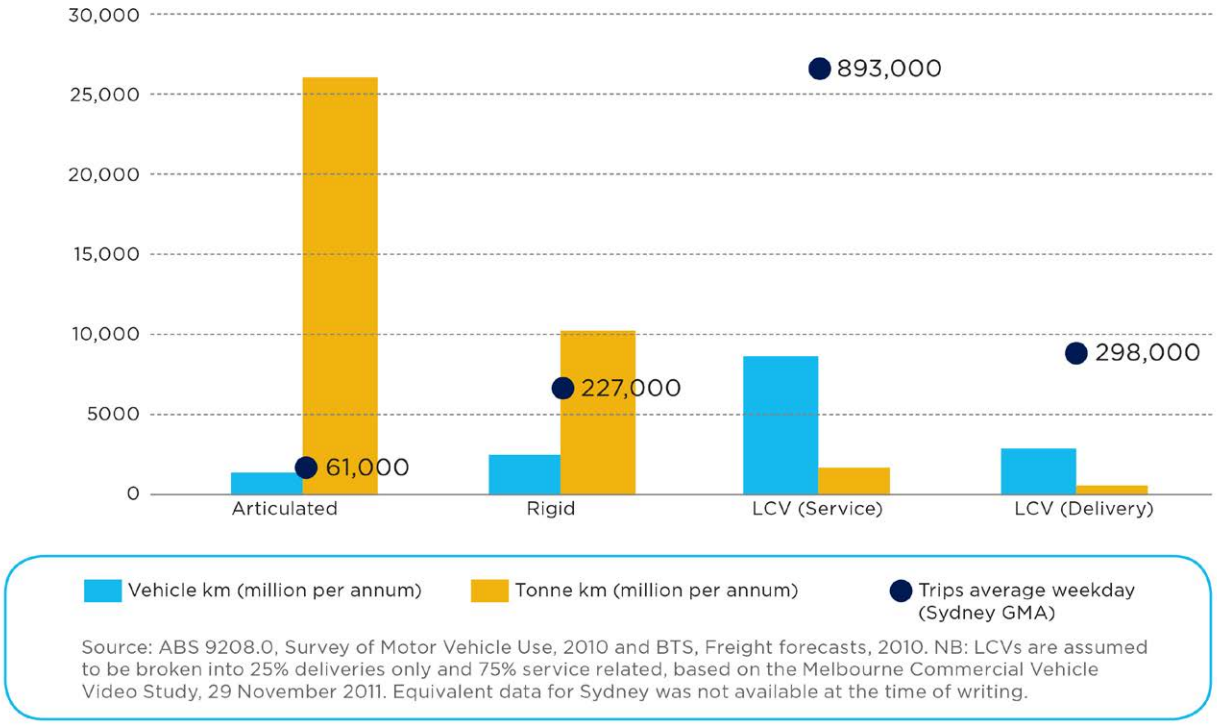
The Victorian research has identified the tasks undertaken by road freight vehicles. The study showed the importance of curtain sided trucks carrying palletised goods such as food and beverages, which made up 22 per cent of heavy commercial vehicles in Melbourne.

In contrast, the role of light commercial vehicles (LCVs), small vans and utilities was smaller than expected, since 75 per cent of these vehicles were actually service vehicles for trades such as plumbing. However, the relative importance of these trips could be growing. The freight carried by LCVs was predominantly documents and parcels. A recent study has shown that low value parcels coming into Australia have doubled between 2006 and 2011. Demand for LCV freight trips is thus likely to increase as internet shopping expands. The impact of these trips on traffic will need to be monitored.

Figure 19 shows freight-related LCVs in NSW travelled a greater distance in 2010 than rigid or articulated trucks, although the amount of freight carried by LCVs was significantly lower.

Curtain sided trucks carrying palletised goods are a critical element of the daily freight task across NSW.

Figure 19 Comparison of truck and light commercial vehicle activity in NSW with trips on an average weekday



Source: ABS 9208.0, Survey of Motor Vehicle Use, 2010 and BTS, Freight forecasts, 2010. NB: LCVs are assumed to be broken into 25% deliveries only and 75% service related, based on the Melbourne Commercial Vehicle Video Study, 29 November 2011. Equivalent data for Sydney was not available at the time of writing.

Case Study 4 explains the results of preliminary work by the Victorian Department of Transport, which used a video camera survey to track and better understand the movement and composition of general road freight.

Targeted outcome

General road freight movements within the Sydney and Melbourne metropolitan areas are a significant part of the transport task. As the way people shop and work changes, Transport for NSW will need to gain a better understanding of the task, particularly in busy urban areas of NSW. Case Study 4 illustrates that in the Melbourne city centre around 40 per cent of trucks are curtainsiders and box trucks. Whether or not this proportion will change significantly is unknown.

For example, online shopping combined with direct home delivery may result in lower truck movements to retail centres. At the same time, some businesses in busy areas may need more frequent deliveries as the amount of pedestrian traffic grows around them. Pressure for parking in busy streets, and competition for loading zone space could potentially increase congestion and conflict for certain vehicles types in urban centres. Simultaneously, the number of general freight vehicles in residential streets may increase as households shift the way they shop.

At this time, not enough is known about the trends in general freight to fully assess and plan for the impact of these changes.

Gaining a better understanding of the general freight task will contribute to the quality of the solutions we develop for many other tasks related to the efficiency and sustainability of freight activities. The opportunity to collaborate with the Department of Transport in Victoria will provide a greater understanding of general freight movements. The outcome of the work will form the basis for better decision making about how urban areas will be served in the future.

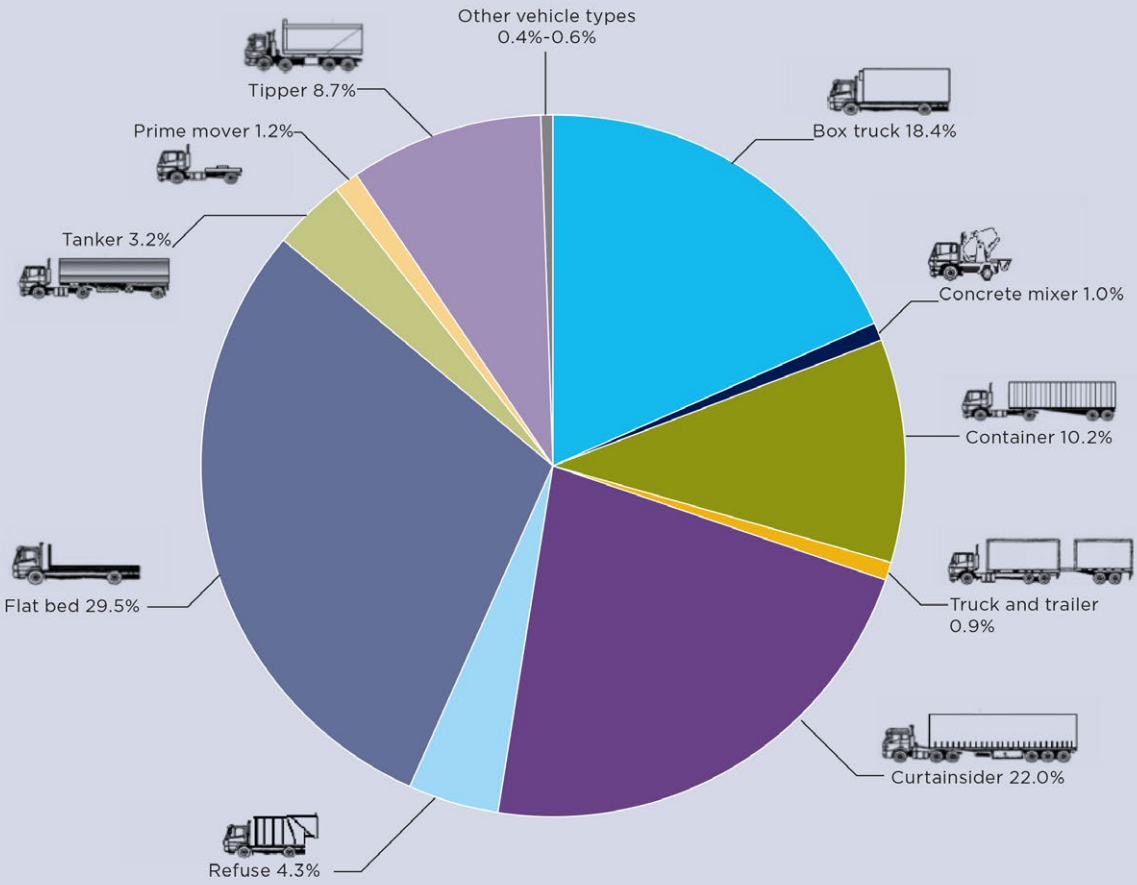
CASE STUDY ④ GENERAL ROAD FREIGHT ANALYSIS

The Victorian Department of Transport investigated the composition of urban traffic flows through a high definition video survey undertaken in mid 2011. The survey categorised traffic as either heavy vehicle or light commercial vehicle, and also identified vehicle types and apparent trip purpose or industry.

The analysis showed the importance of general freight in serving a wide variety of community needs, from deliveries to supermarkets to the removal of rubbish. The results support the inclusion of urban freight vehicles as part of broader planning to integrate land use and freight.

Figure 20 shows the composition of heavy vehicles found in the Melbourne study.

Figure 20 Composition of heavy vehicles in Melbourne (Department of Transport Victoria, 2011)



ACTION 1B Shift more freight movements to off-peak periods

"Avoiding difficult initiatives will result in uneconomical decisions on infrastructure delivery and the further build out of existing roadways that are only fully utilised for a small number of hours a day"

Scott Charlton, CEO Transurban

Levelling out network demand by using off-peak periods

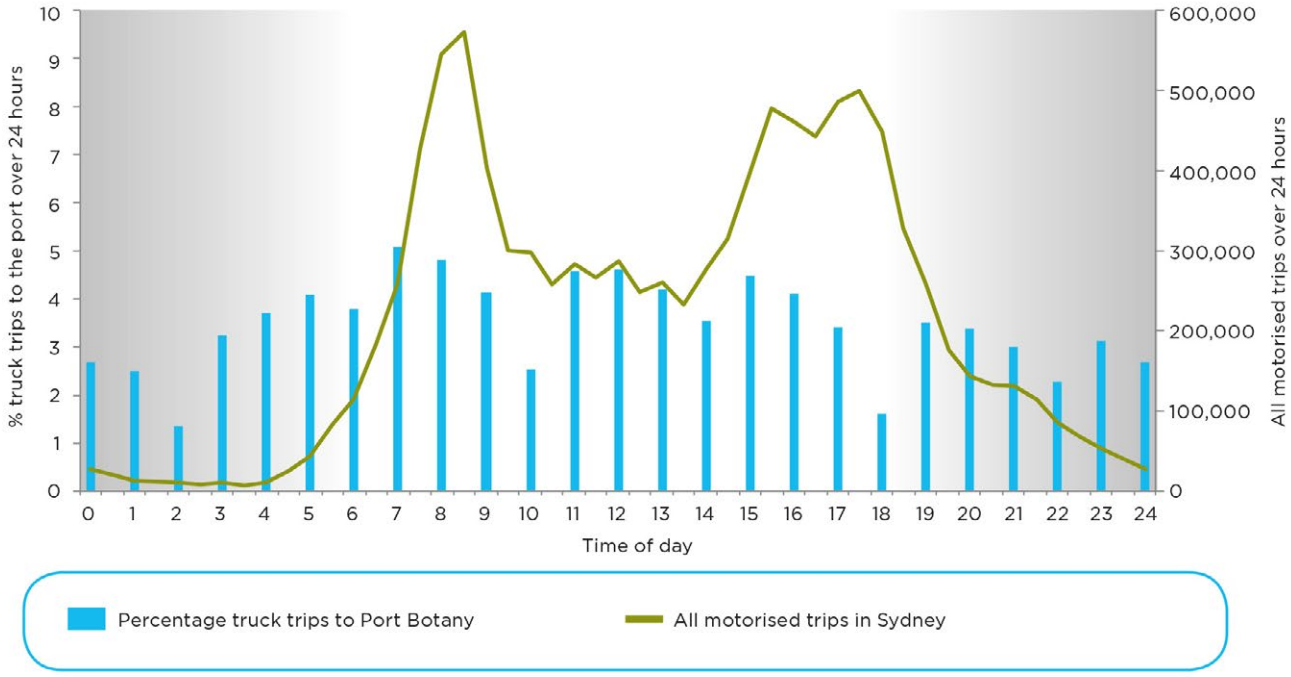
Problem description

Currently, most road freight movements take place during daylight hours on weekdays. This means that freight and passenger movements largely happen at the same time. The demand for network capacity therefore peaks when passenger and freight demand coincide.

During these periods, especially in the morning and afternoon commuter peaks, demand exceeds capacity on many trunk and feeder parts of the network. In contrast, even the busiest parts of the network display latent capacity in off-peak periods, such as late evenings, early mornings, nights and weekends.

A good illustration of this is provided by comparing the time of day profile for Port Botany to the time of day pattern for all motorised trips in Sydney. As shown in Figure 21, general traffic follows a curve with two distinct peaks in the morning and afternoon. The morning peak reflects the common start time for most businesses and

Figure 21 Time of day profile for truck trips to Port Botany, compared to all motorised trips in Sydney 2011 (Source: Sydney Ports 2012 and BTS 2011)



education institutions. The double peak in the afternoon is the result of school travel followed by the later commuter peak.

Overnight and, to a lesser extent, during the middle of the day, the transport network has the capacity to accommodate growth.

Freight operators can only take advantage of relatively clear roads if their origins and destinations enable them to choose the least congested part of the day to travel. Port Botany is a good example of an operation that makes better use of the road network. Truck arrivals are balanced throughout the 24 hours, taking some of the pressure off the peak hours. All users benefit from the reduction in congestion and delays.

Moving freight trips to times outside peak periods will contribute to reduced congestion and, more importantly, can improve freight access and reliability. This will potentially lead to lower transport costs for the entire community. Reducing congestion saves fuel, time, labour and wear and tear on vehicles. It also reduces safety risks and can influence the timing for new infrastructure.

The major limitations to off-peak freight transport activity are the practice of paying penalty rates for off-peak labour and the difficulty of getting approval to operate trucks and other transport equipment in urban areas during the evening, night and early morning.

The problem extends both to heavy freight and connectivity issues. The latter is particularly impacted, because it is concentrated in urban areas.

Impact

As a result of the concentration of freight transport during peak periods, network capacity is underutilised. Even the busiest network links have latent capacity during off-peak periods.

Another outcome is the often heavy congestion during peak periods, which comes at a cost to the freight transport industry and to other road users.

Task 1B-1 Build the case for off-peak freight handling for planning purposes

Transport for NSW will deliver an economic business case to establish the viability and requirements for increasing off-peak use of the freight transport network and logistic activity precincts.

This business case should take into account all relevant variables such as a reduction in congestion, externalities of noise, emissions and impacts on amenity, productivity gains, higher employment, and targeted capital investment.

Targeted outcome

The aim of developing a business case for government is to trigger consideration of off-peak freight in current operations and provide certainty for forward planning and investment decisions. An example of the problem and its economic impacts is provided in Case Study 5.

Transport for NSW will work with local government to encourage and facilitate planning and zoning practices near freight links and activity precincts that are consistent with 24/7 operations.

Task 1B-2 Support the growth of off-peak freight movement through industry informed policy development

Transport for NSW will deliver an Off-Peak Freight Action Plan with industry and other key stakeholders. The plan will establish a workable target and measures for shifting freight into the off-peak period.

The Strategic Freight Model will assist in testing the viability of different off-peak scenarios as part of a broader economic evaluation. An Off-Peak Freight Strategy will advance an agreed scenario that balances the benefits for the freight industry with the needs of the community and environment.

Coal, container terminals and fast moving consumer goods are examples of logistic activities that generally operate 24 hours, seven days a week. The benefits of working outside peak periods on the road network, especially in Sydney, seem obvious, and yet many businesses are not exercising this capacity.

The capacity for more off-peak freight is subject to a range of factors including work practices,

CASE STUDY ⑤ RESTRICTIONS ON OFF-PEAK SUPERMARKET ACCESS

Some supermarkets in residential areas experience supply chain inefficiencies stemming from council restrictions to heavy vehicle access. The nature of these restrictions varies depending on the council, however most are related to delivery curfews and vehicle size.

The case of one store operated by a major supermarket chain in Sydney illustrates these issues. On average, the store receives 35 truck deliveries per week, evenly spread between the curfew times of 7am and 9pm on weekdays and 8am to 7pm on weekends and public holidays. Using the road during these on-peak times causes the supermarket to experience longer delivery runs, higher fuel consumption and increased driver hours. Furthermore, to meet demand during these restricted times, the store employs more drivers and uses a larger vehicle fleet.

These supply chain inefficiencies are compounded by vehicle access restrictions. As deliveries occur at peak periods, and the store cannot risk impeding vehicle and pedestrian traffic, it cannot use normal trailer configurations. Instead of using 24 pallet trailers, the store is serviced by 16 pallet trailers, meaning more freight runs and greater operational costs. These restrictions cause the scheduling of an additional eight deliveries each week, representing an extra 830 kilometres of freight movement.

the scale of individual operations, the use of secure and unattended delivery areas and the availability of incentives to encourage change.

The road network has the capacity to support increased off-peak movements. Even the busiest routes in Sydney, such as the M5, have available off-peak capacity. Moving towards increased off-peak movement of freight requires industry engagement to determine which supply chains are ready to make a change, and the measures needed to make this happen. For example, opportunities exist to reduce tolls in off-peak periods.

However, freight will not move if the dispatch or receival depot is closed. In the case of containers moving in the Sydney metropolitan area, matching the operating hours and practices of depots and IMTs to match the 24/7 operations of the stevedores will be a step towards ensuring that the latent capacity of the network and equipment is used.

Targeted outcome

Taking advantage of off-peak periods increases the efficiency of the road network. Moving more freight on the road outside peak periods can reduce the cost of congestion and prepare for the doubling of the NSW freight task by 2031.

A target for shifting freight movements into off-peak periods, developed with industry and supported by a range of measures, is the key outcome of any strategy for off-peak freight.

Task 1B-3 Identify the infrastructure and regulatory requirements for off-peak freight handling

Transport for NSW will assess critical infrastructure requirements as part of the business case into off-peak freight handling.

In order to shift more freight transport to off-peak periods, the freight and logistics sector needs to use supporting infrastructure in non-residential areas as much as possible. The role of government is to identify where this infrastructure is needed, or already available, and ensure it is commercially attractive. In particular, this will include ensuring network connections work. An example of this is the identification of locations for empty container parks near where containers are 'off hired'. Another example is the identification of distribution centres for fast moving consumer goods in areas with limited impact on residential areas and good access to the network, such as Hoxton Park and Western Sydney IMT proposal.

Targeted outcome

The aim of this task is to provide network capacity, connections and supporting logistics infrastructure for off-peak freight transport in locations where potential impacts of noise, light and vibration can be isolated from residential areas.

ACTION 1C Develop a seamless interstate freight network

Working with national regulators and neighbouring jurisdictions to improve cross-border connectivity

Problem description

The NSW economy and transport network do not operate in isolation. The flow of goods interstate and internationally connects NSW to the national and global marketplace.

It is estimated that approximately half of all road freight and three quarters of all interstate road freight in Australia moves through NSW for at least part of its journey. This reflects the significance of NSW to the Australian economy, and the nation's reliance on NSW roads.

The way the NSW network is regulated and operated should be aligned as seamlessly as possible with other states so that unnecessary duplication and costs are minimised. While governments have made substantial efforts over recent years to harmonise inconsistencies in network regulation, access and safety, more can be done. There is an ongoing COAG work program to further reduce state differences, particularly for road and rail freight operations that cross borders.

Impact

Inconsistent network regulations and operating conditions have a negative impact on state and national productivity. Some of the most significant implications of these inconsistencies include the costs to operators of meeting different state safety requirements, such as the keeping of records related to fatigue.

Task 1C-1 Maintain dialogue with national regulators to support the interests of freight

Transport for NSW will ensure that the interests of freight and logistics are at the forefront of the agenda of the newly established national regulators for rail safety, heavy vehicles and maritime.

The Council of Australian Governments (COAG) has approved a work program to improve national productivity and safety by establishing single national regulators for rail safety, heavy vehicles and maritime. The purpose of these reforms is to improve freight productivity and safety as well as reduce regulatory red tape. Transport for NSW is working with the Standing Council on Transport and Infrastructure (SCOTI) to support the delivery of these outcomes.

In January 2013, the National Heavy Vehicle Regulator (NHVR) commenced initial operations. NSW and other jurisdictions are currently finalising legislation to apply the Heavy Vehicle National Law.

The National Rail Safety Regulator (NRSR) became the safety regulator for rail activities in South Australia, New South Wales, Tasmania and the Northern Territory. Subject to the passage of application laws, it is expected that rail activities in Western Australia, Victoria, Queensland and the ACT will be regulated by the NRSR by the end of 2013.

The National Maritime Safety regulatory scheme is due to commence in July 2013.

The services of all three national regulators will be delivered in NSW via service agreements with the Independent Transport Safety Regulator (ITSR) for rail, and Roads and Maritime Services

(RMS) for heavy vehicles and maritime. These agreements are due for finalisation prior to commencement of the national scheme.

Even though the National Heavy Vehicle Regulator will manage road access applications nationally, road access decisions will remain the responsibility of individual jurisdictions (that is, state and local governments) due to funding and their detailed understanding of the relevant road networks. Interstate operators may therefore still be faced with some differences in access conditions as they move across state borders, due to variations in road conditions.

Targeted outcome

Transport for NSW will maintain dialogue with all three regulatory bodies to support ongoing development of activities and roles, and review progress and effectiveness at designated review points. Each body is charged with streamlining transport regulations:

- The **Australian Maritime Safety Authority** (AMSA) is the single national regulator for domestic commercial vessel safety in Australia. AMSA will apply standards, rules and subordinate legislation consistently around Australia, and will be responsible for the development of the National Standard for Commercial Vessels.
- The **National Rail Safety Regulator** (NRSR) will provide national accreditation for rail transport operators, remove duplication of audits, monitoring and inspections, and improve availability of resources and specialist knowledge to inform decision making and safety investigation.
- The **National Heavy Vehicle Regulator** (NHVR) is responsible for regulating all road vehicles over 4.5 gross tonnes. Under the NHVR, a common set of laws for heavy vehicles for all states and territories will apply.

Under the Intergovernmental Agreement to establish the NHVR, a key undertaking was the preservation of existing local productivity initiatives. These are local regulations, instruments or operational practices that depart from national laws to allow a more productive, efficient or sustainable means of carrying out the freight task, where local conditions enable this to occur.

Task 1C-2 Improve cross border freight flows

Transport for NSW will work with neighbouring jurisdictions to manage issues associated with the transportation of freight across state borders in regional areas.

Differences in access arrangements across borders continue to affect productivity, particularly in regional areas. For example, NSW permits the use of new module building cotton harvesters on its roads, while Queensland does not. Similarly, NSW has a more extensive road train network than Victoria.

The National Land Freight Strategy (NLFS) seeks to address cross border issues. The objective of the NLFS is to improve the efficiency of freight movements across infrastructure networks, minimise the negative impacts associated with such freight movements and influence policy relating to the movement of freight. The NLFS seeks to direct the efforts of all governments and industry towards the long term vision, objectives and outcomes for freight in Australia.

Targeted outcome

Inconsistencies in access arrangements across borders are an impediment to freight productivity and efficiency in regional areas. Transport for NSW will maintain relationships with the Australian Government and other jurisdictions, enabling a collaborative approach for the identification, management and resolution of cross border freight issues. This will assist in the implementation the NLFS.

CASE STUDY ⑥ LINKS TO THE NORTHERN RIVERS – WOODENBONG TO LEGUME

The Northern Rivers and Darling Downs area straddles the NSW/Queensland border.

The Northern Rivers region of NSW is a rapidly growing residential and holiday destination. The areas away from the coast support primary production, such as cattle and forestry, and a range of value adding and processing industries, such as abattoirs, timber mills, grain and feed mills, and milk processing.

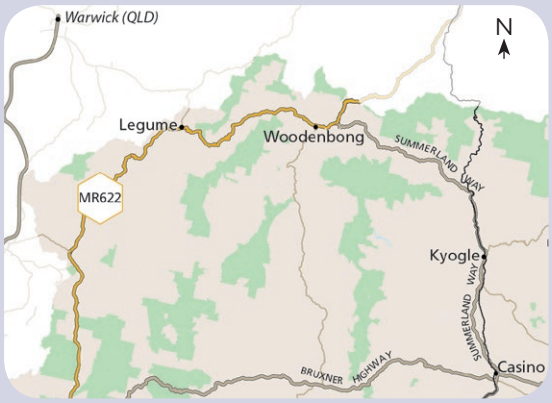
The Northern Co-operative Meat Company in Casino employs in excess of 1,100 people and produces beef, wet blue leather and pork for both the domestic and export markets. Up to 10 TEU per day are transported from Casino to the Port of Brisbane for export. The meat works draw cattle from the New England and north west regions of NSW and from the Darling Downs in Queensland. Some 80 per cent of pigs processed at the abattoir are sourced from South East Queensland. Most of the other processing industries are reliant on raw materials sourced from north west NSW and Queensland.

The Darling Downs is one of Australia's most significant agricultural regions. It is located on the western slopes of the Great Dividing Range in southern Queensland, extending west from Warwick and Toowoomba. It is a highly productive region producing crops including cotton, wheat, barley, soya beans and sorghum, as well as beef and dairy cattle, pigs and sheep. Toowoomba is a growing Local Government Area of more than 150,000 people, while Warwick's population is about 13,700. There is a Big W distribution centre at Warwick servicing areas between Sydney and Darwin including the North Coast of NSW.

The challenge for industries in the Northern Rivers is transport restrictions. These affect both raw materials being transported into the area and finished products being transported out of the area, particularly to the key Brisbane market and port. Due to terrain constraints, the number of east-west links between the north coast and the New England Tablelands and the Darling Downs is limited. There is only one approved east-west B-double route between Newcastle and the Queensland border, being the Gwydir Highway (B76) which connects Grafton with Glen Innes. This route is also the only continuous HML route. Other major connecting roads are the Bruxner Highway (B60), Summerland Way (B91) and Main Road 622, the Woodenbong to Legume Road. All of these routes have significant constraints.

There has been a number of proposals in recent years for the development of upgraded links between the Northern Rivers and South East Queensland. In particular, there have been proposals to upgrade the Summerland Way (B91) north of Kyogle as an alternative route to the Pacific Highway (M1) and to provide access to a proposed industrial and distribution precinct at Bromelton near Beaudesert. In addition, there have been requests to upgrade the section of Main Road 622 between Woodenbong and Legume.

While both these projects would provide significant benefits in the long term, the substantial costs involved make it difficult for them to be ranked at the top of the priority list. However, strategic upgrading projects that will improve road safety, reduce travel times and facilitate access by High Productivity Vehicles are likely to be warranted.



ACTION 1D Improve productivity of the road freight network

Removing barriers to highly productive use of the road network

Problem description

Trucks, and the freight that they carry, constitute a critical link in NSW's economic activity. Trucks of varying size, role and capability facilitate almost all economic activity at some point in the supply chain. However, trucks are currently not carrying freight across the NSW road network in the most efficient way. This is due to the lack of a streamlined approach to managing the movements of vehicles carrying freight.

A more productive movement of freight can be achieved, with fewer vehicle movements, through the use of vehicles carrying greater loads. General access vehicles, which can travel on all roads in the NSW network, are vehicles up to and including the allowable mass for a conventional 19 metre semi-trailer.

Vehicles that exceed the carrying capacity of a standard semi-trailer are known as High Productivity Vehicles (HPV). The main categories of HPV are:

- Restricted Access Vehicles (RAV), which is a general term for all vehicles whose length, width, height or mass is greater than that of a standard 19 metre semi-trailer.
- Higher Mass Limit (HML) vehicles, which are a subset of RAVs that meet a number of requirements, such as road friendly suspension and enrolment in the Intelligent Access Program. This allows them to carry up to 500 kilograms more on a single steer axle and up to 2.5 tonnes more on a triaxle group than the general access limit.
- Oversize and/or overmass (OSOM) vehicles, which are a subset of RAVs that have a height, length, rear overhang, forward projection or mass exceeding statutory dimensions or mass limits. OSOM loads are commonly large indivisible items, special purpose vehicles (e.g. cranes) or agricultural machines/implements.

Despite the ability of HPV to enhance the productive use of the road network, their access to some key parts of the network is currently restricted. This restriction can be attributed to one of two underlying factors.

The first factor is insufficient infrastructure to support HPV access, such as bridges that cannot support heavier vehicles, or roads that are not wide enough to accommodate longer vehicles when turning. When portions of the road are unsuitable for HPV, these vehicles may be denied access to an important delivery route.

The second limiting factor for HPV access is a disjointed approach to funding and approvals. More than 160,000 kilometres of the 185,000 kilometre road network in NSW are local and regional roads. These roads are managed by local governments, but funded through a variety of sources including road user charges from freight vehicles and special grants for identified projects. In addition, the decision to grant RAV route approval lies with local road managers, who are sometimes reluctant to grant approval due to issues of local amenity, safety or concerns about funding road maintenance and upgrades.

Higher Mass Limits (HML)
Higher Mass Limits is a scheme allowing vehicles enrolled in the Intelligent Access Program to be loaded above General Mass Limits.

High Productivity Vehicles (HPV)
High Productivity Vehicles are vehicles approved to carry loads under Higher Mass Limits or Performance Based Standards.

In many cases, the funds collected from HPV access charges on State and local roads do not cover the cost of enabling road enhancements and necessary maintenance to support HPV. This creates a deficit in funding for State road projects and a disincentive for councils to approve access.

A lack of information regarding the capability of State and local road infrastructure to support HPV and HML access is also a significant issue. Detailed assessments of the condition of roads and bridges as well as HPV pilots are required to grant access to HPV on the NSW network and prioritise road freight investments.

The movement of OSOM heavy vehicles on the NSW road network is a growing issue. The increasing number of OSOM movements and size of OSOM vehicles are placing a further strain on the road network and the physical ability of road infrastructure to accommodate such movements. Permitting OSOM movements on NSW roads must be balanced with appropriate levels of risk management in order to minimise disruptions to other road users.

Impact

Restricted access to the road network for HPV, including vehicles operating at HML results in significantly lower productivity. Due to these limitations, many transport operators have resorted to decoupling trailers and making multiple trips, or carrying less than a full load for an entire journey. Restrictions on OSOM movements impact industries such as agriculture, mining and heavy fabrication who rely on them and there are significant economic benefits from accommodating these movements.

In addition to these effects, restricting access to the road network clearly contributes to congestion, which is particularly problematic in the Sydney metropolitan area. In regional NSW, limits on HPV access result in a lack of end-to-end connectivity. Operators are forced to unload prior to reaching restricted portions of the network, which generates unnecessary double handling. Ultimately, barriers to freight travelling on the NSW road network prevent existing infrastructure from being used in the most efficient way possible.

Task 1D-1 Develop national heavy vehicle charging and investment reforms

Transport for NSW will continue to advocate for heavy vehicle charging and investment reforms to improve funding for road infrastructure investment to accommodate heavy vehicles in NSW.

The road network in NSW supports a significant proportion of total truck movements across Australia, generating high costs for NSW in the maintenance and expansion of State roads.

Maintaining the condition of vital freight links in NSW is both a State and a national productivity issue given the crucial role NSW plays in the national land freight network. Heavier trucks have been seeking access to the NSW road network. While the use of heavier trucks with improved technologies can increase productivity and road safety performance, they create a significant cost to NSW through increasing the expenditure necessary for road maintenance and new road investments.

Currently, NSW is significantly disadvantaged under the national heavy vehicle charges framework. NSW receives only nine per cent of national heavy vehicle charge revenue but accounts for one third of the charges generated from heavy vehicles. The deficit is largely funded by NSW taxpayers and the remainder by the Australian Government.

Building on recent moves made by COAG to introduce heavy vehicle charging and investment reform, NSW will seek more direct charging of heavy vehicles for the roads they use. The revenue will be reinvested in NSW road infrastructure. This will result in an improved balance between heavy vehicle use and heavy vehicle revenue in NSW.

Targeted outcome

The development and implementation of heavy vehicle charging and investment reforms would result in NSW receiving revenue from heavy vehicle charging which better reflects the costs to NSW of providing well maintained roads, supporting the level of heavy vehicle road use, and accommodating safety and environmental impacts of heavy vehicles. NSW will continue to make the strong case for national charging and investment

reforms to support more direct charging of heavy vehicles operating in NSW and to ensure NSW receives heavy vehicle revenues based on heavy vehicle use of the NSW road network.

Task 1D-2 Provide necessary infrastructure to support High Productivity Vehicle access

Transport for NSW will deliver a program for strengthening and replacing bridges and roads on existing State freight routes, and enable the opening of new routes, for greater productivity across NSW.

Transport for NSW has an active role in identifying strategic links where expanding HPV access is crucial. Bridges built prior to 1976 are a common problem when attempting to grant a road HML approval, as they were built to lower weight limit standards. Other limitations include low underpasses and narrow shoulders, which present a problem for longer, wider or higher vehicles.

An example is the Port Botany precinct where the proposed expansion to the current Super-B approved network will be fast tracked to allow

HEAVY VEHICLE CHARGING AND INVESTMENT REFORM

The charges currently applied to heavy vehicles in Australia for their use of the roads are applied through fixed annual registration charges and fuel-based road-user charges, which are set through a cost recovery model based on historic expenditure on road services managed by the National Transport Commission (NTC). This arrangement was introduced in Australia in 1992 to ensure heavy vehicles pay their share of road spending.

In 2007, the Council of Australian Governments (COAG) agreed a comprehensive long term road reform plan for road infrastructure pricing and investment decision-making that is expected to deliver better signals and incentives to road infrastructure users and providers, thereby enabling Australia to more efficiently meet the growing national freight task. The road reform plan, rebranded as the Heavy Vehicle Charging and Investment (HVCI) Reform, is COAG's response to the 2006 inquiry by the Productivity Commission into road and rail freight infrastructure pricing, which confirmed the importance to the national economy of efficient provision and use of heavy vehicle road infrastructure.

On 4 November 2011, the Standing Council of Transport and Infrastructure (SCOTI) submitted a Feasibility Study to COAG that canvassed introducing more direct charging (by mass, distance and/or location) for heavy vehicles and associated reforms to road funding arrangements. A key finding of the report is that heavy vehicle pricing reform on its own will not result in significant economic benefits. However, the report also found that significant economic benefits can be expected if incentives are created through funding reform for road providers to improve their efficiency and open up greater access for heavy vehicles.

COAG's endorsement of the Feasibility Study findings and recommendations on 11 July 2012 has broadened the scope of future reforms to include not only reforms to the calculation of prices and the collection of charges, but also reforms to link the use of these revenues to the provision of road infrastructure (referred to as 'supply-side' reforms).

The HVCI Reform will undertake extensive public consultation during 2013 on a series of pricing and supply-side reform options ahead of providing a recommended reform option to SCOTI for consideration in November 2013.

In parallel, the SCOTI has also directed the NTC to complete a comprehensive review of the heavy vehicle charging system, including the balance of charging mechanisms and a review of the assumptions and methodologies used to determine charges to ensure they are practical and fair. Following SCOTI consideration of the review, the NTC will undertake a determination to recalculate heavy vehicle charges for implementation from 1 July 2014.

connection of the third terminal, an increase in GVM from 72.5t to 85t and 109t where the road infrastructure allows.

Once important freight links with infrastructure limitations are identified and prioritised, State and local governments must work together to address those limitations. In some cases, especially when granting HML approval is of particular importance, the NSW Government alone may provide the required infrastructure upgrades. Bridges for the Bush (see Case Study 9) is an example of a NSW Government led program to fix infrastructure limitations and increase HPV access.

Targeted outcome

Undertaking infrastructure enhancements is the key activity necessary to enable expanded HPV access. When bridges and other parts of roads are able to bear the weight and size of HPV, restricting access for these more productive vehicles is no longer necessary.

Expanded access for HPV will provide greater end-to-end connectivity for freight, reducing double handling, decoupling and, ultimately, the number of freight vehicles on the road network.

Task 1D-3 Improve access for High Productivity Vehicles on State and local roads

Transport for NSW will investigate the feasibility of allowing HPV access on State and local roads to improve access for HPV throughout the NSW road network.

A lack of information regarding the capability of roads to support HPV, rather than infrastructure limitations, is often the main barrier to HPV access on State and local roads. Currently, key freight links exist in NSW which could support HPV but have not been subjected to necessary scoping studies or pilots to determine the feasibility of such access.

As an example, Transport for NSW is working towards trialing B triple access on the Hume Highway (M31). A scoping study was commissioned in early 2012 which found that allowing HPV on the Hume Highway (M31) could provide sufficient savings in labour and fuel to offset the cost of enabling access.

CASE STUDY 7 ACCESS OVER ABERDEEN BRIDGE

A meat processor in Tamworth processes lamb for domestic and export consumption. The company currently sends approximately 50 containers per week for export, transported by road.

To reach Port Botany, vehicles use the New England Highway. Due to mass constraints on the bridge over the Hunter River at Aberdeen, the company is unable to use the HML scheme to transport its product. There is also no readily available rail service. As a result, the company cannot achieve optimal loadings of its export products, with a three tonne mass penalty for each container despatched from the facility. This equates to $200 per container of lost productivity through the supply chain.

The company is now in the process of moving its exports to the Port of Brisbane. This will result in a journey that is approximately 140 kilometres longer over a route that offers slower transit times. However, the additional productivity gained will more than outweigh the cost.

Funding has been secured from the Australian Government to replace the Fitzgerald Bridge at Aberdeen, with construction due to commence in FY 2012-13. The replacement of the bridge will have significant economic benefits for the New England region and north west NSW. It will enable producers, including meat producers in Tamworth, to access Port Botany and their export markets as efficiently as possible.

HIGH PRODUCTIVITY VEHICLES ON THE HUME HIGHWAY (M31) – TRIAL B TRIPLE ACCESS

The Hume Highway (M31) currently allows access to heavy vehicles up to and including B-doubles. Transport for NSW and VicRoads are investigating the potential use of High Productivity Vehicles (HPV) such as B-triples on the Hume Highway between Sydney and Melbourne. Initial estimates suggested that HPV could provide sufficient labour and fuel cost savings to offset any charges to recover the costs of enabling access.

The completion of the Hume Highway duplication in mid 2013 will support B-triple access, once other enabling infrastructure works are completed.

As a first step Transport for NSW and VicRoads are developing a detailed business case, which will include a cost benefit analysis and infrastructure cost estimates, to provide for greater HPV access on the Hume Highway. The business case includes industry consultation to assess the demand for HPV access to the Hume Highway, suitable vehicle types and the willingness of industry to pay for improved access arrangements. Safety is a key consideration for the project with the safety performance of HPV in areas such as manoeuvrability, braking performance and stability being considered together with advanced safety features.

The detailed business case is expected to be completed in 2013. Upon completion, the NSW and Victorian governments will consider the recommendations and findings of the study before making a decision about HPV access to the Hume Highway and next steps.

A B-triple Modular Combination is 35m in length and can carry a payload of 82.5t GML, 84.5t CML and 90.5t HML. To operate at the HML payloads the vehicle and operator needs to be enrolled in the Intelligent Access Program (IAP), accredited under the NHVAS Mass Management Accreditation Scheme and be fitted with certified Road Friendly Suspension on all axles and axle groups except the steer axle on the prime mover. The additional lead trailer enables a B-triple to carry 12 to 14 more pallets producing a 35 per cent improvement in cubic freight productivity (for heavier freight this is a 20 per cent improvement). The additional payload carried on modern vehicles such as this reduces the cost, carbon footprint and resource consumption required to move cargo.

For local roads, councils have an important stake in RAV route approvals, due to their impact on local amenity, safety and road maintenance. However, in some cases local councils face barriers to granting RAV route approvals, such as protracted approval processes, or lacking the resources to conduct a RAV route approval assessment.

There may be a role for State Government to work with councils to overcome these barriers. By increasing involvement in what is currently primarily a local government process, Transport for NSW will reduce instances when RAV route approval is denied or delayed.

Targeted outcome

By investigating the feasibility of granting HPV access to roads that are significant to freight, new freight links could be created which would increase the productivity of the freight task.

For local roads, the outcome will be a process that is consistent, efficient and transparent, allowing RAV access to suitable strategic links.

Task 1D-4 Incorporate freight considerations into managed motorway access decisions

Transport for NSW will develop a program of managed motorways and will seek a contribution from the Australian Government.

NSW has given a submission to the Australian Government for funding under the Nation Building 2 program, commencing with the M4 Motorway. This program is consistent with the NSW 2021 goals of reducing travel times and improving road safety.

The movement of freight on the network is highly visible and often blamed for congestion, however, this is not borne out by the traffic data. It is important to highlight that freight movement is a basic element of logistics and is part of everyday life.

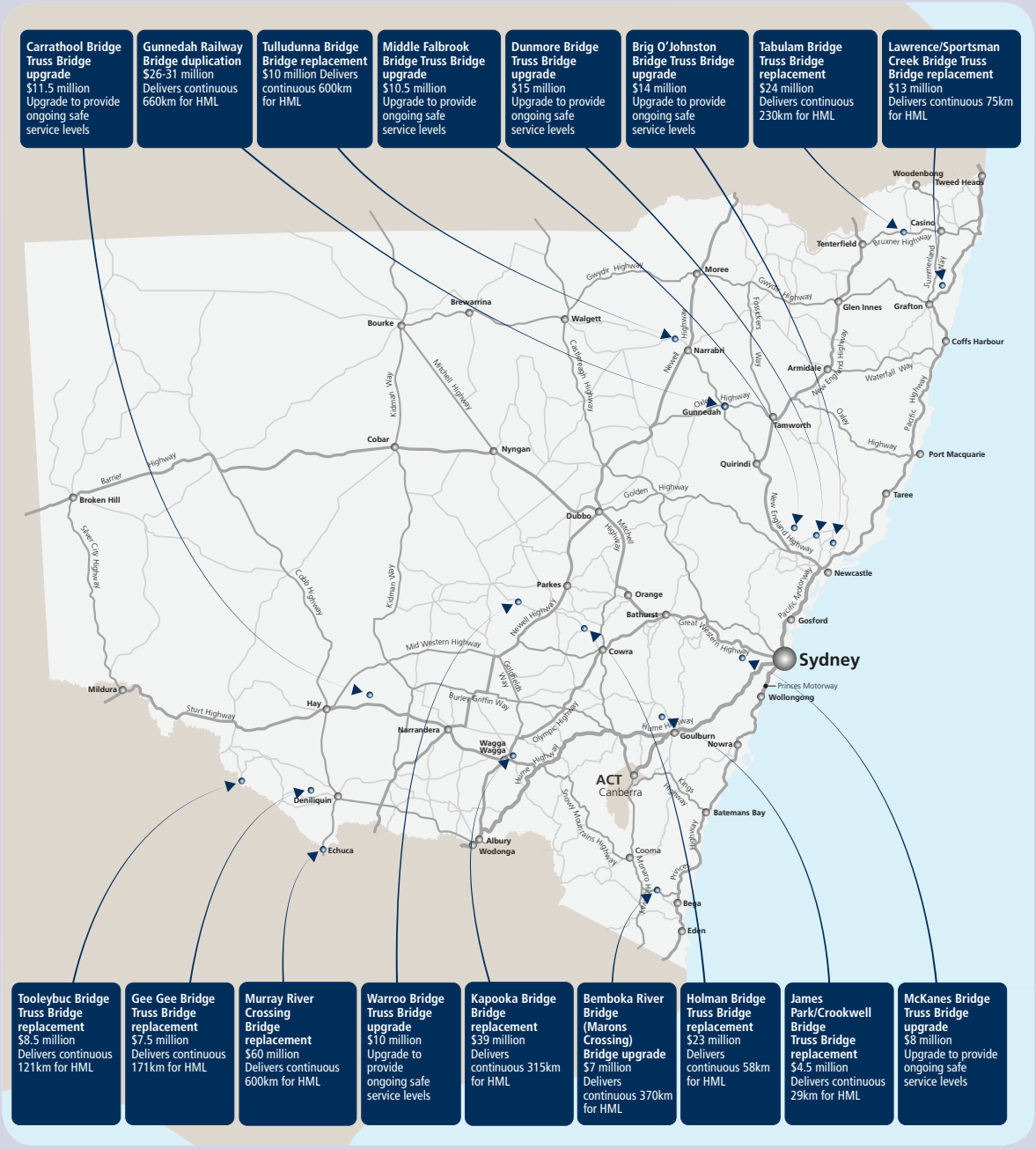
An example is retail activity. Firms handling Fast Moving Consumer Goods (FMCG) seek to eliminate inefficiencies and unnecessary costs in their logistic operations to ensure competitiveness. The new Big W distribution centre at Hoxton Park has been designed to optimise the storage and distribution function and eliminate costs.

Located adjacent to the Westlink M7, the 50,000 pallet capacity facility stores and distributes Big W merchandise to 64 stores across NSW, ACT, Tasmania and Victoria with an average of 250 truck movements a week. By establishing the Big W facility and the neighbouring Masters distribution centre as a logistics precinct in South West Sydney, Woolworths expects to save 5 million kilometres of driving per annum.

CASE STUDY ⑧ BRIDGES FOR THE BUSH – IMPROVING FREIGHT PRODUCTIVITY IN REGIONAL NSW

Some rural bridges and roads across the NSW road network are ageing, low-strength and struggling to keep up with the increasing loading demands from road freight. Replacing, upgrading or strengthening these bridges and roads at high priority locations is necessary for providing access for High Productivity Vehicles. Providing continuity of access for High Productivity Vehicles creates the opportunity to carry the same amount of freight in a fewer number of vehicles, thereby reducing the economic and financial costs associated with moving the goods.

Figure 22 Bridges for the Bush program



To improve accessibility for High Productivity Vehicles in NSW, Transport for NSW in consultation with RMS has prepared a submission to Infrastructure Australia seeking half of the $290 million program cost. Bridges for the Bush proposes to upgrade or replace key bridges in regional NSW at 17 locations, including the following five high priority HML deficient bridges to improve freight productivity in NSW:

- Kapooka Bridge on Olympic Highway, South of Wagga Wagga
- Tulludunna Bridge on Kamilaroi Highway, near Wee Waa
- Gunnedah Railway Bridge on South Street/Oxley Highway
- Murray River crossing at Echuca on Cobb Highway
- Bridge over Bemboka River (Marons Crossing) near Cooma.

These bridges together with the replacement of six heritage timber truss bridges to HML standard are shown in Figure 22.

A new and dedicated infrastructure program over the next five years will fund the necessary upgrade of the network, commencing with priority HML deficient bridges.

The Bridges for the Bush initiative will enhance freight productivity in regional NSW by removing old bridge structures and releasing significant freight pinch points.

Over the next 30 years alone, 8000 heavy vehicle trips or $200 million will be saved in NSW, by replacing the five priority HML deficient bridges.

The proper channelling of freight movements can reduce congestion on Sydney's motorways. There are key points at which high volumes of freight vehicles enter motorways, potentially creating bottlenecks. A good example of this is trucks accessing the M5 from Port Botany. Potential solutions include providing dedicated freight lanes on motorway ramps at key locations or creating dedicated freight lanes on arterial roads during off-peak hours. Regardless of the specific solution, it is important that freight be considered when seeking to manage congestion on managed motorways.

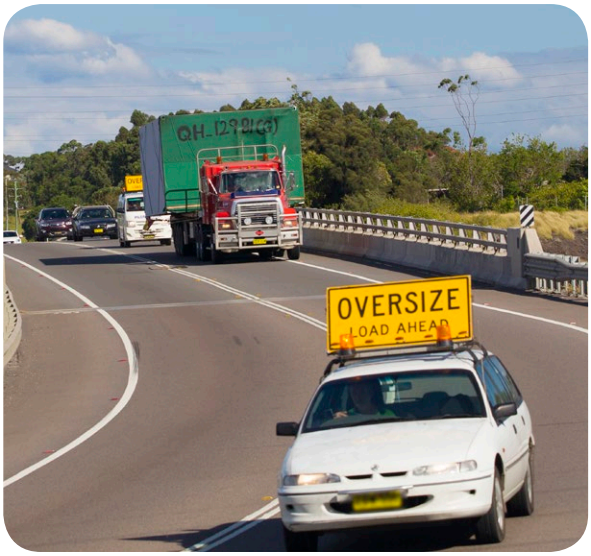
Targeted outcome

A program for managed motorways will facilitate safe and effective access for heavy vehicles, including both HPV and HMLs. Improving access for heavy vehicles will also have benefits for passenger vehicles, including improved safety.

Task 1D-5 Manage oversize and overmass heavy vehicle movements

Transport for NSW, with government and industry stakeholders, will develop a risk-based approach to manage oversize and overmass (OSOM) heavy vehicle movements.

Demand for OSOM movements on the NSW road network has increased in recent years, driven by growth in heavy fabrications, mining and agriculture. The increasing number of movements has placed the road network



under additional strain, imposing greater risks to road safety, road infrastructure and traffic management.

Current and upcoming major infrastructure and development projects such as wind farms across NSW, the North West Rail Link and the Barangaroo redevelopment will generate a significant number of OSOM movements over an extended period.

In order to manage the risks associated with increasing OSOM movements, Transport for NSW is currently developing a risk-based policy for managing OSOM movements in conjunction with government and industry stakeholders (including the National Heavy Vehicle Regulator, RMS and the NSW Police). The policy aims to manage risk through introducing Transport Management Plans (TMPs). The purpose of a TMP is to evaluate and address the specific risks associated with an individual OSOM movement on a particular section of the road network.

The development of this new approach to managing OSOM movements will ensure that OSOM movement applications are assessed in a consistent and efficient manner. A TMP would require applicants to identify and assess the individual risks applicable to their proposed route and apply appropriate compliance measures to control these risks in specific road environments. Requiring TMPs aims to ensure the safety of drivers, vehicles and loads, minimise damage to infrastructure and avoid unnecessary disruptions to other road users.

Targeted outcome

Transport for NSW will maintain a policy which protects the condition of road infrastructure, upholds the safety of the road network and minimises disruptions to other road users (especially emergency vehicles) under increasing OSOM movements.

The policy will use a merit-based approach to risk management and will maximise the economic efficiency for OSOM movements and other road freight.

The construction and maintenance of local roads is the responsibility of local government and is one of the major tasks of this level of government. For most councils, road maintenance is the single largest item of expenditure. Enabling access for HPV on local roads is a council task and consumes financial and technical resources. A critical issue for local government across NSW is that the economic benefits and efficiencies to the freight and logistics industries and their customers do not automatically flow through to councils in terms of increased revenue. Additional funding sources are needed to address the impact of these vehicles on the roads without which many of these freight flows would not be possible.

ACTION 1E Improve productivity of the rail freight network

Enhancing the efficiency and transparency of rail access

Problem description

The movement of freight on the rail network in NSW is essential to the success of the NSW economy. Rail freight plays a critical role in the NSW transport task for bulk as well as containerised freight. Capital is being committed to projects that will create an impact on the efficient operation of the rail freight task. Management of these projects will alter the dynamics of the required freight task. The development projects that will have a freight impact include the Northern Sydney Freight Corridor, Lower Hunter Freight Corridor, Western Sydney Freight Line, Outer Sydney Orbital Corridor, Sydney's Rail Future and the development of intermodal terminals at Enfield, Moorebank and Western Sydney.

For rail freight operations to work efficiently, an access pathway on the network at the right place and right time is needed. While this is a relatively straightforward task for road, creating access pathways for rail is significantly more complex given the fixed and somewhat inflexible nature of the network infrastructure. This task is complicated further by certain access priorities on the network, as is the case in the greater Sydney metropolitan area where passenger services are given first priority on the shared network. The delivery of an efficient and productive logistics chain using rail transport is therefore dependent on an efficient and disciplined system for allocating train paths.

The allocation of this scarce capacity needs to be fair and equitable and determined without prejudice to meet the legitimate business needs of the user. The allocation of rail paths for efficient operations must also incorporate access protocols and third party arrangements.

Access protocols are established by the network providers. In NSW the provision of access to the rail network is split between Sydney Trains, Transport for NSW (specifically the Transport Services Division) and ARTC. Access protocols to the rail network are based on national competition policy which requires owners of essential facilities, such as rail networks, to provide access to third parties. Since the mid 1990s 'above rail' operators (who own and run train services) have been able to use the NSW Rail Network to operate trains. In practice, rail operators negotiate with the rail network owners, such as Sydney Trains and ARTC, and the two parties enter into an agreement which sets out the terms and conditions for the operator's use of the network.

The regulatory basis for these arrangements is the NSW Rail Access Regime. Established in August 1996, the Regime includes the NSW Rail Access Undertaking (RAU). In late 2011 the NSW and Australian Governments signed a Memorandum of Understanding for a program of works to improve capacity for freight rail services on the Northern Sydney Freight Corridor (NSFC) between North Strathfield and Islington Junction. In signing the Memorandum of Understanding, NSW agreed to review the NSW RAU and seek certification of the reviewed undertaking by national competition authorities.

The review will provide an opportunity to examine the provisions and operation of the RAU. It will identify what is working well, as well as any deficiencies or aspects that need amendment to reflect changes in the rail industry, such as the establishment of Sydney Trains and NSW Trains.

It will also consider whether amendments are required to address future challenges, including how to increase freight on rail and regulate rail lines in rural and regional NSW.

Impact

NSW needs a rail network that meets the needs of its users by enabling the efficient operation of trains. Providing a rail access regime which reflects the challenges facing NSW rail networks, consistent with NSW obligations under national competition policy, is part of the solution as is ensuring that freight movement requirements are taken into account when making decisions about network operations.

Complementary to gaining access is the allocation and scheduling of train paths to enable efficient train operation. Efficiency in train operations is evidenced by on-time running, meeting receipt or delivery time slots at stevedore terminals, building export shipments in stockyards to meet shipping arrangements, maximum utilisation of assets and optimal resource use including personnel, fuel and track space. Too often the NSW rail network is inefficient and both network providers and operators fail to perform to each other's expectations.

In addition, coordination of operations is essential to eliminating network constraints and boosting productivity.

Task 1E-1 Conduct NSW Rail Access Review

National competition policy requires owners of essential facilities, such as rail networks, to provide access to third parties.

The review commenced with stakeholder consultation in late 2012. Stakeholders' views will inform the Government on the scope of future rail access regulation applying to the networks that remain in NSW Government control.

Once the Government has decided the nature and scope of future access regulation, further stakeholder consultation on any proposed changes will be undertaken prior to seeking certification of the revised arrangements by national competition authorities.

Targeted outcome

An updated rail access regime endorsed by national competition authorities, which promotes:

- A consistent approach to rail access regulation
- Competition, through the economically efficient operation, use of and investment in rail.

Passenger, coal and container trains on the Illawarra Line at Tempe.

The movement of coal, bulk grain, containers, aggregate and minerals to and from Port Kembla and Nowra converges at Tempe. Access for freight movement across the shared rail network is essential to maintain the viability of businesses and export trades that are reliant on rail. In particular the expansion of the export capacity of the Port Kembla Coal Terminal to 16M tonnes per annum is based on continued access to the shared network.

Task 1E-2 Secure current and future freight capacity requirements on the shared network

The movement of freight on the shared network in NSW is critical to the growth of the State's economy.

Historically, there has been vertical integration of below and above freight rail operations in NSW, and implementation of NSW Government rail freight policy has been undertaken by RailCorp and Country Rail Infrastructure Authority (CRIA). However, over the past 10 years the NSW rail network operation has become more complex as a result of changes in competition policy and separation of parts of the network control to separate entities. As a result, there are currently more than 15 non-government owned entities seeking paths on the rail network to operate trains and three organisations operating parts of the network. In NSW the rail network currently consists of the Sydney Trains passenger network, the Country Rail Network (CRN, overseen by Transport for NSW Transport Services) and the ARTC controlled Hunter Valley, Upper Hunter lines, and Interstate rail network, Metropolitan Freight Network (MFN) and Southern Sydney Freight Line (SSFL).

Network control and access management is critically important for rail freight, given that most trains carrying freight in NSW travel over several or all of these networks during a single journey, interacting with passenger services along the way. One of the impacts of the shared management in network control has been reduced coordination between network providers, as there no longer is a single entity ensuring alignment and consistency. The recent formation of Transport for NSW (including the transfer of CRIA and some RailCorp functions into the Department) has caused additional coordination issues in the industry over roles and responsibilities. Transport for NSW is striving to provide a transport network that allows the efficient flow of goods to their market through initiatives such as the NSW Cargo Movement Coordinator and centralising access applications for the operation of trains on the Sydney Trains network and CRN.

Targeted outcome

Secure sufficient train paths on the shared network for freight and ensure that the interface between the dedicated freight networks and the shared networks align and are efficient.

ACCESS REFORM FOR REGIONAL NETWORKS

A number of independent reviews have raised questions about the way third party access regulation is applied to regional rail networks. In particular, the issue has arisen that the application of the current regulatory and structural reform model may not have given due consideration to the particular circumstances and characteristics of regional networks.

In 2001, the Productivity Commission noted the additional costs imposed by regulated access. These included:

- Administrative costs for government and compliance costs for businesses
- Constraints on the ability of infrastructure providers to deliver and price services efficiently
- Reduced incentives to invest in infrastructure facilities
- Inefficient investment in related markets
- Wasteful strategic behaviour by both service providers and access seekers.

In 2006, the Productivity Commission found that there is the need for a case by case approach to determine if the benefits of mandated access are outweighed by the costs. In particular, the low volumes on regional networks strongly suggest there is limited capacity for above rail competition and separation may further reduce the commercial viability of these networks. It is probable that having one vertically integrated operator would be the most efficient outcome for these networks.

ACTION 1F Maintain productivity of the air freight network

Ensuring growth in air cargo is considered in landside planning strategy

Problem description

Air cargo is low volume, high value freight. It is typically very time sensitive and requires efficient and reliable airside and landside infrastructure. The majority of air freight movements are international, with limited interstate and rare intrastate movements.

There are very few dedicated cargo airlines operating to, from, or within Australia. The vast majority of freight capacity is "belly capacity", which is provided in the holds of aircraft operated by passenger carriers. As a result, peak periods of passenger arrivals and departures tend to coincide with peak periods of air freight activity, placing additional strain on supporting terminals and landside infrastructure.

Low demand for export air freight makes it difficult for dedicated freight aircraft to operate in a cost effective manner within the Australian market. Larger end-to-end supply chain companies (e.g. Fedex and UPS) and "combination" passenger and dedicated freight operators (e.g. Qantas, Singapore Airlines and Emirates) currently dominate the air freight market.

Sydney Airport currently hosts five cargo terminal operators – Qantas Freight, Australian Air Express (also part of Qantas), Toll Dnata, DHL and Menzies. However, growing passenger volumes are placing increased demand on terminal space for expanded passenger operations, with Toll already moving its terminal offsite. This creates additional pressure for efficient and reliable landside links to airside loading points to ensure that flight and delivery schedules can be maintained.

In NSW, nearly all air cargo (domestic and international) moves through Sydney Airport at Mascot. Freight access to and from the airport is done exclusively via road. Air cargo must compete for limited road space in order to support the growing volume of port traffic. Consignment sizes and time sensitivity eliminates the use of rail as a substitutable mode for providing access to and from the Sydney Airport precinct.

Despite these challenges, air cargo movements are forecast to grow steadily over the next 20 years to in excess of one million tonnes per annum.

A major role for the State Government is to ensure that projected growth in air cargo is adequately considered in strategic landside planning for the Port Botany and Sydney Airport precinct. While any decision on the development of alternative airport sites is an Australian Government matter, it is nonetheless important for the State and Australian Governments to work together to ensure a consistent approach to managing air cargo growth is achieved in order to provide certainty for industry.

Impact

While air cargo only represents a small proportion of the freight task and movements to and from the port and airport precinct, its value to the NSW economy is significant. Failure to accommodate the increasing demand for air freight in landside infrastructure planning has the potential to increase industry costs and reduce the reliability and competitiveness of air freight.

Task 1F-1 Understand the landside movements which support efficient air cargo logistics

Transport for NSW will build a model that captures landside movements which support air freight.

In order to incorporate air freight movements with strategic network planning, it is necessary to gain a more thorough understanding of

the landside logistics task which supports the air freight sector. This may include modelling existing and proposed terminal locations, origin destination patterns and peak movement times.

The BFS will work with key stakeholders to collect data on current landside movements and incorporate any relevant findings into broader modelling for the Port Botany and Sydney Airport precinct.

Targeted outcome

The development of an accurate and reliable model which forecasts landside air cargo movements will inform the understanding of the broader Port Botany and Sydney Airport road network.

Task 1F-2 Incorporate the value of air cargo in planned infrastructure upgrades for the Port Botany and Sydney Airport precinct

Transport for NSW will incorporate the needs of the growing air freight task into road access planning for the Port Botany and Sydney Airport precinct.

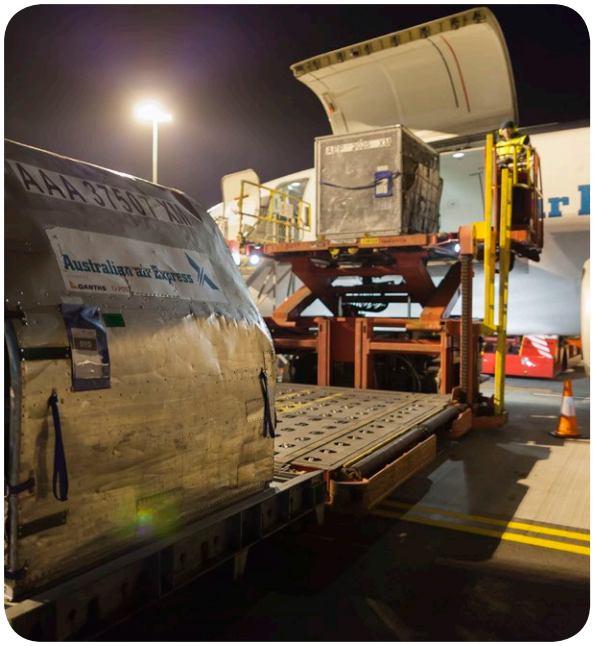
The NSW Long Term Transport Master Plan identifies improving freight efficiency and access to international gateways as two priority actions for NSW. This includes developing a Precinct Action Plan for Port Botany and Sydney Airport to target traffic pinch points.

The State Government has also committed to the construction of the WestConnex Motorway. A major benefit of this project will be improved access and capacity to the Port Botany and Sydney Airport precinct for freight traffic.

BFS modelling outputs may help to ensure that an appropriate level of consideration is given to the growth of air cargo in the development of the pinch point program and options for WestConnex.

Targeted outcome

Planning for road infrastructure improvements will support access to and from the Port Botany and Sydney Airport precinct which will adequately provide for the forecast growth in air freight volumes.



Task 1F-3 Work with the Sydney Airport Corporation and the Australian Government to ensure a consistent approach to strategic airport planning

Transport for NSW will work closely with the Australian Government to ensure that future airport planning is aligned with landside infrastructure planning and development.

To ensure that Sydney Airport has the capacity to meet freight and passenger demand and operate as an efficient international gateway, improvements to Sydney Airport infrastructure may be required. The consideration of a second airport site may also be necessary to meet growing demand for capacity.

While these are matters for the Australian Government, the State Government has a key role to play in ensuring that any proposed changes in airside arrangements for freight are appropriately supported by landside infrastructure networks.

Targeted outcome

A whole-of-network planning approach developed in conjunction with the Australian Government and the Sydney Airports Corporation will incorporate air cargo movement requirements into landside infrastructure planning, improving the sustainability of the landside air freight task.

ACTION 1G Facilitate the use of coastal shipping

Supporting industry to facilitate the use of coastal shipping

Problem description

Coastal shipping currently represents a small but important part of the freight task. The majority of coastal shipping consists of construction materials, bulk minerals and fuels. Shipping movements are predominately interstate, with occasional intrastate movements. The cost per kilometre for coastal shipping generally reduces as travel distances increase. This makes longer coastal shipping journeys more attractive, and therefore competitive with rail freight.

Generally, coastal shipping offers significantly lower per kilometre costs and less environmental impacts compared to road or rail freight. However, slow journey times restrict the amount of freight suitable for coastal shipping. Over the past decade, the volume of freight moved by coastal shipping in NSW has declined. In FY 2001-02, 4.6 million tonnes of coastal freight was loaded in NSW and 15 million tonnes discharged. By FY 2010-11, this had dropped to 3.2 million tonnes loaded, and 13 million tonnes discharged.

Despite the relatively small size of the coastal freight task, NSW accounts for a significant portion of national coastal freight flows. Over the last 10 years, half of the top 10 national coastal shipping flows have been to or from ports in NSW. However, the availability of suitable vessels and the lack of deep water harbours along the NSW coast currently restrict landside capacity for coastal shipping.

The MV KOWULKA discharging gypsum at the Sydney Ports Glebe Island wharf. Around 384,000 tonnes of gypsum is discharged at Glebe Island each year and delivered to plasterboard manufacturing facilities at Wetherill Park, Camellia and Matraville for use in the building and construction industry.

Impact

The role of coastal shipping in NSW at this time appears to be limited and growth will continue to be restricted by insufficient landside capacity, vessel availability and cost.

Task 1G-1 Improve the understanding of the role of coastal shipping in the NSW freight task

Transport for NSW will analyse the role and value of coastal shipping in NSW.

As part of the objective to improve the understanding of the freight task as a whole, the BFS will analyse the role of coastal shipping in the NSW freight task and the value it creates within the freight network.

Targeted outcome

An improved understanding of the dynamics of coastal shipping will assist in identifying opportunities to support the growth and competitiveness of coastal freight in NSW.

Task 1G-2 Work with industry in expanding the use of coastal shipping

Transport for NSW will work with industry to identify opportunities for facilitating the role of coastal shipping.

This may include activities such as appropriate landside planning support and the consideration of complementary road and rail initiatives.

Targeted outcome

Facilitating the use of coastal shipping will enable the use of a relatively efficient and environmentally sustainable mode of freight.

ACTION 1H Improve efficiency of landside cargo transport in regional and urban areas

Improving coordination between participants in commodity chains

Problem description

The movement of cargo to and from the international maritime gateways at Port Botany, Newcastle and Port Kembla is a significant issue for the NSW transport network, and one that is becoming more critical as growth in cargo volumes passing through NSW ports continues. In particular, the movement of cargo to and from Port Botany and Port Kembla warrants action as part of the NSW Freight and Ports Strategy.

The volume of containers through Port Botany has approximately doubled over the past 11 years from about one million TEU in 1999-00 to about two million TEU in 2011-12 (including transhipments). Container volume growth is forecast to continue at between five per cent and eight per cent per annum over the next 25 years (Source: Sydney Ports 30 Year Vision). Using a growth rate of seven per cent, the volume of containers through NSW ports will be about 11 million TEU by 2036-37. This volume of movement on a constrained road and rail network requires optimal performance as well as expansion of physical infrastructure.

The movement of bulk and break bulk cargoes to Port Kembla by rail has a direct impact on the metropolitan rail network due to the volumes of grain and coal that transit through Sydney from western NSW. Similarly, steel products originate at Port Kembla and are transported nationwide by train using the Illawarra line for the first part of the journey.

Rail has historically played a limited role in the movement of containers through Port Botany. In 2011-12 only 260,000 TEU were moved by rail, compared to about 1.6 million TEU by road. In 2011-12 only 260,000 TEU were moved by rail, compared to over 1.6 million TEU by road. As rail volumes have been stable over the past 15 years, they have not kept pace with the growth in container movements through the port. As shown in **Table 2**, the share of rail movements over the past 12 years grew to a peak of 25 per cent in 2000-02 and then dropped to the current modal share of 14 per cent.

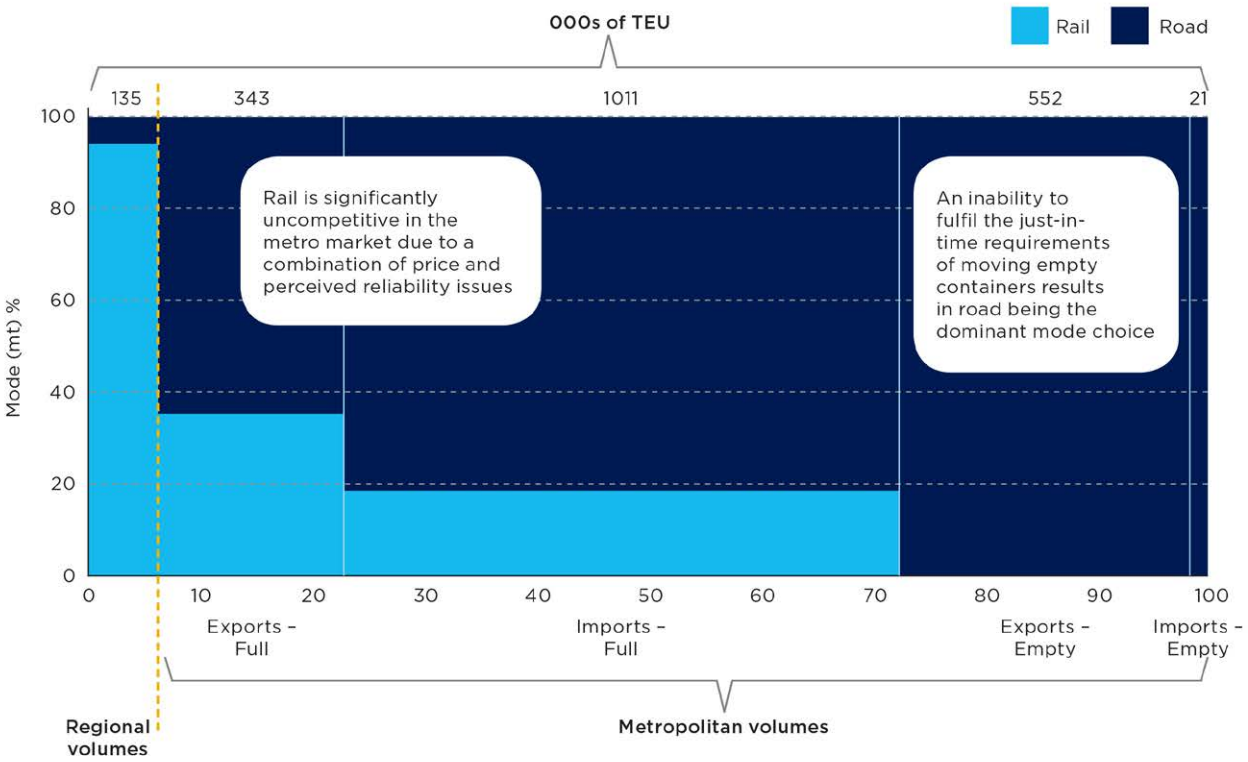
Table 2 Port Botany rail modal share (Source: Sydney Ports)

Year	Total TEU excluding transhipments (millions)	Rail TEU (millions)	Rail Mode (%)
1999-00	0.85	0.19	22.5%
2000-01	0.85	0.21	25.0%
2001-02	0.90	0.23	25.0%
2002-03	1.07	0.26	23.8%
2003-04	1.19	0.25	21.0%
2004-05	1.30	0.25	19.4%
2005-06	1.36	0.29	21.3%
2006-07	1.51	0.30	19.7%
2007-08	1.64	0.31	19.0%
2008-09	1.57	0.31	19.4%
2009-10	1.69	0.32	18.8%
2010-11	1.78	0.25	14.0%
2011-12	1.85	0.26	14.1%

Currently, rail is considered uncompetitive compared to road in the majority of container freight segments:

- Many end-customers in the Sydney metropolitan area prefer road for its responsiveness, reliability and timeliness, especially where the price difference between road and rail is small. It currently costs customers more for stevedores to load and unload trains than it does to service trucks.
- Shipping lines prefer road's just-in-time capabilities for moving empty containers.
- Indicative estimates of rail's cost disadvantage range upwards of $40 per TEU, depending on location.

Figure 23 Estimated mode share for movement of containers to and from Port Botany 2012-13



The main freight segment where rail is competitive with road is exports from regional areas, because its cost advantage in line haulage is only realised over long distances. The relative competitiveness of rail versus road in the various segments is illustrated well by its modal share, which is high for regional exports, but low in the other segments.

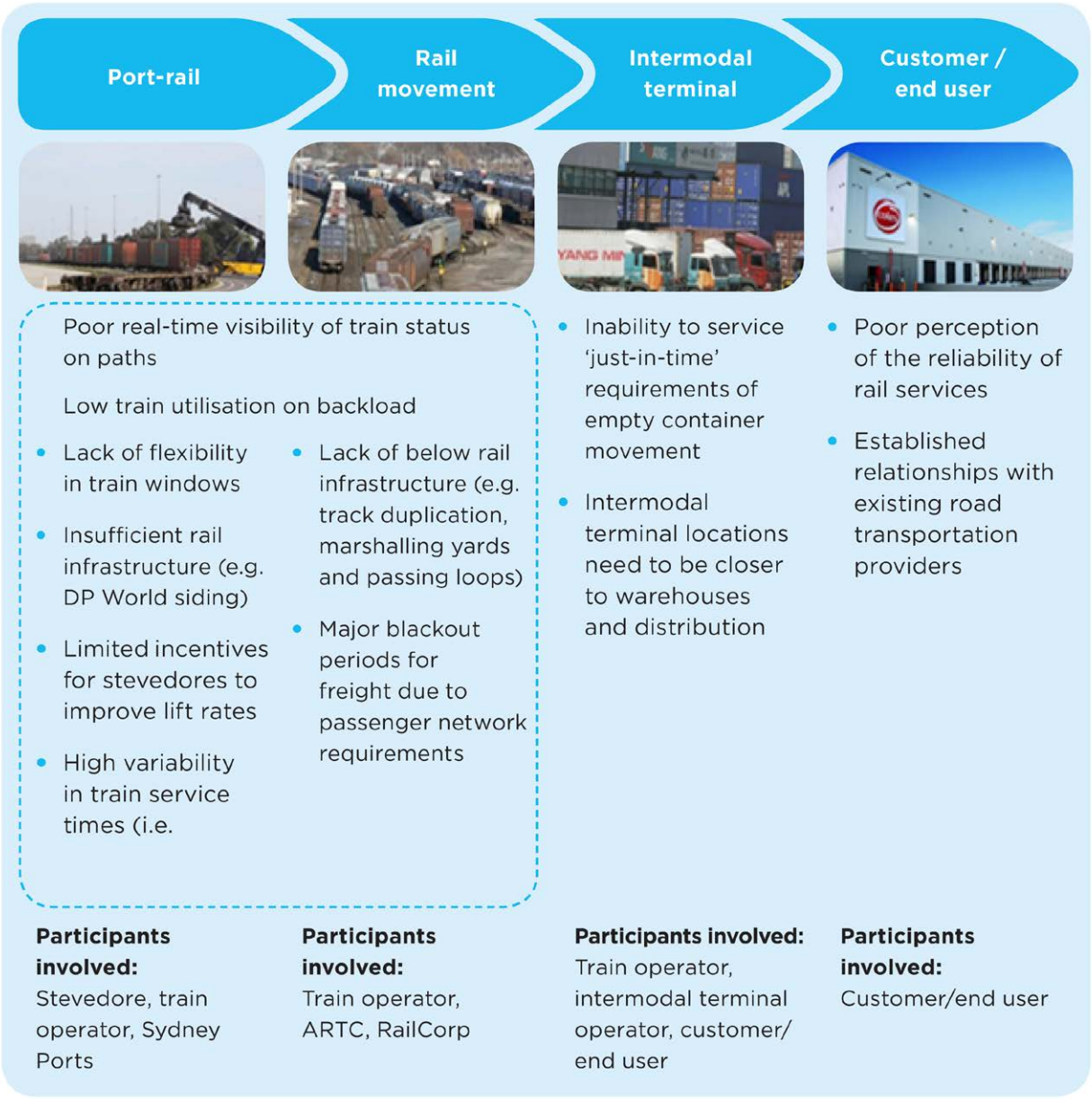
The commercial attractiveness of improving rail coordination varies for each stakeholder. While rail operators and incoming intermodal terminal operators are in favour of maximising volumes to increase asset utilisation, stevedores and existing intermodal terminal operators are driven by the cost to service. A result of rail's lack of competitiveness is that this second group of key participants in the value chain does not have sufficient commercial incentive to effectively participate in the improved coordination of the rail value chain.

On the rail side, the highest barriers to achieving greater efficiency through the container chain are at the port-rail interface and in rail movements. These barriers include: poor real-time visibility of train status on train paths, low train utilisation on backload, a lack of adequate below rail infrastructure, lack of flexibility in train windows, and unreliable train departure and arrival times.

The Port Botany container chain has been confronted with these issues for some time. They have been examined in detail in prior reports, notably by Brereton in 2005 and IPART in 2008, which resulted in a number of new initiatives and investments by Sydney Ports Corporation (Sydney Ports).

Sydney Ports has been successful in driving significant improvements in the container supply chain through initiatives such as the Port Botany Landside Improvement Strategy (PBLIS) supported by the Ports and Maritime Administration Regulation (PAMA). In particular, the Port Road Taskforce was formed in 2008 and has achieved efficiencies in truck turnaround times and on-time running, among other things. The Port Botany Rail Team, while in its infancy, has also made progress towards improved coordination, although there remain some issues beyond the direct control or influence of Sydney Ports.

Figure 24 Barriers to efficiency in the movement of containers by rail to and from Port Botany



In addition to the mandatory performance standards on trucks under PBLIS, the Port Botany Rail Team (PBRT) has worked since 2008 to set up performance monitoring and improve the efficiency of port rail operations. The membership of the PBRT includes Sydney Ports, the stevedores, rail network providers, rail operators and Transport for NSW. The PBRT has secured ACCC agreement for a Rail Charter to voluntarily agree to develop business rules to improve the port/rail interface, Key Performance Indicators (KPIs), operating protocols and future rail governance. A Rail Operations Control Centre (ROCC) has been established by Sydney Ports for facilitating communications, and coordinating train movements within the port precinct. Sydney Ports is working with the ARTC as lessee of the MFN to coordinate the operation of the Port Botany rail corridor.

Although the need for improved container chain coordination is not new, there are several changes and developments in the short term that make it increasingly urgent. These developments are:

- Port Botany and Kembla precinct were recently leased to NSW Ports Consortium (NSW Ports), a process which was completed in early 2013
- The MFN has been transferred to the Australian Rail Track Corporation (ARTC)
- The third terminal at Port Botany, operated by Hutchison Port Holdings, is scheduled to begin operations in early 2014
- Enfield Intermodal Logistics Centre and Enfield staging roads are scheduled to begin operations in mid 2014
- Proposed intermodal terminals at Moorebank led by SIMTA and the Australian Government, are due to begin operations between 2015 and 2017 depending on access and planning approval.

Also, the NSW Government has a goal in the NSW 2021 plan to double rail's mode share of container movements through the port from its current level. This will be achieved though improved performance, capacity enhancements and where necessary, the use of pricing. Improving rail's competitiveness will require these investments to build capacity (such as the planned intermodal terminals), but also improved coordination between the many different parties involved, including the ARTC, the above rail operators and the stevedores.

The rail task is further complicated by the fact that there is already significant use of rail for movement of cargo, primarily steel, coal and grain, to and from Port Kembla. The capacity required to move coal alone is forecast to double from 167 Mtpa in 2011 to 367 Mtpa in 2031, and over 70 per cent of coal is already transported by rail. As the cargo transport task continues to grow, the capacity of the existing rail network to support this growth is a key priority. The significant growth in rail movements to and from Port Kembla will be a key determinant of how much latent rail capacity the NSW regional network has to support growth in Port Botany cargo movements. Coordination of cargo transport in and around both Port Botany and Port Kembla will be necessary to support the expected growth in the cargo task and ensure that the existing network is used most efficiently and effectively.

On the road side, the forecasted growth in Port Botany container volumes continues to put pressure on the network's capacity and efficiency. The road network currently faces connectivity constraints due to the varying

capacity of roads and associated infrastructure to accommodate heavy vehicles. These constraints effectively limit the ability to use High Productivity Vehicles and hence the efficiency of the overall freight network and individual freight movements. As a result, more heavy vehicle movements are needed to satisfy the freight task which adds to traffic congestion, increased safety risks and road degradation.

Ongoing improvements are required to maintain the success to date of PBLIS with both road and rail initiatives in order to maintain the port's competitiveness.

The NSW Government's dedicated strategic freight planning and policy body, the Freight and Regional Development Division of Transport for New South Wales, will integrate the Port Botany Landside Improvement Strategy within its program of works.

Impact

The anticipated port growth and the container movement issues described may create sub optimal utilisation of quayside and terminal infrastructure, as well as off wharf facilities such as depots, warehouses and intermodal terminals, if delivery and clearance transport by road and rail do not maintain the same level of efficiency.

Task 1H-1 Establish NSW Cargo Movement Coordinator

In this context, Transport for NSW is considering the optimal way of achieving the required capacity increases. Other mechanisms for capacity growth are also being explored. The movement of cargo to and from Port Botany and Port Kembla presents opportunities to balance cargo across the network and make better use of existing network capacity, both road and rail.

Transport for NSW is considering the establishment of a new body, the NSW Cargo Movement Coordinator (CMC), to better coordinate and plan the activities of key participants in the cargo transport chain focused on Port Botany and Port Kembla. This body would share some similar characteristics to the successful Hunter Valley Coal Chain Coordinator (refer to Case Study 9), modified to reflect the important differences with the cargo transport network around Port Botany and Port Kembla.

The CMC is planned as an evolution of the successful Sydney Ports PBLIS program and will be based on the PAMA. Any transition will require consultation with all stakeholders and close management to ensure that hard earned benefits are not lost.

The proposed aim of the CMC is to optimise landside cargo transport to meet Port Botany and Port Kembla demand growth, and to minimise overall supply chain costs including externalities such as congestion.

The objectives of the CMC at this stage have been identified as:

- Maintain the success of the Sydney Ports program of landside improvement measures including the Port Botany Landside Improvement Strategy incorporating the Port Botany Road Taskforce and Port Botany Rail Team
- Identify and eliminate pinch points and performance inhibitors on the NSW rail network serving Port Botany
- Identify and eliminate coordination failures in cargo movement to and from Port Botany and Port Kembla
- Identify and quantify externalities associated with the NSW cargo movement task to and from Port Botany and Port Kembla.

The suggested scope of activity for the CMC would be to include all containerised cargo carried by rail to and from Port Botany, road movement at the sea terminal interchange as well as break bulk cargo such as steel and bulk cargoes such as coal, other minerals and grain carried by rail to Port Kembla to and from the rest of NSW and interstate.

This comprehensive scope would help ensure a whole-of-system approach to supply chain optimisation. This is important because it would allow the CMC to:

- Consider coordination issues across the freight network, and their knock-on effects on the whole network and particular supply chains such as export agricultural products
- Make trade-offs between road and rail, in order to maximise overall efficiency
- Consider the impact of road coordination improvements on rail, and vice versa.

The focus of the CMC's activities in addition to the existing PBLIS program should be on operational efficiency and capacity management. These two areas are elaborated on below.

The CMC's operational efficiency activities could include, but would not be limited to, the following categories:

- **Data collection, monitoring and reporting:** the role of the CMC would be to collect, analyse and distribute key metrics regarding system performance for both road and rail networks. This would allow cargo transport chain participants to evaluate the operational performance of the system. Example rail activities could include the reporting of aggregated on-time train running statistics, or system level information on train turnaround times at the port-rail interface. Example road activities could include reporting of truck turnaround times and on-time running.
- **Short term cargo transport chain modelling and pinch point identification:** the role of the CMC would be to model all cargo transport chain interactions between road, rail, port and IMT operations. This would allow cargo transport chain participants to identify bottlenecks which are addressable in the short-term through process and coordination improvements. Example activities could include quantifying the impact and costs of bottlenecks.
- **Day-to-day operational planning and scheduling for rail:** the role of the CMC would be to generate and distribute daily train plans and schedules, similar to the role the HVCCC fulfils in the Hunter Valley. This would provide visibility over daily train movements for train operators, intermodal terminal operators, below rail network providers and stevedores. Example activities could include the allocation of daily train paths, as well as marshalling plans.
- **Disruption management for rail:** the role of the CMC would be to respond to system disruption events through scheduling adjustments, similar to the role the Hunter Valley Coal Chain Coordinator fulfils. Example activities could include the cancellation of services and the dynamic adjustment of daily train paths in response to disruption events when they occur.
- **Dynamic operational optimisation for rail:** the role of the CMC could, if warranted, encompass dynamic whole-of-system coordination. This could include ad-hoc allocations of train paths as required on a daily basis.

The CMC's capacity management activities could include, but would not be limited to, the following categories:

- **System simulation modelling and bottleneck identification:** the role of the CMC would be to provide simulation modelling for the whole cargo transport chain. This would include the ability to evaluate system needs and model the impact of additional infrastructure investments on the cargo transport chain. Example activities could include stress-testing the system through sophisticated scenario analysis. This would identify bottlenecks and evaluate the impact of additional infrastructure investments.
- **Planning infrastructure investments:** the role of the CMC would involve assessing the costs and benefits of infrastructure investment options. This would involve the consideration of what can be quite complex trade-offs in order to optimise future investments in the system. Example activities could include comparing the system benefits of an additional rail marshalling yard against an additional truck marshalling yard.

Targeted outcome

Increased coordination of the cargo movement task will result in higher performance standards of supply chain activities utilising the road and rail networks connecting to the ports.

This will aid in optimising the use of existing limited capacity available across the network. Control and coordination will link land and port side infrastructure needs to ensure timely provision of new network capacity as demand grows over the next twenty years.

CASE STUDY 9 HUNTER VALLEY COAL CHAIN COORDINATOR

The Hunter region is the largest coal export operation in the world, supporting 40 mines and 11 producers. The Hunter Valley coal supply chain operations include:

- Thirty train loading points
- Three coal terminals at Newcastle, with a fourth in the planning approvals stage
- Fifty five trains per day, or around 18,000 trips per year
- Coal loading terminals
- Volumes to support around 1,500 shipping movements per annum
- Facilities to support coal power stations at Eraring, Bayswater, Liddell, Redbank and Vales Point.

Established in 2009, the Hunter Valley Coal Chain Coordinator (HVCCC) is an innovative, industry cooperative model that undertakes end-to-end logistics and capacity planning for the Hunter Valley coal chain.

The HVCCC works to maximise coal chain throughput while considering the collective needs and individual contractual entitlements of its member coal producers and service providers.

The value that the HVCCC offers its members stems from its helicopter view, which allows it to approach planning for the coal chain as a system. This approach represents a significant departure from the previous supply chain management model, which was based on individual supply chain participants making their planning decisions in isolation. This had significant potential to result in adverse outcomes, both for the individual participants and the supply chain as a whole.

The HVCCC's key deliverables include the provision of:

- Detailed long term coal chain capacity models and master plans, to determine long term contractible capacity and identify capacity constraints
- Coordinated annual coal chain maintenance and capacity planning required to deliver contracted capacity
- Monthly planning and coordinated scheduling of the daily movement of coal to meet forecast demand and contractual entitlements
- Reporting and performance measurement against coal chain system assumptions and recommendations for operations improvement.

"The provision of appropriate road and rail connectivity, freight infrastructure and related transport contributes to the long term economic sustainability of our communities."

Local Government NSW submission to the Draft NSW Freight and Ports Strategy, March 2013

Task 1H-2 Improve network connectivity between networks and key freight precincts

Transport for NSW will work with industry and government stakeholders to deliver existing network connectivity projects and establish a working group tasked with taking a whole-of-network approach to resolving connectivity issues.

The movement of freight from origin to destination occurs over roads and railways of various carrying and productive capacities. When travelling along the NSW transport network, connectivity constraints inhibit the efficient movement of freight.

The use of HPV is designed to increase the efficiency and productivity of the freight task on road. However, operating HPV on the road network requires supporting infrastructure and regulation. Connectivity constraints arise when access for HPV is restricted on roads connecting to and from key freight precincts. Connectivity constraints include road infrastructure, bridge infrastructure, curfews, lack of route assessments or community opposition.

Lack of connectivity across the road network can substantially impact economic productivity as the movement of economically valuable freight is constrained. Transport for NSW is currently delivering a series of projects targeted at resolving connectivity issues in metropolitan and regional areas. In the long term, Transport for NSW will establish a working group with representatives from relevant government agencies (including Treasury, Department of Planning and Infrastructure and local governments) to oversee the network in its entirety in order to resolve new and existing issues related to connectivity. This will involve leveraging existing programs and funding sources to identify connectivity issues, prioritise projects, secure funding and execute selected investments.

The working group will also seek to embed new connectivity management programs with government agencies that oversee connectivity so as to manage and resolve connectivity issues on an ongoing basis.

Targeted outcome

The efficient movement of freight to and from key freight precincts in metropolitan and regional areas will improve the efficiency of the entire network.

Minimising connectivity constraints will improve efficiency for the entire network. The delivery of current connectivity programs and the establishment of a new working group that adopts a holistic approach to resolving connectivity issues will assist in securing the efficient movement of economically valuable freight across the State.

The development of a Defined Freight Network will be examined as a means of ensuring improved coordination between levels of government and achieving economy of effort by all stakeholders.

"The identification of a defined and integrated NSW freight network will assist all levels of government in their ongoing strategic planning, investment and infrastructure programs. Councils in particular are looking for guidance from other levels of government to better inform their own asset management and infrastructure investment priorities, especially given the limited funding currently available for these programs."

Local Government NSW submission to the Draft NSW Freight and Ports Strategy, March 2013

CASE STUDY 10 GRAIN HARVEST MANAGEMENT SCHEME

The grain industry plays a vital role in the NSW economy. The NSW grain crop represents a significant portion of the State's agricultural production value.

The NSW grain belt stretches from the Queensland border, through the Riverina and down towards the south-west Victorian border. Generally, grain production is highly variable and dependent upon rainfall and climatic conditions. However, production volumes have increased over time due to improved farming techniques and advancements in technology for harvest machinery (e.g. larger grain headers). Farmers are now able to harvest crops over a shorter and more intense period, usually taking place between November and early January in NSW, and productivity during this period is critical.

Grain is predominantly moved by rail from silos to sub-terminals or to ports for export. However, transport of grain from the farm to grain receival sites is mostly by road. This step in the supply chain faces several issues.

For trucks carrying grain, mass limits and loading regulations can be impediments to efficiency and productivity. Industry consultations have suggested that bulk grain is challenging to load accurately and has a tendency to shift in transit, which alters the mass over a particular axle group. This causes a significant issue in compliance because vehicles which have been loaded to the legal mass limit (for gross and axle weight) on dispatch could become non-compliant if the load shifts.

Vehicles carrying masses greater than General Mass Limits (GML), or in some cases the Concessional Mass Limits (CML), are restricted to certain approved routes. The current road network is constrained in places by mass restricted pinch points (e.g. access roads and bridges), limiting the ability of HPV to maximise the productivity benefit from carrying additional mass.

Transport for NSW is currently developing short and long term strategies to improve efficiency and productivity in this step of the supply chain. In the short term, the NSW Grain Harvest Management Scheme (NSW GHMS) aims to improve productivity through providing flexibility in mass limits for grain transport vehicles. The scheme planned for the 2013-14 harvest provides a short-term arrangement during the harvest period whereby grain trucks are permitted to carry masses above GML, within the range of the NSW HML (Higher Mass Limits) from farms to grain receival locations.

In Queensland, AgForce, a peak organisation representing Queensland rural producers, supports the administration and coordination of memberships to its Grain Harvest Management Scheme. The Queensland scheme also allows flexibility above GML as well as above the axle group mass limits.

Providing flexibly on mass limits is an integral component of both schemes. However, the two schemes differ in objectives. The main objective of the Queensland scheme is to alleviate the uncertainties of in-field loading, while for NSW, the scheme is designed to increase productivity. Furthermore, differences in infrastructure conditions between Queensland and NSW require the consideration of appropriate mass flexibilities for NSW, in order to protect existing road and bridge infrastructure.

Transport for NSW is simultaneously engaging key stakeholders in the grain supply chain to collect information which will inform the development of a long term strategy for addressing access and regulation issues. Multi-modal freight network infrastructure, regulation and coordination challenges will be analysed within the context of current and future harvests to determine necessary policy and network development initiatives as part of this strategy.

By developing these strategies, Transport for NSW aims to improve the productivity and efficiency of the grain transport task, promote the safe movement of grain across the State and support the competitiveness of NSW grain in the marketplace.

CASE STUDY 11 REGIONAL AND URBAN CONNECTIVITY INITIATIVES

Red Bend Silo

Red Bend Silo is a grain receival site located in Red Bend near Forbes, Central West NSW. The site is a major intermodal terminal for grain and is a joint venture arrangement between GrainCorp and Cargill. It processes 60,000 tonnes of grain per year on average.

Road train access is available on the State road network via the Newell Highway. The most direct route from the Newell Highway to Red Bend Silo is approximately four kilometres on local roads (Wirrinya, Paveys Red Bend and Wongajong Roads).

However, road train access is not available from the Newell Highway to the Red Bend Silo due to unsuitable road infrastructure on the local roads, with access restricted to B-doubles. There are three undersized intersections as well as road sections with overly narrow pavement widths which constrain connectivity to Red Bend Silos.

The lack of road train access to Red Bend Silo means that smaller combinations of heavy vehicles must be used, or road trains must be decoupled into smaller units. This is inefficient as it increases costs, introduces double handling and places more trucks on the road network.

Upgrading local roads to enable road train access will deliver economic value by removing connectivity constraints to Red Bend Silo. Enabling road train access will reduce the volume of trucks necessary to deliver this task by approximately 250 trucks or 500 freight trips per year. This can create an economic benefit for many stakeholders, including farmers, truck operators and GrainCorp by increasing the efficiency of this task. Local councils and RMS also benefit from reduced wear and tear on road infrastructure.

Gocup Road

Gocup Road is a State road and is the most direct link between Tumut and the Hume Highway at Gundagai. It serves as a primary access route for the forestry and timber industry in the South West Slopes of NSW.

Heavy vehicle use of Gocup Road has increased over the past decade. Local forestry and timber industries have expanded and are transporting more finished products to the ports of Sydney and Melbourne. Gocup Road was not designed to handle large volumes of heavy vehicles and suffers from poor formation and alignment that impacts freight productivity. The condition of Gocup Road means that industry cannot use High Productivity Vehicles (HPV) to transport freight from plantations located across NSW to the mills in the South West Slopes, and from these mills to markets across Australia and the ports of Sydney and Melbourne.

In recent years, there has been strong demand from industry in Tumut to utilise Super B-doubles, which have a load capacity up to 35 per cent more than conventional B-doubles, to meet their inbound and outbound freight task.

Removing connectivity constraints to and from timber mills in the South West Slopes requires the upgrade of Gocup Road. The cost of upgrading Gocup Road to achieve a level of suitability for HPV such as Super B-doubles is significant and a Nation Building 2 submission has been made to the Australian Government for contribution.

HPV access will reduce the volume of trucks using the road, benefiting many stakeholders including truck operators, major mills, RMS as well as the local community.

Chullora Intermodal terminal

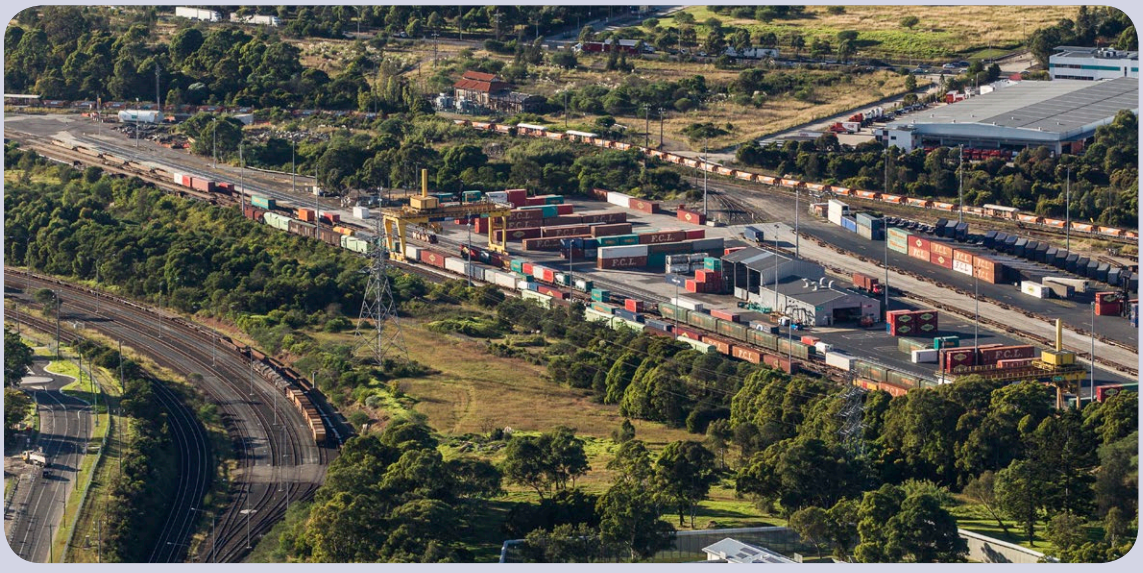
Chullora Intermodal Terminal is a rail freight terminal located in south west Sydney and is owned and operated by Pacific National. It is the only dedicated interstate rail freight terminal in Sydney with an estimated annual throughput of 200,000 TEU.

Semi-trailers and B-doubles operating at Higher Mass Limits (HML) have access to Rookwood Road. HML access is not available from Rookwood Road to Chullora Intermodal Terminal, as this requires access on a few hundred metres of local roads. Pavement issues on these local roads are a connectivity constraint to and from Chullora. Access to Chullora is available for vehicles operating at General Mass Limits (GML).

The lack of HML access to Chullora means that shipping containers are transported to and from the terminal at less than optimal weight leading to inefficiencies in other segments of the container's journey. Infrastructure Australia modelled the effect of Chullora having HML access and found significant economic benefits could be gained.

Removing the connectivity constraint to and from Chullora requires pavement upgrades of the two local roads connecting the terminal. However a lack of local council funding for these works initially prevented this access. Due to the importance of Chullora as part of the national freight network, the Australian and NSW Governments have agreed to jointly fund the project.

Upgrading these local roads to an approved HML B-double route will reduce the required number of truck movements and benefit many stakeholders including truck operators, companies moving freight and the local community. Road managers such as RMS and Bankstown City Council gain economic value from less wear on infrastructure due to the reduction in the number of truck movements on their roads. Pacific National gains economic value from increased competitiveness of Chullora as a rail freight terminal and this may also help to improve the competitiveness of rail for container movements.



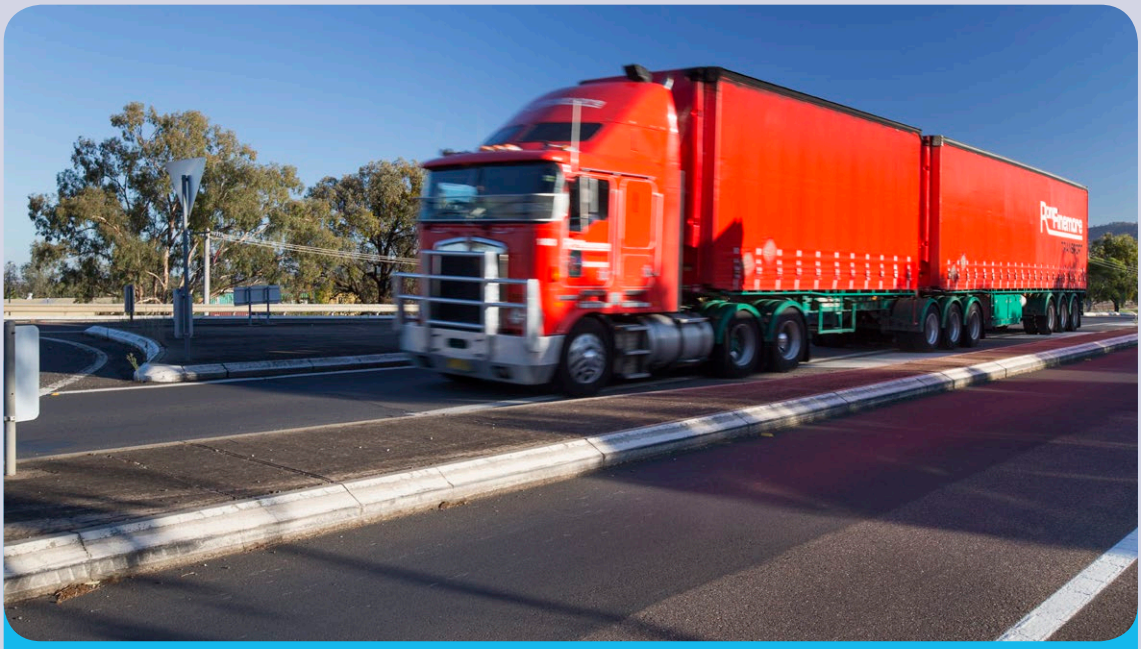
CASE STUDY ⑫ CONNECTIVITY CONSTRAINTS ON LOCAL ROADS

Manildra Group own and operate a flour mill in Manildra in Central West NSW. Manildra Group is the largest manufacturer of wheat based products in NSW and is Australia's largest flour exporter with approximately 60 percent of the export market. Manildra Group is one of the largest exporters of containers from Port Botany. Their products are primarily consumed domestically by industry as inputs to food and beverage manufacturing.

Manildra Group uses rail for the majority of their transport task, consisting of wheat into their mills and flour out of their mills for export. Road movements of manufactured products to domestic customers supplement the rail task. Ron Finemore Transport moves Manildra products by road from the Manildra mill to Victoria, South Australia and Queensland, most at Higher Mass Limit (HML) weights due to the mass constrained nature of the products. However due to network connectivity constraints on local roads, Ron Finemore Transport is unable to deliver at HML to sites in NSW. Connectivity constraints inhibit the efficient movement of goods to precincts of economical valuable freight.

Ron Finemore Transport has applied to numerous councils in regional and metropolitan NSW for HML access. The current situation facing Ron Finemore Transport and other operators is that most councils are restricting access at HML. Councils claim that they lack funding and resources to assess HML applications, in addition to concerns regarding increased forecasts of road maintenance costs, and the perceived impacts of heavy vehicles on local communities.

Ron Finemore Transport delivered over 51,000 tonnes of palletised flour and refined canola oil to Manildra's distribution site in Sydney in the past 12 months. Ron Finemore



Access restrictions on trucks operating at HML constrains productivity, TfNSW will step up efforts with local road managers to ensure the State road network connects to precincts that generate high value freight movements.

Transport could only deliver to this and other locations in NSW at Concessional Mass Limits (CML) due to HML restrictions. A semi-trailer at CML can carry up to an additional four percent compared to GML, while at HML can carry up to an additional twelve percent compared to GML. The restriction on HML access means vehicles are not fully loaded for the trip from Manildra to locations in regional and metropolitan NSW.

To complete the freight task to Manildra's distribution site in Sydney, Ron Finemore Transport needed to make over 2,600 truck movements to move 51,000 tonnes of manufactured products. Greater HML access would reduce the number of truck movements to this site by an estimated ten percent. Greater HML access would maximise cost efficiencies of delivering of products in NSW for Ron Finemore Transport, with flow on benefits to Manildra Group and their customers and the communities that are supported by this valuable agricultural sector. Reduced heavy vehicle numbers would benefit other road users and local communities, and also serve to reduce local councils' road maintenance costs.

Dominating the skyline, the Manildra Flour Mill at Manildra in Central West NSW is the largest processor of wheat in Australia and the ninth-largest mill of its type in the world. Operating 24 hours a day, the plant has a forecast production capacity of 750,000 tonnes per annum.

4.2 Strategic Action Program 2 – Network capacity

"We have to work in today's reality – with the flexibility to deal with tomorrow's possibilities"

Scott Charlton, CEO
Transurban

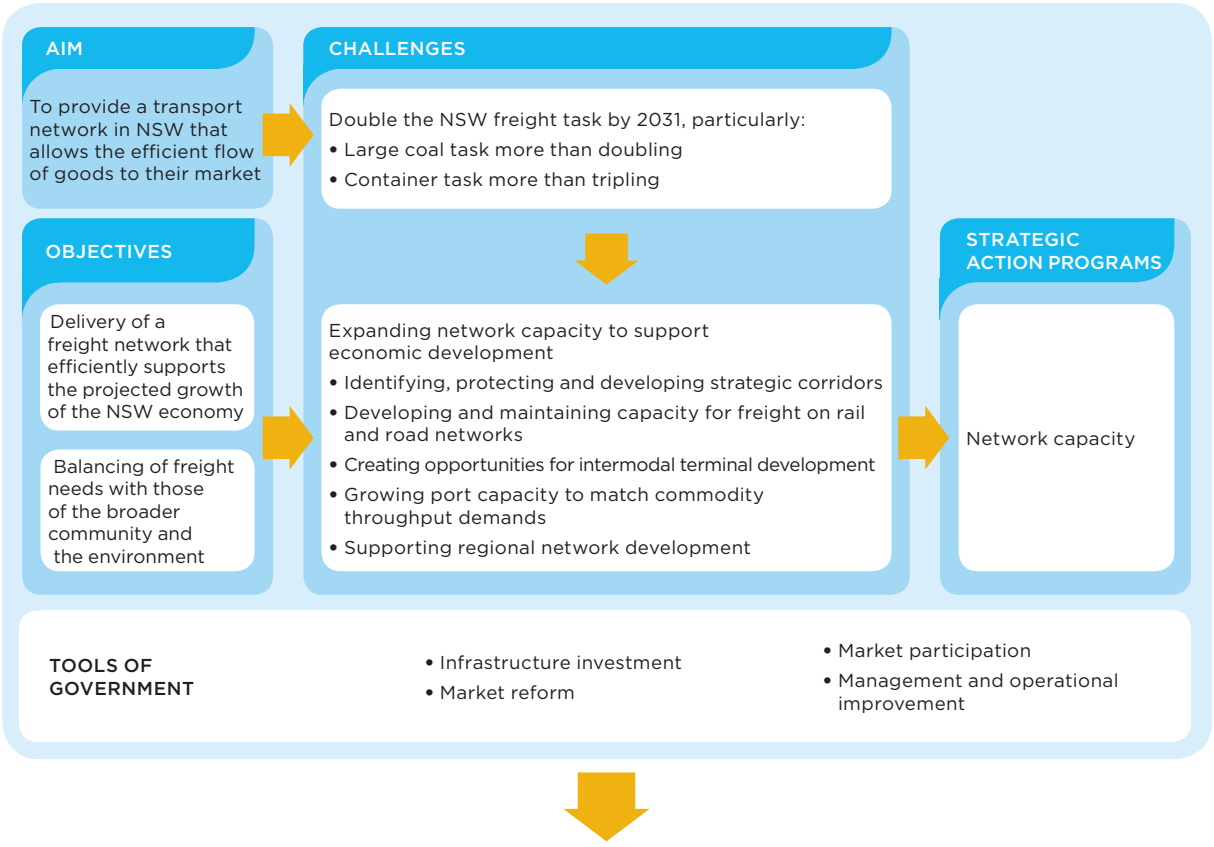
NSW has critical international gateways at Port Botany and Sydney Airport, together with extensive road and rail networks. The optimal performance of the network is critical for the efficient movement of passengers and cargo across the State.

The physical infrastructure of the network has been built, maintained and improved in a fragmented manner dependent on ownership, funding and usage patterns. The result is a network that achieves varied levels of performance. The examples of 'missing links', pinch points and weight limitations that constrain performance are numerous and are not limited to any particular region or mode. This Strategic Action Program sets out to establish and maintain a whole-of-network approach to capacity and performance, in order to achieve the free flow of goods to the market.

As shown in the framework for the NSW Freight and Ports Strategy, the Actions in this Strategic Action Program all contribute to a large subset of objectives and challenges. Each of the planned Actions are described in further detail in this section.

Network capacity is a statewide issue and is not constrained to metropolitan areas. Regional transport networks serving mining and commodity exports are critical to the NSW economy.

Figure 25 NSW Freight and Ports Strategy framework



STRATEGIC ACTION PROGRAM 2: NETWORK CAPACITY

ACTION 2A: Identify and protect strategic freight corridors
- Establish corridors to meet long term freight needs of NSW

ACTION 2B: Develop and maintain capacity for freight on the road network
- Connect and complete Sydney's motorway network
- Prioritise road infrastructure investments

ACTION 2C: Develop and maintain capacity for freight on the rail network
- Separate passenger and freight movements with network enhancements and rail alignments
- Complete the Northern Sydney Freight Corridor
- Ensure that there is sufficient rail infrastructure capacity from mine to port to meet coal demand

ACTION 2D: Develop effective port growth plans to meet freight volume growth
- Develop a Port Botany growth plan
- Develop a Port of Newcastle growth plan
- Develop a Port Kembla growth plan

ACTION 2E: Foster intermodal terminal network development
- Foster intermodal terminals in metropolitan areas
- Support the operation of regional intermodal terminals

ACTION 2F: Coordinate regional infrastructure and service provision
- Adopt a best practice reform model for regional infrastructure

ACTION 2G: Develop and maintain projects to support network capacity
- Evaluate freight infrastructure through an investment framework
- Maintain a program of projects for freight investment
- Fund the infrastructure program

ACTION 2A Identify and protect strategic freight corridors

" ...failure to protect corridors and lands in the immediate-term for long-term projects may rule out these options in the future."

Infrastructure Partnerships Australia, Fixing NSW 2012

Identifying, protecting and developing strategic corridors

Problem description

The location of strategic freight corridors, incorporating both operational and buffer zones, is linked to future supply chain movements and freight flows. However, freight flows have a complex interrelation with population centres and production regions. The recent movement of different commodities across NSW is shown in Figure 26.

Population centres generate freight demand, but can also impede its flow. This is one result of land use change and competing requirements for passenger and freight transport. As shown in Figure 27, population growth varies across NSW, but is generally occurring most rapidly in coastal areas.

As population grows across Sydney and regional NSW, there is a real urgency to ensure that corridors and key freight terminals, including ports, are ready to meet future growth.

For example, the continuing population and employment growth across the greater metropolitan area will place increasing pressure on the metropolitan shared rail network. Additionally, congestion on the road and rail networks serving Port Botany highlights the need for greater separation of freight flows and an increase in the amount of freight moved by rail.

Proposed long term corridors such as the Outer Sydney Orbital and Maldon to Dombarton Rail Line are needed to further separate freight and passenger rail movements, in order for both sectors to grow. Separating freight and passengers will continue through the provision of dedicated freight infrastructure as part of existing or future corridors, such as the Southern Sydney Freight Line connecting Macarthur and Port Botany.

Future corridor design must consider the potential need for a multi-modal outcome involving both road and rail. Most supply chains rely on both networks to reach their markets and customers. Increasingly, freight precincts like the proposed intermodal terminals at Moorebank, will support businesses that receive and distribute goods on road and rail.

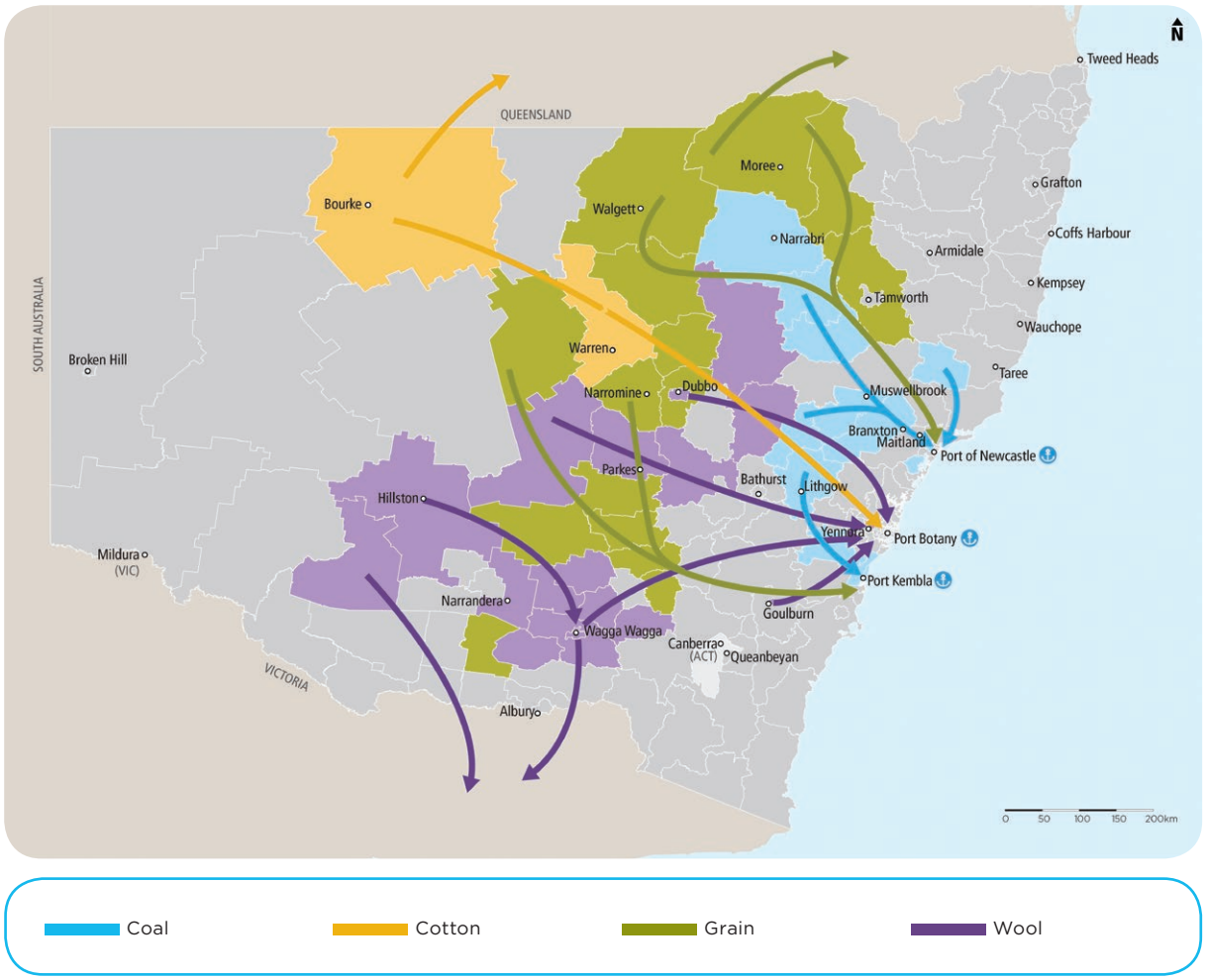
Early planning is needed to integrate future transport corridors and sites for new or expanding freight terminals. This planning work is also critical to maintain a future program of NSW freight infrastructure.

Impact

A failure to adequately identify, preserve and enable the development of long term transport corridors will compromise the ability to increase capacity across road and rail networks.

The Outer Sydney Orbital is a good example of the long term preservation of a corridor. This has enabled the development of critical infrastructure, such as the M7 and M2 Motorways. The M1 Freeway corridor through southern Sydney is another example of the long term preservation of a corridor, which will secure future transport opportunities.

Figure 26 Selected commodity movements 2011



Task 2A-1 Establish corridors to meet long term freight needs of NSW

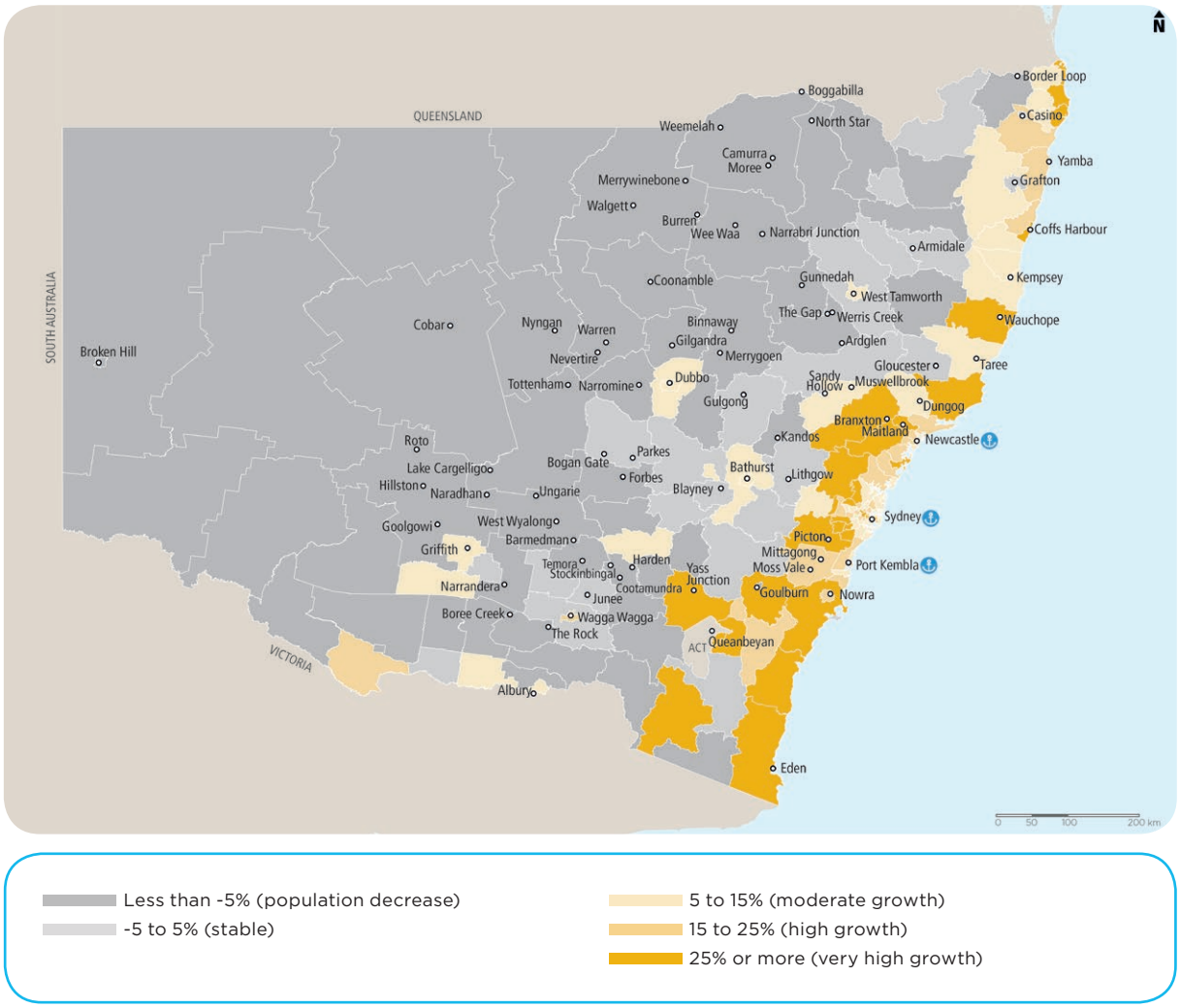
Transport for NSW, with the Department of Planning and Infrastructure and in consultation with local government, will deliver a program to secure an integrated network of corridor alignments and strategic freight sites.

Establishing long term strategic freight corridors is essential to achieving greater separation of freight and passenger movements. Establishing a network of transport corridors will also support key freight precincts and terminals, including the Port of NSW.

For example, an Outer Sydney Orbital would facilitate moving the interstate intermodal task from locations that conflict with the passenger and port freight tasks to Western Sydney. This is discussed in Case Study 13.

It will be important to develop a program of corridor investigations, commencing with the dedicated Western Sydney Freight Line and Western Sydney Intermodal Terminal site. Investigations have already commenced for the Maldon to Dombarton Rail Line in partnership with the Australian Government. Work is also proceeding on the Northern Sydney Freight Corridor and is the subject of a submission to the Nation Building 2 program.

Figure 27 Forecast NSW population growth 2011-2031



A program of corridor investigations will address the following key links:

- Lower Hunter Freight Corridor
- Outer Sydney Orbital
- Bells Line of Road
- Long term Inland Rail Corridor
- M5 East duplication
- M4 East extension
- M2 to M1 Link
- Mount Ousley Road and M1 corridor
- Western Sydney Freight Line
- Western Sydney IMT.

Targeted outcome

The identification of a network of long term transport corridors would support separated freight movements and increase the share of freight moved on rail around the Sydney metropolitan area. A program to identify these corridors has commenced and will deliver the necessary approvals for proceeding to 'shovel ready' stage, as additional capacity is needed to meet forecast demand.

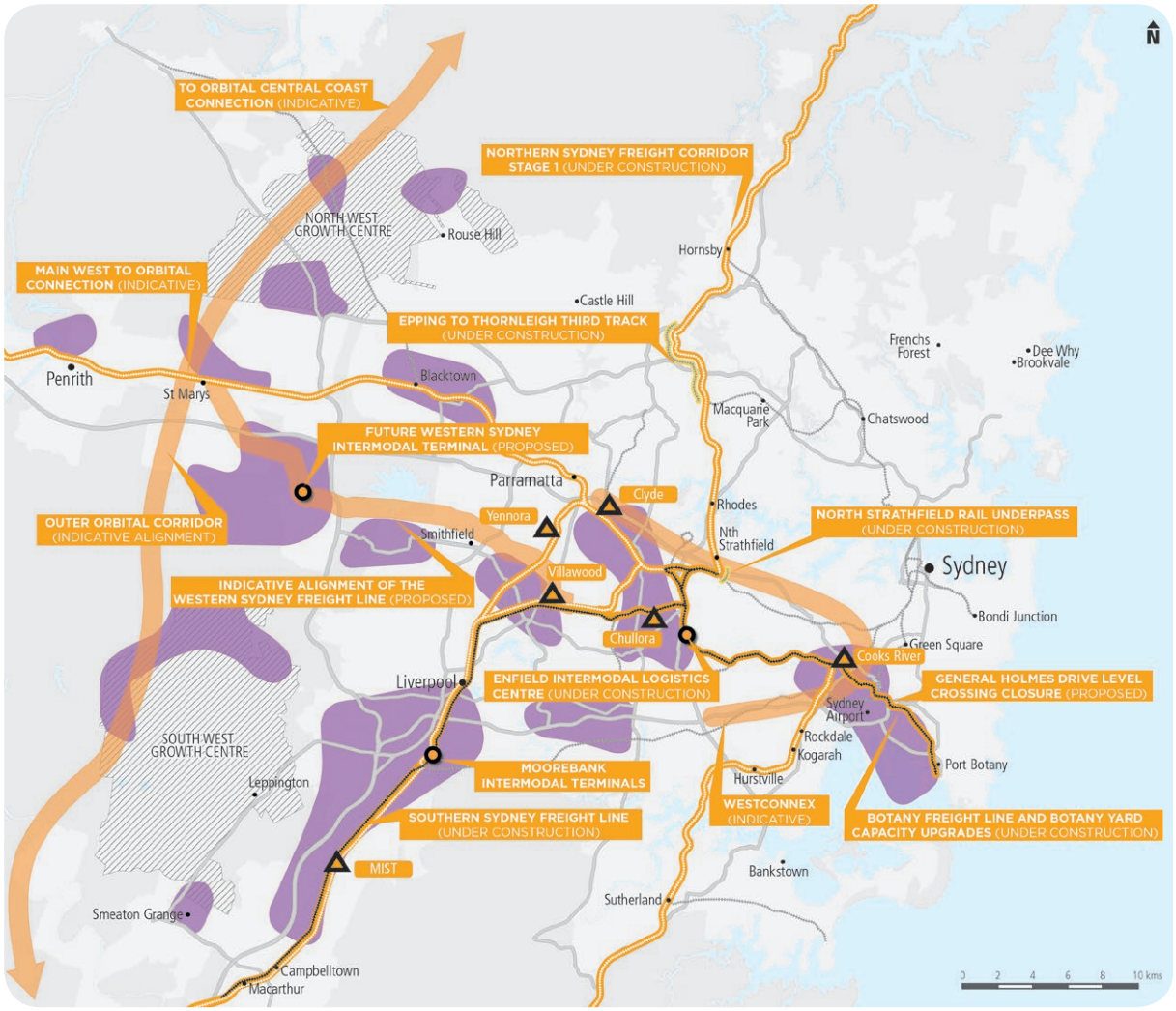
By applying a strategic corridor perspective, individual networks and actions to improve efficiency and capacity can be evaluated in terms of actual supply chain movements and forecast demand. Decisions regarding investment in new infrastructure can be compared across networks, together with

potential transformative corridors that may achieve better long term outcomes. An example of this is discussed in Case Study 14.

To cater for forecast growth in the container market, further intermodal capacity will be needed in Sydney. In the longer term a key strategic location for an intermodal terminal could be in the Eastern Creek area. A future intermodal terminal in Western Sydney will need to be connected to the Metropolitan Freight Network. The necessary lands should be identified and protected in planning instruments to cater for future growth in the freight task.

This planning process to protect corridors, informed by the NSW Strategic Freight Model, will provide greater certainty for metropolitan, regional and local land use planning. This approach is consistent with corridor work in the NSW Long Term Transport Master Plan, which is contributing to the planned growth in centres, urban renewal areas and employment areas with a logistics focus.

Figure 28 Freight activity precincts and key infrastructure projects



CASE STUDY ⑬ OUTER SYDNEY ORBITAL CORRIDOR

Proposed long term corridors support freight growth and provide opportunities to move a greater share of freight around the Sydney metropolitan area on rail. Examples of such corridors include the Outer Sydney Orbital, Inland Rail Line, Western Sydney Freight Line and Maldon to Dombarton Rail Line.

The potential for a new Outer Sydney Orbital corridor has been considered for some time as the means to address the significant industrial development occurring in the west of Sydney.

The 2007 Pearlman Review into the F3 to M7 corridor selection recommended that planning work commence to identify a corridor for a future orbital link between the M7 Motorway and F3 Freeway on the Central Coast.

Identifying a new Outer Sydney Orbital corridor and protecting it from incompatible development is an increasingly urgent priority, particularly as the corridor is of key strategic significance to both the road and the rail task.

While the corridor offers the potential to improve mobility between emerging suburbs and employment locations on Sydney's fringe, it is also a key enabler in progressing the separation of the passenger and freight rail networks in the Sydney metropolitan area. The initial driver for a dedicated freight network includes the interstate freight rail task, as this traffic is the most difficult to accommodate within a densely trafficked, metropolitan passenger system (see Action 2C). The movement of coal around Sydney is another potential driver that would facilitate alternatives to the congested Metropolitan Rail Network and, in particular, the Illawarra Line.

Analysis carried out by Infrastructure Australia suggests that a multi-modal corridor from Western Sydney north to the Central Coast and lower Hunter may provide a more effective long term connection between Sydney, the Illawarra and areas to the north.

An adaptive Outer Sydney Orbital corridor would support a new level of integrated transport planning. It would potentially allow four significant modal problems to be resolved through one integrated corridor. An Outer Sydney Orbital would:

- Provide a dedicated rail freight line north from Sydney, beyond the current Northern Sydney Freight Corridor Project
- Identify and reserve a corridor for the new orbital road link
- Provide a Western Sydney Freight Line
- Provide a corridor for an Inland Rail Route.

An additional consideration is that it may be possible for energy and water infrastructure to use this corridor, where it is sensible to do so.

CASE STUDY (14) M1 CORRIDOR PROTECTION

There are a number of protected transport corridors within metropolitan and regional NSW. Some of these corridors have major projects in planning or underway, while others are not yet in use for transport purposes.

The M1 Freeway corridor between St Peters and Loftus has been reserved in planning instruments for more than 50 years. It spans the local government areas of Marrickville, Rockdale and Sutherland, and in places is only 100 metres wide.

The M1 Freeway was a major road proposed in the 1951 County of Cumberland Planning Scheme, which provided an overall perspective on the future growth of Sydney. Once the corridor was identified, the (then) Department of Main Roads began purchasing land within the corridor for future road development. The original corridor extended from the end of the Southern Freeway at Waterfall, through to the Sydney CBD. In the 1960s, the section of the corridor over the Captain Cook Bridge and its southern approaches was built. Since then, the M1 corridor has been reduced, particularly in the southern sections between Loftus and Waterfall, to preserve National Parks and established open space areas. Over time, sections of the remaining reservation have also been used as community open space and active recreation space.

Transport for NSW is continuing to protect the M1 corridor to provide for possible future transport use. Such uses could include a road, busway, cycleway, light rail and/or heavy rail. The NSW Government also requires that the M1 corridor be retained for possible future use.

Freight origin and destination data provides the evidence base to identify and preserve network expansion corridors. Mapping current distribution patterns and liaison with industry to forecast changes will ensure access for freight can be incorporated into existing sites and new developments.

ACTION 2B Develop and maintain capacity for freight on the road network

Identify missing links and prioritise investment to create capacity

Problem description

Even if the existing road network capacity is used optimally, there are remaining capacity constraints in NSW. Like many other major cities in the world, Sydney is facing increasing congestion on its road network. This issue is related to Australia's economic prosperity and population growth, which places extra demand on transport and road infrastructure and exacerbates congestion. On an average day in Sydney there are around 227,000 rigid truck movements, 61,000 articulated truck movements and 1.2 million light commercial vehicle trips.

For most of these trips, there is no alternative to road transport. Demand for freight movements via road is therefore high, but on some roads existing capacity cannot currently meet demand during peak hours. Exacerbating this problem is a lack of connectivity along certain routes. Port Botany provides one of the most obvious examples. As Sydney's container port and a major source of freight movements, access to and from the port is crucial, However, important routes that would provide capacity, such as the M4 Extension and a widening of the M5 East, are missing.

Impact

The primary impacts of gaps on the road network are congestion and increased travel time. The current road network is at or near capacity in many locations during peak periods. Without intervention, the transport network will face growing congestion, especially on key roads such as the M4 and M5.

Congestion around Port Botany due to insufficient capacity has a particularly negative effect. Efforts to increase the rate of container throughput are negated when trucks cannot effectively access the road network surrounding the ports. At Port Botany, this has the added negative impact of contributing to congestion surrounding Sydney Airport, an already heavily congested area.

Task 2B-1 Connect and complete Sydney's motorway network

Transport for NSW will continue its program of motorway connections, including priority freight movements.

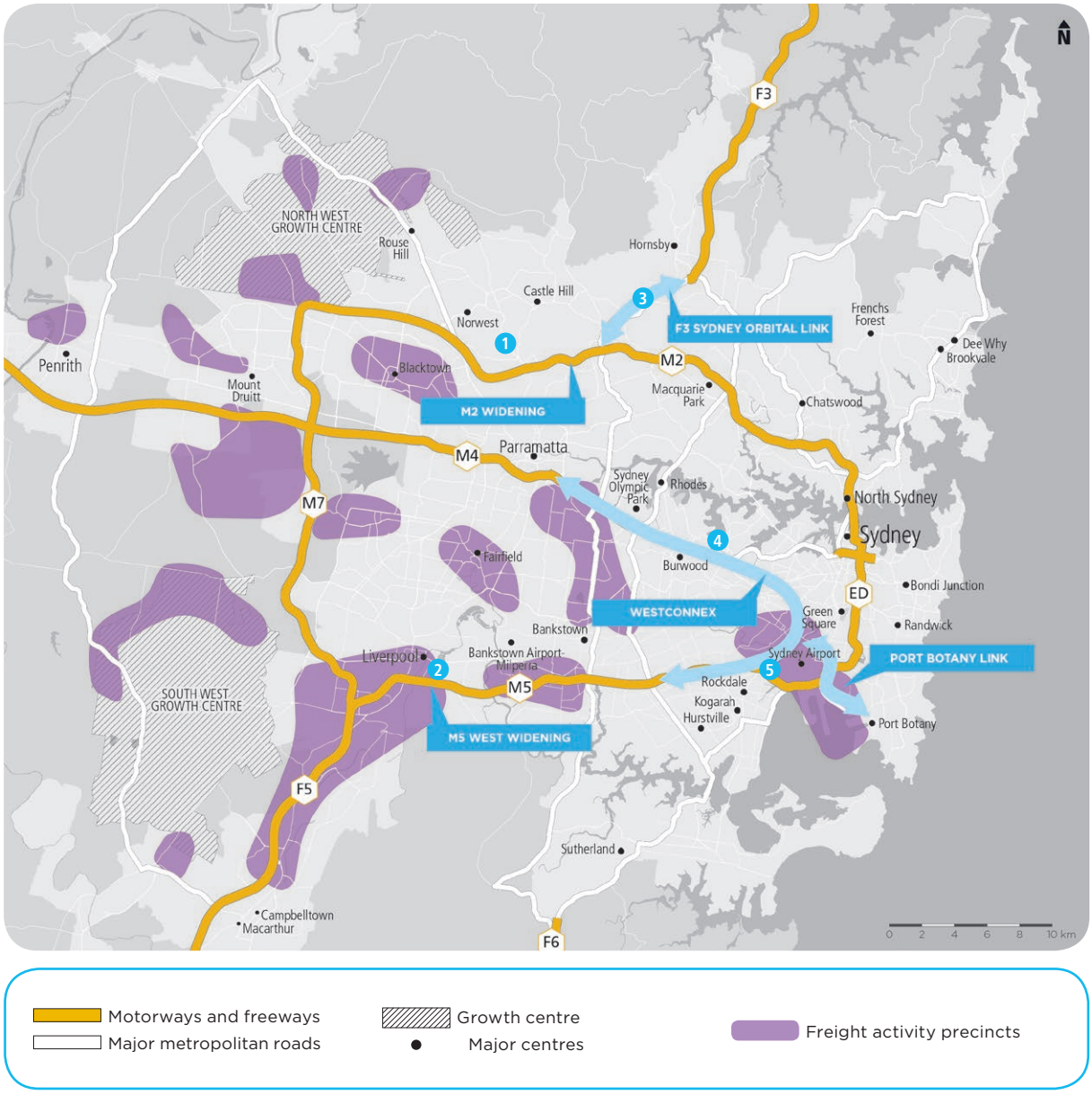
Addressing gaps in Sydney's motorway network is one of the most important steps in expanding capacity on NSW roads. Key motorway connections with benefits for freight include:

- Widening of the M2, particularly between Windsor and Pennant Hills Road (currently underway)
- Widening of the M5 West, providing greater capacity between Bankstown and Liverpool (currently underway)
- Construction of the connection between the M2 and M1, providing the opportunity to streamline interstate movements around Sydney
- The WestConnex project, delivering 33km of new motorway along the Western Motorway (M4) and South Western Motorway (M5) corridors.

Major freight activity centres including Sydney's international gateways, Port Botany and Sydney Airport, are concentrated around the M4 and M5 corridors.

The WestConnex project will reduce freight costs through increased travel speeds and reliability and reduce the distances travelled by freight vehicles. The WestConnex has the potential to deliver time savings on the M4/M5 corridors in the order of 15 minutes to 35 minutes by 2021.

Figure 29 Key projects connecting the motorway network



In addition to these specific steps to connect the Sydney motorway network, Transport for NSW will maintain a long term view of existing connections and plan for necessary upgrades over the next 15-20 years. This will include keeping up with growing demand on roads that serve major distribution centres, such as the M4 and the M7.

Figure 29 demonstrates where there are gaps in the Sydney motorway network.

Targeted outcome

Connecting the Sydney motorway network will provide additional capacity and connectivity for both freight and passenger vehicles travelling in the Sydney metropolitan area, where it is most needed to relieve congestion. The motorways identified for connection and expansion are part of key strategic freight corridors. The development of a strategic road network between key freight centres and ports would lead to improved economic productivity.

Task 2B-2 Prioritise road infrastructure investments

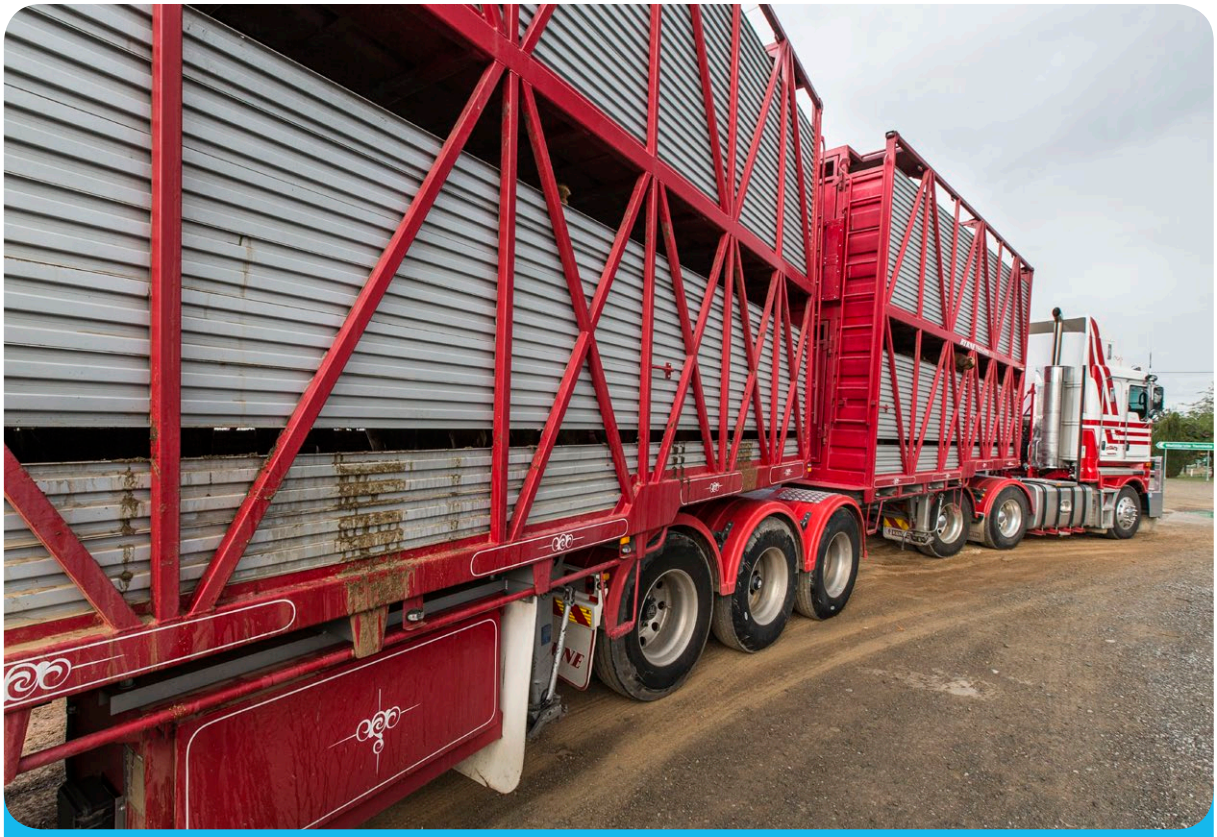
Transport for NSW will prioritise road infrastructure using key performance indicators developed for freight and strategic freight modelling.

Accurate prioritisation of investments is important, with the requirement for a number of significant investments to expand the capacity of the road network. This prioritisation must draw on the key performance indicators and strategic freight modelling described in Action 1A to perform a cost benefit analysis of various investments.

This approach would involve examining freight-related measures and indicators, such as median travel time from Port Botany to distribution centres. It would consider the way in which different infrastructure investments would change those metrics. Investments that would do the most to relieve bottlenecks and raise productivity would then be prioritised.

Targeted outcome

Using key performance indicators and the freight model to evaluate the prioritisation of investments will ensure the application of a fact-based approach to investment decisions. Prioritising the new road infrastructure projects that will confer the greatest benefits for the freight industry will allow the limited funds to be spent on the most important projects. Efficiency of infrastructure investment is required, particularly given the constraints on NSW Government finances.



High performance freight activity on the NSW network is enabled by accurate demand forecasting for thorough forward planning. This supports the timely delivery of well designed and efficient transport infrastructure by both government and business. The location of storage and distribution centres warrants coordinated planning to maximise the capacity of the network and allow businesses to operate efficiently.

ACTION 2C Develop and maintain capacity for freight on the rail network

Enhancing freight rail capacity through targeted investment

Problem description

Data shows that rail carries the 'weight' of the NSW freight task. Major commodities such as coal, grain, wine, meat and cotton are all carried by rail from their source of production to export through NSW ports.

There are approximately 9,400 kilometres of nominal route rail track across NSW, of which around 6,400 kilometres is operational and 3,000 kilometres is non-operational. This network is managed by three entities:

- Australian Rail Track Corporation (ARTC)
- Sydney Trains
- Transport for NSW.

The existing network (as shown in Figure 53, Appendix C) is comprised of the:

- Metropolitan Passenger Network (MPN), which consists of approximately 976 kilometres of operational track and is managed by Sydney Trains. The MPN extends south to Nowra and Macarthur, west to Lithgow and north to Broadmeadow and Newcastle. The MPN is shared infrastructure used predominantly for passenger services.
- The Leased Network, managed by the ARTC for a period of 60 years under the terms of a 2004 lease arrangement with Transport for NSW – approximately 3,270 kilometres of operational track including:
- The dedicated Metropolitan Freight Network (MFN), which serves Port Botany, transferred to ARTC in August 2012 and extends from Port Botany to Sefton and Flemington.
- The Interstate Network – mainline track that links to the Victorian, Queensland and South Australian networks
- The Hunter Valley Network – extends from Port Newcastle through the Hunter Valley to Gunnedah basin
- The Southern Sydney Freight Line from Macarthur to Sefton
- Country Regional Network (CRN), is owned by Transport for NSW, with maintenance services and below rail operations contracted to John Holland
- Branchline/ Grain Line Network is a subset of the CRN – approximately 1000km of branch line track used predominantly for haulage of grain, with lower mass and speed limitations than other parts of the network.

While the dedicated freight lines are relatively well served by capacity development plans, there is limited available capacity on the shared rail network in metropolitan areas for freight traffic. As a result, there is tension between passenger and freight operations.

In addition, there is a legislative requirement for passenger priority in the development of rail timetables on the Sydney Trains, ARTC and CRN rail networks. This further constrains rail freight movements.

Access to the MPN and MFN during commuter peak periods is restricted due to capacity constraints for freight operators. There are also constraints placed on freight rail movements outside peak periods through the need to position passenger trains before the morning and afternoon peaks.

Similarly, the efficiency of freight operations on the Leased Network and CRN is affected by passenger operations. On single track sections, freight trains are held in crossing loops to allow the passenger services to proceed.

Impact

Pending development of dedicated rail freight infrastructure and alignments, the shared rail network will not keep pace with growth. Sharing with a growing passenger task will lead to reduced capacity for rail freight, increased costs and a lack of competitiveness. Where freight continues to move, there will be an increase in road movements and most likely road congestion, as the road network may not have catered for the increased demand.

Task 2C-1 Separate passenger and freight movements with network enhancements and rail alignments

Transport for NSW will investigate network enhancements and rail freight alignments, including:

- Western Sydney Freight Line and Western Sydney Intermodal Terminal
- Northern Sydney Freight Corridor
- Outer Sydney Orbital
- Maldon to Dombarton Rail Link
- Lower Hunter Freight Corridor
- Awaba loops
- General Holmes Drive grade separation
- Coalcliff Eastern loop extension.

Infrastructure enhancements should continue to target bottlenecks on the shared network that restrict freight movements, together with the corridor investigations addressed in Action 2A.

Within Sydney, ARTC is constructing two new staging roads at Enfield for trains operating to and from Port Botany. These tracks will enable regional and metropolitan intermodal services to be advanced across the shared network to the MFN, where they can be staged awaiting pathing access to Port Botany.

On the interstate network, ARTC is continuing to roll out new and extended crossing loops and passing lanes for freight transport, install concrete sleepers and undertake curve easing projects on the North Coast line.

Transport for NSW is proceeding with pre-construction activities for the Maldon to Dombarton Rail Link, which would support the rapidly expanding resources sector in NSW by giving the mining sector alternate access to Port Kembla. Additionally, it may enable Port Kembla to provide overflow capacity for Port Botany's container business and provide a more reliable link between the south west and western coal mines and the rest of the eastern seaboard.

Targeted outcome

Upgrades and enhancements to existing infrastructure will provide capacity to move freight on the various shared rail networks while maintaining priority for passenger services, and improve the reliability of freight and passenger services.

Examples of other potential enhancements include further track duplication and track preparation for double stacking of containers.

Task 2C-2 Complete the Northern Sydney Freight Corridor

Transport for NSW will complete works as part of Stage 1 of the Northern Sydney Freight Corridor (NSFC) program in 2016. It will also seek funding from the Australian Government to commence planning and delivery for Stages 2 and 3 of the program, including the Lower Hunter Freight Corridor.

The movement of freight between Sydney and Newcastle on the Main North Line is a crucial aspect of freight transport in NSW. Several factors currently contribute to insufficient capacity for freight movement along this corridor, including a shortage of holding loops, steep inclines, junctions causing delays at critical locations, and passenger services restricting freight access.

Transport for NSW and ARTC have committed to a series of infrastructure enhancements that will address these issues in order to expand freight capacity on the Main North Line. Collectively, these enhancements make up the NSFC program. Stage 1 projects include:

- Construction of Gosford passing loops (Transport for NSW)
- Addition of a third track between Epping and Thornleigh (Transport for NSW)

Freight movement on the shared rail network is given a lower priority than passenger movement. Any poor performance by a rail freight operator, on a network working at or close to capacity, has the potential to create major delays. The end result is often freight choosing road over rail, regardless of the cost.

- Construction of North Strathfield rail underpass (Transport for NSW)
- Construction of Hexham passing loop (ARTC).

Targeted outcome

The goal of the NSFC is to expand the Main North Line's freight capacity. Each of the key infrastructure enhancements will therefore alleviate specific constraints that currently limit the corridor's capacity:

- The construction of two passing loops at Gosford will alleviate tension caused by passenger and freight trains sharing track. This will improve freight access and reliability through northern Sydney and the Central Coast.
- The addition of a third track between Epping and Pennant Hills, connecting into the existing passing loop between Pennant Hills and Thornleigh, will allow faster passenger services to pass freight trains on this steep section of track.
- The construction of a rail underpass at North Strathfield will enable additional paths for freight trains. This will reduce waiting times and improve the reliability of freight transport.
- The construction of the Hexham passing loop will create a space to hold freight trains before they enter the passenger network, thus avoiding competition with passenger services. The Hexham passing loop was completed in June 2012.

Once completed in 2016, the new infrastructure will lift the corridor's carrying capacity by 50 per cent, from 29 to 44 freight trains each day. This will help to accommodate the expected increase in freight volumes.

The NSFC is a critical link in the movement of interstate freight and supports important passenger movements, as well as domestic coal movements to power stations on the Central Coast. The potential development of an Outer Sydney Orbital in the longer term (see Action 2A) needs to consider the operation of the NSFC and its role in an integrated rail freight network. The NSFC works are designed to meet forecast demand for interstate freight until 2028.

Task 2C-3 Ensure that there is sufficient rail infrastructure capacity from mine to port to meet coal demand

Transport for NSW in conjunction with the NSW Department of Planning and Infrastructure will identify and resolve issues related to the approvals process for rail infrastructure projects which aim to meet coal demand.

Coal is the largest primary industry in NSW, with 63 mines currently operating which provide more than 160Mt of coal for export. The NSW coal supply chain is exposed to a number of significant issues that limit the capacity of rail to meet current and future demand for the movement of coal from mines to ports.

The successful movement of coal is dependent upon the availability of rolling stock, loading facilities, rail access and port infrastructure to meet capacity demands. Participants in the NSW coal supply chain have, however, continued to express frustrations over the complexity, cost and length of the assessment and approvals process for rail infrastructure projects.

A further area of concern is the number of available train paths on the Sydney Trains network available to coal services. Specifically, coal services travelling from the Western and Southern Coalfields to Port Kembla have no option but to travel on the Sydney Trains network. The number of train paths currently available to coal services is constrained by statutory requirements placed on Sydney Trains to give priority to passenger services, the structure of Sydney Trains' timetable and the limited storage facilities at Port Kembla. In turn, this creates reliability issues for coal services which resonate along the NSW coal supply chain. Given the forecast increase in demand for passenger services, the issue of train path availability is set to worsen.

The complexity of the current assessment and approvals process for rail infrastructure projects creates a disincentive to invest in major infrastructure which benefits the NSW coal supply chain. As a result, a number of key infrastructure projects which would ensure future capacity and meet the demand for coal are being delayed or not pursued. Given the significant economic value represented by coal exports, simplifying approval processes for rail infrastructure projects is necessary to secure capacity for coal on the rail network.

Targeted outcome

A streamlined and efficient assessment and approval process for rail infrastructure projects will ensure future capacity requirements for coal services operating on the NSW network. This may involve projects such as building crossing loops, sidings and tracks to guarantee the reliable transportation of coal from mine to port.

CASE STUDY 15 SOUTHERN SYDNEY FREIGHT LINE

The Southern Sydney Freight Line (SSFL) is a 36 kilometre dedicated freight line. It is a single, bi-directional and non-electrified line from Macarthur to Sefton Park Junction, where it joins the existing Metropolitan Freight Network. The SSFL also incorporates six kilometres of existing track between Ingleburn and Glenfield and provides for a connection to the proposed intermodal terminals at Moorebank.

ARTC initiated and funded the SSFL project as part of its lease commitments with the NSW Government. It conducted an Environmental Assessment and retained the current corridor alignment in 2005. Stage 1 of the construction work began in October 2008 and was completed in June 2012, while Stage 2 was commissioned in early 2013.

The key objective of the SSFL is to enable the flow of goods to and from Sydney during peak passenger hours. Currently, access to the Sydney Trains network is constrained by the density of passenger operations, which limits freight access to the network between the peaks. This situation prevents deliveries in Sydney at optimum times.

Currently operational, the new infrastructure is:

- Improving reliability for both passenger and freight rail movements
- Increasing flexibility for timetabling of freight services
- Potentially shifting some of the growing truck task to rail.

The SSFL is a core component of the north-south corridor strategy and should deliver shorter transit times and greater reliability to the Melbourne-Sydney freight market.

ACTION 2D Develop effective port growth plans to meet freight volume growth

Growing port capacity to match commodity throughput demands

Problem description

Long term plans for the growth of ports play a key role in meeting the challenge of growing trade volumes being experienced by NSW international maritime gateways.

Individual port plans need to demonstrate how infrastructure will be provided to meet the forecast trade volume, with an outlook horizon of a minimum of 20 years. Port plans must also be consistent with key State policies including NSW 2021 and the Long Term Transport Master Plan. As significant national assets, future development of NSW ports needs to be consistent with the themes and priorities of the National Ports Strategy.

There are significant differences between the operating and institutional environments for bulk and container ports. These differences include location, stakeholder coordination, land transport arrangements, comparative market advantages, and growth prospects.

Given this diversity, port plans should not be based on a mandated 'one size fits all' approach. Plans, and practical outcomes, need to be tailored around what is most suitable for a particular region and port.

Over the next 20 years, NSW ports will need to focus on their primary markets. Port Botany will remain the key container port in NSW, given current planning and investments to date. Port Kembla is the primary port for motor vehicle imports in NSW and will continue to support export trades such as coal, minerals and grain.

The Port of Newcastle will need to support forecast growth in coal exports, given its pivotal location serving the Hunter coal network. The Port of Newcastle has significant opportunities for growth and development and has prepared plans to improve general cargo handling and bulk liquids capabilities.

Port Corporations and The NSW Ports Consortium therefore require access to up to date freight information and modelling to support their planning processes. Transport for NSW will, where required, provide this support, which together with ongoing technical input will help strengthen port corporation planning and the provision of freight and logistics infrastructure.

Impact

There are significant economic efficiency implications for NSW if major changes are not made to ports and related landside road and rail systems in the next 20 years.

Task 2D-1 Develop a Port Botany growth plan

Port Botany is NSW's primary container port. This port currently handles the second largest container volumes in Australia and has a significant role in the importation of bulk liquids and gases.

In April 2013, the NSW Government announced that Port Botany and Port Kembla would be leased to NSW Ports for $5.07 billion over a period of 99 years. The transaction included the lease of Cooks River and Enfield Intermodal Logistics Centre. The lease commenced on 1 June 2013.

Under the new arrangements, Sydney Ports has retained a significant maritime security and emergency response role, including the functions of Harbour Master, pilotage services and management of navigational aids and buoys.

Port Botany will continue to grow to accommodate the future container demand in NSW. This growth will be supported by improvements to the supply chain connecting to the port and will be considered as part of the overall transport planning being undertaken for the Port Botany and Sydney Airport Precinct.

The port covers approximately 275 hectares and is an integrated area with facilities for stevedoring, trucking, warehousing, bulk liquid trade and storage, customs container examination and empty container storage. Stevedoring services for six berths are currently provided by two stevedores: Patrick and DP World.

As part of the expansion of Port Botany, a third terminal will be operated by Hutchison Port Holdings. Hutchison is currently equipping the terminal with the necessary port and container facilities to prepare for the commencement of operations in late 2013.

Meeting the growing container task

With continuing investment in the port and related supporting infrastructure, it is important that Port Botany's capacity is fully utilised to accommodate long term container trade growth. For the last 15 years this growth has averaged seven per cent per annum. To accommodate forecast growth, a new third container terminal (T3), will provide 1,850 metres of additional quayside capacity including five berths and additional rail sidings.

Growth in trade volumes affects the entire supply chain. While the provision of new port infrastructure is a key element, infrastructure investment in all segments of the port supply chain – port, road and rail – will be critical for servicing future NSW trade demands.

Meeting the challenge of seven million TEU per annum will only be possible if the arterial road and rail connections servicing the port can efficiently transport trade volumes. This will require arterial road capacity improvements and the increased use of rail. Land will also need to be acquired and developed for additional port-shuttle intermodal terminals to service the west and south-west of Sydney.

Sydney Ports, under the T3 approval, connected the terminal to Foreshore Road with a 135 metre road bridge. This road gives each container terminal its own road access, allowing for more efficient truck movements into and out of the port.

Sydney Ports also constructed an elevated road network in Penrhyn Road to eliminate the existing level crossing, which had been constraining truck access to Brotherson Dock for many years. The works, referred to as the Grade Separation Works, consisted of eight major elements, including a large elevated roundabout, three access ramps and four bridge spans linking the ramps to the roundabout.

Works commenced in early 2011 and were completed by the end of 2012. The elevated roundabout has improved safety and efficiency in the precinct and provides unimpeded access for trucks, which no longer have to wait for trains passing through the old level crossing at Penrhyn Road.

Oil, bulk liquids and gas trade

Oil, bulk liquids and gas trade are also a major focus of Port Botany and are expected to continue to grow from 12.6 Mtpa in 2006 to 16.5 Mtpa in 2016, and 24.6 Mtpa in 2036 (Sinclair Knight Merz, 2007). To accommodate this growth, Sydney Ports is constructing a second bulk liquids berth, to be operational by late 2013.

It is forecast by Sydney Ports that a third bulk liquids berth will be required by around 2025. It is possible the need for this berth could be brought forward in light of jet fuel demand predictions for Sydney Airport, which indicate a period of significant growth in demand of 7.22 per cent per annum from 2009 to 2014 (Sydney Jet Fuel Infrastructure Working Group 2010).

Port Jackson

Port Jackson, a port of national significance, is operated by Sydney Ports and will continue to play a major role as a working port. Port Jackson is primarily used for the importation of bulk products such as salt, soda ash, dry bulk cargo and petroleum products. It is also Australia's premier cruise ship destination. The Royal Australian Navy has a significant presence at Garden Island, within the port. Of note, Glebe Island and White Bay play a critical role in the provision of layover and emergency berthing facilities for large commercial and naval vessels.

Cruise shipping

Sydney Harbour will continue to be a favoured destination for international cruise ships. Future planning for Sydney Harbour will include management of the demand for cruise berths and access. The cruise industry is one of the fastest growing segments of the global tourism market, with annual growth of more than seven per cent. In 2012/13 Sydney hosted a record 256 cruise ships, an increase from 199 visits in 2011-12. The number of cruise ships scheduled for the 2013/14 season already exceeds 300.

Cruise Down Under's 2010-11 economic impact assessment estimates the direct expenditure associated with the cruise shipping industry to Sydney and NSW is approximately $400 million. This includes expenditure by passengers, crew and cruise operators.

A Deloitte Access Economics report on the Economic Contribution of the Cruise Sector to Sydney and NSW estimated the industry contributed approximately 3,150 full-time equivalent workers to the Sydney economy in 2010-11.

To cater for this growth, Sydney Ports secured planning approval in February 2011 to build a $57 million replacement domestic cruise passenger terminal at White Bay 5, with additional berthing capability at White Bay 4. The White Bay Cruise terminal was officially opened in April 2013. The state-of the art modern facility accommodates up to 2,400 passengers and includes short term parking for 200 cars, coaches and trucks. Extensive upgrades to local roads and intersections ensures the best possible traffic flows. Larger cruise ships will also have opportunity for limited berthing windows at Garden Island.

However, the trend towards larger international passenger cruise ships will mean that an increasing number of vessels will be unable to pass under the Sydney Harbour Bridge and will therefore need to be accommodated east of the bridge (GHD, 2010).

Sydney Ports is proceeding with an upgrade of the Overseas Passenger Terminal (OPT) to deliver the efficiencies necessary to enable a 3,500 passenger ship to achieve a one day turnaround at the OPT. This passenger capacity represents the largest ships able to berth at the OPT. This will be achieved through the creation of additional space to improve provisioning operations and passenger flow, upgraded passenger amenities and a revised traffic solution.

In addition, further works identified to cater for larger vessels and enhanced maintenance include a wharf extension, northern dolphin, new berth fendering to cater for larger ships and refurbishment of existing lifts.

Sydney is recognised internationally as the 'must see' Australian cruise ship destination. Sydney Harbour is the only capital city port in Australia that provides two dedicated cruise terminals to cater for both the domestic and international cruise sectors.

Subject to the receipt of timely statutory approvals it is anticipated that construction works will commence by May 2014 with a view to completing the building works during the cruise off season.

To date $30 million has been spent on the upgrade with an additional $22 million allocated for the 2013-14 financial year to improve the customer experience.

Other bulk/general cargo trades

The Glebe Island/White Bay precinct is comprised of approximately 40 hectares with eight working berths. The major port activity at Glebe Island is the discharge of dry bulk cargo, such as cement, gypsum and sugar. These products are destined for the Sydney metropolitan market.

Dry bulk products are low value materials, with transport costs representing a significant portion of the product cost. It is for this reason that Sydney Harbour is an ideal port for the import of these products, as it minimises the transport costs associated with their distribution throughout Sydney. Using Sydney Harbour also has associated environmental benefits, as it allows products to be transported by sea instead of land.

There are currently three major leases in the Glebe Island precinct: Sugar Australia, Gypsum Resources Australia and Cement Australia. These lessees have considerable infrastructure in place at Glebe Island and have indicated to Sydney Ports that they wish to extend their leases beyond the current term of 2020.

Glebe Island provides one of the last remaining deep-water berths with backup land for commercial port uses in Sydney Harbour. Glebe Island is centrally located for the supply of bulk products destined for the Sydney market. Delivering bulk materials to Glebe Island would improve the efficiency of the supply chain and minimise transport costs associated with distribution throughout Sydney. This is of particular value to industry, as transport costs represent a significant portion of total product revenues. For example, Glebe Island is particularly well positioned for the supply of cement to over fifty concrete batching plants located throughout Sydney.

Sydney Ports' proposed land use strategy for Glebe Island/White Bay envisages the consolidation of existing and future dry bulk trade at Glebe Island. The current Hanson aggregate import facility at Blackwattle Bay and Hymix cement batching plant at Pyrmont could be relocated to the Glebe Island site, releasing land for alternate uses such as expansion of the Sydney Fish Market and community access. If relocated to Glebe Island, the concrete batching plant could use cement and aggregate from Glebe Island without transporting the material via the external road network, as currently occurs.

Port Eden and Port Yamba

In December 2011, Sydney Ports assumed responsibility for managing the regional ports of Eden and Yamba on behalf of the Minister for Roads and Ports.

These ports play an important role in supporting their respective regional economies through port trade and maritime-related goods and services. For example the Port of Yamba provides approximately 74 full time jobs, and $8 million of value add to the Clarence Valley area, or approximately 0.5 per cent of the region's GDP.

The Port of Eden has developed into a significant supply point for forest products exports such as woodchips and softwood logs, supplemented in recent years by the general cargo trade and the servicing of the Bass Strait oil fields.

In late June 2013, The NSW Government announced its support for cruise ships visiting the Port of Eden. At the start of the 2013-2014 cruise season, navigation charges will be waived for the first four cruise ships to visit Eden. The following five to 29 cruise ships will receive a 35 per cent discount on navigation fees and a 50 per cent discount will be offered thereafter. This initiative will help support the booming cruise industry in Australia and encourage tourism along the Sapphire Coast.

This announcement aligns with the Australian Government's commitment of $ 10 million towards the Eden Port Strategy Infrastructure Project. The funds will enable a 90 metre extension to the breakwater wharf, dredging and the installation of a heavy lifting zone to accommodate vessels

up to 260 metres in length. Future strategic planning by Sydney Ports will include the regional ports of Eden and Yamba.

Targeted outcome

Port growth plans developed by the port operators will clarify the way in which NSW ports will expand to meet future growth in freight volumes. The plans will be largely consistent with the National Port Strategy, together with other key State and regional plans.

Planning for growth in Port Botany and Port Jackson will provide increased certainty through integrated planning of port and landside infrastructure needs.

Task 2D-2 Develop a Port of Newcastle growth plan

The Port of Newcastle, located close to coal mines in the Hunter Valley and Gunnedah basin, will continue to be NSW's primary coal export port. The Port of Newcastle will also continue to service bulk grain and other commodities.

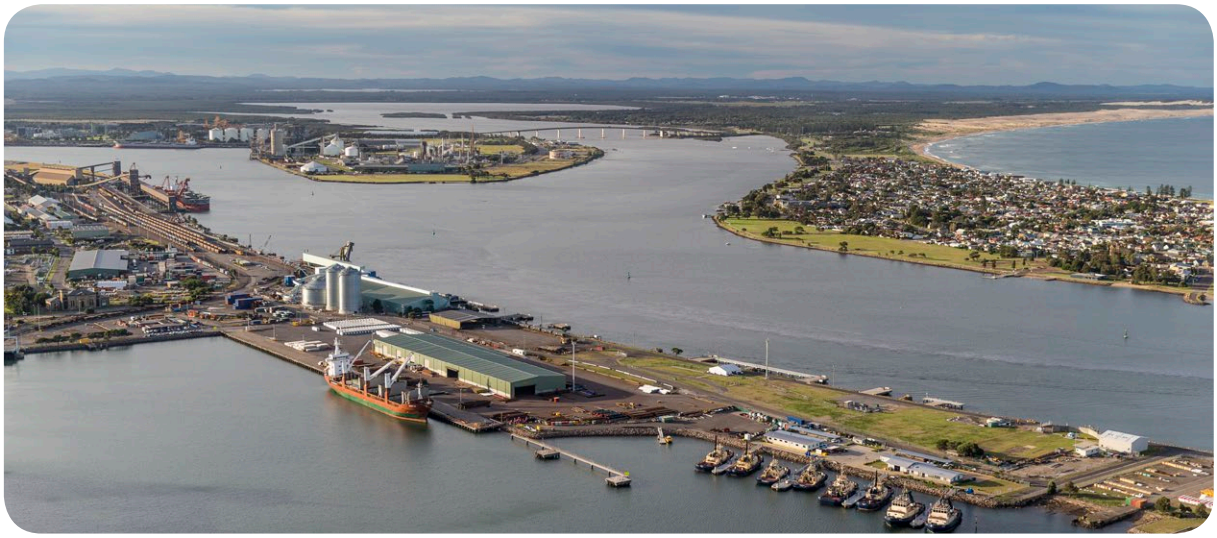
The Port of Newcastle is one of the world's largest coal export ports. The port's other major trades include alumina, petroleum, fertilisers, grains, cement, woodchips and steel. The current total coal export capacity of Newcastle is 202 Mtpa. This consists of 142 Mtpa through the Port Waratah Coal Services (PWCS) terminals at Carrington and Kooragang, and 60 Mtpa through the recently commissioned Newcastle Coal Infrastructure Group (NCIG) terminal.

NSW coal export demand is forecast to increase from 123 Mtpa in 2011 to 182 Mtpa by 2021 and 270 Mtpa by 2031. The majority of this trade will be serviced by the Port of Newcastle, with over 260 Mtpa forecast to pass through the port by 2031.

The Hunter Coal Export Framework (HCEF) was established to ensure additional coal export capacity is brought on line at Newcastle when it is needed. The HCEF allocates coal chain capacity to producers in accordance with long term contracts, aligns commercial incentives for infrastructure investment across the coal chain, and facilitates the efficient operation of the coal chain. These initiatives are designed to encourage investment and boost coal exports from the port.

Infrastructure development projects at Newcastle will increase the total coal export capacity of the port to 331 Mtpa. Key capacity developments are::

- PWCS development of its Carrington and Kooragang Terminals to an approved reach a throughput capacity of 145 Mtpa
- NCIG development of its terminal to an approved throughput capacity limit of 66 Mtpa
- Planning approval to develop a new coal exporting terminal (T4) at the Kooragang Future Development Precinct with an export capacity of 120 Mtpa to meet its obligations under the HCEF.



Gas export facility

There is increasing commercial interest in NSW reserves of Coal Seam Gas (CSG). There are currently no export gas facilities on the Australian east coast, although construction of an LNG facility at Gladstone in Queensland is due to commence this year. The growing estimates of CSG reserves in NSW have led Santos to make enquiries about the feasibility of a Liquid Natural Gas (LNG) export facility in the Port of Newcastle.

Any proposal for an LNG export facility at the Port of Newcastle would be required to undergo a rigorous assessment of safety, environmental and other relevant issues as part of the NSW Government's planning and environmental assessment process.

Grain export facility

Grain exports through the Port of Newcastle totalled 1.8 million tonnes in 2011-2012, rising from the 1.3 million tonnes recorded in 2010-2011. The port has a nominal grain export capacity of around 4.2 Mtpa, which is sufficient for forecast growth demands. Achieving this nominal capacity is, however, dependent upon receiving sufficient rail access to move these volumes to port as well as supply, demand and logistic support impacts.

Targeted outcome

Port growth plans will clarify the way in which NSW ports will expand to meet future growth in freight volumes. The plans will be consistent with the National Port Strategy, together with other key State and regional plans.

Planning for growth in the Port of Newcastle will address the limitations of existing planning approvals by providing increased certainty through integrated planning of port and landside infrastructure needs.

Task 2D-3 Develop a Port Kembla growth plan

The land controlled by Port Kembla Port Corporation was successfully leased to NSW Ports Consortium as part of the Port Botany Transaction. Port Kembla is currently the primary port in NSW for motor vehicle imports and is likely to continue to support export trades such as coal, minerals and grains. Port Kembla is currently Australia's leading port for steel and is one of its largest grain export ports. Planning for the accommodation of these trades, and providing long term security of access to port facilities, are a core part of current expansion plans for Port Kembla.

Port Kembla has been identified as the location for the development of a future container terminal to augment the capacity of Port Botany when required.

The current capacity of the Port Kembla car import terminal is estimated at imports of 280,000 vehicles. Imports of 460,000 vehicles are projected for 2021, based on 4.5% pa average growth (Source: PKPC). Vehicle storage and handling facilities have already been increased at the port with the completion in 2009 of an additional 10 hectares in car storage and processing facilities.

In order to meet the forecast growth in car imports, the port's car import capacity can be increased through a mixture of additional planned infrastructure, including additional vehicle storage and handling facilities, as well as productivity improvements such as reducing the dwell times for cars after they arrive at the port.

Outer Harbour expansion project

As all land within the Inner Harbour of Port Kembla is now fully allocated, the port's strategic focus is the development of the Outer Harbour. This will ensure the port can continue to attract new trades, along with increasing the volume of existing cargoes. The development of the Port Kembla Outer Harbour was approved in March 2011. This approval provided concurrent Major Project Approval for Stage 1 of the development and Concept Plan Approval for Stages 2 and 3.

Stage 1, which commenced in August 2011, will provide for the first multi-purpose berth. This berth will be operated by NSW Ports Consortium as a common user facility. Stage 1 also includes the commencement of works on a cement grinding mill by Cement Australia. The facility will manufacture cement products to service the NSW construction market. Stages 2 and 3 will provide for further reclamation, enhanced rail and road infrastructure, two additional multi-purpose berths and four container berths.

It is also likely that Port Kembla will need to play a role in accommodating the State's container trade towards the end of the current planning horizon. Port Kembla Port Corporation's Outer Harbour Concept Plan proposes the development of two separate container facilities, each serviced by two berths. The two terminals are expected to be constructed between 2014-2025 and 2026-2037 respectively, depending on demand. Each berth would have a capacity of 300,000 TEU per annum, providing a total capacity of 1.2 million TEU per annum upon completion in 2037 (AECOM Australia, 2010).

Coal export infrastructure expansion

Current coal throughput at Port Kembla is around 14.3 Mtpa and nominal capacity is 17-18 Mtpa. The Port Kembla Coal Terminal proposes to upgrade its capacity in two stages to around 25.5 Mtpa. Stage 1 would increase capacity to 22.5 Mtpa by upgrading the existing plant and equipment, and is scheduled for completion in 2013. Stage 2, which is estimated to cost $500 million, is more substantial and would require an environmental assessment under the *Environmental Planning and Assessment Act 1979.*

Grain export infrastructure

Grain exports through Port Kembla totalled 2.9 million tonnes in 2011-2012, a significant increase from the 1.3 million tonnes recorded in 2010-2011. The nominal capacity of the port's grain terminal, at approximately 5 Mtpa, is therefore likely to be sufficient to deal with forecast growth.

Port Kembla is the State's principal vehicle importing hub. The $170 million expansion of the Port Kembla Inner Harbour provides world-class facilities for the motor vehicle import trade.

Biodiesel Facility

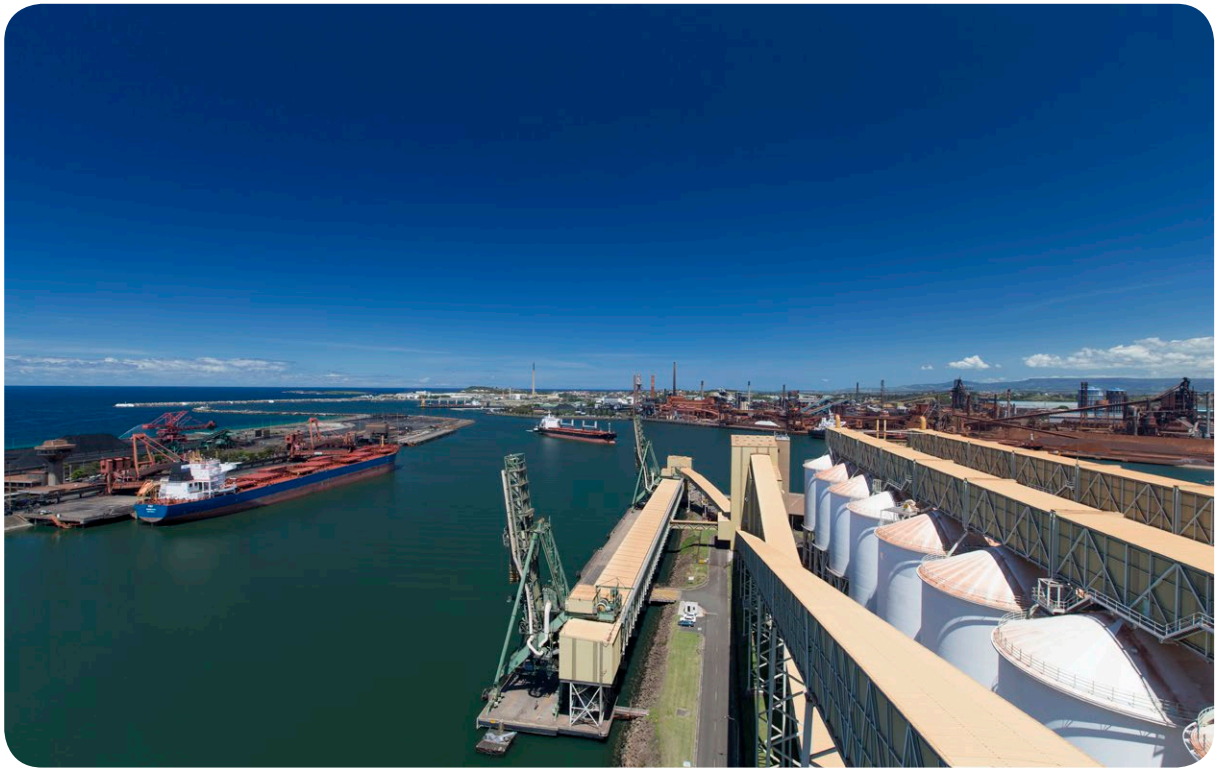
As part of the diversification of Port Kembla, National Biofuels Pty Ltd, a privately owned Australia company, is in the process of establishing a biodiesel production facility. Construction is due to commence in the latter part of 2013. The facility will utilise the remaining land in the inner harbour and function as the first integrated soy bean processing and biodiesel facility in Australia.

It is estimated that the facility will process 1.1 million tonnes of soy bean into 228 million litres of biodiesel and 850,000 tonnes of residual soy bean meal per annum. The soy bean meal will be used in the poultry and feedlot industry, with the remainder exported. The facility is projected to create around 235 permanent jobs and 500 jobs during construction.

Targeted outcome

Port growth plans will clarify the way in which NSW ports will expand to meet future growth in freight volumes. The plans will be consistent with the National Port Strategy, together with other key State and regional plans.

Planning for growth in Port Kembla will address the limitations of existing planning approvals by providing increased certainty through integrated planning of port and landside infrastructure needs. This will include, for example, investigation into the potential Maldon to Dombarton Rail Line.



ACTION 2E Foster intermodal terminal network development

Creating opportunities for intermodal terminal development

Problem description

An intermodal terminal is a facility where freight transfers from one mode of transport to another, and may be stored temporarily. Intermodal terminals are generally thought of as facilities that handle containers, but they also handle other forms of freight. For instance, a silo complex that has the capability to load rail wagons is an intermodal terminal for bulk produce.

Successful intermodal terminals across the State are increasingly including value-add services, either within the terminal or nearby. Examples of value adding services include:

- Freight consolidation and de-consolidation
- Warehousing and cross dock operations
- Container storage
- Quarantine and customs clearance
- Reefer points and cold storage
- Servicing of containers, vehicles and rolling stock.

Metropolitan intermodal terminals are critical to increase rail mode share and manage the rapidly growing import container trade, as well as the interstate freight task.

At present, 85 per cent of import and export containers originate or are destined for locations within a 40 kilometre radius of Port Botany. Approximately 14 per cent of container movements occur by rail, with the rest by road. The existing capacity of intermodal terminals in Sydney is inadequate to meet the growing demand for import and export container movements.

Regional intermodal terminals are critical to support the growing container export task, that in turn supports regional economies. A recent audit of intermodal terminals across the State identified more than 200 sites, with the majority handling grain. While regional intermodal terminals play a large part in freight consolidation and maintenance of market share for rail servicing the ports, many of these sites are considered to be inefficient and unsustainable in the long term.

Impact

A continued lack of forward planning in metropolitan and regional NSW is likely to result in further under provision of intermodal terminals. It will also result in new intermodal developments that do not make the best use of existing and planned improvements to road and rail networks.

In the Sydney metropolitan area, the planned Enfield Intermodal Logistics Centre seeks to address some of these planning issues. While it is remote from Port Botany, the centre is connected by a dedicated rail freight line and in close proximity to an established industrial area with links to Metroad 3 and the Hume Highway. A similar model is proposed for the proposed intermodal terminals at Moorebank, which are close to the Southern Sydney Freight Line and the M5, Hume Highway and M7.

While government does not need to be directly involved in the development or operation of intermodal terminals, it has a role in identifying and protecting land and freight corridors. Government also has a role, where necessary, in identifying supporting road and rail infrastructure. The development of appropriate intermodal terminals in the Sydney metropolitan area and regional areas will contribute to increasing freight moved by rail, particularly in the container market.

Task 2E-1 Foster intermodal terminals in metropolitan areas

Transport for NSW will support the development of sustainable facilities that create network capacity by:

- Supporting ARTC's expansion of the Southern Sydney Freight Line to connect the proposed intermodal facilities at Moorebank to the Metropolitan Freight Network
- Supporting ARTC's construction of the Enfield staging roads to enable staging of Port Botany intermodal services and duplication of the Port Botany line
- Supporting the development of new intermodal facilities at Moorebank by identifying road upgrade requirements
- Identifying and preserving land for an intermodal terminal to serve the freight needs of the Western Sydney Employment Area along with road and rail freight corridors such as the proposed Western Sydney Freight Line.

The primary function of metropolitan intermodal terminals is to facilitate the import container trade. In this context, intermodal terminals function like inland satellite ports. This effectively reduces congestion from the Port Botany and Sydney Airport precinct and utilises capacity in other areas of Sydney, particularly in those areas where these is a growing freight logistics capability. Consideration of complementary road upgrades is usually necessary to support these new terminals.

In Sydney, intermodal terminals have traditionally developed to support either the domestic or international trade. Pacific National operates the only dedicated interstate intermodal terminal in NSW at Chullora, while QR National operates a second intermodal terminal providing import and export services at Yennora.

The intermodal terminals in Sydney that serve Port Botany are located at Cooks River, Yennora and Minto. The rail siding at the intermodal terminal at Camellia is currently not in use.

While Port Botany is located on the dedicated freight network, trains to and from Port Botany to Yennora and Minto must interact with passenger services on the shared network. This restricts the effectiveness of rail operations.

Targeted outcome

The development of new intermodal terminals in Enfield, Moorebank and Western Sydney will occur on sites that are supported by dedicated rail freight lines and adequate road connections. Rail lines to Port Botany will avoid interaction with passenger services on the shared network and facilitate 24 hour port, rail and terminal operations.

Task 2E-2 Support the operation of regional intermodal terminals

Transport for NSW will ensure that regional intermodal terminals play an ongoing role in the freight system by:

- Engaging with regional councils to explore planning issues associated with the development of intermodal facilities within industrial precincts, including adjoining land use, road and rail access to proposed sites
- Working with proponents of industrial estates and intermodal terminals to design facilities
- Working with government and industry to investigate road access issues to intermodal facilities
- Working with councils and the private sector to identify future sites for intermodal terminals.

In regional areas, co-location of production or processing facilities can provide necessary economies of scale to support sustainable operations. One of the main advantages of co-location for a producer is the ability to load containers to the maximum weight permitted for normal road operations. This approach removes a number of connectivity issues and reduces truck movements to the rail head. In situations where the base load is a seasonal commodity, intermodal facilities can often evolve by attracting complementary export and import freight to enable year round operations.

CASE STUDY 16 SUPPORTING THE DEVELOPMENT OF THE MOOREBANK INTERMODAL PRECINCT

The Moorebank precinct has been identified by the Australian and NSW Governments as a key strategic location to increase intermodal capacity. Two intermodal terminals are planned in the precinct; the Moorebank Intermodal Terminal (MIT) has been proposed by the Australian Government for the western side of the precinct, and a privately funded Sydney Intermodal Terminal Alliance (SIMTA) has been proposed for the eastern side. Once complete, these two IMTs are expected to result in up to two million TEU of intermodal terminal capacity.

Transport for NSW expects the development of these two intermodal terminals in the Moorebank precinct to place significant strain on the surrounding local road network. While not all effects of terminal developments have been identified at this time, initial analysis suggests the following impacts to the local road network:

- Travel demand on the section of the M5 Motorway between the Hume Highway at Casula and Moorebank Ave is expected to exceed capacity as early as 2016.
- The absence of west facing ramps from the M5 to the Hume Highway results in a significant number of vehicles using Moorebank Avenue to access the Liverpool CBD.
- By 2026 growth in background traffic will result in peak spreading and traffic conditions similar to the existing peak period in the Liverpool area and on the M5, persisting for most of the day.
- Key intersections providing access to the Moorebank intermodal precinct will exceed capacity with volumes, especially of turning vehicles, resulting in extensive delays, with queuing sufficient to disrupt through movement.

To support the development of the Moorebank intermodal terminals and meet the challenges posed by impact on the local road network, Transport for NSW is seeking to provide road network upgrades. The specific goals of these upgrades include:

- Providing additional capacity and traffic reliability on key routes accessing the precinct.
- Ensuring full access to the precinct for High Productivity Vehicles (HPV), including Higher Mass Limit (HML) vehicles.
- Managing the needs of the precinct in terms of road access while addressing negative externalities for the surrounding community and environment.

Transport for NSW has made a Nation Building 2 submission to undertake modelling and economic analysis to determine the optimal road upgrade package to meet the needs of the developed Moorebank intermodal terminal precinct.

CASE STUDY ⑰ FLETCHER INTERNATIONAL EXPORTS INTERMODAL TERMINAL – ENHANCING FREIGHT PERFORMANCE IN REGIONAL NSW

In November 2009 Fletcher International Exports established an intermodal rail terminal in Dubbo, central NSW. With a 1.5km rail siding and 450 metres of train loading hard standing area, the terminal services the rail movement of containerised agricultural commodities, mining commodities and sheep meat products from Dubbo to Port Botany.

The intermodal terminal was built to alleviate freight access and interface issues experienced by Fletchers with the existing intermodal terminal in Dubbo. The roads from the company's plant to the terminal incurred weight restrictions, limiting truck use to six axle semi trailers. Truck movement was also constrained due to congestion experienced along the route through school zones and hospital/residential and high traffic areas. Shunting requirements and a rail crossing near the CBD meant that freight and passenger movements often coincided, causing inconvenience for both.

The new terminal is situated in Dubbo's industrial precinct closer to Fletcher's plant and other commodity sources and is serviced by a higher-grade road that allows quad-axle semi trailer movements. Through cooperation with local council, and the implementation of a trial differential road pricing scheme, permits have been granted for truck movements to the terminal that facilitate more efficient truck freight and the delivery of higher payloads to the rail siding with direct access to road train routes. This has allowed containers to be loaded at optimum weights and significant freight savings to be passed along the logistics chain to export customers across the globe.

Fletcher intermodal terminal has not only enhanced their freight performance but has provided a viable rail option for other regional exporters to move their freight containers to Port Botany.

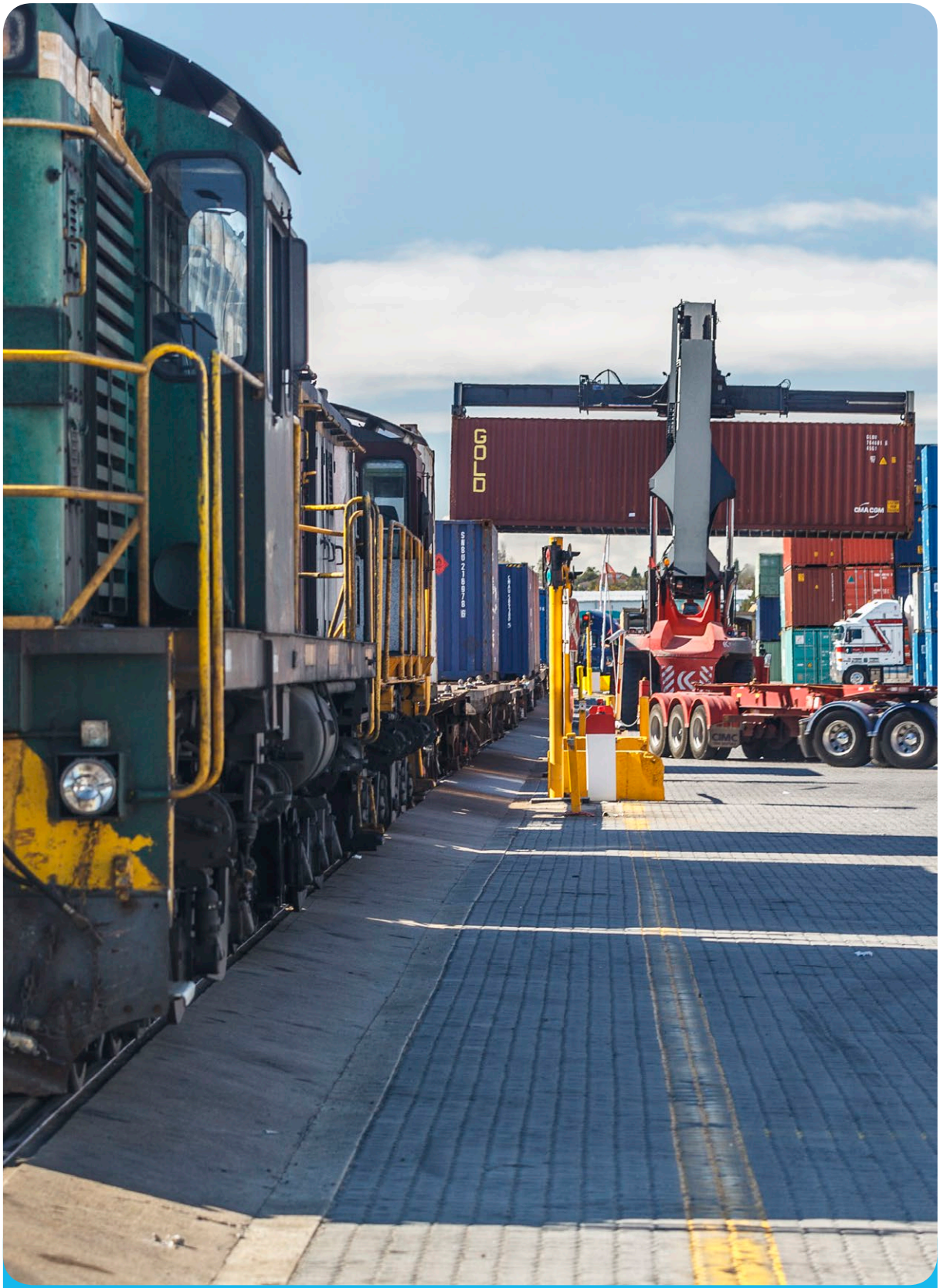
Many of the intermodal terminals in regional NSW are constructed around pre-existing sidings that are not designed for modern trains. Others offer poor road access, have minimal scope for expansion and lack buffer zones to ensure public amenity.

Despite regional intermodal terminals having varying levels of commercial viability, NSW Government has no plans to provide financial assistance to support under performing operations or to provide funding for new facilities.

Targeted outcome

Government and industry will work together to provide clear advice on best practice terminal development, including the mitigation of impacts such as noise and heavy vehicle access.

Transport for NSW will develop a set of criteria for assessing the value creation and network capacity enhancement of regional intermodal and cargo handling facilities. These criteria will be developed in consultation with industry and will form the basis of how developments, both existing and planned, will be supported by the NSW Government. The aim is to develop capacity for the movement of cargo.



The location, efficiency and sustainability of the transhipment task from road to rail is critical in the performance of the overall freight network.

ACTION 2F Coordinate regional infrastructure and service provision

Supporting regional network development

Problem description

Current governance arrangements reflect historical factors that see the NSW Government with responsibility for regional rail infrastructure, while local governments have responsibility for most regional road infrastructure.

Asset management, funding, planning and service procurement are therefore undertaken separately, at times with competition for funding between modes. This is despite regional infrastructure being characterised by high levels of public subsidy. This lack of coordination is both a suboptimal use of public funds and a poor incentive for private investment.

The governance framework for regional infrastructure is in need of reform and has been the subject of increasing attention from policy makers, including Infrastructure Australia. Recent work by the Independent Pricing and Regulatory Tribunal (IPART) on access pricing for grain lines has also drawn attention to the inefficiencies that arise from the public subsidisation of competing road and rail infrastructure, including the resultant subsidisation spiral.

Impact

The lack of a collaborative approach to regional infrastructure causes:

- Fragmentation of asset management and lack of responsiveness to market needs
- Uncoordinated subsidisation of road and rail infrastructure
- Uneven incentives for greater private investment in regional infrastructure.

Investment decisions relating to regional rail infrastructure require careful risk assessment. Well defined demand forecasts are an essential element of investment decisions, as the 'build it and they will come' approach to infrastructure provision does not work.

Task 2F-1 Adopt a best practice reform model for regional infrastructure

Transport for NSW will deliver, in collaboration with local councils, a regional infrastructure model to deliver improved network capacity and efficiency.

Breaking down long standing practices of uncoordinated infrastructure provision and management is a significant reform that will need to proceed on an incremental basis. Progress will need to be closely assessed and evaluated to refine and inform further reform.

Regional road and rail infrastructure needs to be coordinated and integrated more effectively. Ideally, the distinction between management, regulation and investment functions for State owned and local government owned infrastructure should be broken down, in favour of a more consolidated view of regional infrastructure.

Such an approach is currently being explored through a collaborative process between the NSW Government and five councils in the Central West region. The concept being considered involves the development of a regional integrated asset management plan that covers the development, management, access and pricing of a mix of infrastructure assets.

These assets are primarily road and rail infrastructure, but may also include freight centres, loading points and intermodal facilities. The specific details of this concept are still in the design phase, and require careful negotiation between all parties. Design is progressing on the basis of introducing integrated cross-modal regulation, coordination and management.

As a way forward, a trial can be an effective initial approach, to test and refine a solution and carefully monitor progress. It has been suggested that the re-opening of the Cowra Rail Line offers the opportunity to trial an improved regional infrastructure model. Further discussion about the Cowra Rail Line is contained in Case Study 18.

The recommendations and findings of IPART's review of access pricing on the NSW grain line will also be taken into consideration. IPART made a number of observations about sustainability on the grain line network, which suffers from poor cost recovery and strongly competing road infrastructure.

Targeted outcome

The potential reopening of the Cowra Rail Line provides an opportunity to develop a best practice model of coordination between State and Local Government in the provision of regional infrastructure.

Expected learnings from the Cowra Rail Line reopening pilot may include understanding the:

- Market appetite for projects where demand risk is the responsibility of parties that are in the best position to manage the risk of capital investment and asset utilisation
- Application of the model to similar tasks, such as the movement of grain across other regional road and rail networks
- Cost reductions for building and managing infrastructure
- Benefits of more effective infrastructure usage.

CASE STUDY 18 COWRA RAIL LINE

Regional road and rail infrastructure is characterised by a high dependence on public subsidy and poor coordination of asset management, planning and service procurement activities across State and Local Government. To address this issue, regional road and rail infrastructure needs to be coordinated and integrated more effectively.

The 200 kilometres of rail line located in the Cowra area between Blayney in the north and Harden in the south are part of the Country Regional Network. The lines are non-operational, having been progressively suspended since 2007 due to low traffic volumes and safety concerns.

As there is strong local support to re-open the lines, a cooperative investigation process has been undertaken between five councils (Blayney, Cowra, Harden, Weddin and Young) and Transport for NSW. This investigation focussed on how the regulatory and operating model for the lines can be improved and customised to local circumstances.

Importantly, investigations have focussed not simply on improving economic sustainability, but on the potential to attract commercial investment. The project offers the opportunity to trial an improved integrated regional infrastructure model, in which a more effective rail operations model is supported by a complementary road access regime. This model would enable commercial bids for service provision to be developed.

Progress to tendering stage is dependent upon a well defined and commercially appealing transport 'product' being put to the market. This is the current focus of discussions between Transport for NSW and the five local councils.

Development of the transport product is currently being facilitated by the development of a Memorandum of Understanding (MoU) between the councils and the NSW Government. The MoU is intended to:

- Recognise that the current governance arrangements for regional infrastructure suffer from cost shifting, and uncoordinated planning, financial and asset management processes
- Promote stronger cooperation in the design, maintenance, management and operation of freight infrastructure and procurement of services that use the infrastructure
- Provide a joint governance framework to guide the development and implementation of an integrated approach to the provision of freight infrastructure and services in the region
- Provide a coordinated investment framework designed to promote and maximise private investment in freight infrastructure.

While the Cowra Rail Line project is currently in early development, if successful, this regional infrastructure model may have applicability to similar regions, or to other tasks.

ACTION 2G Develop and maintain projects to support network capacity

Developing network capacity 'just in time' to meet forecast usage demand

Problem description

NSW is facing a significant network infrastructure task over the next 20 years, with an expected doubling of the freight task. Opportunities to improve the performance and efficiency of road and rail networks, ports and other terminals will coincide with planning for new infrastructure, as well as with private sector initiatives for new capacity.

NSW, like other states, is grappling with the efficiency, capacity and sustainability of existing and future freight networks. The historic lack of an overarching freight strategy in NSW has contributed to reduced container flows on the shared metropolitan passenger and rail freight network, and increasing pressure to identify and protect important dedicated freight corridors such as the Western Sydney Freight Line. A future program for freight infrastructure projects, as part of the NSW Freight and Ports Strategy, will enhance planning and delivery of the NSW Government's State Infrastructure Strategy.

Strategic planning around freight in NSW has been limited in scope and delivered by different governments, port corporations and road and rail network owners. Congestion and bottlenecks have often reached crisis point, with quick fixes preferred over the planned implementation of projects to increase freight network efficiency, capacity and sustainability in the long term.

The cost of providing new infrastructure and competition for scarce public funds requires an improved standard of decision making by government. At the national level, Infrastructure Australia has established standards and criteria to secure funding for infrastructure projects. The National Port Strategy and National Land Freight Strategy provide further guidance to achieving greater national productivity.

A lack of consistent evaluation of infrastructure projects has prevented greater comparison and prioritisation of investment across different projects and programs for road and rail. Further a lack of detailed analysis and modelling has made it difficult to determine which projects provide the best economic outcomes for NSW and potential partners in the private sector and government.

The establishment of Transport for NSW will further enable integrated outcomes in grouping like transport projects, including freight projects. Inter-agency collaboration has the potential to enhance benefits realisation for projects, can reduce costs and resource requirements.

Impact

A freight infrastructure program has been developed and maintained through successive NSW Government Infrastructure Strategies, linking to goals in NSW 2021. This work is ongoing and has been informed through submissions to the Australian Government, most recently, under the Nation Building program. Opportunities for investment rely on a well-conceived and integrated program of NSW freight projects.

The program of freight related projects in NSW must reflect current and projected priorities on road and rail networks, together with ports and other terminals. There is a distinct cost to the NSW economy where network capacity and lack of efficiency constrains the movement of goods. Congestion is a clear example of this dampening effect on State productivity.

Without clear priorities for infrastructure investment, Action 2A for identifying and preserving future transport corridors cannot readily proceed past initial investigation.

Task 2G-1 Evaluate freight infrastructure through an investment framework

Transport for NSW will prioritise freight infrastructure projects to ensure value for money outcomes that integrate different modes, demands and networks.

Effective planning for identifying and delivering freight network efficiency, capacity and sustainability will contribute to a seamless freight network that enables efficient movement of goods in the short and long term, with real gains in productivity.

In developing a program of freight infrastructure the following considerations will broadly inform the process for input into the portfolio investment framework:

- Project assessment and evaluation: adopting a structured and consistent approach, with common evaluation techniques and outcomes, taking into account the economic strategic and social returns and level of project risk. This would achieve consistency across government when competing for limited funding.
- Project funding: considering the appropriate funding mechanisms for a particular project, based on the project's characteristics. Options for financing (including private sector funding) need to be explored to maximise the pool of funds available to the NSW Government.

Targeted outcome

A decision-making framework is essential to making the right decisions about investing in new infrastructure. The infrastructure program for freight represents a snapshot of the projects and corridors under development, based on expected demand over the short, medium and longer term.

Many of the projects in the program need further evaluation and refinement, which is a recognised part of any infrastructure initiative. The Strategic Freight Model developed by Transport for NSW provides a mechanism for more comprehensive evaluation of supply chain demand and potential strategic responses.

A framework for infrastructure decision making will deliver benefits including:

- Better alignment of programs and projects with strategy objectives and performance indicators
- The ability to compare and make project investment decisions and trade-offs including project risks
- Improved balancing of investments across modes, asset types, drivers and life cycles
- Transparent and defensible means of prioritisation based on available evidence
- Increased return on investment
- Improved business cases for public and private funding.

Task 2G-2 Maintain a program of projects for freight investment

Transport for NSW will develop and maintain a program of freight infrastructure projects to be delivered as part of the transport portfolio investment framework.

Over the next 20 years the growth in the freight task will require upgrades to the State's road, rail, port and terminal networks. As discussed earlier, progress has been made, with funding provided for significant road and rail upgrades. There are, however, other significant projects that will be required to enable the freight network to grow in an efficient and sustainable manner.

Some of these infrastructure projects have already been identified elsewhere in the NSW Freight and Ports Strategy. However, the planning horizon needs to be extended to ensure there is a program of projects developed through the planning and pre-construction phases, and ready to proceed to construction should market demand grow quicker than originally forecasted.

CASE STUDY ⑲ WYONG TO NEWCASTLE COAL RAIL ENHANCEMENT PROGRAM

Collaborative demand analysis between Transport for NSW and the private sector is developing the business case for new track infrastructure to be financed by the private sector. Without additional network infrastructure coal trains to and from Lake Macquarie will not be allocated train paths resulting in lost export volume and constraints on coal supply to the power generators in the Lake Macquarie area.

The NSW Government has committed $3 million for early works in order to develop a solution for the movement of coal on the NSW Central Coast.

The development of new coal mines and the demand for coal to serve the power station near Lake Macquarie are expected to increase the demand for track capacity on the section of the rail network between Newcastle and Wyong. Thermal coal transported from the Hunter Valley to the Lake Macquarie power stations (Eraring and Vales Point) is forecast to grow to around 7.5 Mtpa to meet the needs of the electricity generators and export coal from the proposed Wallarah 2 mine will add to exports from the existing Newstan and Teralba loading facilities. This will result in up to an additional 10 Mtpa of coal being moved from the Lake Macquarie mines to the PWCS and NCIG terminals.

The Wyong to Newcastle rail corridor is currently one of the busiest in NSW with passenger, coal, grain and container trains using the shared network. On this section of the track there are currently an average of 12 daily freight trains in each direction, peaking at up to 14 per day. Added to this there are 13 coal trains each way within the northern half of the Wyong to Newcastle section of the corridor. The planned development of Wallarah 2 and changes in the transport contracts for coal to be used in power generation will create additional coal train movements and commensurate demand for additional rail network capacity. Current forecasts are for an increase of the number of coal trains each way from 13 to 24 each day between Wyong and Newcastle by 2015.

The addition of extra low speed coal trains from these developments between Newcastle and Wyong necessitates construction of passing loops to ensure that the optimal operating capacity of the network created by the Northern Sydney

Freight Corridor project can be maintained and passenger trains to and from Newcastle will not be constrained.

Transport for NSW has instigated the Wyong to Newcastle Coal Rail Enhancement Program. This program of work seeks to create additional network capacity for the movement of coal by rail from the Hunter Valley to the Central Coast power generators at Vales Point and Eraring and from the proposed new Wallarah 2 coal mine just north of Wyong to the export stockyards at Carrington and Kooragang Island.

The Bureau of Freight Statistics has undertaken an initial assessment to establish what additional network infrastructure will be required.

The proposed works are:

- New 1,700m+ Up and Down passing loops at Awaba North, including high speed crossovers;
- Improvements at the mainline junctions with the balloon loops owned by Origin Energy and Delta; and
- A new mainline connection for the balloon loop for the Wallarah 2 coal project.

Preliminary engineering work is underway to determine the project cost for the proposed Up and Down passing loops at Awaba North. Based on a suitable business case the anticipated project development and delivery timeframe is 3 to 4 years. At this stage neither the Cobbora Coal Project (a potential source for the coal to the power stations) nor Wallarah 2 Coal Project has received planning approval. It is anticipated that development consent for Cobbora Coal Project may be given in late 2013 and Wallarah 2 Coal Project in late 2013 or 2014.

The committed requirement for the provision of coal from the Cobbora Coal Project or alternate mines to the power stations on the Central Coast is from 2015 onwards and to ensure that sufficient network capacity is on line and operational, Transport for NSW needs to undertake the early works in anticipation of development approvals and mine development.

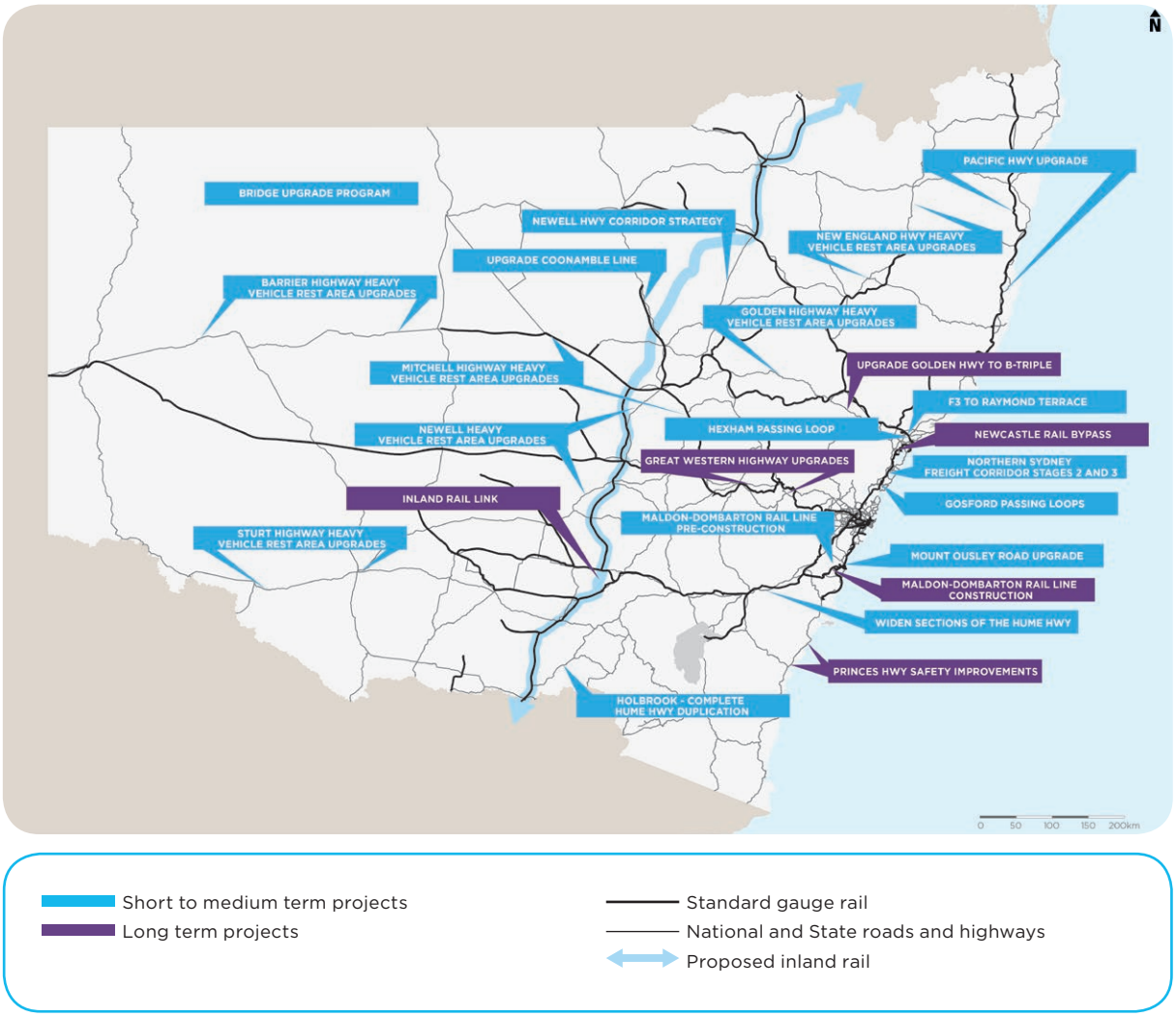
The early works phase including preliminary design is due for completion in December 2013 and commercial discussions are underway with Origin Energy, Delta Electricity, Wallarah 2 Coal Project and other key stakeholders in order to develop a financial solution for the capital works.

By working with the Australian Government, Transport for NSW will deliver key freight infrastructure as part of National Land Freight and Port Strategies. Infrastructure NSW will provide further advice on projects as part of its State Infrastructure Strategy.

Targeted outcome

Maintaining a program of freight infrastructure projects helps provide a degree of planning certainty, allowing for quicker start-up and delivery once funding becomes available.

Figure 30 Forecast freight infrastructure projects in NSW



Task 2G-3 Fund the infrastructure program

Transport for NSW will identify funding sources to enable the delivery of critical freight infrastructure by Government and the private sector.

Section 5.3 of the NSW Freight and Ports Strategy outlines the approach to funding and financing. The enabling capability outlined in Action 1A is critical in the development of accurate "investment grade" demand forecasts that are of sufficient robustness to underpin investment and funding decisions.

Planning ahead with greater certainty to meet expected demand in the NSW freight task is now possible with development of the NSW Strategic Freight Model and creation of the Bureau of Freight Statistics. Pinch points on road and rail networks have been identified at a strategic level, supplemented with the latest data and inputs from industry engagements across 16 supply chains.

The Australian Government has signalled that economic productivity is closely linked to improvements on national and state roads and rail lines, which support the efficient movement of freight. Overcoming pinch points across the freight network requires a systematic and ongoing process of analysis to identify the right projects for delivery at the right time. Accordingly, the NSW Government is pursuing funding for a range of important freight related projects under the Nation Building 2 program.

Projects which are subject to existing or potential funding from the Australian Government have been identified. By including these projects, NSW has agreed to fund half of the project cost and is seeking a similar contribution from the Australian Government.

The importance of the NSW freight task to the national economy is substantial and covered in Section 2.1 of the NSW Freight and Ports Strategy. Significant investment in NSW by the Australian Government and the Australian Rail and Track Corporation highlights the shared nature of the task and the need for joint planning and investment. In 2011-12, the Australian Government's contribution to transport projects was just over $2 billion, with around half this spent on improving the Pacific Highway.

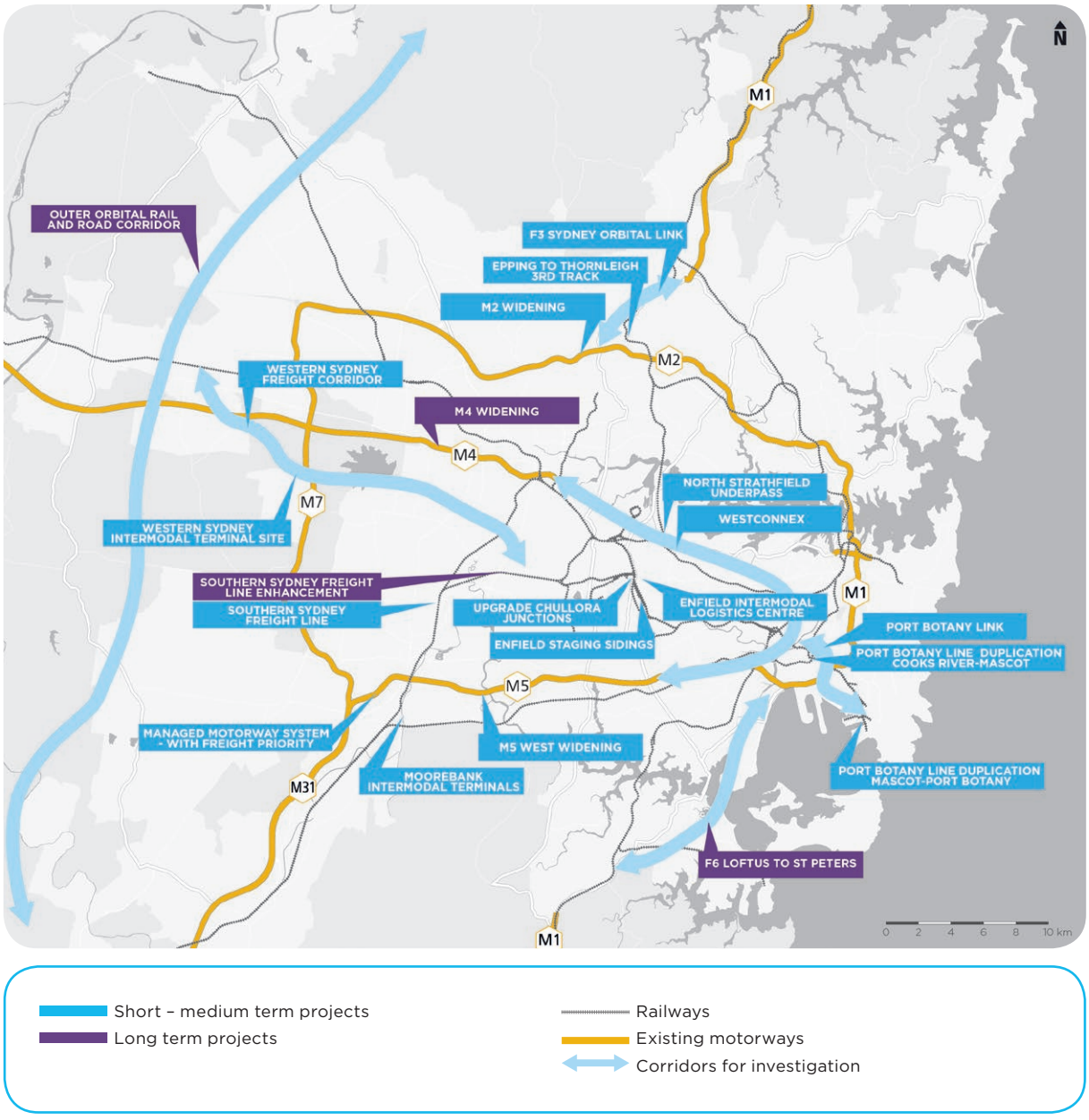
Many freight transport projects require seed funding to identify the initial corridor alignments and sufficient project definition to support a business case for public and private investment. Transport for NSW will provide this funding to accelerate critical projects like the Western Sydney Freight Line and Intermodal Terminal that face increasing pressure from urban growth.

Targeted outcome

A program of projects that enables government and freight network users to better understand what infrastructure is needed in the short, medium and long term. Funding to support the program is generally focused over the short to medium term (up to 10 years), which is consistent with the approach adopted by the Australian Government through successive national infrastructure programs, most recently Nation Building 2.

Active involvement of industry to expand the freight network and invest in solutions for better coordination and greater efficiency is essential to meet the challenges of the growing freight task. The support of the Australian Government and local councils across NSW is also needed to deliver infrastructure projects.

Figure 31 Forecast freight infrastructure projects in the Sydney metropolitan area



4.3 Strategic Action Program 3 – Network sustainability

"In developing policies regarding freight and heavy vehicle access, councils must balance the economic benefits associated with the growing freight task, with the concomitant impacts on road and bridge infrastructure and the road safety and amenity concerns of their local communities."

Local Government NSW submission to the
Draft NSW Freight and Ports Strategy, March 2013

The NSW economy requires a sustainable freight network that balances efficient freight movements with community expectations of safety, good neighbourhood amenity and positive environmental outcomes.

Achieving sustainable transport networks is largely about planning, and the need to integrate land use and freight logistics planning to achieve long term outcomes. Early identification and protection of key freight infrastructure and corridors is one area which can help provide certainty for industry investment, and for the residents living in surrounding communities.

Greater integration of freight within metropolitan and regional land use plans is needed to manage the interface between freight infrastructure and communities. This interface is generally thought of as land adjoining transport corridors and freight terminals, including ports. However, the interface is much broader and includes development along road corridors, including local and regional roads that support freight movements to local businesses.

Population growth in the Sydney metropolitan area and in regional centres is putting pressure on industrial land, which includes important freight facilities. Protecting the capacity for industrial development in close proximity to ports and intermodal terminals is vital to service future growth. Preventing encroachment into these precincts will require a concerted effort across government, including local governments.

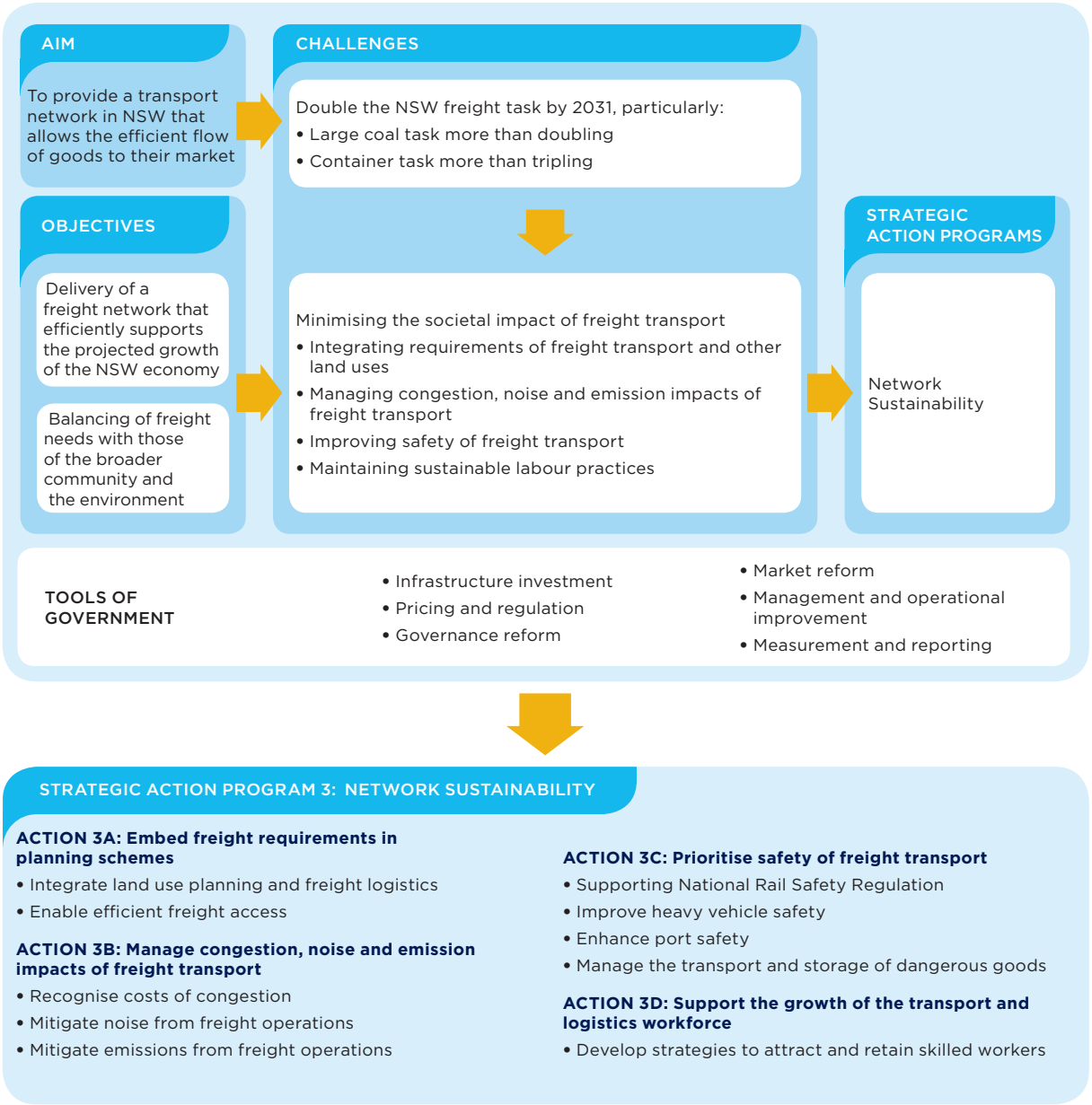
Delivering a sustainable freight system is a core responsibility for government and industry. Practical responses are needed to address significant problems such as the potentially adverse impact of freight on the community, constrained urban environments with limited room for freight activity, environmental challenges like climate change, and demographic changes such as an ageing workforce.

Allowing the efficient flow of goods to the market has inherent benefits for the environment and community. Lower costs, better management of impacts like noise, reduced emissions and increased use of green technology contribute to efficiency. Protecting communities and the environment up front also reduces longer term costs to government due to remediation and retrofitting.

Becoming more sustainable can deliver important outcomes for supply chain efficiency. For example, early planning and protection of transport corridors and strategic freight land can avoid future land use conflict and costs.

As shown in the framework for the NSW Freight and Ports Strategy, the actions in this Strategic Action Program all contribute to a subset of the objectives and challenges. Each of the Actions will be described in further detail in this section.

Figure 32 NSW Freight and Ports Strategy framework



ACTION 3A Embed freight requirements in planning schemes

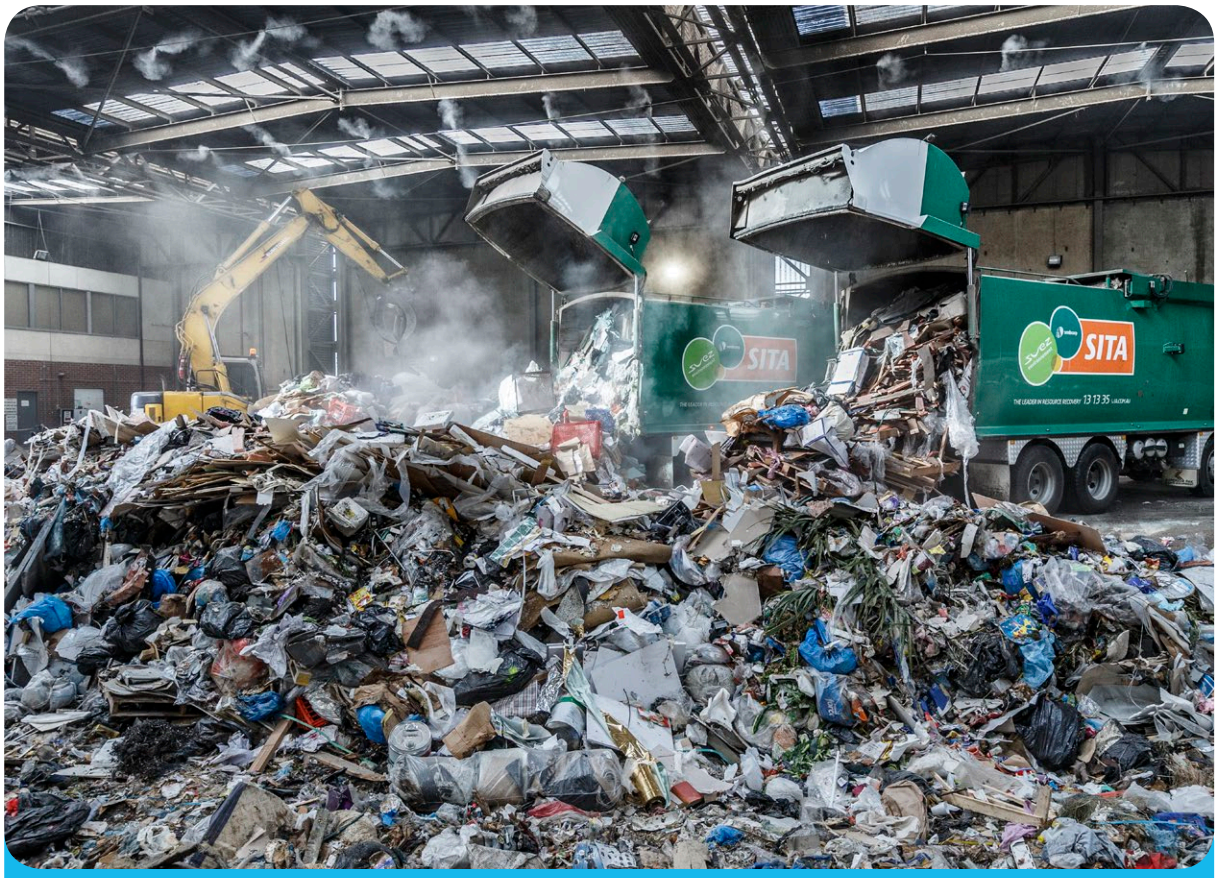
Integrating requirements of freight transport and other land uses

Problem description

Growth in population centres and employment across NSW is driving the growth in freight movements. Effective access arrangements for freight transport are needed to service supply chains, which increasingly need to meet just-in-time delivery demands.

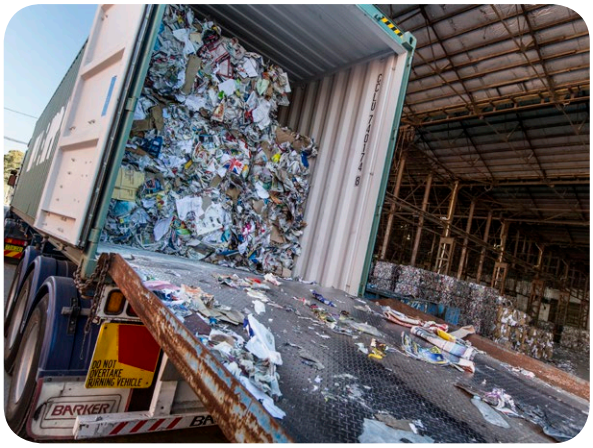
Integrating land use planning and freight logistics requires particular expertise that may not be available to local councils. Local plans are often silent on freight issues and potential solutions. This leaves councils with little evidence to support an integrated approach to freight logistics, and can often lead to 'blunt instrument' regulation, such as heavy vehicle bans or curfews, that may not allow the wider community to benefit from better freight access.

Restrictions on local access and limitations on existing infrastructure are impacting on freight productivity as businesses must run more vehicles to carry the same load. This means many businesses must make and accept more deliveries during congested peak hours. Contributing to this is the resistance by planners and councils to adopt High Productivity Vehicles.



The average person in NSW generates 1.5 tonnes of waste per annum. The movement of waste from household and business origins to resource recovery and land fill accounts for approximately five per cent of truck movements in NSW.

Planning decisions need to consider freight logistics needs and network implications. Current planning instruments are silent on prior or existing freight access routes in areas that have undergone zoning changes, such as industrial areas that have been rezoned into residential areas. In some areas, especially those that have had zoning changes, councils are experiencing pressure from residents to implement curfews and heavy vehicle number restrictions.



CASE STUDY 20 RESOURCE RECOVERY IN GREATER SYDNEY

SITA Australia specialises in resource recovery, recycling and waste management services for residential and commercial customers throughout NSW. SITA seeks to maximise the recovery of valuable resources for recycling and reuse via an extensive resource recovery network consisting of primary resource recovery facilities, Material Recycling Facilities (MRF) and Advanced Resource Recovery Technology (ARRT) facilities. Within NSW, SITA currently owns and/or operates 10 primary resource recovery facilities, three MRFs and four ARRT facilities, with this network anticipated to develop and expand into the future.

SITA collects commercial and residential waste in colour coded bins that clearly identify the type of material stream to be placed within them: general waste; co-mingled recycling; paper and cardboard; organics; and dry materials (with the latter soon to be introduced into the Sydney basin). These bins are collected by dedicated collection vehicles and transferred either to a primary resource recovery facility, a MRF or directly to an ARRT, depending on the material stream and the degree of contamination. If delivered to a primary resource recovery facility, an initial sorting process is undertaken with the then separated feedstocks or commodities (that is, paper, cardboard, plastics and metals) being transported either to SITA's ARRTs for further processing to create the final recovered products, or for direct sale.

To enable the efficient movement, processing and recovery of resources, primary resource recovery facilities and MRFs reside within urban areas, while the ARRTs reside on the peri-urban boundary. For instance, SITA recovers residential and commercial organic feedstocks via a supply chain network that uses its primary resource recovery facilities at Chullora and Camellia in Sydney's west, which then feeds its composting ARRTs in Sydney's far west and south west. The separated organics are transformed into fit-for-purpose compost and mulch and delivered to the consumer market for reintegration back into the economy.

The prominence of resource recovery activities is likely to grow in the future as communities and businesses place greater emphasis on sustainable waste management practices. This will see increased demand for an integrated, multi-stream collection and dispatch network that feeds resource recovery facilities within and on the peri-urban boundary. Subsequently, heavy vehicle access for collection trucks in these locations and along key routes within the urban network requires continued support to appropriately service the expansion of these resource recovery operations.

Impact

A lack of integration of freight transport with other land uses in planning has resulted in a conflict between freight needs and local planning.

The primary impact of this is more frequent truck movements into areas, contributing to increased congestion on local and State roads.

An increase in truck movements also has a negative impact on freight productivity. Freight costs increase due to the lost opportunity to take advantage of quieter, cleaner and generally safer heavy vehicles which subsequently causes an increase in the cost of goods to consumers.

Task 3A-1 Integrate land use planning and freight logistics

Transport for NSW will work with local government and the Department of Planning and Infrastructure to embed the needs of freight into strategic land use planning.

The NSW Government is currently undertaking a substantial review of the planning system, with an increased emphasis on strategic planning, streamlined approval processes and measures to link strategic plans with infrastructure provision.

This review provides an opportunity to ensure freight and logistics requirements are taken into account in NSW's new planning system.

Transport for NSW will support this process by providing access to updated freight information and modelling, together with ongoing technical support. This will help strengthen the integration of plans for land use change and for freight and logistics.

At the local level, greater support can be provided to assist councils in incorporating freight considerations into land use plans and policies. This may include assisting councils to develop guidelines to manage the interface between communities and freight activity centres, including providing technical and planning advice on significant projects and plan making at all levels.

Targeted outcome

A key outcome of the integration of land use planning and freight logistics will be the protection of key freight corridors and strategic sites. Where freight activity impacts on other land uses, such as delivery to shops in residential areas, this should be recognised in local planning and approvals. This may include the requirement to operate transport movements with a reduced footprint.

As much as possible, freight impacts will be contained within the immediate confines of freight corridors, precincts and other major generators. If these impacts cannot be contained onsite, then measures to 'buffer' important freight sites from more sensitive land uses will be implemented (see Action 2A for more detail). This will be achieved through a variety of measures including restrictions on the type and extent of adjoining development, as well as the implementation of mitigation measures within the development itself.

The task will also result in more effective management of the interface between communities and freight activity centres, thereby achieving a balance between industry, community and environmental needs.

Task 3A-2 Enable efficient freight access

In order to enable efficient freight access, Transport for NSW will extend recommendations detailed under Actions 1A, 1D, 1H and 2B to local planning to ensure connectivity of the road network.

Targeted outcome

The extension of recommendations detailed in Actions 1A, 1D, 1H and 2B to local planning will result in the more efficient linkage of centres of production to centres of consumption.

Regulations on freight movements can sometimes get out of step with current technologies and industry best practice.

ACTION 3B Manage congestion, noise and emission impacts of freight transport

Investigating the external impact of freight movements on the community

Problem description

Freight movement by road is impacted by and contributes to congestion, especially on urban roads during peak periods. A prime example of this is the congestion in the Port Botany precinct, where freight trucks and traffic to and from Sydney Airport are impacted by excess demand for road capacity.

In addition, rail freight is also affected by congestion, creating the need to build extra capacity as there is competition for rail paths. Examples of how this is being addressed is detailed in Case Study 15 (the Southern Sydney Freight Line) and Task 2C-2 (completion of the Northern Sydney Freight Corridor). The completion of these corridors will alleviate congestion and thereby reduce emissions.

The movement of freight is rarely silent and the generation of noise on a shared network in proximity to residential areas is a recognised issue.

Similarly, the movement of freight generates emissions. This is a problem in general, but especially in proximity to residential areas.

Impact

Congestion issues relating to freight are twofold:

- Freight is impacted by congestion, which carries both direct costs (such as fuel) and indirect costs (such as productivity loss)
- Freight contributes to congestion, which carries the same direct and indirect costs as for passenger traffic.

The impacts of noise and emissions are reduced community amenity near road and rail freight corridors and, importantly, reduced community acceptance of new infrastructure or growth of the freight task in their localities.

Freight movement, particularly with older and less efficient vehicles and equipment, also creates increased greenhouse emissions and fuel costs.

Task 3B-1 Recognise costs of congestion

Transport for NSW will assess the cost of congestion for freight users to inform decision making.

While there is a general acknowledgement that congestion is a problem in the Sydney metropolitan area, especially during peak hours, the specific contribution of freight transport to this congestion is unknown. There is also little available data which quantifies the impact of congestion on freight efficiency and emissions. There is therefore a need to identify the cost of congestion to the freight industry, as well as the relative contribution of freight to congestion overall. This assessment should take into account:

- Geographic area, as road congestion involving freight transport is concentrated on a relatively small number of locations, most notably in the Port Botany precinct on major arterial roads
- Timing, both day of the week and time of day, as most congestion issues occur during morning and afternoon peak hours on weekdays
- Type of freight, as container trucks have different characteristics to, for instance, removalist trucks or cement mixers
- Ability to reduce cost impacts, as while some road freight may be avoidable, for instance because of the availability of rail capacity, other movements may not have a viable alternative.

The cost and contribution to congestion problems can then be quantified in terms of indirect costs (such as lost productivity) and direct costs (such as fuel) for both passengers and the freight industry.

It is important that this cost calculation specifically recognises both avoidable and

unavoidable costs. For instance, the value of focusing on the congestion costs related to cement mixers (which are required to operate during business hours) is less than the value of focusing on congestion related to container trucks in and out of Port Botany (where a rail alternative is available, as well as off-peak operations).

As a next step to identifying the congestion cost impact, this cost should be taken into account in planning decisions. Full cost-benefit analyses of alternatives should inform decision making, particularly where there are avoidable costs resulting from road freight.

The most obvious example of this is regarding road versus rail trade-offs in the container chain around Port Botany. Full cost recognition should form the basis for modal comparisons around network investments, intermodal terminal planning and economic incentives.

Targeted outcome

Recognition of the costs of congestion to both the freight industry and passengers will result in the collection of useful data relating to the impacts of congestion. This will include identification of direct, indirect, avoidable and unavoidable costs.

This data will allow government, communities and the freight industry to identify locations where unnecessary costs are being imposed by congestion, thereby informing decisions about alternative access options and potential problem solutions.

Task 3B-2 Mitigate noise from freight operations

Transport for NSW will continue to manage noise from road and rail freight through existing programs and new measures.

These measures include strategic noise management plans for road and rail freight which aim to eliminate unnecessary isolated noise events (e.g. truck and engine brake noise) and limit overall noise levels. There are differing approaches to the mitigation of noise from road and rail freight operations.

CASE STUDY 21 COSTING CONGESTION

When evaluating the benefits that would be realised through infrastructure upgrades and enhancements, Transport for NSW recognised that there are a number of non-price characteristics that contribute to the cost savings resulting from infrastructure upgrades. In order to perform a full cost-benefit analysis of various upgrades, quantifying the non-price costs of freight transport across modes was necessary.

Among the various non-price costs identified was the value of travel time savings resulting from lower levels of congestion associated with infrastructure enhancements. To compute the value of freight travel time savings, a value must be assigned to a unit of travel time. This unit value of travel time takes into account the value of the driver's time, as well as the value of the freight while it is in transit.

In addition to quantifying the value of time savings to freight due to infrastructure upgrades, the value of changes in vehicle passenger hours resulting from a reduction in congestion caused by freight was measured. Just as different values are assumed for different kinds of freight, trip purpose and vehicle occupancy affects the unit value assigned to passenger vehicle time.

Deloitte was engaged to undertake a study of various infrastructure upgrades, taking non-price costs into account. The results of this study showed that the contribution of costs resulting from lost time could potentially be quite significant. In the scenario involving the most upgrades (that is, the scenario expected to decrease road congestion the most) the expected 2021 non-price value of time savings from reduced freight and passenger travel was $346 million, compared to the $225 million saved with the fewest infrastructure upgrades.

By recognising that reducing congestion caused by freight has non-price savings, a more complete view of the costs and benefits resulting from different infrastructure investment scenarios was developed.

For road freight, a range of approaches have been proven to be successful in reducing noise impacts and there are a range of international standards around the management of road noise that have been widely accepted. For example, the existing noise abatement program uses infrastructure, such as noise walls and low noise pavements, to reduce the impacts of freight transport on communities (particularly in urban areas).

Other approaches include:

- Ensuring road noise is considered in planning processes
- Implementing standards for quieter vehicles
- Facilitating the introduction of electric and other low noise vehicles, through programs such as the Green Truck Partnership
- Strengthening the ongoing education and enforcement program which focuses on addressing the worst emitters of brake noise.

In comparison, there is considerable work to be done in the management of rail noise, where recognised noise standards do not currently exist.

Significant upgrades are being made to rail infrastructure to improve rail freight efficiency, which will increase rail's share of the transport task. This will result in a greater number of services and longer trains. However, rail noise is already an issue with communities living near rail corridors. Proposed increases in rail traffic are exacerbating these concerns. Unusually loud locomotives or freight wagons are considered by the community to create an unnecessary impact.

A comprehensive approach to managing the impacts of rail noise combines the efforts of local councils, infrastructure owners, developers, train operators, train manufacturers, and the community. It will minimise and mitigate avoidable noise at its source by:

- Reducing wheel squeal on curves through the use of lubrication technology at the wheel rail interface
- Investigating means of accelerating the take up of quieter locomotive technology, including considering moving to electrical traction for dedicated freight rail lines and restricting access to some areas unless rolling stock noise standards are met. Some of these new technologies could also contribute to reducing freight emissions
- Working with operators on the standards for, and maintenance of, rolling stock
- Implementing a noise abatement program to help mitigate impacts in areas already affected by rail noise.

In addition, a comprehensive approach will seek to minimise the development of new locations acutely affected by noise, by supporting the implementation of planning controls and building regulations.

Signs currently in place across NSW urge noise consideration for residents, particularly when entering densely populated urban areas.

Targeted outcome

Through the development and implementation of new freight noise reduction programs and the continuation of existing measures, communities living near freight corridors and facilities will experience a substantial reduction in unnecessary noise generated by road and rail freight.

Task 3B-3 Mitigate emissions from freight operations

Transport for NSW will manage and reduce the emission of greenhouse gases, fine particles and nitrous oxide from freight transport.

Greenhouse emissions from freight transport are expected to increase by over 50 per cent from 2010 to 2030.

Some actions to increase the efficiency of freight transport will also help to reduce the emission of greenhouse gases. These include:

- Shifting freight movements to off-peak periods (see Action 1B)
- Promoting the use of High Productivity Vehicles (see Action 1D).

More specifically, Transport for NSW will also:

- Promote the use of low emission technologies and fuels and programs, such as through the Green Truck Partnership.
- Optimise freight network management, for example through the Green Freight Program.

Despite increases in traffic volumes, total fine particle and nitrous oxide emissions from the NSW diesel fleet have been reducing for some time. This trend will continue as new vehicles enter the fleet.

To provide ongoing management of this problem, Transport for NSW will:

- Promote the use of low emission vehicle technologies and fuels, by implementing the Green Truck Partnership.
- Continue to support the retrofit program, at a cost of $8.5 million over three years to subsidise the fitting of particle traps to older vehicles. The program will improve air quality in the vicinity of the M5 East Tunnel by targeting older container trucks travelling to Port Botany.
- Continue to monitor air quality in the M5 East Tunnel and publish in-tunnel air quality data on the RMS website. Smoky vehicle cameras will also continue to identify trucks with excessive emissions for inclusion in the retrofit program.
- Consider the implementation of low emission zones, such as at Port Botany, as has been done in the United States around some ports.

Targeted outcome

The key outcome of the above listed initiatives will be the reduction in emissions from the freight transport network. The key challenge is to ensure that the most suitable freight transport modes and technology are adopted for the specific freight requirements. This will require the careful balancing of economic and sustainability considerations.

NSW FREIGHT EMISSIONS CONTEXT

Air pollution

Most freight vehicles in NSW, both road and rail, are powered by diesel engines that produce emissions of fine particles and nitrous oxides. In Sydney, diesel road vehicles contribute 15 per cent of total nitrous oxide and five per cent of particulate emissions.

The reduction in truck emissions is a direct result of tougher emission and fuel standards. The rate of reduction has been slowed by the large 'legacy' fleet, of trucks that did not have to meet emission standards when new and are likely to continue to operate in urban areas for a considerable time. Accelerated modernisation of the truck fleet would improve the rate of emission reduction.

The contribution from diesel locomotives to fine particle and nitrous oxide emissions is minor. However, increasing concerns about the effect of these pollutants renders it an issue of concern near freight corridors.

Emission standards have been introduced in Europe and the United States for diesel freight locomotives. These standards do not apply in Australia. Diesel locomotives in Australia have an average age of around 35 years. Age is important as it reflects the engine technology, which has a significant bearing on pollutant emissions and fuel consumption and greenhouse emissions.

Greenhouse gas emissions

Despite an increase in total greenhouse emissions from road freight over the last 35 years, as the road freight task has increased, the emissions intensity of this sector has improved in terms of emissions per tonne kilometre. This is a result of advances in engine efficiency and a doubling of the average load per vehicle, achieved largely through a shift from single trailers to B-doubles. This trend has begun to slow in recent years and without further reforms, average loads per vehicle are likely to grow by less than five per cent between 2010 and 2030.

Although freight train greenhouse emissions are about one third of those from road transport for an equivalent task, road transport performs most of the freight task due to its flexibility, convenience and reliability. The road transport share of the freight task is increasing, with the exception of bulk products, such as coal.

Future outlook including carbon tax impact

The freight industry faces significant challenges. These include volatility in fuel prices and the future impact of the carbon tax and energy supply on fuel prices.

Under the Carbon Tax, heavy vehicles will not be affected by carbon pricing until 2014. In the short term, this will mean that heavy vehicles will become the more competitive mode. In the longer term, it is likely that heavy vehicle transport will face higher carbon price commitments due to higher emissions. To ensure that the two year period does not adversely impact on the rail industry's development, the NSW Government will support the industry in other ways, for example increasing the imperative to provide improved rail infrastructure.

Efforts to de-carbonise the economy will continue, with pricing signals such as the carbon tax, and non-economic signals such as purchasing policies and corporate strategies driving a move away from carbon intensive goods.

The link between objectives to reduce greenhouse emissions and the commercial challenges facing freight operators is that these emissions are directly related to the amount of fuel used. There is therefore an economic impetus to adopt fuel saving strategies and to consider alternatives to diesel fuel to manage the commercial risks arising from energy availability and affordability.

Green Freight Program

Effective action to reduce freight emissions requires recognition that all elements of the industry need to be engaged around an emissions reduction program that is linked to improved business efficiency. Transport for NSW therefore proposes to establish an overarching program, the Green Freight Program, which will help bring these elements together.

The Green Freight Program will facilitate the transfer of freight from road to rail, where it can be shown to reduce emissions and provide complementary benefits such as reductions in road congestion, deferral of additional road expenditure, improved road safety, continued employment in regional communities and reduced transport costs to industries such as agriculture, manufacturing and heavy industry.

Opportunities are being created for the rail industry through the construction of new rail infrastructure such as the Southern Sydney Freight Line and the Northern Sydney Freight Corridor. These developments are designed to improve the competitiveness of rail. To take advantage of these opportunities the rail industry needs to demonstrate that it can effectively compete with road freight in all aspects, including noise. This includes taking advantage of technological advancements.

CASE STUDY 22 SUSTAINABLE EQUIPMENT DEVELOPMENT

Centennial Coal (Centennial) has 1,800 employees and seven operating underground coalmines in NSW, making Centennial one of the largest underground miners in NSW. Supplying both the domestic and export markets, Centennial's coal fuels around 40 per cent of NSW's coal-fired electricity generation capacity.

Between 2010 and 2012 Centennial took delivery of seven state of the art C44aci 4,354hp diesel electric locomotives built at Broadmeadow near Newcastle along with 152 wagons. These fuel efficient train sets allow Centennial to achieve higher payloads at less cost while operating rail freight services with excellent safety, noise and emission performance.

These newly acquired locomotives and wagons demonstrate rail industry best practice, supporting the Centennial Coal sustainability objectives. The wagons' self-steering bogies contribute to little or no 'wheel squeal'. The electronic braking systems are quieter with faster response times as the brakes are applied and released simultaneously on each wagon. The locomotives are less noisy under power, which when combined with 'bin loading' at the mine site, results in reduced noise levels from train loading operations. The new locomotive design improves efficiency both in power and braking. This results in fewer impacts on nearby communities both beside running lines and at idling locations.

Given their performance characteristics, these 'High Productivity Trains' may potentially carry more tonnes per train set cycle hour. This can be achieved while contributing to Centennial's goals of mitigating the impact of their operations on the community, lowering costs and being more fuel efficient.

As part of the Strategic Noise Action Plan, Transport for New South Wales is working with rail freight operators and customers such as Centennial to promote the use of more environmentally sustainable locomotives and wagons. Transport for NSW is also fostering information sharing between government and industry about the sustainability aspects of rolling stock design, technology and maintenance standards.

This locomotive is part of a train set hauling coal for Centennial and entered service in 2012. The C44aci model meets the NSW EPA noise emission standards for new or substantially modified locomotives. Currently there is no corresponding EPA standard for particulate or air emissions from locomotives however these new locomotives meet the company's self imposed targets.

ACTION 3C Prioritise safety of freight transport

Improving safety of freight transport

Problem description

The function of the transport network involves people, freight, machinery, vehicles, and material handling equipment. The operation of the network occurs day and night in all weather and in all parts of the State. There are significant safety risks that need to be well managed as the majority of the network is shared and part of the built environment; it involves not only freight industry participants but the wider public.

Freight transport safety has improved in recent years, however a sustained safety focus needs to be maintained to continue to reduce road trauma from heavy vehicle crashes.

Impact

The industry requires ongoing monitoring and management to improve safety while increasing mobility and efficiency across the transport networks.

Task 3C-1 Support National Rail Safety Regulation

Transport for NSW will support the implementation of National Rail Safety Regulations.

On 20 January 2013, NSW commenced the Rail Safety (Adoption of National Law) Act 2012 and Regulations which established the NRSR as the regulator for rail safety in this State. The Independent Transport Safety Regulator (ITSR) functions as a branch of the National Rail Safety Regulator (NRSR) and continues to deliver regulatory services in NSW on their behalf under a Service Level Agreement.

Transport for NSW will continue to support the work of the NRSR and collaborate with jurisdictions through the Standing Council on Transport and Infrastructure (SCOTI) to ensure the national rail safety reforms achieve the desired outcomes.

Subject to the passage of applicable laws, it is expected that rail activities in Western Australia, Victoria, Queensland and the ACT will be regulated by the NRSR by the end of 2013.

Targeted outcome

Transport for NSW will support the work of the NRSR and the continued implementation of national rail safety reforms to reduce red tape and achieve more uniform arrangements and certainty for industry.

Task 3C-2 Improve heavy vehicle safety

Transport for NSW will continue to work with government and industry to implement initiatives from the NSW Road Safety Strategy.

The NSW Government has recently prepared a Road Safety Strategy 2012-2021, which takes a holistic view of the road safety system. The NSW Freight and Ports Strategy recognises that all components of the road system, including vehicles, users and the roads themselves, have a role to play in helping to keep road users safe.

Key initiatives in the Road Safety Strategy focusing on heavy vehicle safety include:

- Target crash risk assessment on higher volume roads, using the route safety review process across the key freight routes.
- Consult with industry with a view to bringing forward technologies that deliver a significant safety outcome, including vehicle to vehicle technologies and Intelligent Speed Adaptation trials.
- Investigate a trial of Dedicated Short Range Communications systems to improve levels of communications for heavy vehicle operators.
- Improve heavy vehicle compliance through targeted enforcement to address speeding, fatigue, drug impairment and distraction in a partnership approach between Transport for NSW, Roads and Maritime Services, NSW Police, WorkCover NSW and industry.

- Work with the industry and associations (in the whole supply chain) to develop effective communications to strengthen awareness of objectives associated with Chain of Responsibility legislation.
- Work with industry to further develop workplace safety messages for heavy vehicle operators.
- Transport planning to consider heavy vehicle routes around ports and the provision of rest areas to meet heavy vehicle needs on major routes.
- Develop and extensively promote a heavy vehicle safety feature guide to encourage the introduction of safer trucks and the uptake of safety technology across the transport sector.

Transport for NSW, in conjunction with the road transport industry, will also investigate the feasibility of implementing a Five Star Trucking Safety Rating System designed to encourage best driving practice and reward those operators who foster safe driving.

Truck rest areas are important in managing driver fatigue as well as providing facilities for load adjustment or addressing maintenance issues that can arise on route. Transport for NSW will continue to identify and develop rest areas at strategic locations on major freight routes.

Targeted outcome

The outcome of managing heavy vehicle safety will be the reduction in the number of fatalities and injuries caused due to freight network accidents. As outlined in the NSW Road Safety Strategy, target fatalities should be reduced to 4.3 fatalities per 100,000 population by 2016, compared with 5.1 (provisional) in 2011.

Task 3C-3 Enhance port safety

Transport for NSW, with government and other key stakeholders, will continue to improve the safety of NSW ports by undertaking regular risk assessments of port and shipping activity.

The safety elements of the shipping task are continually evolving with the changes in types and numbers of ships visiting ports.

A 2010 review concluded that the current Port Safety Operating Licence model requires an update so as to be brought closer to contemporary practice. The model was put into place in 1995 and sets out performance standards for marine safety and environmental protection in each port.

Targeted outcome

Transport for NSW will explore options for developing a more contemporary model for delivery of port safety in NSW, which will include a less prescriptive format and a greater focus on risk management. This will lead to enhanced port safety outcomes.

Task 3C-4 Manage the transport and storage of dangerous goods

Transport for NSW, in conjunction with other regulatory authorities and industry, will review dangerous goods routes, including the restrictions on using tunnels for some products.

This review should also include the utilisation of road trains in regional areas, such as Newcastle, for distribution of dangerous goods to mines.

There are some goods which are vital for the sustainability of NSW industry and everyday life, but present particular challenges for their safe transport and storage. For example, there are regulations which prohibit the transport of dangerous goods along certain routes. These routes include some tunnels, bridges or other areas which are considered to present a higher than normal risk when used for the transportation of dangerous goods. These restrictions force trucks to travel on limited routes and may contribute to road congestion, impacting on productivity and efficiency of transport, and increasing the costs for all users of dangerous goods.

Targeted outcome

Carrying out a risk-based review of dangerous goods routes will better align the current restrictions with the expected level of risk associated with transporting dangerous goods. Reviewing existing regulations in greater detail could better align the requirements with individual product risks and ensure maximum efficiency of the supply chain. The review may also identify opportunities for the movement of dangerous goods within accepted safety requirements that are not currently used by industry.

ACTION 3D Support the growth of the transport and logistics workforce

Developing and maintaining sustainable labour practices

Problem description

Many rural-based industries, including the transport and logistics industry, face a range of challenges in attracting and retaining skilled labour. These challenges include increased competition from lucrative mining-related activities and an ageing workforce.

Impact

The freight and logistics industry faces a scarcity of skilled workers resulting in increased costs and challenges to the viability of businesses.

Task 3D-1 Develop strategies to attract and retain skilled workers

Transport for NSW will work with government and industry groups to understand and address skills shortages.

An initial task will be to quantify the scale of skill shortages in the transport and logistics industry, including identifying the regions which are most greatly impacted.

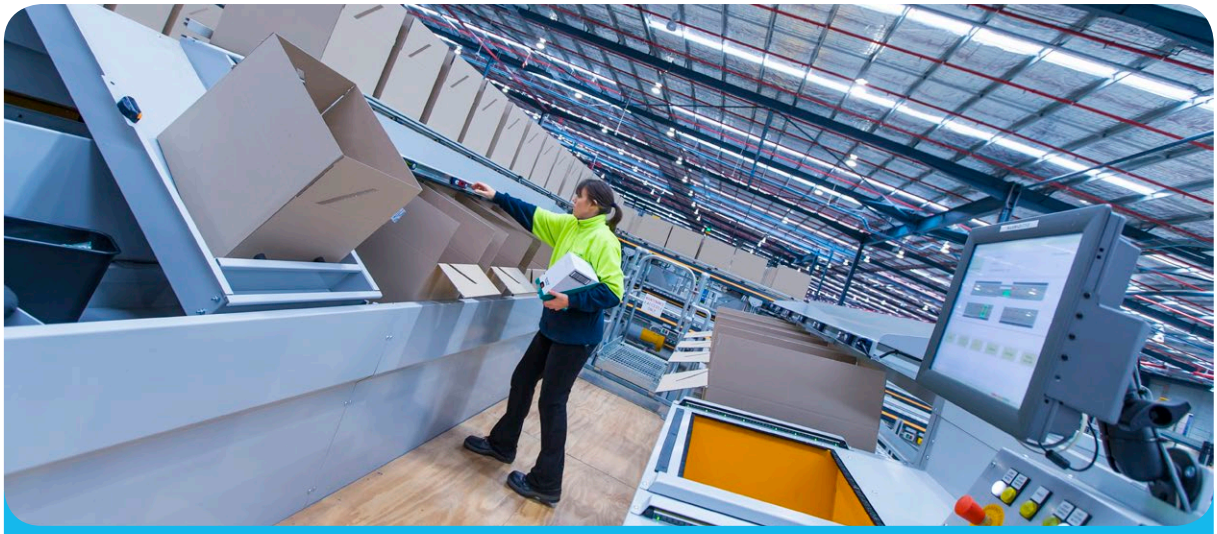
The industry can then target entry level workers for education and training, working with community colleges and tertiary institutions such as TAFE.

Government and industry groups can also work together to promote initiatives such as Green Light Day. This is a NSW-based awareness day, which attempts to increase the attractiveness of a career in the transport and logistics industry. Further details about the Green Light Day are provided in Case Study 23.

Targeted outcome

Workforce initiatives in the freight and logistics industry will result in development of the required employment profile. It will also encourage people to enter the sector and make them aware of the available occupations and career progression.

In addition to this, such initiatives will provide the ability to quantify the scale of the skill shortage in the industry and identify the occupations which are most in need. This will assist in future planning and targeting of initiatives to fill skills gaps in the industry.



Improvements in transport technology will create more attractive job opportunities in the future. The industry is working hard to attract a younger, more diverse workforce as more experienced employees reach retirement age.

CASE STUDY 23 GREEN LIGHT DAY

The inaugural 'Green Light Day' was held in August 2011 and aimed to support and promote careers in the transport and logistics industry. The day saw over 230 students from 23 schools participating in four events across Sydney. The launch event at the MLC Centre in Martin Place saw attendance by enthusiastic students, teachers, government and industry representatives from 25 state, national and international organisations coming together to celebrate the importance of the transport and logistics industry.

Concurrent with these events, open days were held at Axima Logistics in Smithfield, RAAF Base at Richmond and Qantas Centre of Service Excellence at Alexandria with the support of local MPs, TAFE and the Australian Trucking Association. The events exposed students to potential careers in transport and logistics and provided them with an opportunity to gain valuable insight from industry members.

The second Green Light Day took place in August 2012 and consisted of events and open days featuring selected secondary students from metropolitan Sydney in 'meet and greet' and mentoring sessions with industry leaders. Through these interactive and informative sessions, students learnt about the diverse opportunities that a career in the transport and logistics industry can provide.


RailCorp

5 IMPLEMENTING THE NSW FREIGHT AND PORTS STRATEGY

"Asciano has had an ongoing concern that there are not sufficient performance related incentives in place to drive efficient behaviours ..."

Asciano submission to the Queensland Competition Authority, August 2012

5.1 Measuring and reporting on progress and impact

The NSW transport network is arguably the most valuable asset in the State. Transport for NSW manages a transport network portfolio with a value in excess of $95 billion. This figure does not capture the additional value created by businesses using the network.

Part of the function of Transport for NSW is the management of the transport network assets and operations. This requires careful performance monitoring to ensure a return is delivered to the people of NSW. There are two types of monitoring and measurement that are important for Transport for NSW to report on, the implementation of the NSW Freight and Ports Strategy as a measure of inputs, and overall network performance as a measure of outcomes.

Implementation of the NSW Freight and Ports Strategy

Implementation, as well as ongoing evolution, of the NSW Freight and Ports Strategy requires monitoring, measurement and reporting to ensure accountability and to provide visibility to Government and other stakeholders. Evolution of this Strategy will be informed by periodic review and assessment of the Strategic Action Programs, to ensure that specific Actions and Tasks are on schedule and remain relevant, as well as ongoing engagement with industry and government agencies.

To facilitate periodic review, Transport for NSW will monitor progress of the implementation of the NSW Freight and Ports Strategy and has put in place a performance reporting process, including a process of independent assessment, to track progress of strategic Actions and Tasks on an ongoing basis. This process builds upon high quality project plans that define the delivery of discrete tasks and projects within the NSW Freight and Ports Strategy.

Transport for NSW will also regularly engage industry stakeholders through the Freight Advisory Groups Governance Structure which encompasses the Freight Advisory Council at a strategic level, as well as Freight Industry Groups for each freight mode at an operational level. This structure is in place to facilitate collaborative consultation and receive feedback on the impact of strategy implementation and overall network performance. The structure will also provide updates on progress of the implementation of the NSW Freight and Ports Strategy.

Transport for NSW will report to government, industry and other stakeholders through the development of a *State of Freight* annual report. This report will provide:

- **Performance:** Tracking of the key performance indicators (KPIs) that provide the basis for ongoing assessment of network performance
- **Accountability:** Status and progress update of the implementation of strategic Actions and Tasks
- **Impact:** Economic analysis of the impact of the implementation of the NSW Freight and Ports Strategy
- **Stakeholder feedback:** Feedback from key stakeholders on the implementation of the NSW Freight and Ports Strategy and future priorities
- **Infrastructure:** Update of long term infrastructure program delivery timetable

This approach will help ensure accountability for delivery of the NSW Freight and Ports Strategy. It will also provide visibility on how the Freight Transport Plan is contributing to the NSW Long Term Transport Master Plan as well as providing

industry and the community with certainty and transparency around government priorities for the freight network.

Measuring and reporting on network performance through KPIs

To ensure network users create value and provide a tangible return on the investment of public funds, a performance management regime is required. Access to the network requires, and will continue to require, permission or payment. As an example, access to State roads requires users to operate vehicles that are registered and compliant with a range of regulations. Users of State roads also provide payments through fees, tolls or taxes. Similarly, access to ports and rail network infrastructure requires users to meet set standards and pay a range of fees and charges.

An aspect that is currently missing in the management of the freight network is the enforcement of comprehensive performance standards that directly relate to efficiency and effectiveness. Performance standards of this type are in use in parts of the network.

As an example, leases of container terminals at Port Botany now include performance measures relating to productivity. The result is a series of incentives that drive efficiency and effectiveness for the commercial gain of the lease holders. The wider NSW transport network also gains, as assets are efficiently utilised and capacity is maximised.

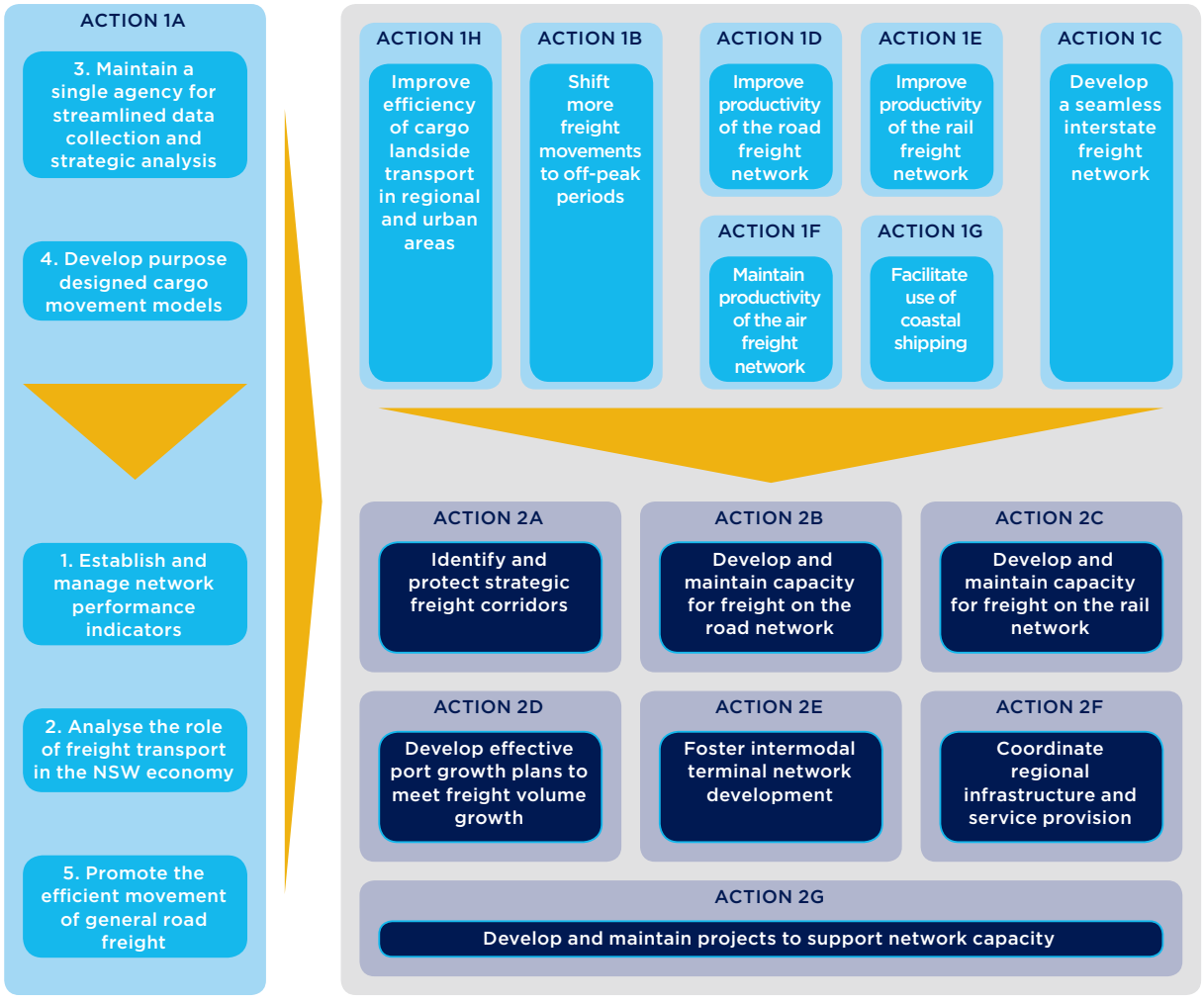
KPIs are part of the fabric of both business and government. Action 1A includes a specific task that relates to KPIs and sets out to provide network performance management tools. Transport for NSW will monitor the KPIs and publish quarterly reports. These reports will provide the community with transparent indicators of performance. They will also inform network management agencies on the use of network assets, so that use of the network can be optimised.

5.2 **Prioritisation**

This document has divided actions and tasks into three Strategic Action Programs. There are many linkages and dependencies between Actions and Tasks, particularly in Strategic Action Programs 1 and 2. These interrelationships are illustrated in Figure 33.

The Tasks in Action 1A create the foundation of supporting data for this Strategy and are prerequisites for a large number of the Actions and Tasks. In particular, Task 1A-3 (Establish a single agency for streamlined data collection and strategic analysis) and Task 1A-4 (Develop purpose designed cargo movement models) should be a first priority, as they are essential to:

Figure 33 The connecting relationships between tasks in the NSW Freight and Ports Strategy



- Task 1A-1 (Establish and manage freight network performance indicators): the agency is required to manage the KPI measurement process, and the freight models will help inform the selection of appropriate KPIs
- Task 1A-2 (Analyse the role of freight transport in the NSW economy): the agency is best placed to conduct this analysis, and the freight models will provide important base data for the analysis
- Action 1H (Improve efficiency of landside cargo transport in regional and urban areas): the holistic view of NSW freight from the freight models will help inform operational efficiency and capacity management activities, and the NSW Cargo Movement Coordinator will benefit from working with the BFS for reporting, collection and analysis of data.

The tasks in Action 1D (Improve productivity of the road freight network) and Action 1E (Maximise network capacity by reforming rail access) are also important prerequisites. In combination with the tasks in Action 1A, these tasks will be important to the following:

- Action 2A (Identify and protect strategic freight corridors): projections of future demand in an efficient system are required to make network wide decisions about long term capacity requirements
- Action 2B (Develop and maintain capacity for freight on the road network): road's share of the freight task in an efficient system needs to be understood to make road infrastructure investment decisions.
- Action 2C (Develop and maintain capacity for freight on the rail network): rail's share of the freight task in an efficient system needs to be understood to make rail infrastructure investment decisions.

These linkages and dependencies have been considered as part of the task prioritisation process to maximise efficiency in the implementation of the NSW Freight and Ports Strategy.

Figure 34 illustrates the work plan for Transport for NSW over the next five years. The phasing of the Tasks over time reflects the nature of the dependencies described above. Over time, priorities will shift as new Tasks get initiated and existing Tasks get completed, reflecting the portfolio nature of this Strategy.

The rolling work plan has a five year planning horizon. Transport for NSW will reissue the NSW Freight and Ports Strategy in five years' time or earlier if required. Some Tasks in the five year work plan have already commenced prior to the release of this Strategy. This means that Transport for NSW is currently dedicating resources to execute and complete numerous Tasks within this Strategy. The remaining Tasks are scheduled for commencement at various stages of the five year work plan.

Figure 34 An initial work plan with the projected tasks for Transport for NSW to 2017

	Action	
Network efficiency	**1A**	Identify freight movements and network demand
	Task 1	Establish and manage freight network performance indicators
	Task 2	Analyse the role of freight transport in the NSW economy
	Task 3	Maintain a single agency for streamlined data collection and strategic analysis
	Task 4	Develop purpose designed cargo movement models
	Task 5	Promote efficient movement of general road freight
	1B	Shift more freight movements to off-peak periods
	Task 1	Build the case for off-peak freight handling for planning purposes
	Task 2	Support the growth of off-peak freight movement through industry informed policy development
	Task 3	Identify the infrastructure and regulatory requirements for off-peak freight handling
	1C	Develop a seamless interstate freight network
	Task 1	Maintain dialogue with national regulators to support the interests of freight
	Task 2	Improve cross border freight flows
	1D	Improve productivity of the road freight network
	Task 1	Develop national heavy vehicle charging and investment reforms
	Task 2	Provide necessary infrastructure to support High Productivity Vehicles access
	Task 3	Improve access for High Productivity Vehicles on State and local roads
	Task 4	Incorporate freight considerations into managed motorway access decisions
	Task 5	Manage oversize and overmass heavy vehicle movements
	1E	Improve productivity of the rail freight network
	Task 1	Conduct NSW Rail Access Review
	Task 2	Secure current and future freight capacity requirements on the shared network
	1F	Maintain productivity of the air freight network
	Task 1	Understand the landside movements which support efficient air cargo logistics
	Task 2	Incorporate the value of air cargo in planned infrastructure upgrades for the Port Botany and Sydney Airport precinct
	Task 3	Work with the Sydney Airport Corporation and the Australian Government to ensure a consistent approach to strategic airport planning
	1G	Facilitate the use of coastal shipping
	Task 1	Improve the understanding of the role of coastal shipping in the NSW freight task
	Task 2	Work with industry in expanding the use of coastal shipping
	1H	Improve efficiency of landside cargo transport in regional and urban areas
	Task 1	Establish a NSW Cargo Movement Coordinator
	Task 2	Improve network connectivity between networks and key freight precincts
Network capacity	**2A**	Identify and protect strategic freight corridors
	Task 1	Establish corridors to meet long term freight needs of NSW
	2B	Develop and maintain capacity for freight on the road network
	Task 1	Connect and complete Sydney's motorway network
	Task 2	Prioritise road infrastructure investments
	2C	Develop and maintain capacity for freight on the rail network
	Task 1	Separate passenger and freight movements with network enhancements and rail alignments
	Task 2	Complete the Northern Sydney Freight Corridor
	Task 3	Ensure that there is sufficient rail infrastructure capacity from mine to port to meet coal demand
	2D	Develop effective port growth plans to meet freight volume growth
	Task 1	Develop a Port Botany growth plan
	Task 2	Develop a Port of Newcastle growth plan
	Task 3	Develop a Port Kembla growth plan
	2E	Foster intermodal terminal network development
	Task 1	Foster intermodal terminals in metropolitan areas
	Task 2	Support the operation of regional intermodal terminals
	2F	Coordinate regional infrastructure and service provision
	Task 1	Adopt a best practice reform model for regional infrastructure
	2G	Develop and maintain projects to support network capacity
	Task 1	Evaluate freight infrastructure through an investment framework
	Task 2	Maintain a program of projects for freight investment
	Task 3	Fund the infrastructure program
Network sustainability	**3A**	Embed freight requirements in planning schemes
	Task 1	Integrate land use planning and freight logistics
	Task 2	Enable efficient freight access
	3B	Manage congestion, noise and emission impact of freight transport
	Task 1	Recognise cost of congestion
	Task 2	Mitigate noise from freight operations
	Task 3	Mitigate emissions from freight operations
	3C	Prioritise safety of freight transport
	Task 1	Support National Rail Safety Regulation
	Task 2	Improve heavy vehicle safety
	Task 3	Enhance port safety
	Task 4	Manage the transport and storage of dangerous goods
	3D	Support the growth of the transport and logistics workforce
	Task 1	Develop strategies to attract and retain skilled workers


FY12-13
FY13-14
FY14-15
FY15-16
FY16-17

"The greater the certainty that the NSW Government can provide, the more likely it will be for industry to identify areas for complementary investment."

John Mullen, CEO, Asciano

5.3 Funding and financing

Projects that enhance the efficiency and capacity of the freight transport network all require significant investment in the identification, planning and delivery or construction phases.

The Freight Infrastructure Program (see Action 2G in Appendix F) contains the priority projects identified for the next 10 years. In addition the tasks and projects associated with planning, design and systems development will be incorporated into the overall work plan. The physical infrastructure projects are complemented by the less obvious but equally essential efforts of all freight sector participants. Arranging the funding and financing of these projects is an ongoing task for Transport for NSW, the role of which is to:

- Determine demand and potential revenue
- Determine network needs
- Develop projects to the definitive feasibility stage
- Identify funding and financing options
- Implement projects through delivery agencies.

Funding for projects and ongoing operation of the transport network is the critical issue facing Transport for NSW.

Public sector funding

All public sector funding for infrastructure ultimately comes from the taxpayer. When funding infrastructure, government effectively operates no differently to commercial businesses in that investment decisions will be made where there is a clear and measurable benefit and there is a cost attributed to borrowing or using equity. Most projects to improve the efficiency of the transport network are high cost.

The use of public sector funding for freight infrastructure is appropriate where forecasting shows there will be wide economic benefit to the NSW economy, rather than just a particular firm or activity.

Potential sources of funding for infrastructure include the Australian and NSW Governments and private investment. This includes:

- Co-investment with the private sector
- Leases and concessions
- User charges or value capture
- Australian Government Nation Building Program
- Australian Government Regional Infrastructure Fund
- Restart NSW (seeded with capital from the sale and lease of State assets such as the long term lease of Port Botany and Port Kembla)
- Heavy Vehicle Safety and Productivity Program.

The use of public funds for the development of transport network infrastructure should be restricted to projects that are not in conflict with commercial development proposals. The use of public funds can create market distortion and generate inefficient work practices and network use.

A recent example of the inefficient use of public funds in freight network infrastructure is the proposed $14.5 million grant to develop the Riverina Intermodal Freight and Logistics Hub. The proposed grant will come out of the Australian Government's Regional Infrastructure Fund, provided a commensurate private sector commitment is made. The total cost of the Riverina project is forecast to be $57.4 million. The grant will comprise 25 per cent of the planned capital expenditure. When this funding is supported by private sector contributions the development will progress.

However, an intermodal facility at nearby Harefield is already in operation and another is also under consideration for development at nearby Cootamundra. The Cootamundra facility with a planned capital expenditure of $12 million is to be financed entirely by the private sector, however, the project is now under commercial review and may not progress. Where commercial planning and development is already underway, and there is a sufficient appetite for risk, market intervention using public funds undermines investment decisions.

Private sector financing

Private sector financing is an alternate means of paying for transport infrastructure. This is an ideal method of providing infrastructure, particularly where there is firm forecast demand and a clear means of getting a return on investment from increased productivity. Importantly a revenue stream to pay for the infrastructure must be identified.

Financing for freight infrastructure from non-government sources can include:

- Co-investment with the private sector
- Leases and concessions of parts of the transport network
- Creation of Infrastructure Bonds or similar instruments for specific projects
- Unsolicited proposals
- Other methods.

As an example, a freight-only lane or on/off ramp on a motorway could be funded from 'user pays' toll revenue. This would require firm demand forecasts or user commitments. The financing parties could then use the forecasts or commitments to assess the risks and develop a finance model for the project.

This scenario is similar to the financing arrangements for the container terminal being developed by Hutchison Ports Australia at Port Botany, as well as for the Patrick operational enhancement project that is introducing automation to the existing terminal.

CASE STUDY 24 SURAT BASIN

A current example of private sector financing of freight infrastructure is underway in Queensland.

The Surat Basin Rail (SBR) project proposes the construction of a 204 kilometre railway between Wandoan and Banana to enable large-scale mining and export of thermal coal from the Surat Basin to the Port of Gladstone.

A private consortium consisting of the ATEC Rail Group, QR National and Xstrata Coal (as equal partners) has been granted an exclusive mandate by the Queensland Government to progress the SBR project to financial close. Under the terms of the exclusive mandate, the railway must be an open access, multi-freight rail system, developed at no cost or risk to the State.

Private sector development of the $1 billion railway will deliver significant benefits for Queensland, including coal royalties to the State, employment opportunities during construction and operation, and growth in local and regional economies.

The SBR will form a critical component of the Surat Basin coal supply chain, along with expansion of the Wiggins Island Coal Export Terminal and upgrades to the QR National Moura rail system.

Future construction of the SBR will depend on the private investment decisions of the miners who will be the SBR's customers and the consortium's capacity to secure project finance.

If the SBR project achieves financial close, the SBR model has the potential to deliver critical freight infrastructure to Queensland without the need for significant government investment or assumption of risk in the construction and operation of the railway.

UNSOLICITED PROPOSALS

The NSW Government is seeking to capture innovative ideas from industry that provide real and tangible benefit to the people of New South Wales. The NSW Government encourages the best ideas and solutions from the private sector and a greater level of private sector investment and participation in projects, with rigorous planning and costing to deliver the highest standards of public value – and confidence to investors and the community.

An unsolicited proposal is an approach to Government from a Proponent with a proposal to build and/or finance infrastructure, and/or provide goods or services where Government has not requested the proposal.

Assessment Criteria

Unsolicited Proposals are assessed against the following assessment criteria:

- Unique benefits of proposal providing justification to directly negotiate
- Value to Government; encompassing economic benefit, service delivery, whole-of-life costs, risk transfer, timely achievement of objectives and qualitative outcomes
- Whole-of-Government impact, including opportunity cost
- Appropriateness of return on investment obtained by the Proponent given project risks
- Capability and capacity of Proponent to deliver the proposal
- Affordability
- Appropriate risk allocation.

The Assessment Process

A three stage assessment process has been developed to guide the evaluation of proposals. The process involves:

- Stage 1 – Initial Submission and Strategic Assessment
- Stage 2 – Detailed Proposal
- Stage 3 – Negotiation of Final Binding Offer

Interested parties are encouraged to visit http://www.nsw.gov.au/unsolicitedproposals for more information.

Recognising the need for a high quality link between the M2 Motorway and the M1, the Australian Government commissioned and funded a feasibility study into options. Roads and Maritime Services coordinated the study on behalf of the Department of Infrastructure, Transport, Regional Development and Local Government. Sinclair Knight Merz (SKM) was commissioned in early 2002 to conduct the study.

The study area extended from the M1 at Kariong on the Central Coast to the northern section of the Sydney Orbital Road network and from Dean Park in the west to the M2 in the east.

The study was completed and a preferred corridor for the new link announced by the Australian Government on 6 May 2004. The preferred option effectively replaces Pennant Hills Road, running from the M1 at Wahroonga to the M2 between North Rocks and Cheltenham.

According to the SKM study, the preferred eight kilometre route between the M1 and the Sydney Orbital Network, which would effectively replace Pennant Hills Road, was the option that best met the Australian and NSW Governments goals. It would maintain an efficient and effective National Highway route through Sydney, meet environmental concerns, economic and inter-regional goals and address the performance of the existing road corridor.

The NSW Government received an unsolicited proposal from Transurban for a possible M1 to M2 Link in July 2012. The NSW Government is currently assessing the merits of the proposal and working with Transurban in the development of a detailed proposal from which it can be determined whether the parties want to proceed to negotiate a final binding offer.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APPENDIX A – NSW LOGISTICS TASK (2011-2031)

NSW Strategic Freight Model

Transport for NSW has developed a Strategic Freight Model (SFM), which for the first time provides a strategic view of the entire logistics task on road and rail networks, together with provision for expansion to other modes such as domestic sea freight and conveyors.

The SFM reflects the logistics task which involves a mix of supply chains, servicing four broad markets:

- International import and export (export market)
- Interstate
- Regional
- Metropolitan.

The SFM has modelled the NSW logistics task and provided forecasts of growth to 2031. The key capabilities of the SFM are:

- Determine freight capacity constraints by transport mode
- Provide inputs for cost benefit analysis and investment decision making
- Provide inputs for environmental modelling such as forecasting fuel use and emissions
- Provide inputs for regional planning as part of the broader NSW planning framework.

The SFM takes into account potential changes in commodity production and how goods are transported between more than 230 origins and destinations across NSW. The SFM also has the capability to test the future resilience of the freight network under different scenarios. Running scenarios of future growth can offer strategic insights into how efforts to optimise the network and build new capacity may impact on network performance.

As the SFM is based on commodity flows, advice from industry reference groups has helped calibrate the model. This advice has informed modelling assumptions to reality test the way in which the model represents current and future supply chain activity.

Supply chain logistics

The logistics task is not restricted to a single market, mode or organisation. It generally refers to a collective of decisions and activities involved with moving goods and materials between producers and consumers across different markets.

The types, locations and destinations of commodities greatly influence the modes used to transport them. For instance, most coal and other bulk commodities are transported over long distances to ports by rail. Movements between origins and destinations for commodities and the decisions around transport are broadly defined by industry as 'supply chain logistics'.

Figure 35 provides an overview of the way in which supply chains operate. It focuses on shipping container movements between the point of production and the destination, which includes ports and distribution centres for retail and manufactured goods.

Supply chains for some commodities, like meat and livestock, pass through a number of different production stages, as depicted in Figure 36. These individual movements between farm, abattoir and warehousing locations are recorded in the SFM.

The customer is also central to the evolution of different supply chains. In the grain supply chain, for instance, the varying needs of customers result in a number of different individual movement types. Domestic feed grain customers generally require smaller, more flexible and direct deliveries by road, whereas larger domestic and export customers make extensive use of rail through one or more consolidation points.

Figure 35 Container supply chain example

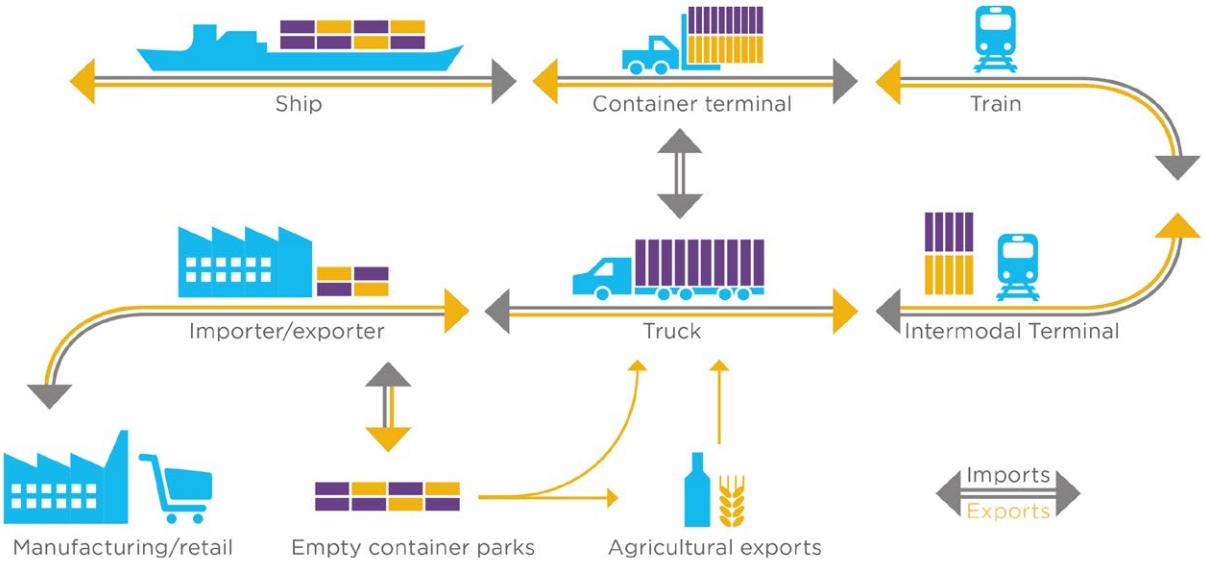
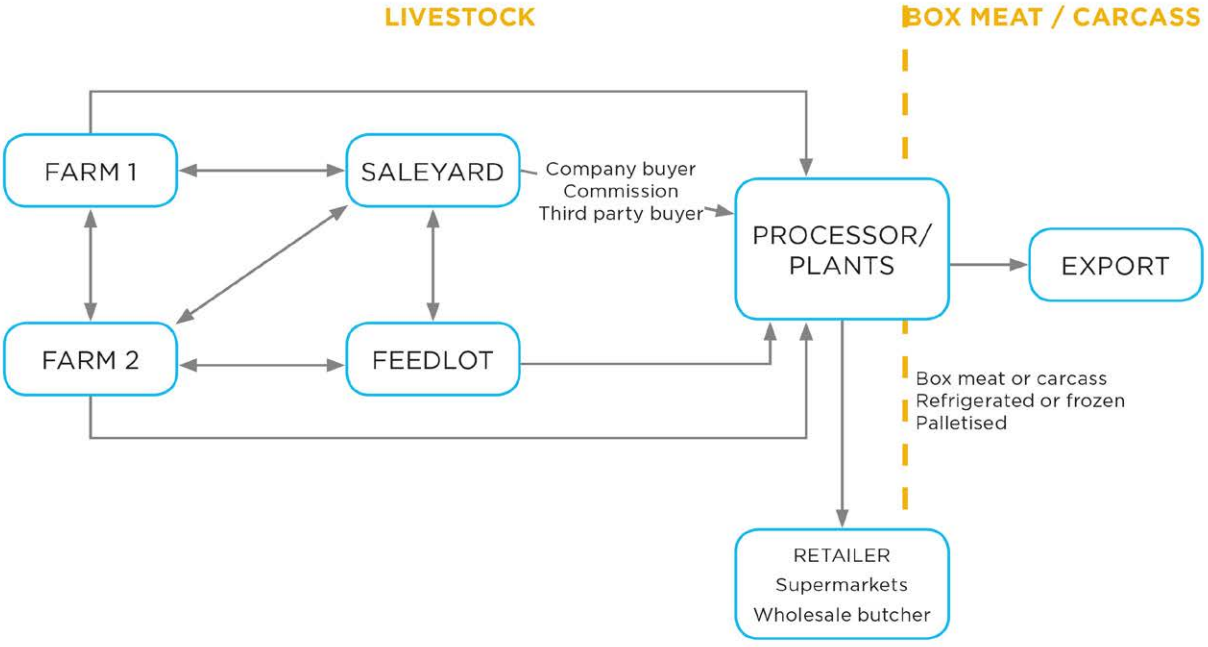


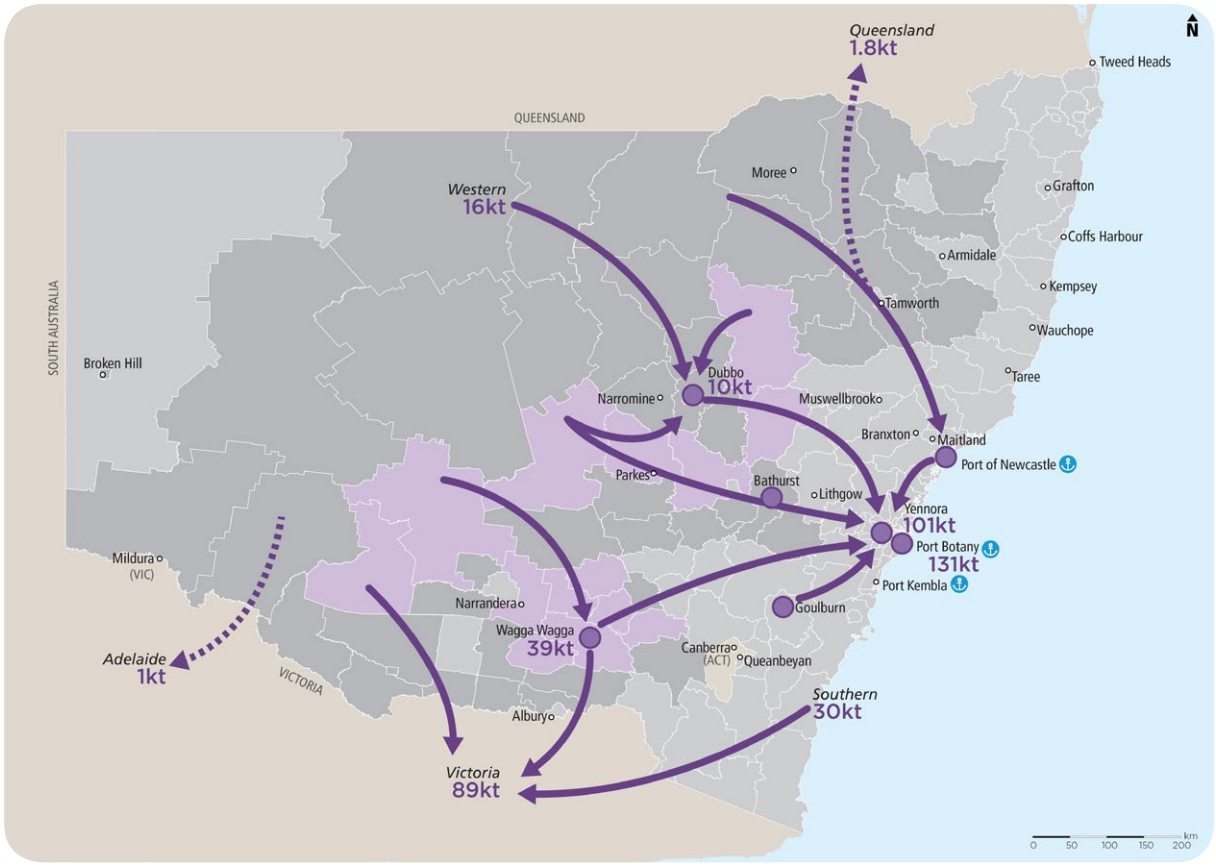
Figure 36 NSW livestock and box meat supply chain



In developing the NSW Freight and Ports Strategy, the 15 most valuable supply chains in NSW were examined with key industry representatives. Using the SFM and industry advice, the volume and movement of specific commodities such as wool, coal and grain have been quantified.

Figure 37 shows the movement of wool, originating in central NSW and moving via key warehouses in the Riverina and Dubbo to Port Botany for export.

Figure 37 Movement of wool in NSW by volume 2011



Size of the logistics task

In 2011, 409 million tonnes of freight was transported in NSW. It is estimated that by 2031 the logistics task in NSW will have almost doubled to 794 million tonnes.[1]

The demand for goods and services within NSW, and the associated logistics task, are growing faster than population growth. Each person in NSW consumes, on average, over 500 kilograms of food each year and produces an average of 1.5 tonnes of waste.[2]

The logistics task by commodity grouping for 2011 and 2031 is shown in Figures 39 and 40.

Figure 39 shows that mining products represent almost half the current freight task due to the high volumes generated by the coal industry (approximately 170 million tonnes per annum). Coal is expected to remain the largest and fastest growing bulk freight task in NSW.

The forecast growth in coal over the next 20 years from 2011 to 2031 is conservatively estimated at four per cent per annum.[3]

By 2031 the coal task is forecast to be approximately 370 million tonnes per annum. All other commodities except agriculture are assumed to grow by three per cent per annum. The model assumes that growth for agricultural freight movements is modest at one per cent per annum.

Containerised freight through Port Botany has grown at over seven per cent for the past 10 years, with 2 million TEU units moving through the port in 2011. Over the next 20 years, containerised freight moving through NSW ports is forecast to continue to grow at seven per cent (based on the Sydney Ports forecast).

The change in commodity transport volumes anticipated over the next 20 years is illustrated in Figure 40 The commodities shown in Figure 41 include those about which industry reference groups were consulted during the engagement process for this Strategy.

Figure 38 The growing NSW freight task by industry sector 2011 to 2031

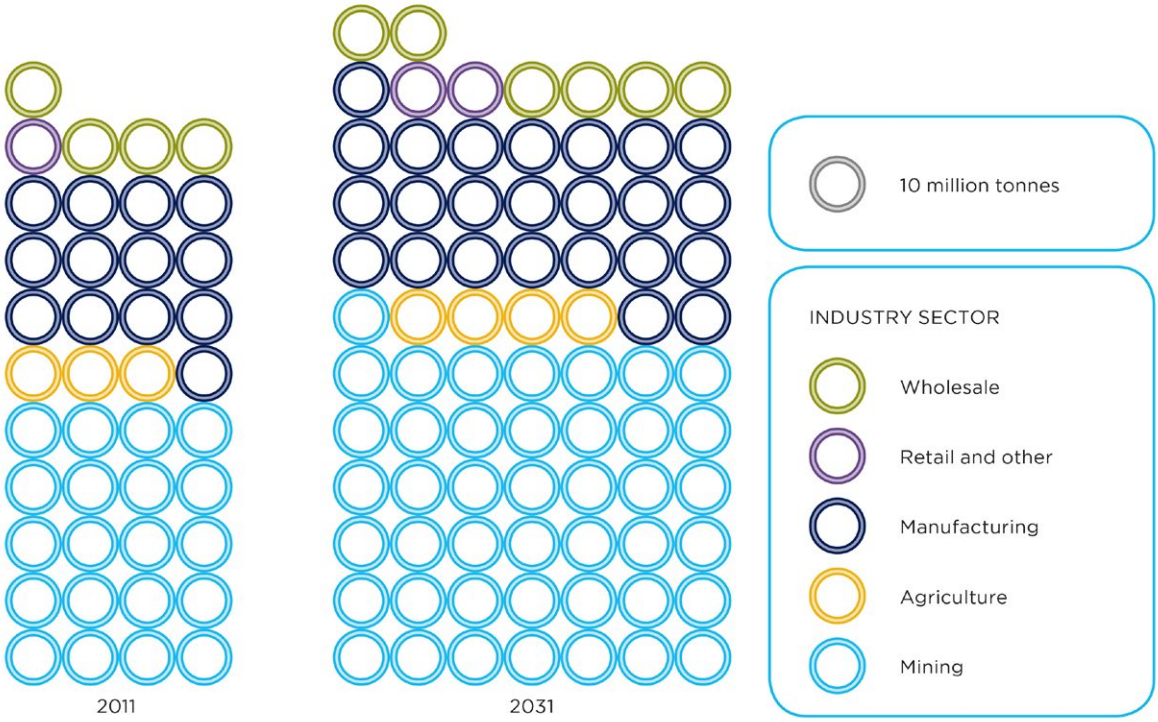


Figure 39 Share of the freight task by freight sector and volume 2011

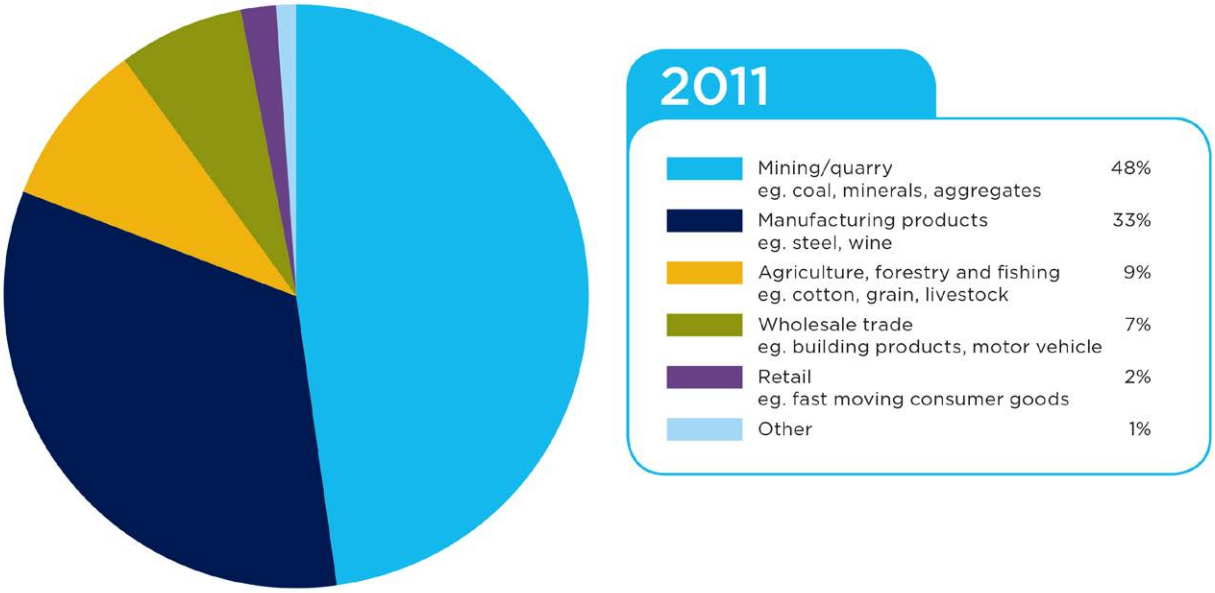


Figure 40 Share of the freight task by freight sector and volume 2031

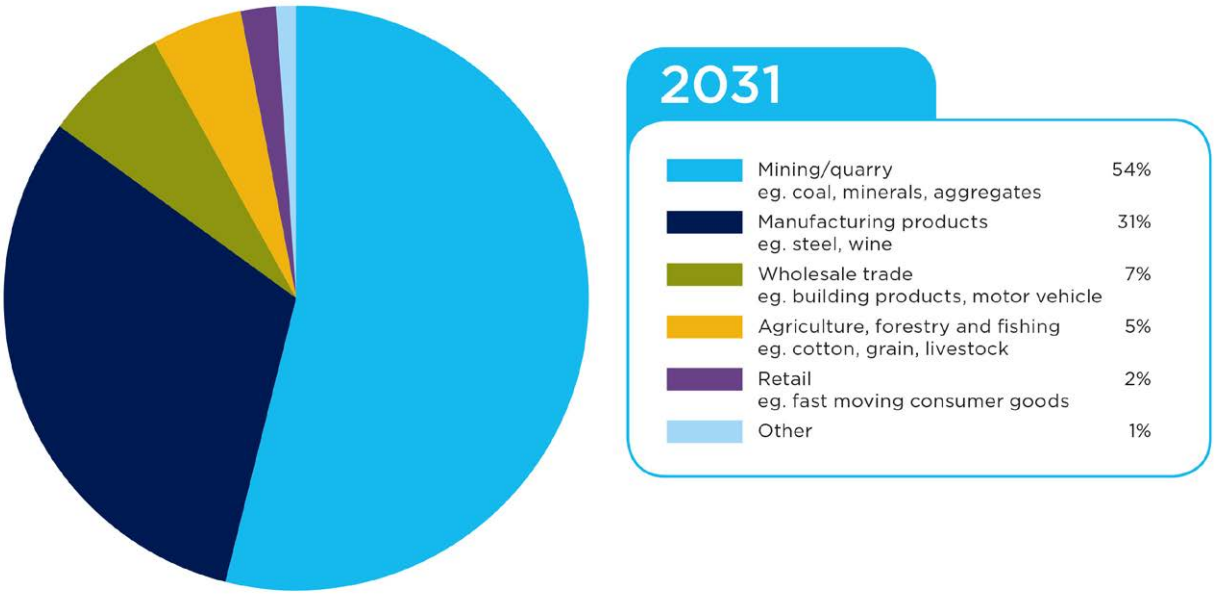
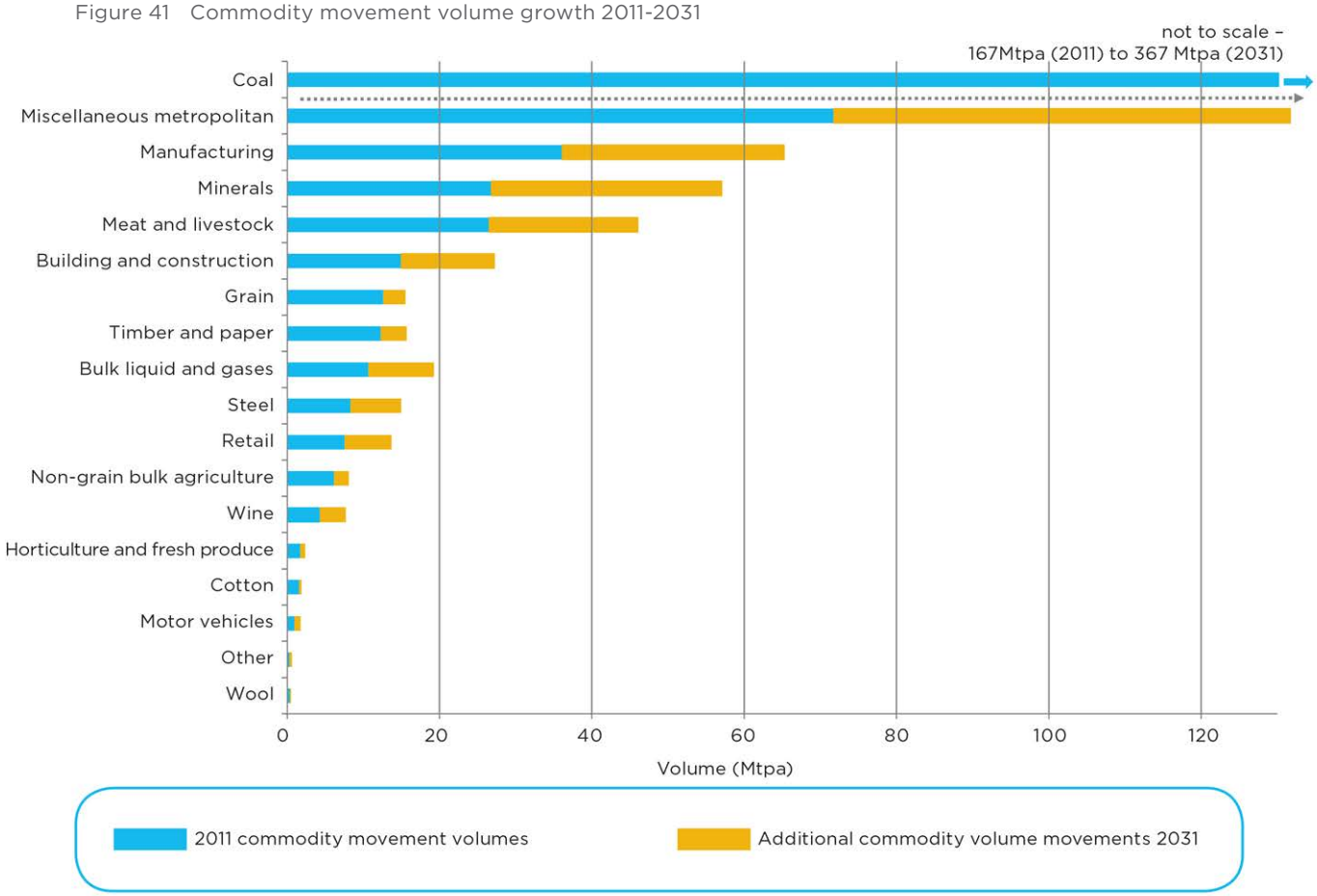


Figure 41 Commodity movement volume growth 2011-2031



Origin and destination of freight

Using the SFM, different commodities can be shown moving between 230 origins and destinations across NSW. Over 72 different commodities are included in the SFM. Figure 42 shows the top export commodity volumes for Statistical Local Areas across NSW.

The major commodity/transport regions in NSW include the:

- Hunter, where significant volumes of coal are moved to Newcastle Port.
- Central West NSW, where mining and agricultural production (especially grain) dominate the transport network.
- Sydney Metropolitan Area, where export and import products, typically in containers, are transported through Port Botany. Products can range from agricultural exports to imported consumer goods, such as electronics and whitegoods.

Figure 42 Largest export commodity flows by Statistical Local Area[1]

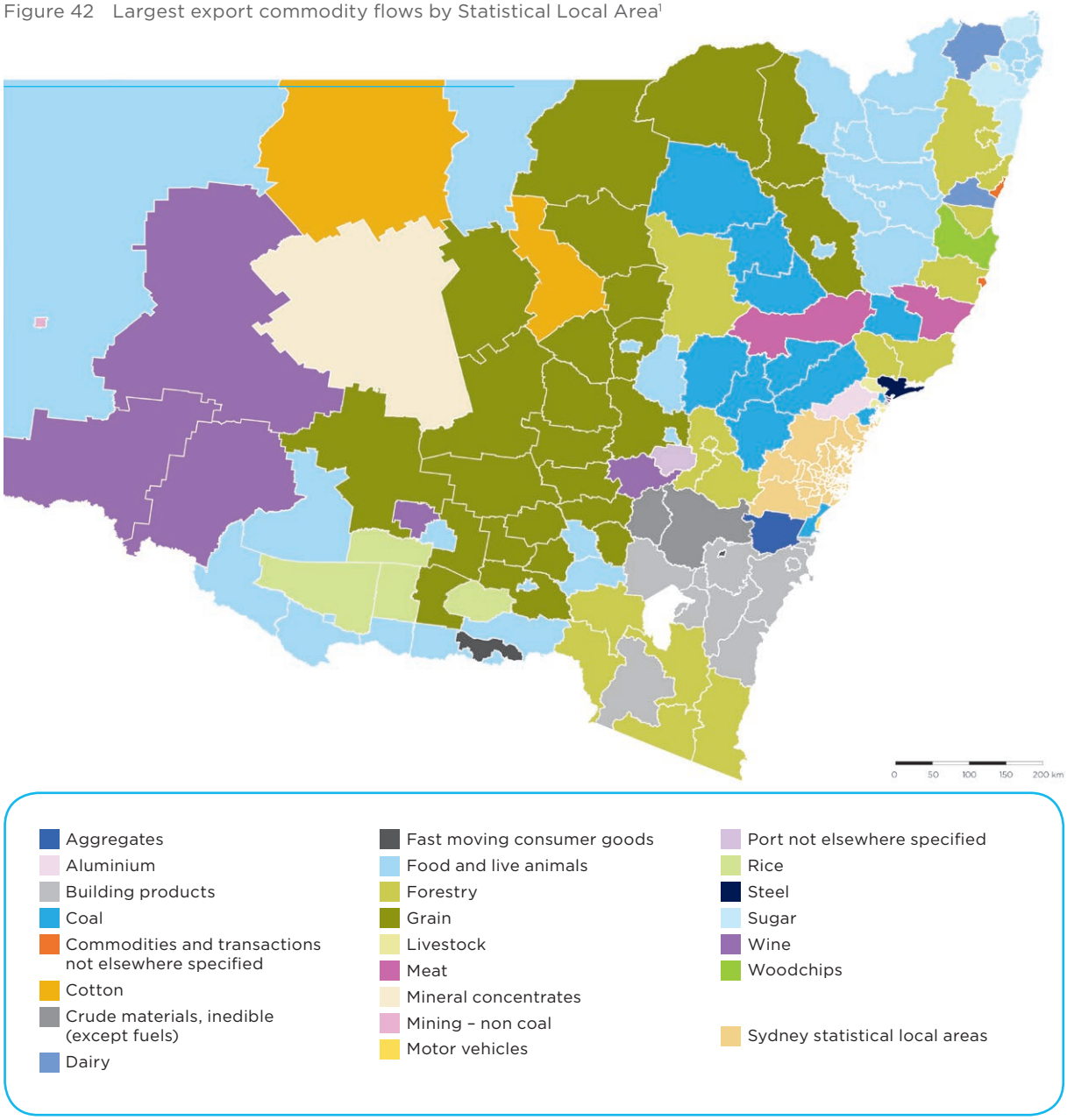
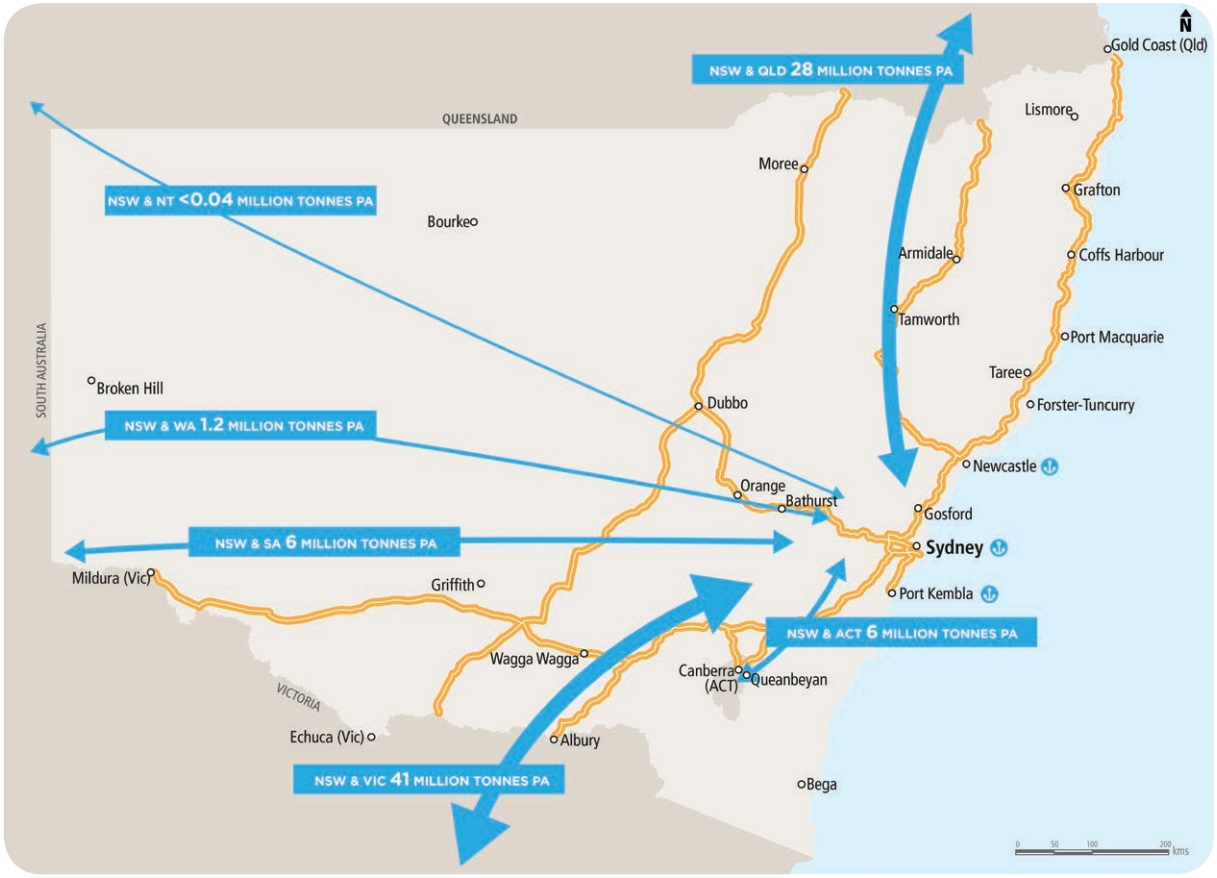


Figure 43 Interstate freight movements in 2011



National highway network

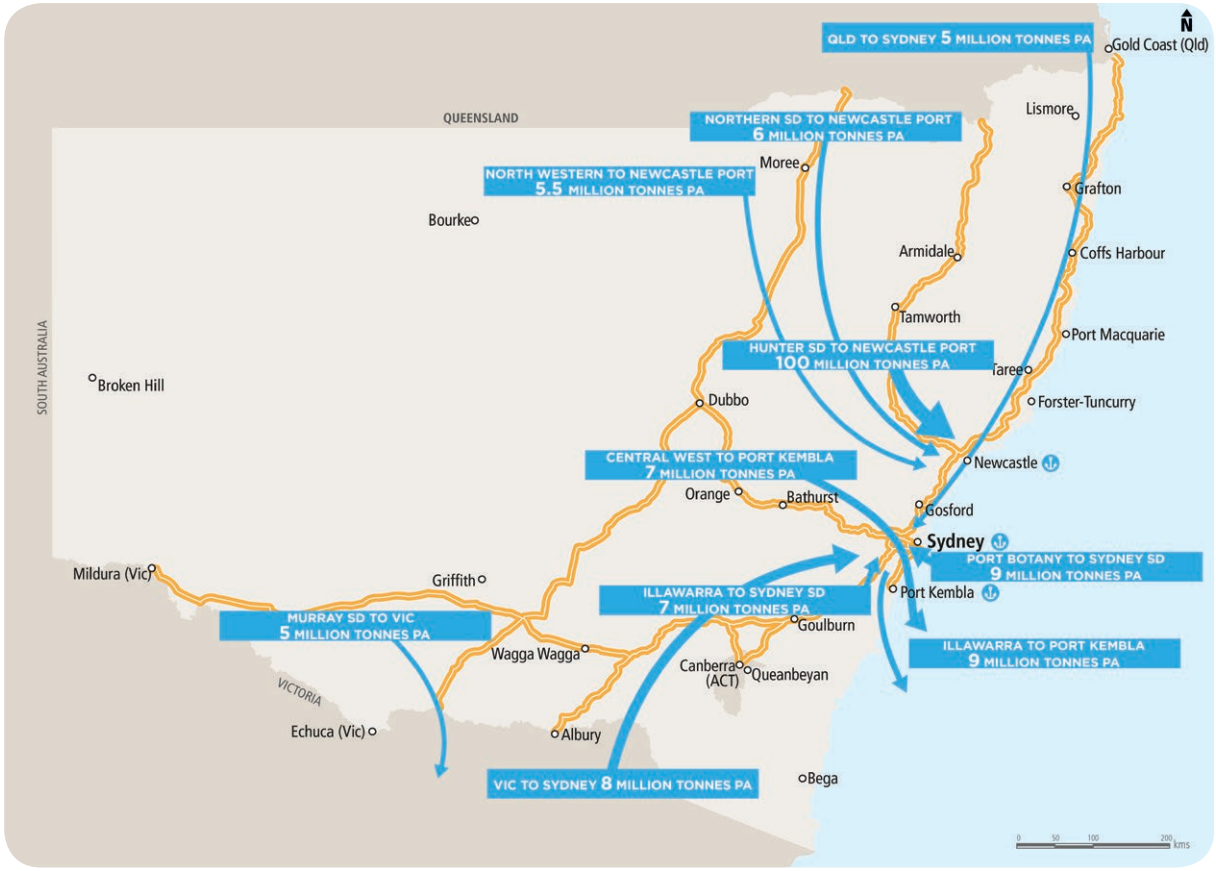
Note: Interstate movements make up approximately 20% of the total NSW task

- Illawarra, where Port Kembla is a major trading port, exporting steel, coal and grain amongst other products, and importing motor vehicles.
- South West NSW, which is a major producer of food such as fruit, grains, rice and wine. In this region, producers can make a choice between transporting products south to Melbourne or north to Port Kembla or Sydney.
- North West NSW, which is also a major agricultural production area with products such as grain and cotton. Again, this region can make transport choices between moving north to Brisbane and south to Newcastle or Sydney.

There are also many inter-regional movements in NSW, particularly around metropolitan Sydney and coal movements to power stations near Lithgow and the Central Coast.

In 2011, NSW interstate freight volumes amounted to approximately 82 million tonnes. Approximately 92 per cent of freight was moved by road. Figure 43 shows the way in which the interstate freight task is distributed, with the largest freight movement being between NSW and Victoria at approximately 41 million tonnes of the total flow. The majority of flows between NSW and Victoria begin or end in Sydney.

Figure 44 Top 10 NSW inter regional freight flows 2011



By 2031 the coal task through Newcastle Port is forecast to grow to 260 million tonnes or more per annum from 108 million tonnes per annum in 2011.

In general, NSW ports are the most significant origins and destinations for freight based on:

- Port Botany, where the import/export container task was approximately 2 million containers in 2011.[7]
- Port Kembla, which receives approximately 15 million tonnes of coal per annum and, depending on the season, approximately 2 to 4 million tonnes of grain per annum.[8]

Mode share analysis

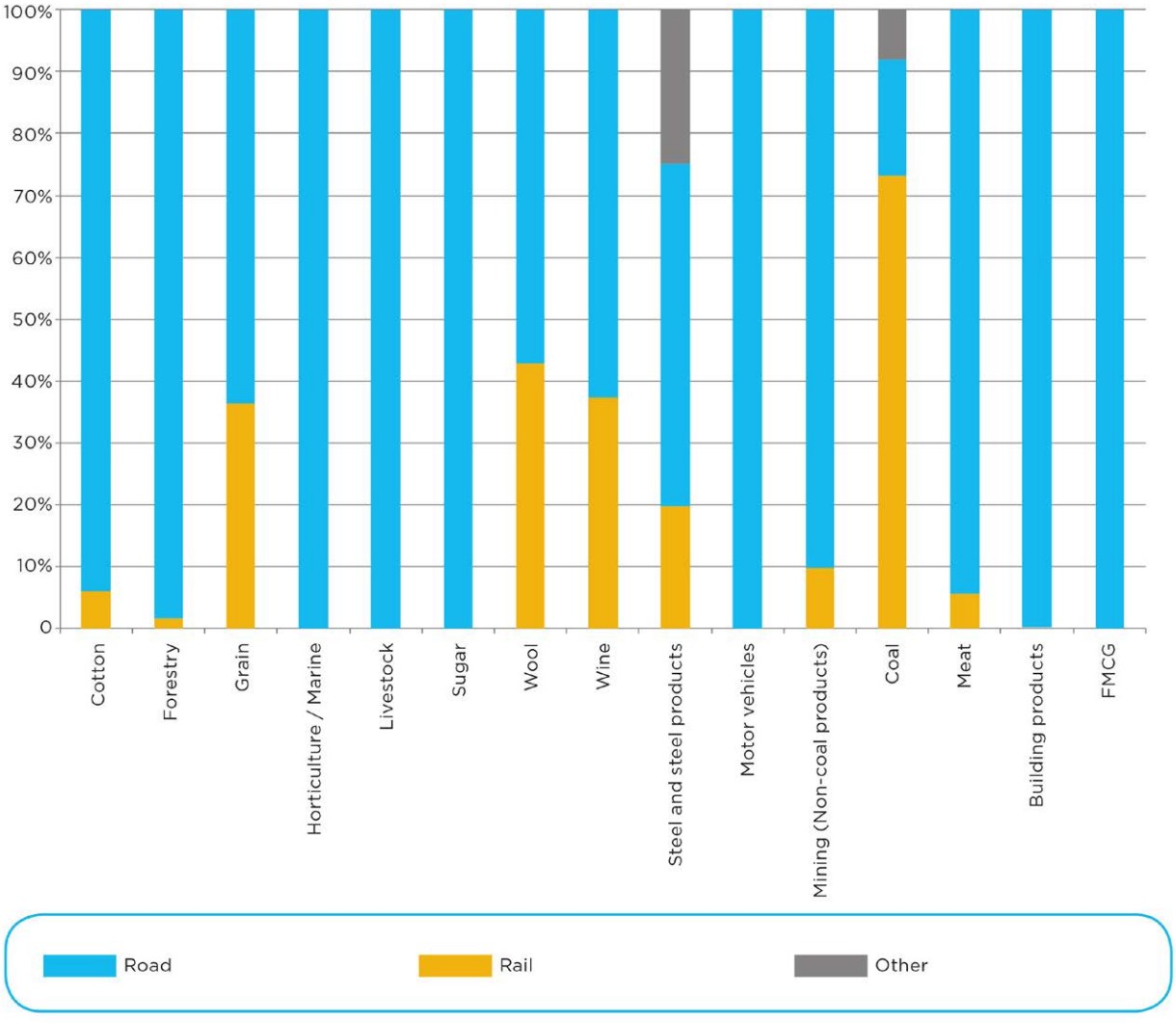
Typically, bulk commodities, such as coal and grain, are moved by rail while commodities transported in smaller quantities are moved by road. Mode share for different commodities can vary significantly based on a range of factors including:

- Types of commodity and tonnage being moved
- Distance between the origin and destination
- Access to particular modes (such as access to rail interfaces).

The road network moved 63 per cent of the 409 million tonnes of freight moved in NSW in 2011. By 2031, NSW roads are projected to remain the dominant mode, but to shoulder proportionally less of the total freight task at 59 per cent. The success of programs to increase the use of High Productivity Vehicles on NSW roads should ensure the amount of freight moved by road is achieved using relatively fewer vehicle trips.

Decreases in road freight would be matched by increases in the rail mode share from 33 per cent in 2011 to 37 per cent in 2031. Increased rail use by 2031 is explained by the growth in the coal freight task. By 2031, forecast volumes of coal transported by rail are expected to increase to 46 per cent of the total rail freight task. The mode share of the most valuable commodity supply chains in NSW is shown in Figure 45.

Figure 45 NSW freight mode share for selected commodities in 2011

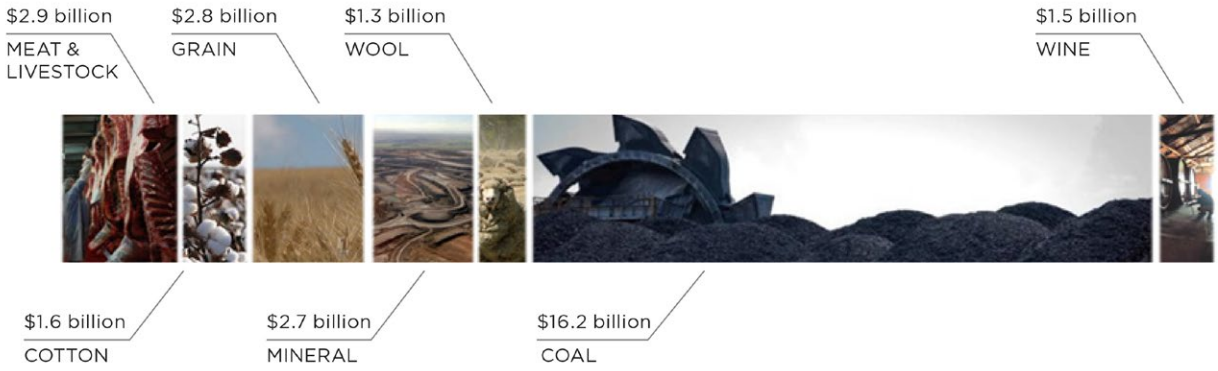


Importance to the economy

The value of the freight and logistics industry is forecast to be around $57.9 billion, or 13.8 per cent of the Gross State Product (GSP), in 2011-12.[9]

The industry sectors that rely on freight make a significant and varied contribution to overall GSP.

Figure 46 Value of selected commodities to the NSW economy



VALUE OF COMMODITIES TO NSW

- NSW **coal** exports were valued at over $16 billion in 2010-11 (NSW Minerals Council, 2011)
- The NSW mineral industry, which includes non coal minerals, such as gold and copper is valued at around $3 billion in 2010-11 (ibid)
- The motor vehicle industry saw 314,594 new vehicle sales in NSW in 2011, representing 31.2 per cent of total new sales across Australia (ABS, 2012)
- The construction materials industry generated some $7.21 billion in revenue, contributed $11.7 billion to GDP and employed over 18,000 people in 2008 (Cement, Concrete and Aggregates Australia, 2008)
- The grain industry in NSW produced over 17 million tonnes of grain, of which nearly four million was exported through NSW ports in 2010-11 (ABS, 2011)
- **Horticulture** is Australia's third largest agricultural industry with an estimated gross value of production of $7.1 billion in 2006–07 (Hyder Consulting, 2011a)
- NSW is the second largest **wine** producing state accounting for over 30 per cent of the $5 billion Australian wine industry. The State grows 26 per cent of the industry's wine grapes and produces a third of its wine by volume (Hyder Consulting, 2011b).
- **Forestry and timber products** contribute more than $2 billion each year to the NSW economy (Hyder Consulting, 2011c)
- The Australian **steel** industry chain, from basic production through to fabricators and small manufacturers, generated almost $29 billion in turnover in 2005-06 (ABS, 2007)
- NSW is the largest producer of **wool** in Australia with 577,000 bales produced in 2011 (Transport for NSW, 2011b)

APPENDIX B – ROAD NETWORK

The NSW freight network comprises roads, rail, ports and terminals, airports and freight activity precincts. A description of the key landside components of the NSW freight network is provided in Appendices B-D. The National Land Transport Networks in NSW are shown in Figure 47.

Roads provide a vital network of connections for freight movements, including journeys to supermarkets and other businesses in urban areas. There are almost 185,000 kilometres of roads in NSW, managed by the three tiers of government.[10]

The management of the road network is explained in Table 3.

Figure 47 The NSW segment of the National Land Transport Network

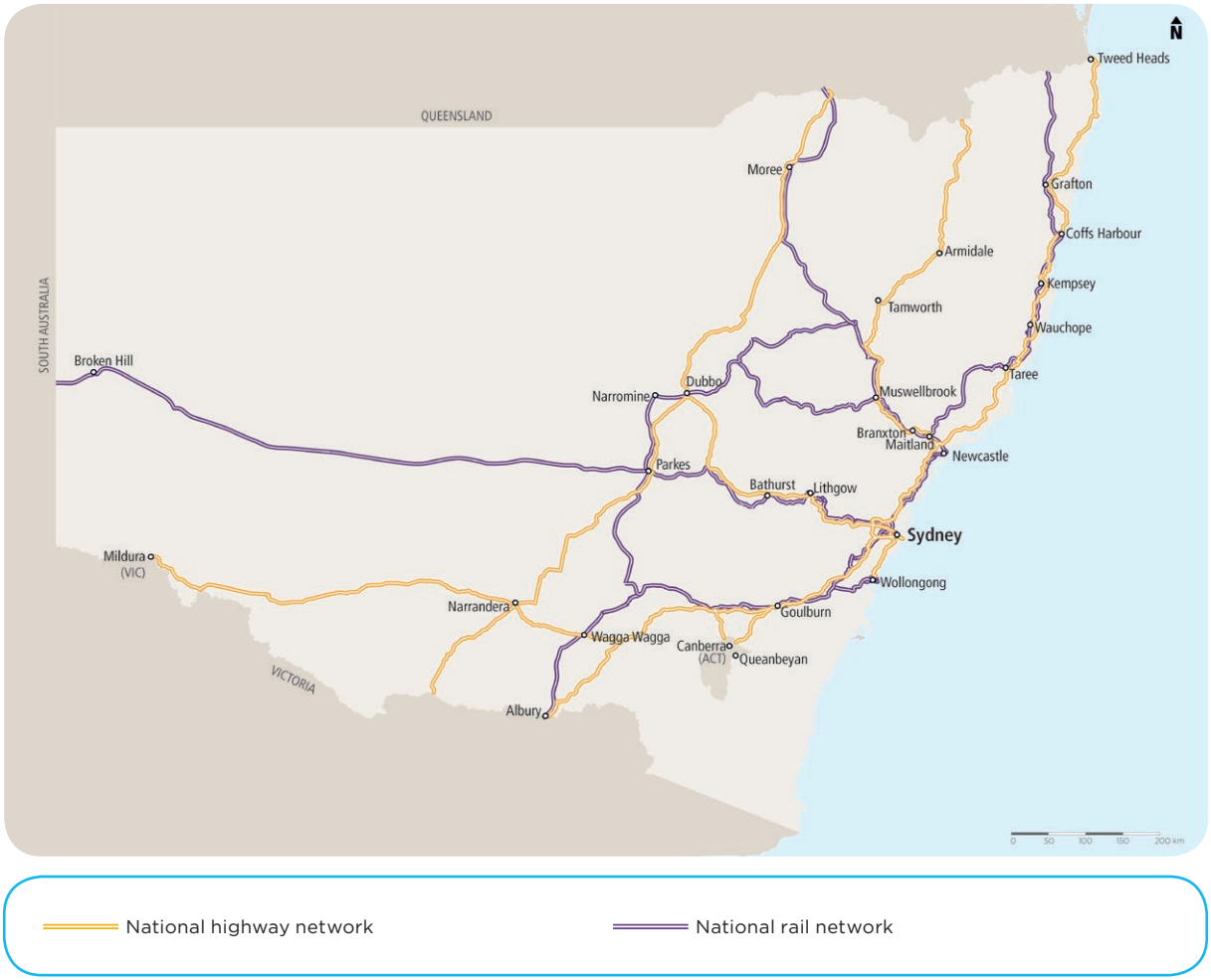


Table 3 NSW road hierarchy

ROAD NETWORK	RESPONSIBILITY	DESCRIPTION
State roads **(including national road components)**	NSW Government Australian Government	The State road network comprises 18,028 kilometres of roads, including 4,323 kilometres of national roads supported by the Australian Government. The State road network also includes 147 kilometres of privately funded toll roads.
Regional roads	NSW Government Local government	Local Government has management and funding responsibility for 18,231 kilometres of regional roads. State funding grants are also available. The NSW Government also manages 2,970 kilometres of regional and local roads in the unincorporated area of NSW.
Local roads	Local government	Councils are the authorities for 145,619 kilometres of local roads. Financial Assistance Grants and Roads to Recovery Program funding is also made directly available to councils by the Australian Government.

Road hierarchy

To assist in identifying the most economically important freight roads and in managing, planning and prioritising works across the State road system, an urban freight hierarchy of State roads has been developed. Within the Sydney metropolitan area there are three classes in the freight road hierarchy: primary, secondary and tertiary.

Primary freight routes typically:

- Serve the needs of freight transport for interstate access and to strategically important ports, airports, industrial areas, freight terminals, intermodal terminals and hubs within Sydney, Newcastle and Wollongong
- Link major regions throughout the Sydney metropolitan area and connect it to rural regions across the State, and to other states
- Incorporate the National Land Transport Network and other major arterials
- Carry high volumes of heavy freight vehicles, in excess of 4,000 heavy vehicles Average Annual Daily Traffic (AADT), and high concentrations of live-haul, long distance, high productivity trucks.

Secondary freight routes provide links for significant freight flows within regions. They may serve numerous major business and freight origins and destinations within a regional area and carry medium volumes of heavy vehicles (1,000-5,000 heavy vehicles AADT).

Tertiary freight routes provide connections from the local road system and the lower order elements of the State road system to the primary and secondary freight routes. They serve the numerous major business and freight origins and destinations within a subregion, and carry lower volumes of heavy vehicles (typically less than 2,000 heavy vehicles AADT).

Tertiary and local roads are typically where connectivity issues for freight access occur. They are also where Higher Mass Limit (HML) vehicles tend to have restricted access.

The road freight hierarchy for the Sydney metropolitan area and the Newcastle and Wollongong regions is shown in Figure 48.

Figure 48 Road freight hierarchy

Main freight routes

Table 4 compares the inbound and outbound freight volume forecasts for key road corridors in NSW. Inbound and outbound movements are defined by the section of road where the largest movement occurs as the freight moves into or out of the major centre they serve (for example, the Hume Highway (M31) into or out of Sydney and the New England Highway (A15) into or out of the lower Hunter).

Table 4 shows that the largest road freight movements in NSW are along the Pacific (M1) and Hume (M31) Highways between the east coast capital cities of Melbourne-Sydney and Sydney-Brisbane. These cities and their surrounding markets include important international gateways like ports and airports. With growing populations, these cities create substantial demands for goods and services. Freight volumes are anticipated to grow proportionately with increasing economic output.

Other important secondary movements include Adelaide-Sydney along the Sturt Highway (A20) connecting with the Hume Highway (M31) and the Olympic Highway (A41), which is used to move freight interstate. The movement of freight generated from primary industries in western NSW depends on the Newell Highway (A39) for access to processing and export destinations. Freight movement from southern NSW along the Newell Highway (A39) is largely bound for Melbourne, while movements from northern NSW include livestock and grain to Brisbane.

Movements along the Newell Highway (A39) and along the Great Western Highway (A32) to Sydney are constrained by physical road limitations. Narrow winding sections of these roads limit access for High Productivity Vehicles. Movement over the Blue Mountains is currently limited to vehicles no more than 19 metres long.

Movements of oversize loads, notably mining equipment, are not included in the outputs from the SFM. These movements are made on less heavily trafficked western highways, including the Newell Highway (A39).

Table 4 Estimated and forecast freight volumes (kilotonnes) on key road corridors

ROAD	2011			2031			2011-31
Corridors	Inbound	Outbound	TOTAL	Inbound	Outbound	TOTAL	Change
M31 Hume Highway (north of the Illawarra Highway)	18,136	13,663	31,799	34,242	23,927	58,169	83%
M1 Pacific Motorway (M1) (Hornsby to Newcastle Gosford)	10,002	10,517	20,519	17,896	18,753	36,649	79%
M1 Pacific Highway (near the Queensland Border)	8,789	7,319	16,108	15,974	13,203	29,177	83%
A32 Great Western Highway (near Penrith)	8,568	2,998	11,566	13,034	5,673	21,707	88%
A15 New England Highway (between Maitland and Singleton)	740	7,132	7,872	1,122	11,531	12,653	61%
A1 Princes Highway (near Sutherland)	3,695	3,695	7,390	6,896	6,896	13,792	87%
A39 Newell Highway (near the Queensland border)	1,988	2,716	4,704	3631	4,931	8,562	82%
A20 Sturt Highway (east of Mildura)	1,882	2,656	4,538	3393	4,868	8,261	82%

Recent upgrades to key routes

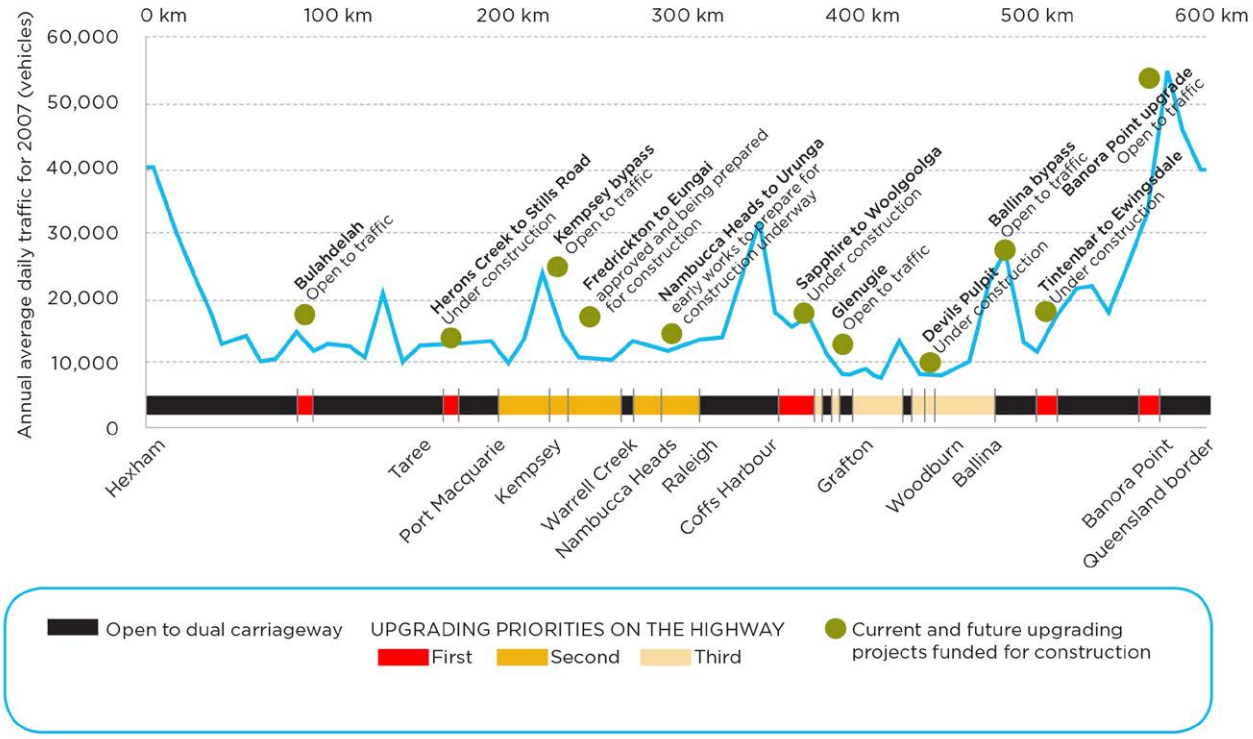
The Pacific (M1) and Hume (M31) Highways continue to be improved to carry increasing freight and passenger demands. Since 2007, more than 114 kilometres of the Hume Highway (M31) has been upgraded. The Holbrook Bypass officially opened on 23 June 2013, signifying the end of the Hume Highway (M31) upgrade to complete dual carriageways along the entire length of the highway.

Currently, 360 kilometres of the existing 677 kilometre Pacific Highway (M1) between Hexham and the Queensland border are dual carriageways (four lanes of divided road). Around 60 kilometres of multi-lane road is currently under construction. The final alignment of the highway will include a high standard connection to the M1 Pacific Motorway (M1). The Pacific Highway (M1) work program to 2013-2014 is shown in Figure 49.

The program involves three priorities:

1. Completing dual carriageway between Hexham and Port Macquarie, Ballina and the Queensland border, and Raleigh and north of Woolgoolga, along with growing suburbs of Coffs Harbour, by 2014.
2. Completing dual carriageway between Port Macquarie and Raleigh. Substantial progress on priority two by 2014 will include:
   - Building the Kempsey bypass
   - Preparing approximately 105 kilometres of new projects including Frederickton to Eungai, Warrell Creek to Urunga and Port Macquarie to Kempsey.
3. Priority three includes: Completing dual carriageway safety upgrades at Glenugie (south of Grafton) and Devils Pulpit (north of Maclean)
   - Preparing environmental assessments and designs for the remaining 150 kilometres of highway between Woolgoolga and Ballina.

Figure 49 Pacific Highway (M1) Duplication Program, a $4.84 billion plan (2009-10 to 2013-14)



Completed projects include:

- Buladelah bypass, completed June 2013 (8.5 kilometres)
- Kempsey bypass, completed March 2013 (14.5 kilometres)
- Banora Point, completed September 2012 (2.5 kilometres)

Projects under construction include:

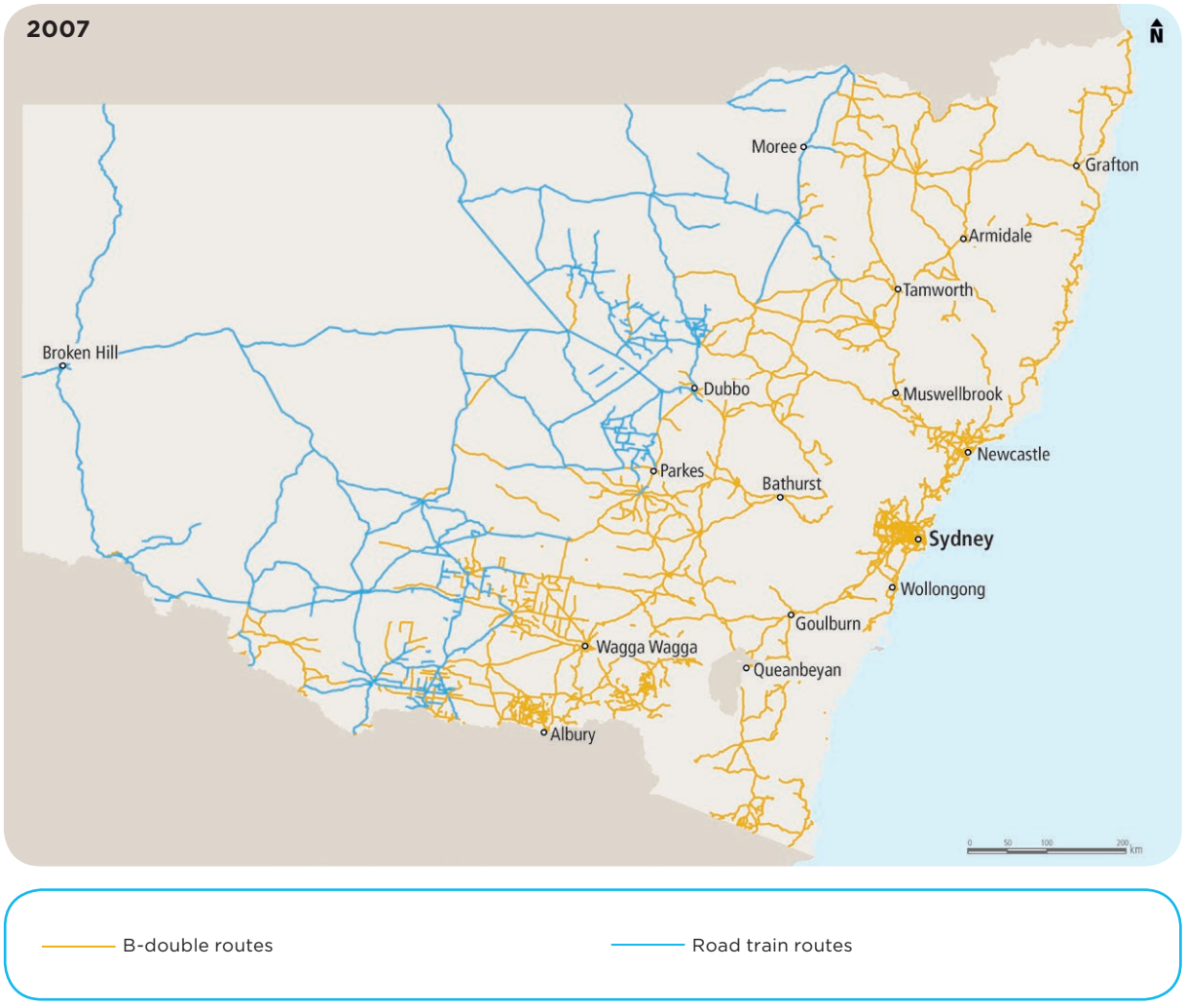
- Due in second half of 2013: Herons Creek to Stills Road (3.5 kilometres)
- Due in early 2014: Devils Pulpit (7 kilometres)
- Due in second half of 2014: Sapphire to Woolgoolga (25 kilometres)
- Due in second half of 2014: Tintenbar to Ewingsdale (17 kilometres)

High Productivity Vehicles

In order to meet the expanding road logistics task, greater use of High Productivity Vehicles (HPV) with increased freight capacity will be needed. A Performance Based Standards Scheme has been developed to facilitate the development of HPV that are better equipped to handle the future freight task. These vehicles need to meet 14 safety, performance and infrastructure standards and be approved by a national body before they are allowed to use road networks assessed as suitable for them.

Bigger vehicles, such as B-triples or a new type of A-double with improved safety and performance features are needed to address

Figure 50a NSW B-double and road train routes in 2007



the estimated 20 per cent of road freight that is mass constrained.[11] B-triples can deliver an increased payload of up to 25 per cent per truck compared to B-doubles.

The main issue with accommodating HPV on the road network is that they require more space when cornering and negotiating intersections. They also require bigger rest and break down areas. As the road network has not been designed for vehicles of these dimensions, key roads need to be upgraded to accommodate them.

At present road trains and similar sized vehicles can only operate on sections of the Newell Highway (A39) and further west. TfNSW and Roads and Maritime Services (RMS) are finalising a policy paper for public discussion on how safer and more modern versions of these vehicles may be able to operate in other parts of NSW. RMS has recently approved the extra mass for road trains using triaxle, rather than tandem, dollies that will improve the efficiency of road transport in western NSW.

Nearly all State roads (96 per cent of the total or 17,030 kilometres) within the expanded Higher Mass Limits (HML) access zone are now approved for HML. Over 3,710 kilometres of regional and local roads, which connect to the State road network, have also been approved for HML.

Figure 50b NSW B-double and road train routes in 2011

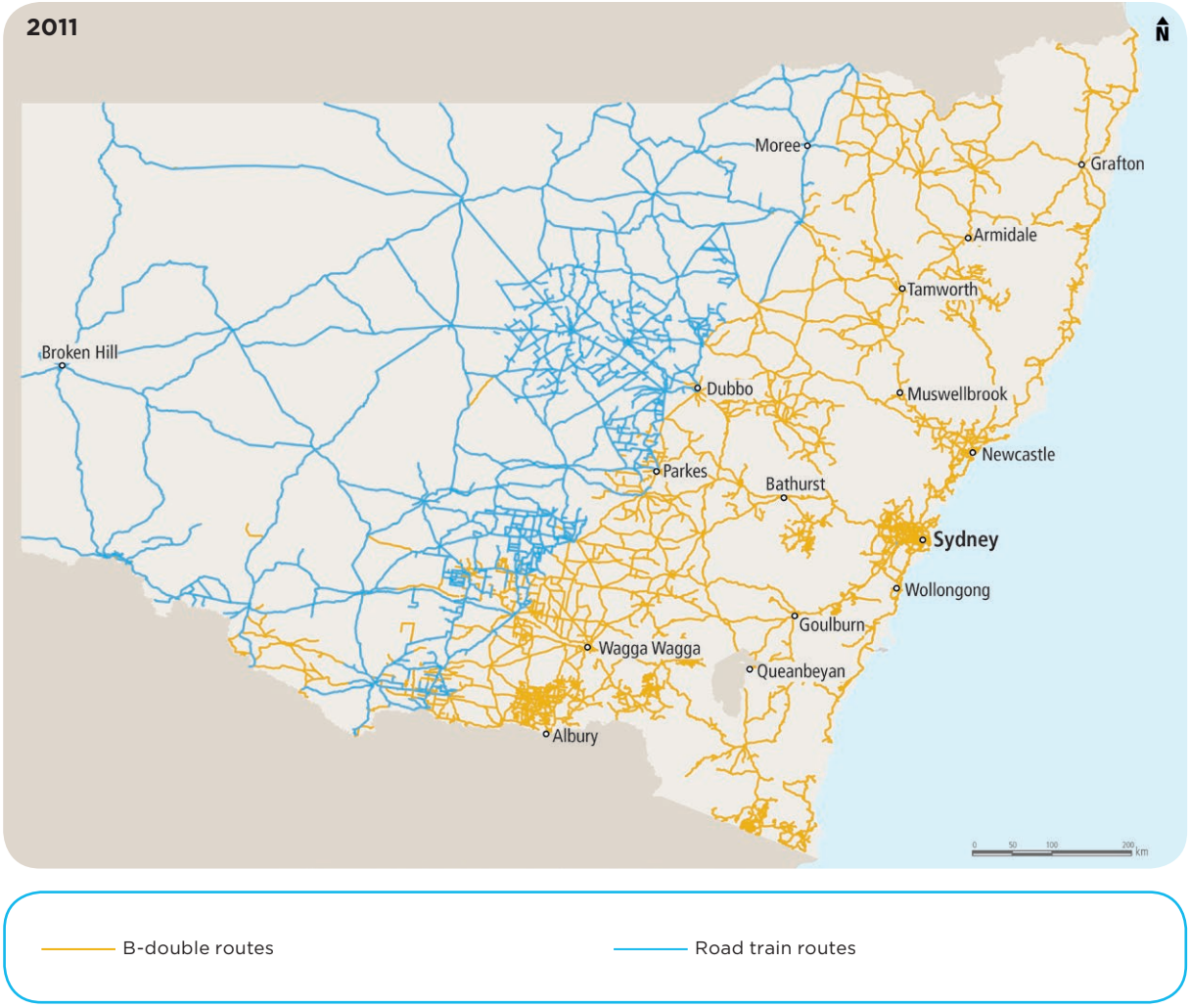


Figure 50 shows that routes across NSW available for B-double and road train use have increased in 2007-2011. Routes which are now approved for HML include:

- Hume Highway (M31): entire route is available for HML B-doubles.
- Pacific Highway (M1): HML access is quite disjointed, with some sections available for HML B-double, HML short combination, and no HML. There are bridge restrictions across all levels of HML access on this route.
- Newell Highway (A39): route is available for HML road trains with the following sections restricted to HML B-double: Coonabarabran to Gilgandra, Dubbo to Back Yamma Road (Forbes), Lachlan Valley Way (B81) (Forbes) to Narrandera.
- Great Western Highway (A32): over the Blue Mountains, restricted to HML short combination, while the rest of the route is available for HML B-double.
- Golden Highway (B84): entire route is available for HML B-double.
- Sturt Highway (A20): majority of the route is available for HML road trains, while the route east of Narrandera is restricted to HML B-double.
- New England Highway (A15): entire route is available for HML B-doubles, with a restriction on the Fitzgerald Bridge southbound.
- Olympic Highway (A41): entire route is available for HML B-doubles, with a restriction on the Kapooka Bridge.

Connectivity issues

An estimated 75 per cent of road freight movements are through urban areas.[12] These movements are increasing at twice the rate of passenger transport movements, particularly around major freight centres such as ports. Most freight movements involve the use of local roads when picking up or dropping off their payload.

The road network in urban areas is generally less suited to freight movements and the creation of suitable networks is receiving increased attention. HPV require local government approval to run on local roads. This has proven problematic due to community concerns about heavy vehicles and council concerns about increased pavement wear.

As with other road users, freight movements also suffer from urban congestion. As a result, these movements tend to occur outside peak traffic periods and at night. However, access to urban areas for deliveries is increasingly being restricted by councils to daylight hours, when congestion and pedestrian activity is greatest.

The movement of containers to and from port areas is a matter of increasing attention, given the growth of inbound containers to Sydney. Due to the higher mass of containers, new vehicle combinations employing quadruple axle groups are now being used to increase the productivity of these movements. RMS is finalising a policy governing the use of such vehicles.

Work is underway to develop a container freight network in Sydney that will facilitate movement to and from ports and intermodal terminals.

Light commercial vehicles

The light commercial vehicle (LCV) task includes smaller trucks carrying up to 3.5 tonnes, and smaller vehicles such as utilities and vans. Although the amount of freight carried by weight is small compared to other freight vehicles, LCVs make more trips than articulated and rigid vehicles combined, as shown in Figure 51.

Growth in LCV numbers is occurring faster than population growth which is due to growth in small, service oriented businesses (such as cleaners, tradesmen and dog walkers). They predominantly operate in urban areas and have an influence on traffic movements, particularly during the off-peak period. Research by the Victorian Department of Transport, using video survey techniques, has determined that these services related tasks account for 75 per cent of all LCV movements.

The freight related task for LCVs is thus around 25 per cent, with growth attributable to increasing just-in-time deliveries (such as courier services, online shopping deliveries and parcel services). Growth in LCV movements is occurring faster than heavy commercial vehicles, where increases in vehicle size has a countervailing effect on growth in numbers (ABS 9309.0, 2012).

The number and behaviour of LCVs impact traffic congestion. For example, a service vehicle may combine delivering goods with performing a service (such as a plumber carrying pipes and fittings to a house), and in this way reduce the number of trips. Conversely, delivery vehicles may make multiple 'just in time' deliveries of small consignments or may circle around searching for parking spots.

LCV drivers predominantly make trips in the inter-peak periods, when businesses are open but when there is less general traffic on the road. A recent survey of delivery drivers indicated that many would also be prepared to make deliveries outside normal business hours, but that the staffing at either end of the trip restricted their travel to standard business hours (VIC DoT, 2011).

Figure 51 Comparison of truck and light commercial vehicle activity in NSW, with trips on an average weekday[13]

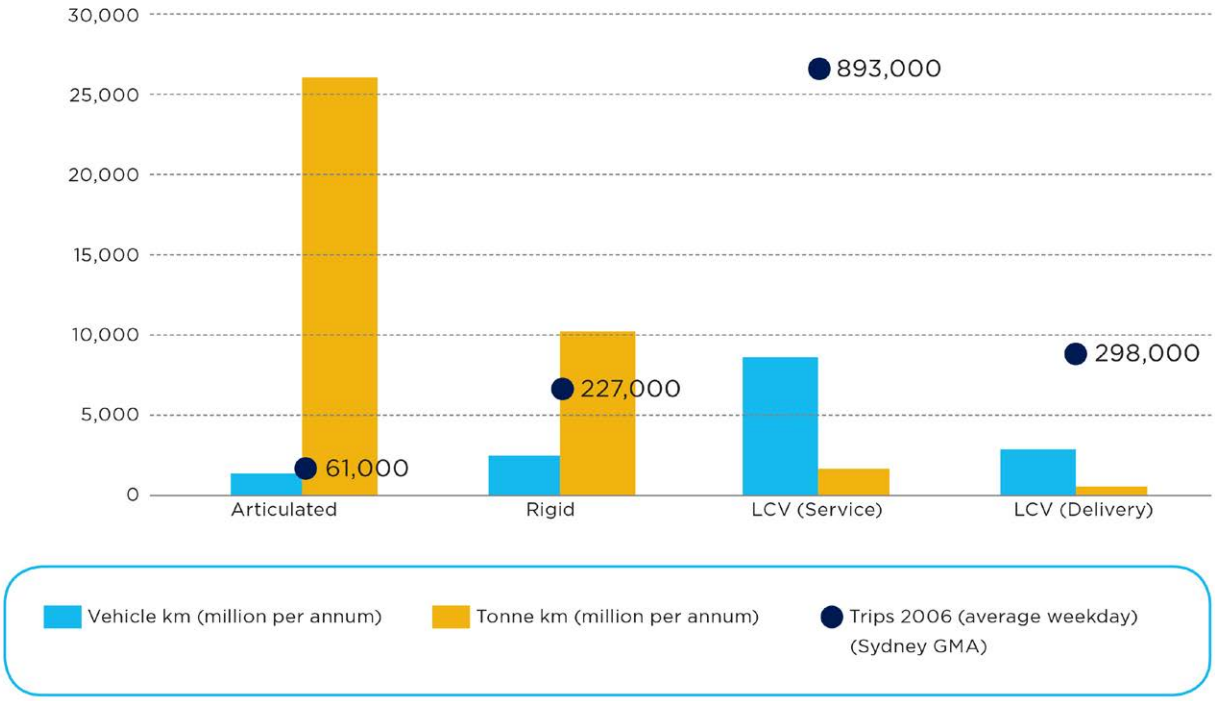
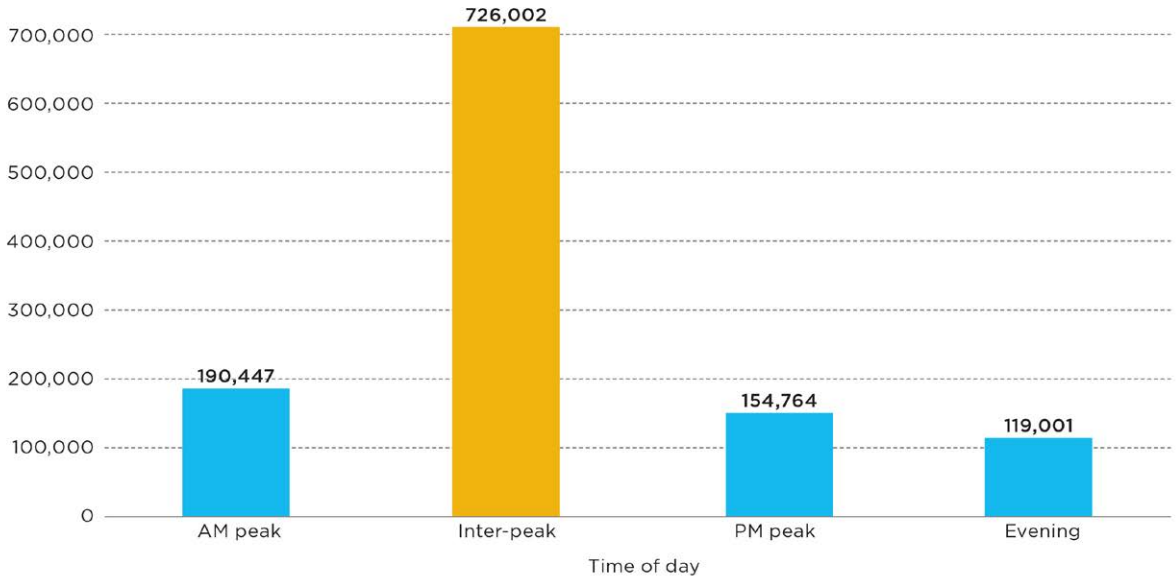


Figure 52 Light commercial vehicle activity by time of day, average weekday, 2006 (Sydney GMA)



More information is needed on the role and impact of LCVs. This will allow the costs of extra congestion caused by these vehicles to be compared with the benefits of moving specific or bespoke goods 'just in time', with the potential for greater productivity, higher quality service and less waste.

APPENDIX C – RAIL NETWORK

Rail operators and access

There are approximately 9,400 kilometres of nominal route standard gauge rail across NSW, of which around 6,400 kilometres is operational and 3,000 kilometres is non-operational.[14] This network is managed by three entities:

- RailCorp owns the greater Metropolitan Passenger Network and provides third party access to the network.
- Sydney Trains manages the Metropolitan Rail Network and operates suburban passenger services.
- Australian Rail Track Corporation (ARTC) manages the Defined Interstate Rail Network and the Hunter Valley Network, with TfNSW maintaining its ownership of the network. ARTC now manages the Metropolitan Freight Network, including the dedicated freight line extending from Port Botany. ARTC does not operate train services.
- TfNSW owns the Country Regional Network (CRN). The network is managed by John Holland Rail on behalf of TfNSW under a 10 year performance based contract that commenced in January 2012.

The majority of the ARTC leased network is subject to Australian Competition and Consumer Commission approved access undertakings, with the Interstate Undertaking applying to the Interstate Network and the Hunter Valley Access Undertaking applying to the Hunter Valley Network. All other sections of the NSW network (with the exception of privately owned track, such as South Maitland Railway) are subject to the NSW Rail Access Undertaking, which is currently under review by TfNSW.

Under the *Border Railways Act 1922*, sections of the Victorian Rail Network were extended into NSW. The Victorian Government is responsible for the management of this track. Operational Victorian lines that extend into NSW are:

- Benalla to Oaklands (standard gauge, leased to the ARTC)
- Echuca to Deniliquin (owned and operated by Vline)
- Shepparton to Tocumwal (owned and operated by Vline).

Rail network structure

The rail network comprises a number of discrete components, being the:

- Metropolitan Passenger Network (MPN): approximately 697 kilometres of operational track extending south to Nowra and Macarthur, west to Lithgow and north to Broadmeadow/Newcastle. The MPN is shared infrastructure used predominantly for the provision of passenger services.
- Leased Network: approximately 3,270 kilometres[15] of operational track leased to the ARTC. This includes the:
  - Metropolitan Freight Network (MFN): nestled within the MPN, the MFN extends from Port Botany to Sefton and Flemington Junctions, and is used exclusively for freight movements.
  - Interstate Network: main line track that links to ARTC's Victorian, Queensland and South Australian networks.
  - Hunter Valley Network: extends from Port of Newcastle through the Hunter Valley to Gap (Werris Creek).
  - Southern Sydney Freight Line from Macarthur to Sefton
  - ARTC's inland route from Parkes to North Star via Narromine, Dubbo and Werris Creek.
- Country Regional Network (CRN): approximately 2,400 kilometres of operational regional and branch line track that does not form part of the Interstate or Hunter Valley networks.
  - Branchline/Grain Line Network: a component of the CRN, with approximately 1,000 kilometres of branch line track used predominantly for haulage of grain, with lower mass and speed limits than other parts of the network.

Figure 53 shows the NSW rail networks.

Figure 53 NSW rail networks

The interstate and main line freight network can be identified using similar criteria to that used for defining the primary road freight networks. That is, routes that facilitate high volume freight movements and also:

- Support international trade
- Link capital cities
- May form part of the National Land Transport Network and other major arterial routes.

The north-south corridor, Hunter Valley and east-west rail corridors form part of the National Land Transport Network. The main line freight network also includes key shared freight and passenger lines on the Metropolitan network, such as the Northern and Illawarra rail lines.

The regional freight network includes those lines which support less frequent freight movements, but nevertheless play an important role in supporting the economy. This network includes some rail lines that are dedicated freight infrastructure, and others that are shared with passenger operations. These lines may offer a lower operating standard than the interstate and main line networks.

The regional freight network is also fed by a dedicated freight-only branch line network, which primarily services the grain and cotton industries. Relatively low volumes of freight moved on some of the regional and branch line networks means that long term infrastructure maintenance costs cannot be fully recovered from freight operators. These networks therefore require ongoing subsidies from government to ensure their continued operation.

Role of ARTC

The ARTC was established in 1998 following an Inter-Governmental Agreement between the states and territories to implement a 'one stop shop' for access to the national rail network. In 2004, the NSW Government leased key sections of the NSW network to the ARTC for a period of 60 years to facilitate this objective.

The lease arrangement involved the immediate transfer of the Interstate and the Hunter Valley Networks. The lease option to include track from Gap to Boggabilla was exercised by ARTC in 2011, while the transfer of the Metropolitan Freight Network was completed in 2012. The Southern Sydney Freight Line will extend the Metropolitan Freight Network to provide a dedicated freight link to the south of Macarthur.

Figure 54 Metropolitan Freight Network connects key freight destinations. Southern Sydney Freight Line connection will remove conflicts with suburban passenger trains, improving access for Melbourne and southern NSW freight trains.

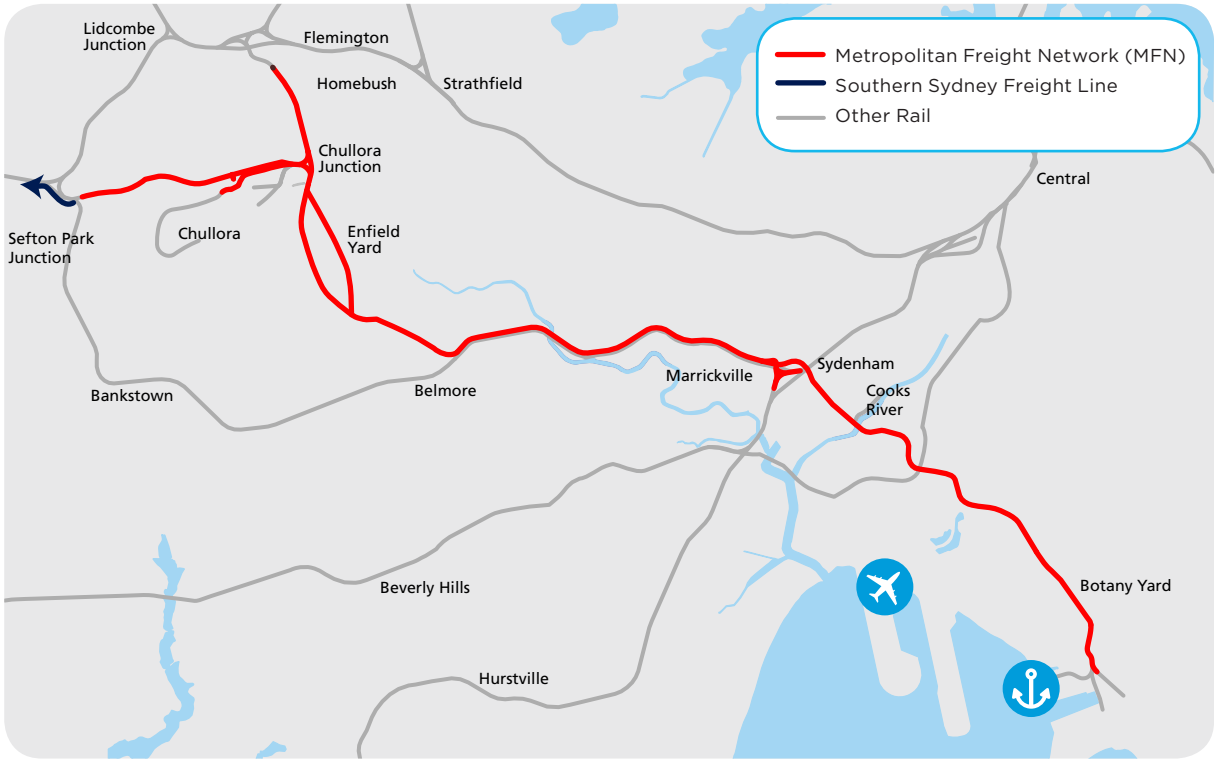


Table 5 Estimated and forecast freight volumes (kilotonnes) on key rail corridors

RAIL	2011			2031			2011-31
Corridors	Inbound	Outbound	TOTAL	Inbound	Outbound	TOTAL	Change
Hunter Valley	106,677	792	107,469	260,000	1,689	261,689	143.5%
Illawarra	1,243	8,323	9,566	17,321	2,281	19,602	104.91%
Main West	7,538	1,038	8,576	15,344	2,219	17,563	104.79%
Short North	3,422	5,091	8,513	5,850	10,680	16,530	94.17%
Main South	725	4,655	5,380	9,821	1,481	11,302	110.07%
North Coast	625	913	1,538	1,341	1,927	3,268	112.48%

Network activity and limitations

The metropolitan network is a densely trafficked, shared rail network that supports over 2,000 passenger services and 150 freight movements each week day. All urban, intra-urban, regional and interstate passenger movements rely on the metropolitan network. Freight services must operate around the needs of passenger services.

Interstate (including all Melbourne-Brisbane movements) and intra-state (including all movements to and from Port Botany, and a number of movements to and from Newcastle and Port Kembla) freight traffic also relies on the metropolitan network. Limited capacity during morning and afternoon passenger peaks already restricts freight operations at these times. Table 5 compares the inbound and outbound freight volume forecasts for key rail corridors in NSW. Inbound and outbound movements are defined by the point where the largest movement occurs as they are moving into or out of the major centre they serve (for example the Hunter Valley line into Newcastle or the Main West line into Sydney and Port Botany).

The CRN supports in the vicinity of 50 train movements each day, the majority of which are freight train movements, including coal, grain, flour, general freight containers, ore and passengers. Due to the seasonality of some of these commodities, train movements exhibit a degree of seasonal variability. Over 80 per cent of traffic on the CRN (in gross tonne kilometres) is freight: of this approximately one third is grain.

Low traffic volumes create problems for cost recovery and long term sustainability. As a result, much of the cost of the network is met by government and the network is maintained to a 'fit-for-purpose' standard, with lower mass and speed limits in place. The volume of freight moved across the CRN is shown in Figure 55.

In total, on the CRN there are approximately:

- 506 kilometres of Class 1 track, with a 25 tonne axle load and 80 kilometres per hour maximum speed for freight
- 420 kilometres of Class 2 track, with a 21 tonne axle load and 80 kilometres per hour maximum speed for freight
- 734 kilometres of Class 3 track, with a 19 tonne axle load and 70 kilometres per hour maximum speed for freight
- 727 kilometres of Class 5 track, with a 19 tonne axle load and 50 kilometres per hour maximum speed for freight.

Most of the grain line network is Class 5, although some sections are Class 3.[16]

There are 37 non-operational lines in NSW, totalling 3,139 kilometres of track. Services on the majority of these lines were suspended in the 1980s, generally due to low traffic volumes, safety concerns and infrastructure damage from flooding.

Figure 55 Country Regional Network freight gross tonnage

Rail service operation and procurement

Freight rail services are provided by the private sector. Currently, there are approximately 10 freight rail providers who operate services on the NSW rail network. These service providers apply for access to the network from the rail track managers, such as Sydney Trains and ARTC, and receive paths on which to operate. Freight rail operator services are procured by the end use customer or their agents.

Government does not generally procure freight rail services, except for the haulage of bulk grain to port and a number of rail maintenance services. For grain services, the NSW Government has two contracts in place until mid 2014:

- GrainCorp has been contracted to secure a minimum service level on the grain line network
- Pacific National has been contracted to secure the provision of main line locomotives for the export grain services.

Network improvements

Southern Sydney Freight Line

The Southern Sydney Freight Line (SSFL) is a 36 kilometre length of single track from Macarthur to Sefton. The project was completed and delivered by the ARTC in early 2013. The SSFL now links the Interstate Network between Sydney and Melbourne with the Metropolitan Freight Network. The SSFL forms part of the Interstate Network managed by the ARTC.

Construction of the SSFL was a condition of the State entering into the lease for the Defined Interstate Rail Network and Hunter Valley networks. The term of the licence for the SSFL is the same as the DIRN, Hunter Valley and Metropolitan Freight Network (MFN), which run for 60 years from September 2004. The track will be bi-directional and dedicated to freight. It will provide access to the MFN and Port Botany from the south without having to travel through the MPN during peak passenger periods. It is anticipated that once the SSFL is completed, the ARTC will seek to extend its Interstate Access Undertaking to apply to this track and the MFN.

Northern Sydney Freight Corridor

The Northern Sydney Freight Corridor (NSFC) Stage 1 Project is a $1.1 billion suite of infrastructure upgrades designed to improve access and reliability for freight trains travelling between North Strathfield and Broadmeadow. The NSFC Project is jointly funded by the NSW Government ($214 million) and Australian Government ($840) and comprises:

- A rail freight underpass at North Strathfield
- A third track between Epping and Pennant Hills
- Passing loops at Gosford
- Passing loop at Hexham (which has been completed).

The NSFC Project is supported by an agreement between TfNSW, RailCorp and the ARTC to deliver certainty of access for freight trains. Under the NSFC Agreement, enabled freight capacity will be preserved for use by freight operators for 20 years from the time the final works are commissioned. It is anticipated that the final works will be completed by mid 2016.

Country Regional Network

An investment program is in place for the CRN to facilitate upgrades of strategic lines, the installation of steel sleepers and replacement of timber bridges. These works will be completed by 2020-21. Other investments recently completed and underway include:

The Narrabri to Walgett Line has been re-railed and upgraded to Class 3 standard. The Dubbo to Coonamble Line is being re-railed and upgraded to Class 3, with work completed as far north as Armatree. The remainder of the track will be completed by 2014.

The following bridges are also scheduled for replacement in 2012-13 and 2013-14:

- Near Ballandoran, on the Troy Junction and Gilgandra line
- Near Tullamore, on the Bogan Gate to Tottenham line
- Over Humbug Creek, near Ungarie.

COAL TRANSPORT BY RAIL TO PORT KEMBLA

In CY2011 9.2 Mtpa of coal was hauled by rail to Port Kembla from the southern, western and local Illawarra mines (Source: PKCT). Port Kembla Coal Terminal is currently examining capacity expansions plans to accommodate receiving 31 Mtpa from rail. This project is based on improved coordination, existing routes, Port Kembla Inner Harbour terminal upgrades and improved train refuging capabilities.

Access to Port Kembla from the western coalfields is currently available through two routes: Main West to Lidcombe – Goods line to Tempe – Illawarra line to Port Kembla and the Main West to Harris Park – then via Sydney Trains' Cumberland Line and Main South to Moss Vale; then Moss Vale to Unanderra line to Port Kembla. This route is used during closedowns and possessions.

Assuming no network delays and a clear path, the route via Moss Vale takes 75 minutes longer than the Illawarra line. There are capacity issues on the Illawarra line and the Main South, with limited available freight paths on both corridors.

The construction of the Maldon to Dombarton line (without the St Marys to Glenlee line) would create a third option to move trains from the western coalfields to Port Kembla. This route would be 2 minutes quicker than the Illawarra line option.

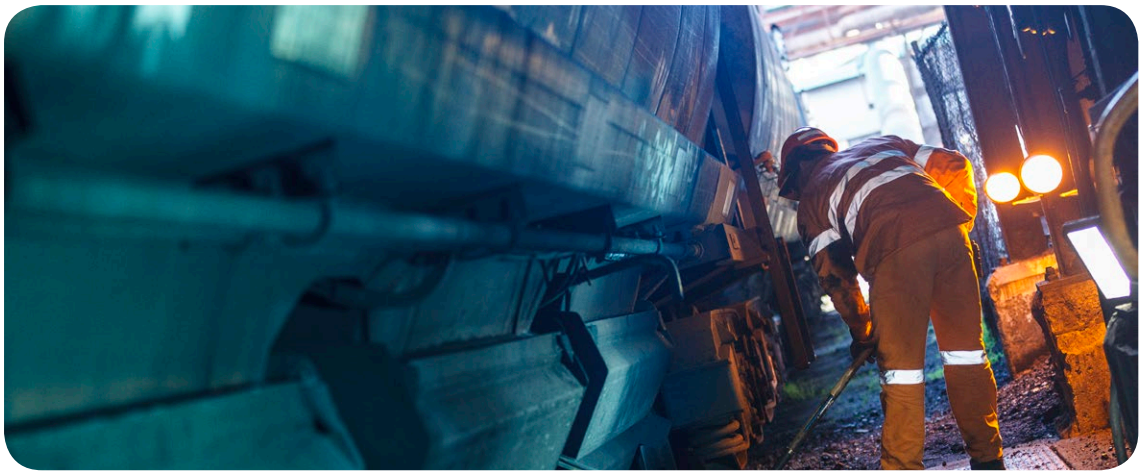
Coal from Tahmoor to Port Kembla would be approximately 90 minutes quicker than the existing route via Moss Vale. It would also eliminate the reversing manoeuvres needed to arrive/depart Tahmoor Colliery which significantly reduce network capacity (up to two hours).

Future capacity through Sydney

There are significant capacity constraints for both the Main South and Illawarra line options. The Illawarra line has a high level of utilisation, particularly on the double track section from Hurstville to Waterfall and paths for freight services are limited largely due to two steep sections, which significantly slow laden freight trains.

Coal haulage via the Main South option would be almost wholly locked out of running via the ARTC controlled Southern Sydney Freight Line (SSFL) in its current configuration with its capacity being taken up port shuttles to the proposed Moorebank precinct and interstate/intrastate traffic.

It is expected that demand on the SSFL will result in some freight remaining on the Sydney Trains' Main South Line. Anticipated passenger growth in this area will progressively restrict opportunity for freight access, with major impediments being flat junctions and passenger termination points from Sefton to Macarthur.



THE MALDON TO DOMBARTON RAIL LINE

The Maldon to Dombarton Line was proposed in the early 1980s to provide improved linkages between the southern and western coalfields and the newly constructed Port Kembla coal terminal. Construction on the line started in 1983, with coal traffic forecast through the Port Kembla coal loader to grow from 10 Mtpa in 1983 to 26 Mtpa in 1990, with 17 Mtpa to be carried on the Maldon to Dombarton Line.

The initial design was for a single track line, with four passing locations. The line would be used by AC traction electric locomotives and the Main South from Glenlee to Maldon, the Maldon to Dombarton line and the existing Moss Vale – Unanderra line from Dombarton to Port Kembla would be electrified. The project also included construction of a complementary line from St Marys to Glenlee for use by AC electric traction locomotives.

The locomotives were not purchased and the line from St Marys to Glenlee was never built. Unfortunately corridor preservation was never carried out. No AC electric traction infrastructure was built, with the exception for the installation of masts in readiness for overhead wiring between Unanderra and Dombarton.

Duplication of the Moss Vale to Unanderra line between Dombarton to Unanderra was completed and commissioned prior to work on the project being suspended in 1988.

When construction was suspended earthworks, ballast and culverts had been mostly completed within the Sydney Water Catchment area. Outside the catchment area minimal formation work was completed. Bridges are yet to be built over the Nepean River although viaduct approaches have been constructed and remain in place. No bridges has been constructed over the Cordeaux River or road bridges over the line built on the Hume Freeway, Condell Park Road, Janderra Lane and Main Road 95 (Picton Road B88). The first 60 metres of the 4 kilometres long Avon tunnel has been built at Dombarton. To further compound present day construction problems at Wilton the corridor abuts a housing estate that is being developed.

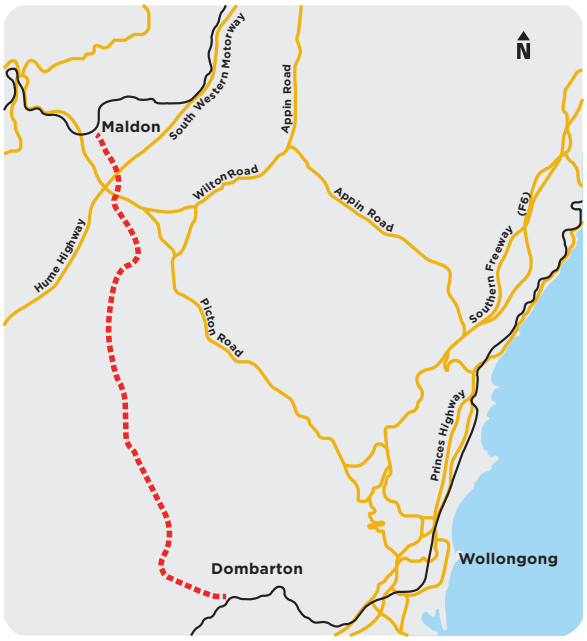
Current estimates by ARTC are that construction on the project is approximately 15 per cent complete (by value) and in 2010 a review by ACIL Tasman estimated between $624 million and $667 million to complete the line.

It is likely that future operations on the Maldon to Dombarton line will be freight only and involve diesel locomotives. The construction of the Maldon to Dombarton line would need to address the following issues:

- The environmental and contamination issues associated with building and operating a diesel-hauled railway through part of the Sydney water catchment.
- Re-design of the tunnel to effectively deal with emissions from freight trains in a 4 kilometre long tunnel. Loaded trains from Port Kembla would be climbing a 1:30 grade and tunnel design would need to ensure locomotives are able to operate optimally.
- Modern fire and life safety controls associated with tunnel operations.

An expansion of Port Kembla for high intensity container operations when Port Botany reaches throughput capacity will require containers to be moved by both road and rail. Transport by rail along the Maldon to Dombarton line to the intermodal facilities planned in south and western Sydney while posing significant operational and engineering challenges, including:

- Diesel trains will be required to climb almost 14 kilometres of ruling 1:30 grade, including 4 kilometres of tunnel, limiting the trailing load of the train, with loaded trains taking longer to traverse the single line section
- The need to remove diesel emissions from the tunnel may require periods between trains to allow the emissions to evacuate
- Capacity will need to be increased between Macarthur and the western coalfields, entailing major works.



Expansion of port infrastructure, such as the Kooragang Island coal loading berths, is vital to the growth of the NSW economy. The accurate forecasting of demand translates to bankable revenue forecasts.

APPENDIX D – KEY NSW NETWORK NODES

Intermodal terminals and freight activity precincts

Across NSW, the freight industry has formed into clusters close to key freight transport corridors. These freight activity precincts are key 'nodes' serviced by the freight network. Clustering freight activity has enabled the co-location of supporting infrastructure to more efficiently meet the needs of freight generators and operators. Increasingly, freight precincts are developing around intermodal terminals and international gateways such as ports and Sydney Airport.

The NSW freight network includes a number of significant freight activity precincts located in the Greater Metropolitan Area, as well as six metropolitan and 22 regional intermodal container terminals connecting the road and rail freight tasks. Each region of NSW also has freight activity clusters and important industry precincts that support freight and logistics. These clusters and precincts are nominated in regional planning strategies as part of the broader NSW planning framework.

The freight precincts located in the Greater Metropolitan Area include:

- Port Botany to Sydney Airport and Sydenham
- Chullora and Enfield to Silverwater
- Western Sydney Employment Area
- Moorebank to Prestons and Minto
- Wetherill Park
- Villawood
- Bankstown
- Blacktown to Seven Hills.

The number of intermodal terminals in NSW has been growing with an additional three regional terminals presently in the construction or planning phase, and a further three proposed sites being considered. There are also a further two proposed sites in border regions which will likely affect NSW freight movements. This list does not include the intermodal transfer of ore and mineral freight.

The majority of intermodal terminals are located in regional areas, with some regions supporting a number of terminals servicing different commodities. Figure 57 identifies the location of intermodal terminals across the State, and demonstrates the importance of good road and rail connections to facilitate the efficient transfer of containers across modes for aggregation and distribution.

Transport for NSW has completed an assessment of intermodal terminals across NSW and observed the following industry dynamics:

- Within Sydney and Newcastle, intermodal facilities are operated by freight forwarders and transport operators
- In regional areas, terminals have generally evolved around pre-existing rail infrastructure, often based around a company's distribution chain with few greenfield sites being developed
- A limited number of terminals offer the full range of facilities to sustain the long term needs of road and rail operators for the movement of freight, for example:
  - Availability of land for expansion to accommodate growing freight task
  - Availability of empty container storage
  - Preferred siding lengths for rail services
- The need for the inclusion of strategic, purpose-built intermodal facilities within proposed industrial developments has recently been identified. These can provide a range of facilities for both road and rail transport operators to improve the efficiency of domestic and international freight movements
- Limited terminals support interstate (or domestic) rail freight operations.

Figure 56 NSW metropolitan freight precincts, which supports intermodal terminals on the freight network

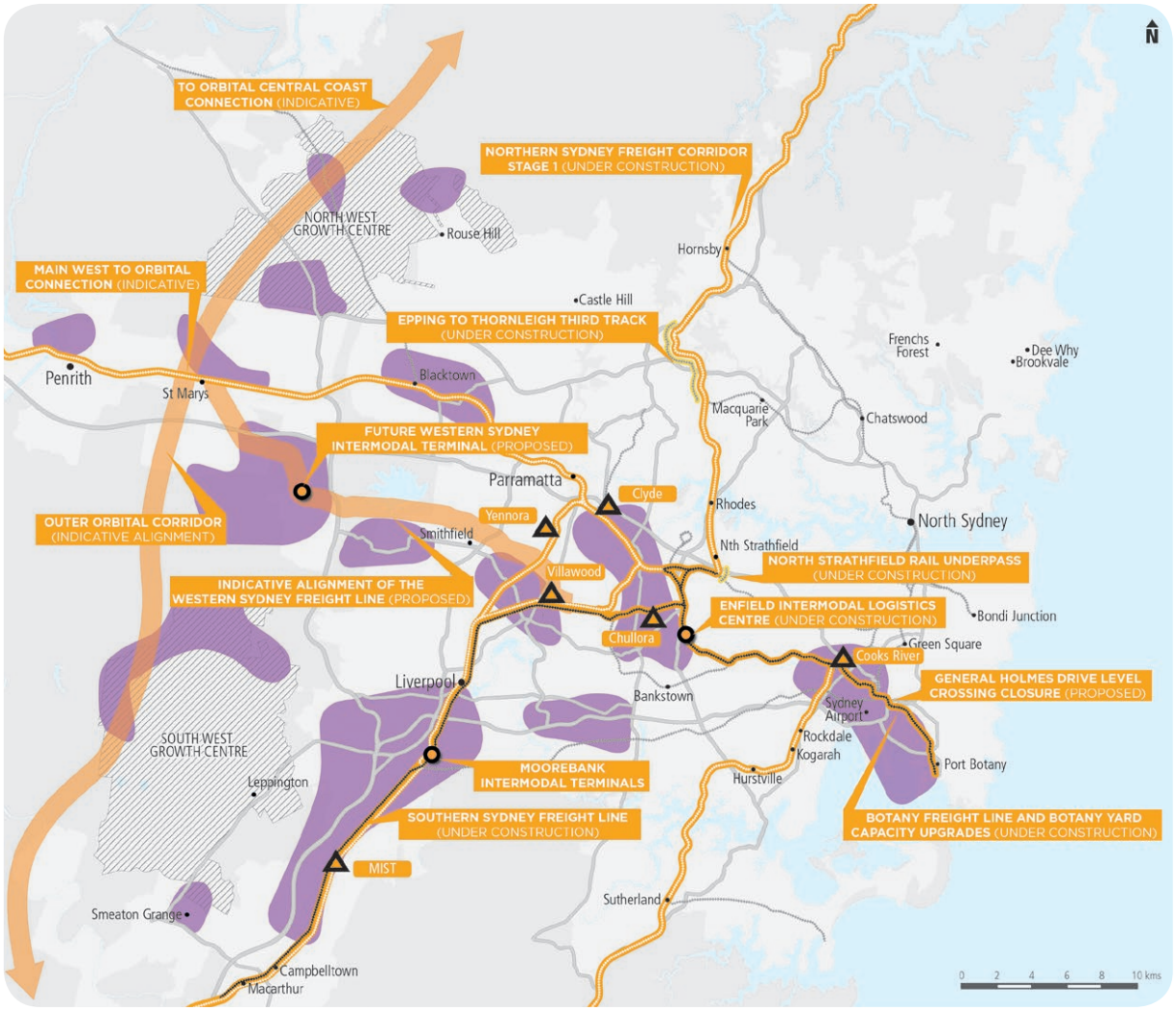


Figure 57 NSW regional intermodal terminal network, which demonstrates the importance of good road and rail connections and linkages to ports

NSW ports and coastal harbours

NSW's ports are its trade gateways to the world. They provide a critical link between landside and seaside elements of the supply chain and play a key role in supporting growth in all import and export trade, and thus in economic development in NSW. NSW's major ports are Port Jackson, Port Botany, Port Kembla and the Port of Newcastle. Eden and Yamba function as regional ports and coastal harbours, and there are a further 23 coastal harbours. Each port has a role that reflects its comparative advantage, as shown in Table 6.

The majority of shipping activity in NSW is concentrated in the ports of Sydney and Newcastle. Ship visits to Sydney's Port Botany and Port Jackson represent around half of all visits to NSW each year. Together, Sydney and Newcastle account for more than 80 per cent of all ship visits to NSW. Port Kembla receives around 15 per cent of ship visits and the regional ports around two per cent.[17]

NSW's ports have facilitated trade in the following areas:

- Total port trade was around 179 million tonnes in 2010-2011 (Port's Annual reports)
- Container trade was forecast to increase from 2 million TEU in 2010-11 to 10.9 million TEU in 2036 (Sydney Ports Corporation, 2011a)
- Port Botany's container growth rate is estimated to continue at between six and eight per cent per annum (Sydney Ports Corporation)
- In 2010-2011 there were 5,029 vessel visits through the ports of NSW (Ports' Annual Report)
- Coal exports through the Port of Newcastle reached 142 million tonnes in 2012-2013, increasing from 120 million tonnes in 2011-2012 (Newcastle Port's Annual reports)
- Port Kembla is forecast to import 240,000 vehicles in 2012-2013 and the annual overall growth rate is estimated at four per cent
- In 2012-13, Sydney will host a record passenger cruise season with 216 scheduled cruise ship visits, being an increase from 150 visits in 2010-12 (Sydney Ports website).

Table 6 The different role of each NSW port reflects their comparative advantage.

Each port has a role to play in supporting trade and economic growth:
The **Port of Newcastle** is one of the world's largest coal export ports. The port's other major trades include alumina, petroleum, fertilizers, grains, cement, woodchips and steel.
Port Botany is Australia's second largest container port and has a significant role in the importation of bulk liquids and gases.
Port Jackson (Sydney Harbour) is primarily used for the importation of bulk products such as salt, soda ash, lubrication oil and petroleum products. It is also Australia's premier cruise ship destination. The Royal Australian Navy has a significant presence at Garden Island.
Port Kembla is one of Australia's largest grain export ports, and the State's principal motor vehicle importing hub. The port's other major trades include coal, steel, iron ore and various dry and liquid bulk products.
The **Port of Eden** services the NSW south east hinterland and south coast. The port's major trade is the export of woodchips, supplemented by exports of softwood logs and general cargo.
The **Port of Yamba** services the Northern Rivers District and provides a link to Norfolk Island and the south west Pacific region. Major trades include timber, live animals, manufactured items, kit houses, boats, explosives and general cargo.
Coastal Harbours, of which there are 25, cater for the commercial fishing industry, local tourism and recreational boating and provide a departure point for charter boats. A limited amount of freight is transported through coastal harbours.

As shown in Figure 58, NSW's ports are key infrastructure nodes that are integrated with the road and rail network and, through these, linked with intermodal and other terminals throughout the State. Ports rely on the efficient movement of commodities through these networks to facilitate trade.

Figure 58 NSW port network, in which ports are critically integrated with the rail and road network

Major airports

Airports are primarily an Australian Government responsibility. The NSW Government plays an important role in supporting the land side transport task for air freight movements into and out of NSW. The NSW air freight network is shown in Figure 59.

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, and fresh fruit and vegetables. Air freight is moved in two ways: either using specialist freight aircraft, or within the belly-holds of passenger aircraft. 80% of all air freight handled at Sydney airport is carried in the holds of passenger aircraft.[18]

Domestic air freight movements are vital to business and industry in regional area. 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 in 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. The air freight task at Sydney Airport in 2012 was 615,378 tonnes and is forecast to grow to 1,011,312 tonnes by 2033. The domestic task is estimated to be approximately 100,000 tonnes per annum of this total. Transhipments account for 27% of overall tonnage.

Sydney Airport currently schedules 7,400 freighter aircraft movements per annum and this is forecast to grow at 9,100 aircraft movements per annum in 3033. 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.[19]

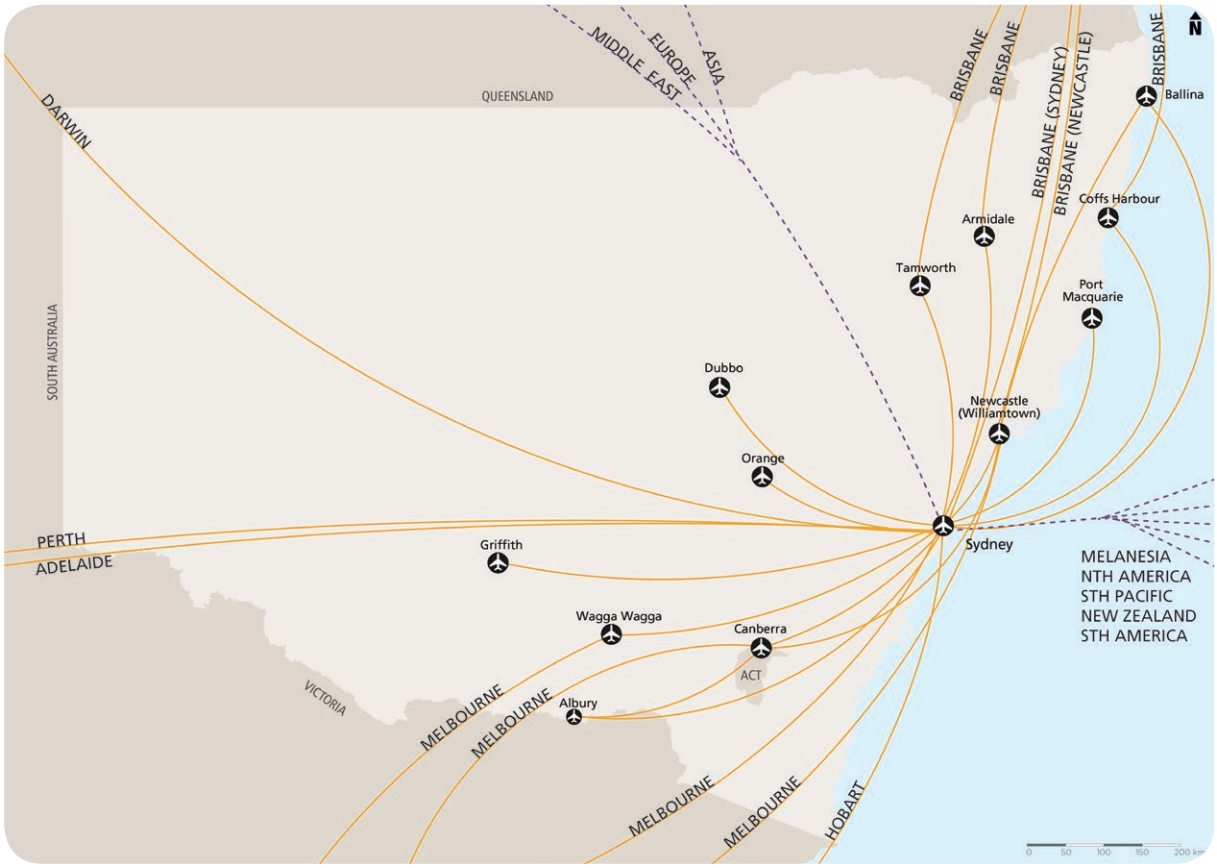
Overall, the air freight task is small compared to the total volumes of freight moved within NSW. However, in terms of value, air freight carries a higher proportion relative to the task. For example, the average value of air cargo, by weight, is in the order of 300 to 350 times that of sea cargo.[20]

The NSW Government has a role in the air freight supply chain through:

- Maintaining efficient connections to air freight hubs
- Planning for the efficient use of land surrounding airports
- Minimising land use conflicts that impact upon the provision of support services for 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.

Figure 59 NSW aviation network, identifying key airports across the state and their linkage with interstate and overseas destinations



APPENDIX E – PIPELINES

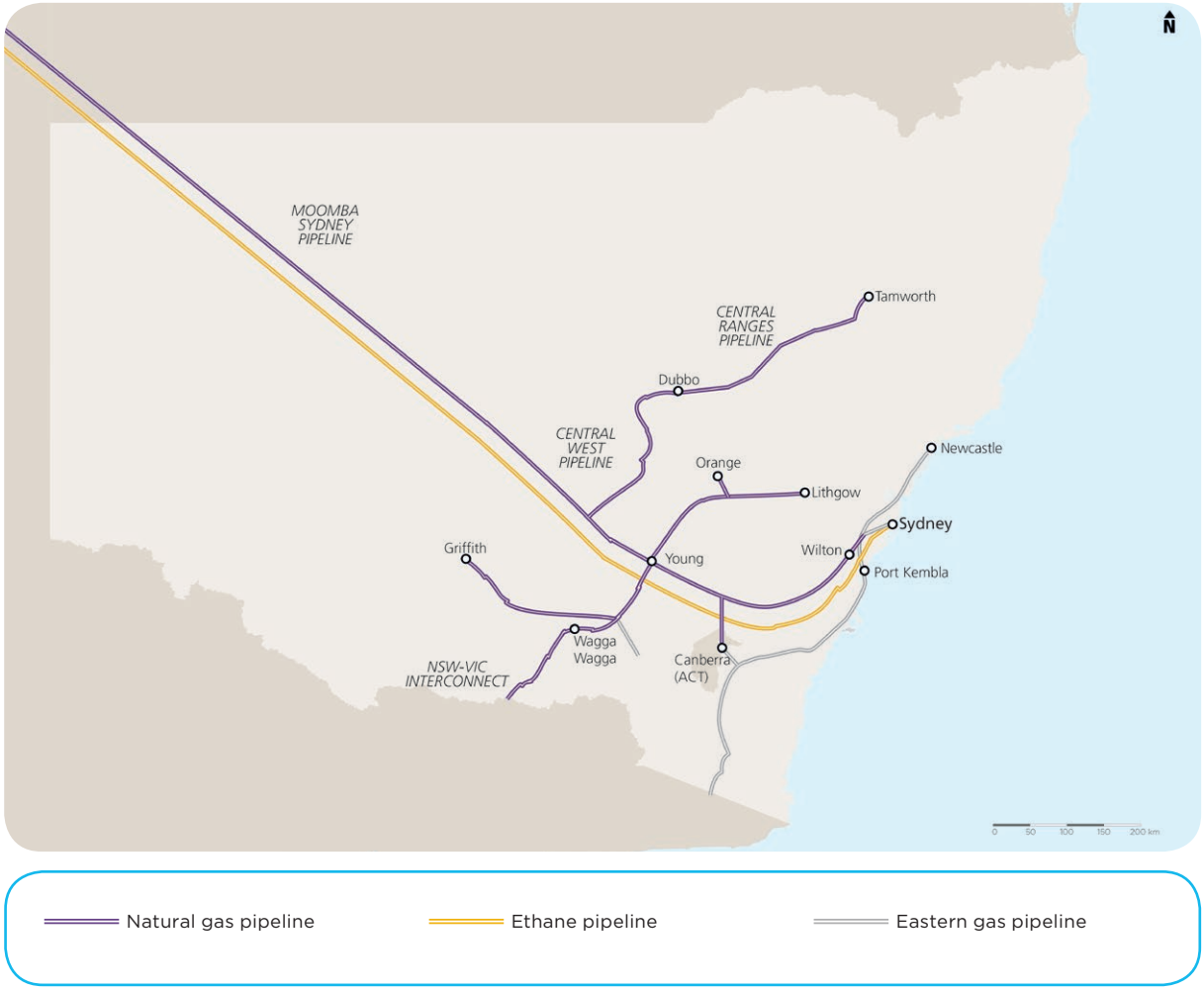
Pipelines are predominantly used to convey oil, gas and petroleum around the State. The licensing and performance management of pipelines in NSW are under the control of the NSW Department of Trade and Investment. NSW is not an exporter of oil, gas or petroleum products.

Natural gas distribution

Gas supplied to NSW is sourced from the Moomba gas fields in South Australia. It is piped through to gas distribution systems in Sydney, Newcastle, Wollongong and Canberra, and to some NSW regional centres including Dubbo and Wagga Wagga.

The location of gas pipelines in NSW is shown in Figure 60.

Figure 60 NSW gas pipeline network, in which the Moomba Sydney Pipeline is the main pipeline crossing the majority of the State



Oil production and product distribution

Currently crude oil to supply Sydney's needs is imported through the Gore Bay Terminal and delivered to Shell's Clyde Refinery by pipeline. Products produced at the refinery include petrol, diesel fuel, jet fuel, bitumen and LPG. Some products are fed via pipelines connected to Sydney Airport and distribution terminals in Newcastle and other oil companies at Silverwater. At the Kurnell Refinery in Botany Bay, products are distributed by pipeline to distribution depots in Banksmeadow. The location of petroleum pipelines is shown in Figure 61.

Recent deterioration in the performance of the oil refining business in Australia, driven by the high Australian dollar and increasing competition from Asia, has had major repercussions for the industry. Shell's Clyde Refinery ceased refining operations in late 2012 and, together with the Gore Bay Terminal, has converted to a fuel import facility. Meanwhile, Caltex Australia is proposing to close its Kurnell Oil Refinery, although the site will continue to operate as a strategic storage location for petroleum.

Ship movements into Port Botany and Port Jackson of refined product will continue and increase. Of note bitumen importing has now commenced through Port Botany.

Figure 61 NSW fuel pipeline network, linking petroleum infrastructure with key Sydney locations

Coal Seam Gas (CSG) production

As demand for gas increases, the expansion of methane CSG extraction has gained momentum. The major coal producing basins in NSW, including the Sydney-Gunnedah-Bowen Basin and the Clarence-Moreton Basin, have potential for coal seam methane production. The NSW Government has released a Code of Practice for Coal Seam Gas Exploration to ensure strong standards are set for industry during the exploration phase. The Government has also introduced a Strategic Regional Land Use Policy to protect strategic agricultural land through an independent scientific assessment prior to the development application stage.

Liquefied Natural Gas (LNG)

The potential export of LNG is more advanced in Queensland than in NSW, due to Queensland's abundant coal seam gas reserves and supporting infrastructure plans. Construction of a LNG facility at Gladstone in Queensland has already commenced, with first cargoes scheduled to be exported from 2015. In NSW, the potential for LNG development is comparatively smaller.

APPENDIX F – INFRASTRUCTURE PROGRAM

"What I've consistently said is it's prudent for state governments to look at risk sharing in an equitable way"

The Honourable Mike Baird, MP
Treasurer, and Minister for Industrial Relations of NSW

Current position

The projects in the infrastructure program correlate with Actions in this Strategy, as well as ongoing projects such as Stage 1 of the Northern Sydney Freight Corridor and the Maldon to Dombarton Rail Line investigation.

The projects in the program are dependent on funding from a variety of sources.

A number of projects in the program, where external funding is sought, have received initial funding approval from the Australian Government as part of the Nation Building 2 program. Key freight projects, such as Stage 2 of the Northern Sydney Freight Corridor, have also been included to outline planned submissions for Australian Government funding.

Of the 71 projects identified in the NSW Freight and Ports Strategy infrastructure program, some projects have secured funding and work has commenced.

The infrastructure program focuses on the short to medium term, that is the next 10 years, as well as projects that are either committed to proceed or funded through Australian sources. The program will be reviewed annually as part of the Transport for NSW Total Asset Management (TAM) planning process.

The infrastructure program will be updated to incorporate additional projects that will be identified as a result of Actions in this strategy. Updates will include new opportunities on the network for private sector concessions or development of specific items of freight infrastructure.

Alternate funding and finance arrangements for freight infrastructure projects from non government sources may include:

- Co-investment with the private sector
- Leases and concessions of parts of the transport network
- User charges or value capture
- Creation of Infrastructure Bonds or similar instruments for specific projects
- Unsolicited proposals
- Tax incentives for designated transport infrastructure projects
- Other methods.

The infrastructure program identifies projects where the NSW Government will actively seek investment by the private sector.

Other long term infrastructure projects such as the Outer Sydney Orbital and Western Sydney Freight Corridor are unlikely to commence construction within the next 10 to 15 years. However, work is needed to plan and implement corridor preservation requirements to expand network capacity.

Operational expenditure will also need to be directed to investigate key transport corridors benefiting freight. Identifying and protecting these corridors is imperative, as the land is already under pressure from urban growth and encroachment.

Table 7 NSW Freight and Ports Strategy – Infrastructure Program

Sponsor	Project	Description	Mode	Status
TfNSW	NSW Managed Motorway Program – M4	This project involves technology infrastructure and systems to improve the efficient management of Sydney Metropolitan motorway network. As part of the Nation Building Program 1 the State and Australian Governments agreed to 50/50 fund the $17M cost associated with the concept development of the M4 Managed Motorway which will be completed by mid 2014.	Road	Planning is funded
TfNSW	Western Sydney Freight Line and Intermodal Terminal	Corridor protection and design works for potential Western Sydney Freight Line (WSFL) alignments are required to ensure successful construction and on time delivery of the WSFL if the project were to proceed. The project includes assessment of suitable sites, land acquisition and planning to "ready-to-proceed" status for a Western Intermodal Terminal that connects to interstate mainline rail networks, Port Botany and Sydney Metropolitan arterial roads.	Rail	Planning is partially funded
TfNSW	Rail Freight Performance Regime for Metropolitan Sydney	To develop a performance regime for freight trains seeking access to the shared Metropolitan passenger and dedicated freight rail network. The project will assess and review freight train reliability issues and improve outcomes for both freight and passenger rail services.	Rail	Funding sources to be determined
TfNSW	NSW Main Western Rail Corridor Capacity Enhancements	TfNSW is proposing to undertake a strategic assessment of the Main Western Rail Corridor to determine: • forecast demand and the location of future demand • operational efficiencies and network interfaces • infrastructure deficiencies and opportunities for improvements.	Rail	Funding sources to be determined
TfNSW	Outer Sydney Orbital Multi-Modal Transport Corridor	Detailed Alignment Study for an Outer-Sydney Orbital Multi-Modal Transport Corridor that includes dedicated rail for freight movements.	Multi	Funding sources to be determined
TfNSW	Strategic Noise Action Plan	The project will develop a plan to address rail noise issues on the rail network in support of Government modal objectives and an expected growth in rail freight movements.	Rail	Funding sources to be determined
TfNSW	Northern Sydney Freight Corridor (NSFC): Stages 2 & 3	The Northern Sydney Freight Corridor (NSFC) program is needed to resolve the rail constraints between Strathfield in Sydney and Broadmeadow in Newcastle on the east coast interstate rail freight network to meet medium to long-term freight demand. This proposal seeks detailed planning works required for NSFC Stage 2 and 3. Construction of stages 2 & 3 is estimated to be required by 2028.	Rail	Funding sources to be determined
TfNSW	Lower Hunter Freight Corridor	The purpose of the Lower Hunter Freight Corridor is to provide a rail bypass route for existing and projected freight currently routed via Broadmeadow and other inner Newcastle suburbs. Such a bypass would divert freight services from sensitive suburban areas where several level crossings operate and deliver major time savings and reliability improvements for interstate rail freight.		Funding sources to be determined
TfNSW	Sydney Motorway Program – M1 to M2	The Project comprises the construction of a dual two lane road tunnel approximately 7.7km in length beneath Pennant Hills Road and the Northern Railway Line linking the M1 Freeway and the M2 Motorway. The project aims to alleviate traffic congestion, particularly along Pennant Hills Road, resulting in travel time savings. The project will reduce operating costs for national freight carriers and long-distance transport operator whilst providing opportunities to integrate with the regional transport network.		Partially funded
TfNSW	Country Regional Rail Network Projects	$115M has been committed by the NSW Government for steel re-sleepering, ballasting, resurfacing and bridge renewals. These works will improve the reliability and efficiency of the NSW country rail network. In addition, $141.7M has been committed to other works including routine maintenance, signalling system upgrades, level crossing improvements and corridor maintenance.	Rail	Funded
TfNSW	Upgrade Coonamble Grain Line	$20.3M has been committed by the NSW Government for a re-railing program of 57kms of track from Armatree to Coonamble.	Rail	Funded

Sponsor	Project	Description	Mode	Status
TfNSW	Maldon-Dombarton Rail Line	The Australian Government has provided TfNSW with $25.5M to undertake planning and preconstruction development. This planning encompasses assessment of design, engineering, safety, operations, environmental, economic, cost and stakeholder issues. The construction will involve laying 35 kilometres of standard gauge track to enable the connection of Port Kembla directly to the Main South Line via Dombarton at Maldon. It would also include two passing loops, bridges over the Nepean and Cordeaux Rivers and one of the longest rail tunnels in Australia. Subsequent project delivery and operation will most likely be by the private sector.	Rail	Planning is funded
TfNSW	Rail Passing Loops at Awaba	Local constraints southwest of Newcastle on the shared network are affecting the future availability of reliable freight paths for coal trains. Additional reliable coal freight paths are required to meet the future transport of coal to major power stations on the Central Coast, and the movement of export coal to the Port of Newcastle. This project will deliver the network path requirements.	Rail	Planning is funded
TfNSW	Centenary Drive and Arthur Street, Homebush	The project aims to address insufficient capacity on the Centenary Drive corridor and turning lanes/routes onto the M4 and Parramatta Rd. The 'stop-start' conditions result in increased collisions, vehicle emissions and operating costs. The problems also impact network travel and reliability/times on Parramatta Rd, the M4 and the Hume Highway. Planning has commenced by RMS with $1M allocated in the FY12/13 NSW State budget.	Road	Funding sources to be determined
TfNSW	Mitchell Highway – Realignment at Goanna Hill, near Molong	Planning is being undertaken by RMS. The Goanna Hill section of the Mitchell Highway is 7.2 km long, commencing approximately 20km north of Orange. This section has poor vertical and horizontal alignment, and poor surface conditions. This project will replace and realign the Goanna Hill section of the Mitchell Highway, providing 100 km/hr standard alignment, generally alongside the existing highway, improving lengths of overtaking sight distance, and constructing an eastbound overtaking lane along the steepest gradient.	Road	Planning is funded
TfNSW	Intelligent Systems to Enhance Freight Productivity	The Intelligent Transport Systems to Enhance Freight Productivity Program covers technology applied to transport and infrastructure to transfer information between systems for improved safety, productivity and environmental performance.	Multi	Funding sources to be determined
TfNSW	M1 – Masters Road Interchange – Planning	This proposal seeks planning funds in order to develop and assess concepts and gain planning approval to enhance the capacity of this critical section of the M1. Once delivered the project would ensure a minimum of three lanes in each direction for the full length of the M1 between Five Islands Road and Mt Ousley Road (a distance of 7km) providing additional lane capacity to address traffic efficiency concerns. The proposal would also investigate options for the construction of a Masters Road flyover providing direct access from the M1 to Masters Road for northbound vehicles.	Road	Planning is funded
TfNSW	Mt Ousley – Four climbing lanes and Mt Ousley Road / M1 Freeway Junction	RMS has commenced planning for additional climbing lanes on Mt Ousley Road. Mt Ousley Road is a key freight route as the only access route for B-doubles into the Illawarra from the North. The initiative is for the construction of four additional climbing lanes on Mt Ousley Road between the Picton Road and Bulli Pass, options for the construction of a grade-separated interchange at the junction of Mt Ousley Road and the Southern Freeway, and construction of a third southbound lane from the existing arrestor bed to the junction of Mt Ousley Road/the Southern Freeway.	Road	Partially funded
TfNSW	Princes Highway – Bulli Pass major upgrade/link to Memorial Drive – Planning	Bulli Pass is the only feasible alternative road option to Mt Ousley Road for access across the escarpment into Wollongong and Port Kembla. Funding is sought for planning activities to develop options to upgrade Bulli Pass. Following a major upgrade, Bulli Pass would be an efficient, high quality and high productivity freight route. The route would be an alternative to Mount Ousley that can, when required, service commuter and tourist traffic as well as heavy vehicles to and from Wollongong and Port Kembla.	Road	Partially funded

Sponsor	Project	Description	Mode	Status
TfNSW	Hume Highway – Picton Road Interchange	This project proposes an improvement to this section of nationally significant road infrastructure needed to support an efficient and productive freight industry. RMS has undertaken modelling to assess alternative interchange layouts that could resolve the long term capacity and road safety concerns associated with the existing layout. The preferred option for upgrading the interchange involves constructing an additional bridge to provide a six lane configuration of Picton Road over the Hume Highway and two continuous off-ramp trumpets from the Hume Highway, reducing conflicting traffic movements and maintaining traffic flow.	Road	Partially funded
TfNSW	Picton Road – Road Safety Treatments	This $43.6M project provides essential improvements to upgrade the Picton Road between the Hume Highway intersection at Wilton and the Mt Ousley Road intersection at Mt Keira.	Road	Project complete
TfNSW	Bridges for the Bush – Program 1 & 2	The NSW Government has made a commitment of $145 million, including $135 million of new money from Restart NSW for this critical regional infrastructure project. In Aug 12 the NSW Government made a submission to the Australian Government seeking half the funding of the estimated $290 million program. To date the Australian Government has provided $19.5 million for the Kapooka Bridge replacement. Project development by RMS has already commenced on the 17 bridges including design and environmental assessment. Program 1 involves the upgrade or replacement of the following bridges identified to provide accessibility for higher productivity vehicles (i.e. heavier and larger trucks) thereby improving freight productivity in Regional NSW: • Kapooka Bridge on Olympic Highway • Tulludunna Bridge on Kamilaroi Highway • Gunnedah Railway Bridge on South Street/Oxley Highway • Murray River crossing at Echuca on Cobb Highway (joint NSW & VIC) • Bridge over Bemboka River Program 2 involves the replacement of six heritage timber truss bridges and upgrade of six timber truss bridges to HML standard and to provide ongoing safe service levels.	Road	Partially funded
TfNSW	Regional and Metropolitan Network Productivity Program	A program for assessment, prioritisation and resolution of HML connectivity access impediments on regional and metropolitan council managed roads that link to State and National freight routes.	Road	Funding sources to be determined
TfNSW	Hume Highway Bridges access for B-Triple, Higher Mass Limit and Higher Productivity Vehicles	The Sheahan Bridge and the Badgally Road bridges on the Hume Highway have been identified as not suitable for B-Triple high productivity vehicles. The initiative is to strengthen these bridges to improve interstate and local freight route continuity on the Hume Highway. Detail structural analysis is completed on Badgally and remedial works required have been identified and costed. Detailed analysis for Sheahan Bridge is currently being undertaken.	Road	Partially funded
TfNSW	Hume Highway – Holbrook Bypass	This $237M project is the last section of the Hume Highway to be upgraded to provide dual carriageways. The project opened to traffic in August 2013.	Road	Project complete
TfNSW	Hunter Expressway	This $1.7B Nation Building 1 Fund project funded by the Australian and NSW Governments provides a link between the M1 and Branxton. The project is due for completion in 2013.	Road	Funded
TfNSW	Telarah Station Remodelling	Improve rail capacity through Telarah by constructing a new terminating platform. This will assist coal movements to Newcastle from Stratford and interstate rail freight traffic.	Rail	Funding sources to be determined
TfNSW	M5 Widening	This $400M project is underway and involves widening the M5 Motorway to three lanes in each direction between King Georges Road and Camden Valley Way. The project is predominantly funded by the motorway operator, and is expected to be completed in late 2014.	Road	Funded

Sponsor	Project	Description	Mode	Status
TfNSW	Erskine Park Link Road	Construction of the Erskine Park Link Road between Old Wallgrove Road and Lenore Lane will improve access to the M7 Motorway for businesses in the Western Sydney Employment Area. This $48M project is underway and will be complete by mid CY13.	Road	Project complete
TfNSW	Old Wallgrove Road, between the M7 Motorway and the Erskine Park Link Road – Planning	RMS has commenced planning on the Old Wallgrove Road connection between the M7 Motorway and Erskine Park Link Road.	Road	Funded
TfNSW	Archbold Road: Extension from Erskine Park Link Road to the Great Western Highway Including East-Facing Ramps on the M4 Motorway – Planning	The project seeks to undertake planning to provide convenient, reliable access for freight vehicles moving between the Western Sydney Employment Area and Sydney's motorway network, and the wider interstate freight network by: • Upgrading Archbold Rd between Great Western Hwy and Erskine Park Link Rd to provide a our lane divided carriageway within a 30 metre wide corridor, and • A motorway on-ramp from Archbold Road to the M4 for eastbound traffic and planning of a motorway off-ramp to Archbold Rd for westbound traffic.	Road	Planning is funded
TfNSW	M1 Sydney Newcastle Freeway – Kariong Interchange Ramp Upgrades	• The M1 Freeway is the major road used to move freight and people to and from the Central Coast. The entry and exit ramps at Kariong are used extensively by heavy and light vehicles and are deemed not adequate to provide an efficient and safe flow of traffic to meet forecast growth demands.	Road	Funded
TfNSW	M1 Sydney Newcastle Freeway – Kariong Interchange to Somersby Interchange	The M1 Freeway is the major road used to move freight and people between Sydney and the Central Coast, the Hunter and areas further north. This project seeks to construct two additional lanes in order to widen the section of road between Kariong Interchange and Somersby Interchange on the M1 Sydney to Newcastle Freeway.	Road	Funded
TfNSW	Duplication of Tourle Street Bridge and approaches, Kooragang	Additional capacity on Tourle Street and Cormorant Road, including duplication of the Tourle St Bridge, to improve the efficiency of the local freight network accessing the Port of Newcastle and connectivity between population/employment centres in Newcastle and Port Stephens.	Road	Funded
TfNSW	Adamstown Level Crossing – Planning	Planning for the elimination of conflicts at the 'at-grade' intersection between St James Road and the Main Northern Rail Line. The project seeks to progress the planning and options development of this project and provide real time information on train arrivals/expected road delays and intersection improvements on alternative crossings to make these more attractive.	Rail	Funded
TfNSW	M1 Freeway Weakleys Drive Intersection	The project aims to rectify capacity issues at an intersection at the northern end of the M1 Freeway. High demand for the existing roundabout results in: • Congestion and delays on Interstate, local freight and commuter traffic • Lack of capacity on a key area of the National Land Transport Network • Continuing road safety issues at a key intersection on the National Land Transport Network	Road	Funded
TfNSW	Bega Bypass	• The $60M Federally-funded Princes Highway bypass of Bega is due for completion in 2013.	Road	Funded
TfNSW	Gocup Road	It is proposed to upgrade Gocup Road to a high performance based standard (level 3) including realigning and widening key sections, adding a series of overtaking lanes, and overall upgrading of pavement able to withstand heavy loads. The initiative will enhance the productivity of freight movements to and from the South West Slopes, supporting in turn, the export of timber products originating from the region, and drive improvements in safety and maintenance outcomes. The upgrade of Gocup Road will also improve the connectivity of a key piece of off-network infrastructure with the national network – by enabling the use of efficient heavy vehicles.	Road	Funding sources to be determined

Sponsor	Project	Description	Mode	Status
TfNSW	Yarrawonga-Mulwala Bridge over the Murray River	The Yarrawonga Weir is proposed to be closed in 2020. As a result of the closure and the inability of the Mulwala Bridge to accommodate the projected increase in vehicle movements, a new Murray River crossing is required in order to maintain connectivity between the townships of Mulwala and Yarrawonga. Victorian and NSW governments have jointly announced a route study (2009). Planning has commenced and a public display of options was held in August 2010.	Road	Funding sources to be determined
TfNSW	New England Highway – Scone Rail Level Crossing Removal – Planning	A $1.4M Australian Government funded study will identify a solution for the separation of the New England Highway and Main Northern railway line at the present New England Highway rail level crossing in Scone.	Road	Funded
TfNSW	New England Highway – Tenterfield Heavy Vehicle Bypass – Planning	This Australian Government funded $3.3M project aims to identify a solution for removing heavy vehicles transiting through Tenterfield.	Road	Funded
TfNSW	Newell Highway – Trewilga realignment near Parkes	RMS has commenced planning for a realignment at Trewilga. This project will replace and realign the Trewilga section of the Newell Highway, including the following works: • Provide a 110 km/hr standard vertical and horizontal alignment at Trewilga • Provide a pavement compliant with acceptable roughness condition • Provide standard road formation width, including 1.6 km of widened shoulders • Provide a northbound overtaking lane.	Road	Funded
TfNSW	Newell Highway – Grong Grong realignment	The Newell Highway forms part of the National Land Transport Network (NLTN) Melbourne-Brisbane Corridor and is a crucial road link for freight traffic between Queensland and Victoria. This project will construct a bypass for the Newell Highway at Grong Grong, to include a link road with the village. The bypass will remove poor horizontal alignment and permit the Newell Highway to accommodate a posted speed limit of 110 km/h.	Road	Funded
TfNSW	Newell Highway – Moree Stage 2	The Newell Highway passing through the town of Moree includes a northern section bypass completed in 2010 in order to increase traffic efficiency for through traffic travelling on the Melbourne-Brisbane Corridor. The southern section of the bypass is not yet complete and is causing congestion at peak times. This project would construct a bypass for the southern section of the Newell Highway at Moree, to link the northern bypass completed in 2011. The southern bypass would separate through freight traffic from the intersections present on the current route, reduce travel time delays and improve road safety.	Road	Partially funded
TfNSW	Newell Highway – Mungle Back Creek to Boggabilla heavy duty pavement construction with wide centreline	This project is seeking to replace existing distressed pavements to provide greater access and reliability to the High Productivity Vehicle and Higher Mass Limit traffic in the region.	Road	Funding sources to be determined
TfNSW	Newell Highway – Narrabri to Bellata heavy duty pavement construction with wide centreline	This project is seeking to replace existing distressed pavements to provide greater access and reliability to the High Productivity Vehicle and Higher Mass Limit traffic in the region.	Road	Funding sources to be determined
TfNSW	Newell Highway – North Moree heavy duty pavement construction with wide centreline	This project is seeking to replace existing distressed pavements to provide greater access and reliability to the High Productivity Vehicle and Higher Mass Limit traffic in the region.	Road	Funding sources to be determined
TfNSW	Newell Highway – Overtaking lanes	This project seeks to plan and construct overtaking lanes on various sections of the Newell Highway identified as high priority. Planning and construction has commenced by RMS for high priority locations.	Road	Partially funded

Sponsor	Project	Description	Mode	Status
TfNSW	Newell Highway – West Wyalong heavy vehicle bypass	The Newell Highway passing through the town of West Wyalong includes a heavy vehicle bypass. The bypass is 4.8 km long, but the pavement is not currently suited for Higher Mass Limit vehicle operation. This project will widen and strengthen the existing bypass, aligning it to Higher Mass Limit standards. The upgrade will render the bypass capable of permitting Higher Mass Limit vehicles, thereby closing a gap for this type of vehicle traffic in the Melbourne-Brisbane Corridor.	Road	Funded
TfNSW	Pacific Highway – M1 Freeway to Raymond Terrace – Planning	This project seeks to develop a nationally significant piece of infrastructure to 'shovel ready' in order to provide a high standard link between the northern end of the Sydney to Newcastle M1 Freeway at Beresfield and the Pacific Highway at Raymond Terrace. RMS has selected the preferred route for the project.	Road	Funded
TfNSW	Port Botany – Sydney Airport Transport Improvement Plan including Planning for Increased Rail Capacity between Port Botany and Enfield - Short Term Actions	A number of projects to enhance the transport network in and around Port Botany / Sydney Airport. Includes: • Light vehicle road underpass of the rail line at General Holmes Drive • Truck layover area on Foreshore Road • One-way pairs road configuration on Bourke Road and O'Riordan Street • Widening of Mill Pond Road • Port Botany Freight Line duplication (planning).	Multi	Funded
TfNSW	New England Highway – Bolivia Hill realignment near Tenterfield	RMS has commenced planning. The project aims to: • Undertake an environmental assessment to determine the most appropriate option to improve the horizontal realignment of a 3 kilometre section of the highway •Improve the freight efficiency of vehicles accessing this freight corridor by increasing curve radii, reducing grade and removing the 60km/h speed limit applied to trucks and buses on this section • Improve the overall safety of this section of the road by improving general conditions for all road users.	Road	Funded
TfNSW	Bells Line of Road – Improvement Planning	On 09 Nov 09, the Australian Government and NSW Governments announced a Long Term Strategic Corridor Plan for the Bells Line of Road. The $2.9M plan is jointly funded. This plan was completed by RMS and published on 31 Oct 2012. The plan recommends a road corridor should be reserved for a future upgrade linking the Bells Line of Road with the Sydney motorway network near Kurrajong Heights. The next phase of the project includes safety works, realignments, improved overtaking opportunities as well as planning for future works.	Road	Funded
TfNSW	Great Western Highway – Pulpit Hill to East of Foy Avenue	The Great Western Highway between Pulpit Hill and Medlow Bath has insufficient capacity, substandard horizontal and vertical alignment and insufficient sight distance. These deficiencies are affecting the efficiency of freight and general traffic movements on the Great Western Highway. The project would involve the reconstruction and widening of the Great Western Highway between Watson Way, Katoomba and 450 metres east of Foy Avenue, Medlow Bath.	Road	Funding sources to be determined
TfNSW	New England Highway – Goonoo Goonoo upgrade Tamworth Equine Centre to Calala Lane	Planning has commenced by RMS. The project would involve widening Goonoo Goonoo Road in Tamworth from 2 to 4 lanes, between the Australian Equine Livestock Events Centre roundabout and Calala lane (1.45 kilometres in length).	Road	Funding sources to be determined

Sponsor	Project	Description	Mode	Status
TfNSW	New England Highway – Singleton Railway Underpass (Gowrie Gates)	This project aims to improve interstate freight productivity along the National Land Transport Network (NLTN) by eliminating the pinch point which currently exists at the railway underpass. This will improve freight efficiency, particularly for over-dimension vehicles, between the Port of Newcastle and the heavy mining industry in the Upper Hunter Valley and beyond to the Northern Tablelands. In addition, the project will also aim to reduce the risk of severing the New England Highway and Great Northern Railway at Singleton (both part of the NLTN) and improve road safety for local traffic by improving sight distance.	Multi	Partially funded
TfNSW	New England Highway Upper Hunter heavy duty pavement construction	The project would involve reconstructing 12.5 kilometres of the New England Highway with heavy duty pavement. This section of the Highway lies between Aberdeen and Willow Tree and is currently in poor condition.	Road	Funding sources to be determined
TfNSW	New England Highway – Belford to Golden Highway	One fifth of the traffic on this section of the New England Highway near the intersection with the Golden Highway is classed as heavy vehicles with many of these vehicles servicing the industry in the region. The Hunter boasts a significant port for freight movements, and a large coal industry that is growing. Without the proposed improvements, capacity problems will continue to worsen with a potential for greater costs to freight efficiency and the safety of all road users on this section.	Road	Planning is funded
TfNSW	New England Highway – Singleton Bypass – Planning	This project aims to identify options for the next stages of development of the Singleton Bypass with the intention to identify a corridor and to incorporate this corridor in the council local environment plan.	Road	Partially funded
TfNSW	New England Highway – Aberdeen Bridge	This Australian Government funded project is the replacement of the Fitzgerald bridge over the Hunter River to allow higher mass limit (HML) vehicle access along the New England Highway.	Road	Funded
TfNSW	Moorebank Intermodal Terminal supporting transport system upgrades	Provide the supporting road infrastructure upgrades at the Moorebank IMT precinct to meet forecast transport demand driven by Moorebank IMT operations and passenger traffic growth on the surrounding network.	Road	Funding sources to be determined
TfNSW	Princes Highway Upgrades	The Princes Highway provides critical links between Sydney, Wollongong, Canberra and communities on the South Coast down to the Victorian border. It accommodates in excess of 330 million trips by residents, visitors and for freight movements each year. There are two upgrade projects proposed. Them Gerringong to Bombaderry upgrade will complete a four lane arterial road between Waterfall and the turn off to Jervis Bay just south of Nowra and will provide an improved road system to support freight movements including to Port Kembla, while also enabling the safe passage of residents and visitors supporting anticipated population growth at Nowra-Bomaderry and the South Coast tourism industry. Replacement of the existing bridge structure will also allow southbound access for higher mass limit and over height vehicles which will contribute to productivity gains in freight transport. The second upgrade involves realigning 3.1 kilometres of the highway between Narooma and Cobargo, crossing over Dignams Creek. This will improve travel times and reliability along this section of the highway as well as remove a key “black spot”.	Road	Funded
ARTC	Southern Sydney Freight Line (SSFL)	The SSFL Stages 1 and 2 provide a dedicated freight line for a distance of 36 kilometres between Sefton Park Junction and Macarthur in southern Sydney. The SSFL will provide a third track in the rail corridor specifically for freight services, allowing passenger and freight services to operate independently. Stage 1 of the SSFL from Sefton to Leightonfield has been completed in June 12. It is expected that additional passing loops will be required on the SSFL to increase capacity. The demand for train paths will in part come from the operators running trains between Port Botany and the planned intermodal terminal in the Moorebank precinct. It is likely that passing loops will be constructed by ARTC at Warwick Farm and Carramar.	Rail	Funded

Sponsor	Project	Description	Mode	Status
ARTC	Upgrade of the Port Botany rail line / Enfield Staging Roads	The rail yard at Port Botany has been fully modernised and re-signalled to handle increasing volumes of container traffic to and from the Port. Additional tracks are now under construction at Enfield and signalling works along the MFN will support an increase in rail freight capacity to and from the Port Botany.	Rail	Funded
ARTC	Botany Rail Line Duplication	Joint TfNSW/ARTC project to increase capacity between Marrickville and Port Botany through duplication of the existing rail line.	Rail	Planning is funded
ARTC	Chullora Junction Upgrade	This project seeks to alleviate a pinch point on the network at Chullora. It will entail duplicating the West fork of the Chullora triangular junction to allow an increase in interstate rail traffic.	Rail	Funding sources to be determined
ARTC	Inland Rail Route	Feasibility and alignment of an inland rail route.	Rail	Planning is partially funded
Sydney Motorways Project Office (SMPO)	WestConnex	WestConnex is the largest transport project in Australia, linking Sydney's West and South-West with the City, Airport and Port in a 33km continuous motorway. It will transform Sydney and be the trigger for urban revitalisation that will beautify the Parramatta Road corridor and make it a more attractive place to live, work and socialise. The project is expected to cost $11-11.5 billion in today's money.	Road	Funded
SPC	Enfield Intermodal Logistics Centre	The Intermodal Logistics Centre (ILC) at Enfield is a fit-for-purpose intermodal terminal with rail connections that will improve the transfer of containerised freight to-and-from Port Botany and throughout regional NSW. Construction is expected to finish in 2013 and will be fitted out by private operator Hutchison Ports for a start of operations in 2014.	Multi	Funded
CoA	Moorebank Intermodal(s)	The project involves the development of freight terminal facilities linked to Port Botany by rail, increasing Sydney's rail freight capacity and reducing road freight on Sydney's congested road network. There are currently two proposals: (1) A Australian Government funded Moorebank Project Office (MPO) terminal, and (2) A privately funded Sydney Intermodal Terminal Alliance (SIMTA) terminal	Multi	Funding sources to be determined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APPENDIX G – CONSULTATION TO DEVELOP THE FINAL NSW FREIGHT AND PORTS STRATEGY

"Feedback from community and stakeholders is important...Freight stakeholders crave information about transport that allows them to make good decisions"

NICTA, Draft Freight and Ports Strategy Submission

During the four month consultation period following the Draft NSW Freight and Ports Strategy release in November 2012, Transport for NSW attended over 30 stakeholder forums with industry, local government representatives and members of the public to discuss the Draft Strategy. Traffic to the official Draft NSW Freight and Ports Strategy website exceeded 7000 visits.

A list of organisations and individuals who provided a submission to the Draft Strategy is given in Appendix G. The table below outlines the key issues that we heard in response to the Draft Strategy and provides a brief overview of how the final NSW Freight and Ports Strategy responds.

Key Issues Raised	How the NSW Freight and Ports Strategy responds
Supporting Defence and national security transport requirements	Section 2.1 identifies the need for Transport for NSW to work with the Australian Defence Force to incorporate the needs of Defence into the development and operation of the NSW transport network.
The importance of regional freight to the NSW economy	Section 2.2 identifies volumes and values of regional freight by location and commodity, as well as the road and rail productivity challenges experienced in regional NSW.
Freight network planning in the Illawarra region	Task 1A-4 (Develop purpose designed cargo movement models) includes the Illawarra Cargo Movement Model, whose purpose is to understand and forecast freight flows in the region, identify existing bottlenecks and inform potential efficiency improvements.
Support for regional NSW freight moving across state borders	Task 1C-2 (Improve cross border freight flows) aims to work with neighbouring jurisdictions in managing issues which affect cross-border freight productivity such as inconsistent access arrangements between states.
Funding and maintaining infrastructure to support road freight productivity	Task 1D-1 (Develop national heavy vehicle charging and investment reforms) outlines the development and implementation of heavy vehicle charging and investment reforms which will support NSW receiving revenue commensurate with heavy vehicle related road infrastructure costs.
Increase productivity through improving High Productivity Vehicle access on roads which are vital for freight	Task 1D-3 (Improve access for High Productivity Vehicles on state and local roads) aims to improve HPV access on freight significant state and local roads through consistent, efficient and transparent processes.
Information sharing and collaboration between the NSW Government and local councils on High Productivity Vehicle access considerations and road infrastructure implications	Task 1D-3 (Improve access for High Productivity Vehicles on state and local roads) aims to work with councils in sourcing and sharing information regarding the capability of roads to support High Productivity Vehicles and to support route approval processes.
Increasing demand for oversize and overmass heavy vehicle movements to cater for volume growth in mining and agricultural freight	Task 1D-5 (Manage oversize and overmass heavy vehicle movements) aims to develop a risk-based approach to managing oversize and overmass heavy vehicle movements, in partnership with industry.

Key Issues Raised	How the NSW Freight and Ports Strategy responds
Parking arrangements on metropolitan arterial roads	Task removed considering the implementation of parking restrictions to facilitate arterial road freight flows.
Consideration of air freight productivity within the NSW transport network	Action 1F (Maintain productivity of the air freight network) aims to ensures that air cargo movement requirements and projected growth in this sector will be integrated within landside infrastructure planning and improvement projects.
Coastal shipping and port interfaces	Action 1G (Facilitate the use of coastal shipping) aims to improve the understanding of the dynamics of coastal shipping and work with industry to support the growth and competitiveness of coastal freight in NSW.
Road freight connectivity issues between freight generating locations in regional and urban areas and the wider transport network	Task 1H-2 (Improve network connectivity between networks and key freight precincts) aims to implement, through a cross-government working group, a whole-of-network approach to identify, assess, prioritise and deliver road infrastructure projects which enhance network connectivity. This approach will support delivering higher productivity gains by connecting precincts of economically valuable freight to the transport network.
Managing grain freight movements	A case study in Task 1H-2 (Improve connectivity to and from key freight precincts) outlines the development of short and long term strategies in partnership with industry to improve productivity in the transport of grain from farms to grain receival sites through addressing access and regulation issues.
Catering for increased coal volumes through the provision of supporting rail infrastructure	Task 2C-3 (Ensure that there is sufficient rail infrastructure capacity from mine to port to meet coal demand) aims to work with the NSW Department of Planning and Infrastructure to identify and resolve issues related to the approval process for rail infrastructure projects necessary to meet coal demand.
Consulting with industry and the community with regards to the implementation and progress of this Strategy	Section 5.1 identifies and outlines mechanisms and established reporting criteria for informing government, industry and other stakeholders of Strategy progress and impacts.

In addition to informing the development of the final NSW Freight and Ports Strategy, the submissions have provided valuable insight at both the operational and strategic level from a variety of industry and community perspectives. These submissions will be used by Transport for NSW as enduring references to inform consideration, development and implementation of future freight network initiatives.

Submissions received on the Draft NSW Freight and Ports Strategy

- Arup Pty Ltd
- Asciano Limited
- ATEC Rail Group Limited
- Auburn City Council
- Australasian Railway Association
- Australian Federation of International Forwarders
- Australian Logistics Council
- Australian Trucking Association NSW
- Bankstown City Council
- Bega Valley Shire Council
- Blayney Shire Council
- Blue Mountains City Council
- Blue Mountains Integrated Transport Forum
- BlueScope Steel Australia and New Zealand
- Brian Burke
- Campbelltown City Council
- Centennial Coal
- Central NSW Councils
- City of Botany Bay Council
- Cowra Shire Council
- DP World Australia
- Dubbo City Council
- Emma Rooksby
- Fletcher International Exports
- Freight and Trade Alliance
- Glenfield Waste Services
- GrainCorp Ltd
- Holroyd City Council
- Hopman Consulting Services Pty Ltd
- Hunter Business Chamber
- Hunter Valley Coal Chain Coordinator
- Hutchison Ports Australia
- Illawarra Business Chamber
- Knauf Australia
- Lachlan Regional Transport Committee Inc
- Liverpool City Council
- Livestock and Bulk Carriers Association (LBCA)
- Local Government NSW
- Lynda Newnam
- Macarthur Regional Organisation of Councils (MACROC)
- Malcolm Moore
- Matt Farr
- Matthew Allen
- Michael Russell
- Narrandera Shire Council
- NatRoad
- Newcastle Port Corporation
- NICTA
- NSW Business Chamber (Sydney Business Chamber)
- NSW Minerals Council
- Orana Regional Organisation of Councils (OROC)
- Parkes Shire Council
- Port Kembla Coal Terminal
- Property Council of Australia
- Qantas
- Randwick City Council
- Regional Development Australia (RDA), Hunter Committee
- Regional Development Australia (RDA),Northern Rivers

- Regional Development Australia (RDA), Far South Coast
- Regional Development Australia (RDA), Mid North Coast
- Regional Development Australia (RDA), Sydney
- Roads Australia
- Rockdale City Council
- Ron Finemore Transport Pty Ltd
- Ross Mewton
- Shipping Australia Limited
- Shoalhaven City Council
- South East Australian Transport Strategy Inc. (SEATS)
- Southern Agventure
- Southern Councils Group
- Southern Sydney Regional Organisation of Councils (SSROC)
- Sue Tomic
- Sutherland Shire Council
- Sydney Ports Corporation
- Transport and Logistics Centre
- Transport for NSW
- University of Wollongong
- Veolia Transport Australia
- Visy Pulp and Paper Pty Ltd
- Wollondilly Shire Council
- Wollongong City Council
- Wollongong Neighbourhood Forum 5
- Woolworths Limited

APPENDIX H – GLOSSARY, ENDNOTES AND REFERENCES

TERM	EXPLANATION
AADT	Average annual daily traffic
ABS	Australian Bureau of Statistics
Above Rail	Rail transport services provided by passenger and freight transport operators. Does not include ownership of rail tracks (see below rail)
ACCC	Australian Competition and Consumer Commission
ADR	Australian Design Rule
AMSA	Australian Maritime Safety Authority, the National Maritime Safety Regulator
AQIS	Australian Quarantine and Inspection Service
ARRT	Advanced Resource Recovery Technology
ARTC	Australian Rail Track Corporation, an Australian Government owned corporation established in 1997 that owns, leases, maintains and controls the majority of main line standard gauge railways lines in Australia. In NSW operates: • Defined Interstate Rail Network • Hunter Valley Network • Metropolitan Freight Network (MFN) • Southern Sydney Freight Line (SSFL) on completion
ATC	Australian Transport Council, established in 1993 to provide a forum for Federal, State, Territory and New Zealand ministers to consult and provide advice to governments on the coordination and integration of all surface transport and road policy issues
ATDAN	Australian Transport Data Action Network
ATSB	Australian Transport Safety Bureau, the National Transport Safety Investigator
Background traffic	Traffic that occurs around developments, irrespective of the construction site
Below Rail	Provision of rail infrastructure services to freight and passenger rail transport operators, including rail tracks and associated infrastructure such as signalling
BFS	Bureau of Freight Statistics a new group within the Freight and Regional Development Division. The BFS will hold freight data across NSW to analyse and forecast demand across modes
BITRE	Bureau of Infrastructure, Transport and Regional Economics – part of the Policy and Research Division of the Department of Infrastructure and Transport in Australia. It provides economic analysis, research and statistics on infrastructure, transport and regional development issues to inform both Australian Government policy development and wider community understanding.
BTS	NSW Bureau of Transport Statistics – operates as an independent entity within NSW Department of Transport to monitor and forecast transport system usage and performance.
CEF	Clean Energy Future: the Federal Government's carbon pricing scheme.
CMC	The NSW Cargo Movement Coordinator – proposed body to plan and coordinate the movement of cargo to and from Port Botany and Port Kembla.
COAG	Council of Australian Governments – COAG is the peak intergovernmental forum in Australia, comprising the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australia Local Government Association (ALGA).
Connectivity	The ability to use forms of transport to and from key freight precincts that deliver the highest possible productivity
CRIA	Former Country Rail Infrastructure Authority

TERM	EXPLANATION
CRN	Country Regional Network – John Holland Rail provide train control and maintenance of the CRN.
CRRF	COAG Road Reform Plan
CSG	Coal Seam Gas
CSRGT	Continuing Survey of Road Goods Transport
DfT	UK Department for Transport
DIRN	Defined Interstate Rail Network
DP&I	NSW Department of Planning and Infrastructure
DPC	The NSW Department of Premier and Cabinet
EDI	Electronic Data Interchange
EPA	Environment Protection Authority
EU	European Union
FMCG	Fast Moving Consumer Goods – typically sold in supermarkets and discount stores
FMD	Foot and Mouth Disease
FRD	Freight and Regional Development, a division within Transport for NSW
GMA	Sydney Greater Metropolitan Area (GMA) which stretches from the Newcastle Statistical Sub-Division (SSD) in the north to the Illawarra SD in the south, and west to Outer Western and South Western Sydney.
GSP	Gross State Product measures the level of state production, and is equal to the Sum of State spending by household, business and government sectors, plus inventories and interstate and overseas exports, minus interstate and overseas imports. It is a comprehensive measure of economic activity occurring within a State.
GVA	Gross Value Added
GVM	Gross Vehicle Mass
HCEF	Hunter Coal Export Framework
HML	Higher Mass Limits – a scheme allowing heavier vehicles enrolled in the Intelligent Access Program to be loaded above General Mass Limits.
HPV	High Productivity Vehicles – vehicles approved to carry loads above standard mass limits under Higher Mass Limits or Performance Base Standards
HVCCC	Hunter Valley Coal Chain Coordinator
IA	Infrastructure Australia – a statutory body established in 2008 to advise governments, investors and infrastructure owners on issues dealing with Australia's current and future infrastructure needs; mechanisms for financing infrastructure investments; and policy, pricing and regulation and their impacts on investment on the efficiency of the delivery, operation and use of national infrastructure networks.
IAP	Intelligent Access Program – Certified intelligent transport system providing restricted access and over dimension vehicles with improved network access nationally. In return, compliance with approved access conditions is monitored using satellite-based tracking technology. This provides RMS and the community assurance that the right heavy vehicles are operating on their approved routes.
ICT	Information and Communications Technology – a general term highlighting the role of unified communications and the integration of telecommunications and audio-visual systems in modern information technology.
INSW	Infrastructure New South Wales, an independently chaired body that provides strategic policy direction and oversight for infrastructure planning and delivery to the NSW Government.

TERM	EXPLANATION
Intermodal Terminals (IMT)	An intermodal terminal is an area of land used to transfer freight between at least two modes of transport. It is typically used to describe the transfer of international shipping containers from road to rail and vice versa.
IPART	Independent Pricing and Regulatory Tribunal of NSW – IPART is the independent economic regulator for NSW. It oversees regulation in the electricity, gas, water and transport industries and undertakes tasks referred to it by the NSW Government.
IRHS	International Road Haulage Survey
ISO	International Standards Organisation – establishes standards, including those ensuring interoperability of shipping containers
ITSR	Independent Transport Safety Regulator – an independent statutory authority of the NSW Government. From 2013 ITSR will administer rail safety regulation under a service agreement with the National Rail Safety Regulator.
ITS	Intelligent Transport Systems
Kilotonnes	A thousand tonnes of freight
KPI	Key Performance Indicator
landside	Area of port activities not directly involved in vessel servicing
LCV	Light Commercial Vehicle – commercial carrier vehicles generally with a gross vehicle weight of up to 4.5 tonnes. E.g. pickup trucks, vans used for commercial and passenger-based transport.
LNG	Liquefied Natural Gas
LPG	Liquid Petroleum Gas, a fuel used in vehicles
LPIs	Local Productivity Initiatives
LTTMP	Long Term Transport Master Plan, being developed by Transport for NSW to address key transport challenges facing NSW over the next 20 years
mdl	Mass-distance-location charging – a heavy vehicle pricing option investigated under the COAG Road Reform Plan
MFN	Metropolitan Freight Network – a dedicated rail freight line between Port Botany and Enfield / Chullora and through to Sefton Junction (for south bound services) and through Flemington to North Strathfield for (north bound services). There was also a freight rail link from Dulwich Hill to White Bay Rozelle, which is being converted to light rail.
MIT	Moorebank Intermodal Terminal (Australian Government GBE development)
MoU	Memorandum of understanding
MRF	Materials Recovery Facility
mt	Megatonne i.e. one million metric tonnes
Mtpa	Million tonnes per annum – unit of measurement for annual freight volume
NB2	Nation Building 2 – An Australian Government funding program
NCIG	Newcastle Coal Infrastructure Group – operates the Newcastle Coal Terminal on Kooragang Island
NHVR	National Heavy Vehicle Regulator – an independent body for regulating all vehicles in Australia over 4.5 tonnes
NICTA	National ICT Australia – an independent company helping to build capabilities. NICTA is supported by TfNSW and has a number of projects in Infrastructure Transport and Logistics research focus area.
NRSR	National Rail Safety Regulator
NSFC	Northern Sydney Freight Corridor – a series of projects to improve access between Sydney and Newcastle for freight trains
NSW Trains	TfNSW agency that operates NSW TrainLink passenger services

TERM	EXPLANATION
NTC	National Transport Commission – reformed in 2004 to develop and coordinate regulatory reform for nationally consistent surface transport policies and laws.
OEH	Office of Environment and Heritage, a separate office within the NSW Department of Premier and Cabinet formed in 2011
'off hired'	When a hirer has finished with a leased shipping container
OPT	Overseas Passenger Terminal – passenger shipping terminal at Sydney's Circular Quay
OSOM	Oversize and/or overmass (OSOM) vehicles, which are a subset of RAVs that have a height, length, rear overhang, forward projection or mass exceeding statutory dimensions or mass limits. OSOM loads are commonly large indivisible items, special purpose vehicles (e.g. cranes) or agricultural machines/implements.
OWO	Outer Western Orbital corridor – transport corridor in the western part of the Sydney Basin to provide future transport capacity – aka Outer Sydney Orbital
PAMA	Ports and Maritime Administration Regulation 2012 (NS)
PBLIS	Port Botany Landside Improvement Strategy – led and coordinated by Sydney Ports to improve the competitive access and service arrangements of container movements between stevedores and transport carriers at Port Botany. PBLIS is the subject of Part B of the Ports and Maritime Administration Regulation 2012 (NSW)
PBRT	Port Botany Rail Team – An Sydney Ports formed team that develops and implements enhancements to freight rail operational performance and transport chain visibility. The PBRT comprises representatives from Sydney Ports; stevedores; rail operators; rail network owners (Australian Rail Track Corporation) and other government agencies, such as Transport for NSW. The PBRT is part of the PBLIS focused on rail movement.
PBS	Performance Based Standards – Alternative approach for Heavy Vehicle configuration and route assessment
Pinch Point	Pinch points are traffic congestion points, intersections or short length of roads at which a traffic bottleneck exists slowing down the broader network. They cause a build up on traffic and travel delays at these spots and on the wider road network.
PSOL	Port Safety Operating Licence
PWCS	Port Waratah Coal Services – operates Coal terminals on the Hunter River at Carrington and Kooragang Island
Quad dog trailer	4 axle heavy vehicle trailer with turntable
Quin dog trailer	5 axle heavy vehicle trailer with turntable
Rail Head	The point on a railway at which supplies are unloaded and distributed, often via another transport mode, such as shipping or train ferry.
Rail Terminal	A rail facility where rail services may commence or terminate and where cargo may be transferred between trains.
RailCorp	A statutory authority of the State of New South Wales that is the custodian of railway real estate, infrastructure and trains. RailCorp owns The Metropolitan Passenger Network (MPN), extending south to Nowra and Macarthur, west to Lithgow and north to Newcastle. The MPN is shared infrastructure used predominantly for passenger services. RailCorp also leases the Metropolitan Freight Network (MFN) to ARTC.
RAU	Rail Access Undertaking – establishes regulatory rights and obligations for operators (access seekers) and network owners; and sets parameters for commercial negotiations between them.

TERM	EXPLANATION
RAV	Restricted Access Vehicle
Road Pricing	The charges paid by vehicle operators for use of roads. It can take many forms including tolls or per kilometre charges.
ROC	Regional Organisations of Councils
RFIC	Road Freight Industry Council
Roll on / Roll off	A facility along the quay side which can cater for vessels which need to drive vehicles on or off the ship via a ramp lowered by the ship.
Rolling stock	Refers to all vehicles that move on rail, including passenger carriages, powered (locomotives) and unpowered (wagons) rail vehicles.
RMS	NSW Roads and Maritime Services – a TfNSW agency responsible for major road infrastructure, licensing of drivers, registration of new vehicles and improving road safety (replaced RTA)
RTA	Roads and Traffic Authority (replaced by RMS)
SCATS	Sydney Co-ordinated Adaptive Traffic System
SCOTI	Standing Committee on Transport Infrastructure – consists of transport agency Chief Executives to support the ATC's work program.
SD	Statistical Division. The ABS geographical boundary below state. For example, Sydney SD is the geographical area of the Sydney Basin plus the Central Coast.
SIMTA	Sydney Intermodal Terminal Alliance – principals of one of the Moorebank IMT proposals
SMVU	Survey of Motor Vehicle Use
Sydney Ports	Sydney Ports Corporation manages and develops port facilities and services in Sydney Harbour, Yamba and Eden. It is responsible for marine safety and emergency pollution response, vessel traffic control, the role of Harbour Master, the marine pilots and navigation buoys and markers
Sydney Trains	TfNSW agency that manages the Metropolitan Rail Network and operates suburban passenger train services.
SSFL	Southern Sydney Freight Line – a single track enhancement to the rail corridor between Sefton Park Junction and Macarthur for dedicated freight use.
Statistical Local Areas	ABS's Australian Statistical Geography Standard is being introduced from 2011 Census data releases.
TEU	Twenty foot equivalent units, the international unit of measure used for standardising container throughput numbers
T4	Terminal 4 proposal by Port Waratah Coal Services for an additional coal loader at Newcastle
TISOC	Transport and Infrastructure Senior Officials Committee
TfNSW	Transport for NSW, the statutory authority of the NSW Government created to manage transport services in the State. TfNSW plans and coordinates the functions of Sydney Trains, NSW Trains, the State Transit Authority, and Roads and Maritime Services. TfNSW is charged with improving the customer experience, planning, program administration, policy, regulation, transport services, infrastructure and freight for NSW.
VAS	Vessel Arrival System – the system facilitating the process of booking vessels in and out of port.
WSFL	Western Sydney Freight Line – a proposal to extend Metropolitan Freight Network to the Western Sydney Employment Zone

NSW Prescriptive and Performance Based Standards (PBS) heavy vehicle combinations

Transport Roads & Maritime Services

NSW GOVERNMENT

FACT SHEET

In NSW heavy vehicles are categorised as 'general access' and 'restricted access' vehicles, dependent on the vehicle mass, dimensions and configuration or a combination of all three. General access vehicles have unrestricted access to the NSW road system. General access vehicles are those that do not exceed all of the following:

Width 2.5 metres **Length** 12.5 metres (Rigid Truck); 19 metres (Articulated Combination)

Height 4.3 metres **Mass** GML value shown in chart below

PRESCRIPTIVE COMBINATIONS

2 Axle Rigid Truck

12.5 metres maximum overall length

GML^: 15.0t

3 Axle Rigid Truck

12.5 metres maximum overall length

GML^: 22.5t

17.0t 6.0t*

CML^: 23.0t**

4 Axle Rigid Truck

12.5 metres maximum overall length

GML^: 26.5t

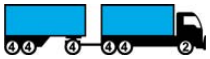
17.0t 10.0t*

CML^: 27.0t**

Twin steer vehicles fitted with a load sharing suspension are permitted 11 tonnes on the twin steer axle group increasing the Total Combination Mass of the vehicle by 1 tonne.

6 Axle Truck and Dog Combination

19.0 metres maximum overall length

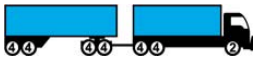


GML^: 48.0t

Refer to the Class 3 Truck and Dog Trailer Combination Notice 2010 for operating conditions.

7 Axle Truck and Dog Combination

19.0 metres maximum overall length



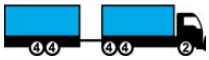
GML^: 50.0t

Total Combination mass of combination is limited to 50.0t.

Refer to the Class 3 Truck and Dog Trailer Combination Notice 2010 for operating conditions.

Truck and Pig Combination

19.0 metres maximum overall length

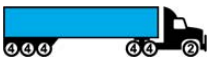


GML^: 37.5t

The loaded mass of a pig trailer must not exceed the loaded mass of the towing vehicle.

Semi-Trailer

19.0 metres maximum overall length



GML^: 42.5t

21.0t 17.0t 6.0t*

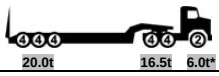
CML^: 43.5t**

22.5t 17.0t 6.0t*

HML^: 45.5t***

Truck and Low Loader Combination

19.0 metres maximum overall length

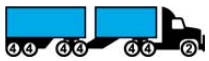


GML^: 42.5t

Special Permit required for masses over 42.5t.

19 metre B Double Combination (General Access Vehicle)

19.0 metres maximum overall length



GML^: 50.0t

17.0t 17.0t 17.0t 6.0t*

CML^: 51.0t**

Level 9, 101, Miller Street, North Sydney NSW 2060
Locked Bag 928 North Sydney NSW 2059
www.rms.nsw.gov.au | 13 22 13

May 2013
RMS. 13.259

PRESCRIPTIVE COMBINATIONS *(CONTINUED)*

19 metre B Double Combination (Restricted Access Vehicle)

19.0 metres maximum overall length

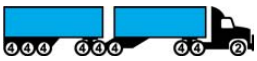
GML^: 55.5t

17.0t 17.0t 17.0t 6.0t*

CML^: 57.0t**

25 metre B-Double Combination

25.0 metres maximum overall length



GML^: 62.5t

21.0t 21.0t 17.0t 6.0t*

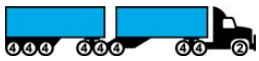
CML^: 64.5t**

22.5t 22.5t 17.0t 6.0t*

HML^: 68.0t***

26 metre B-Double Combination

26.0 metres maximum overall length



GML^: 62.5t

21.0t 21.0t 17.0t 6.0t*

CML^: 64.5t**

22.5t 22.5t 17.0t 6.0t*

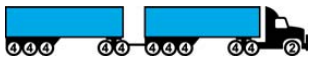
HML^: 68.0t***

Prime mover must be fitted with a Front Underrun Protection System (FUPS) and meet Cabin Strength requirements.

ROAD TRAINS

A-Double/Type 1 Road Train Combination with Tandem Axle Dolly

36.5 metres maximum overall length



GML^: 79.0t

21.0t 17.0t 21.0t 17.0t 6.0t*

CML^: 81.0t**

22.5t 17.0t 22.5t 17.0t 6.0t*

HML^: 85.0t***

Rigid Truck and Two Dog Trailer Combination/Type 1 Road Train

36.5 metres maximum overall length

GML^: 79.0t

17.0t 17.0t 17.0t 17.0t 17.0t 6.0t*

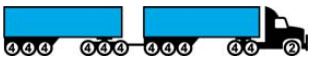
CML^: 81.0t**

HML

Combination not eligible for operation at Higher Mass Limits

A-Double/Type 1 Road Train Combination with Tri-axle Dolly / Modern Road Train

36.5 metres maximum overall length



GML^: 82.5t

21.0t 21.0t 21.0t 17.0t 6.0t*

CML^: 84.5t**

22.5t 22.5t 22.5t 17.0t 6.0t*

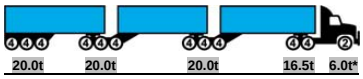
HML^: 90.5t***

Operator must be accredited in the Maintenance Management Module of NHVAS when operating on approved routes east of the Newell Highway

RFS Tri-axle converter dolly must be fitted with certified Road Friendly Suspension

Modular B-Triple Combination

35.0 metres maximum overall length



GML^: 82.5t

21.0t 21.0t 21.0t 17.0t 6.0t*

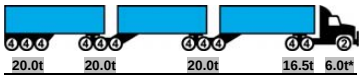
CML^: 84.5t**

22.5t 22.5t 22.5t 17.0t 6.0t*

HML^: 90.5t***

B-Triple Combination

36.5 metres maximum overall length



GML^: 82.5t

21.0t 21.0t 21.0t 17.0t 6.0t*

CML^: 84.5t**

22.5t 22.5t 22.5t 17.0t 6.0t*

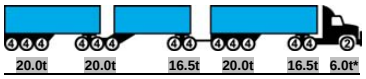
HML^: 90.5t***

IAP required for operation at all mass limits

Operator must be accredited in the Maintenance Module of NHVAS

AB-Triple Combination with Tandem Axle Dolly

36.5 metres maximum overall length



GML^: 99.0t

21.0t 21.0t 17.0t 21.0t 17.0t 6.0t*

CML^: 101.0t**

22.5t 22.5t 17.0t 22.5t 17.0t 6.0t*

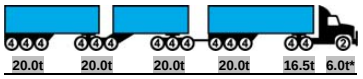
HML^: 107.5t***

IAP required for operation at all mass limits

Operator must be accredited in the Maintenance Module of NHVAS

AB-Triple Combination with Tri-axle Dolly

36.5 metres maximum overall length



GML^: 102.5t

21.0t 21.0t 21.0t 21.0t 17.0t 6.0t*

CML^: 104.5t**

22.5t 22.5t 22.5t 22.5t 17.0t 6.0t*

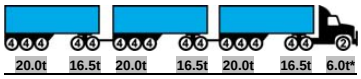
HML^ :113.5t***

IAP required for operation at all mass limits

Operator must be accredited in the Maintenance Module of NHVAS

A-Triple/Type 2 Road Train Combination with Tandem Axle Dolly

53.5 metres maximum overall length



GML^: 115.5t

21.0t 17.0t 21.0t 17.0t 21.0t 17.0t 6.0t*

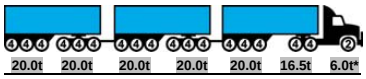
CML^: 117.5t**

HML

Combination not eligible for operation at Higher Mass Limits

A-Triple/Type 2 Road Train Combination with Tri-Axle Dolly

26.0 metres maximum overall length



GML^: 122.5t

21.0t 21.0t 21.0t 21.0t 21.0t 17.0t 6.0t*

CML^: 124.5t**

HML

RFS Tri-axle converter dollies must be fitted with certified Road Friendly Suspension

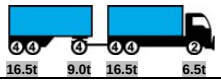
Combination not eligible for operation at Higher Mass Limits

PERFORMANCE BASED STANDARDS APPROVED COMBINATIONS

(Mass limits for PBS vehicles are subject to final PBS vehicle approval)

PBS Truck and Three Axle Dog Trailer Combination (Tri Dog)****

≤ 20.0 metres at Level 1 Access

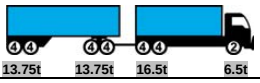


16.5t 9.0t 16.5t 6.5t

GML^: 48.5t

PBS Truck and Four Axle Dog Trailer Combination (Quad Dog)****

≤ 20.0 metres at Level 1 Access



13.75t 13.75t 16.5t 6.5t

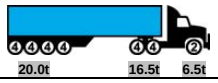
GML^: 50.5t

17.0t 17.0t 17.0t 6.5t

HML^: 57.5t***

PBS Quad Axle Semi-Trailer Combination

≤ 20.0 metres at Level 1 Access



20.0t 16.5t 6.5t

GML^: 43.0t

27.0t 17.0t 6.5t

HML^: 50.5t***

PBS Truck and Five Axle Dog Trailer Combination (Quin Dog)****

≤ 30.0 metres at Level 2 Access

20.0t 16.5t 16.5t 6.5t

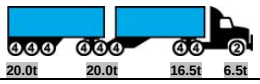
GML^: 59.5t

22.5t 17.0t 17.0t 6.5t

GML^: 63.0t***

PBS B-Double Combination

≤ 30.0 metres at Level 2 Access



20.0t 20.0t 16.5t 6.5t

GML^: 62.5t

21.0t 21.0t 17.0t 6.5t

CML^: 64.5t**

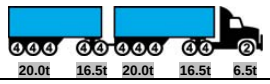
22.5t 22.5t 17.0t 6.5t

HML^: 68.5t***

Internal dimensions vary between PBS and prescriptive B-Doubles

PBS A-Double Combination

≤ 30.0 metres at Level 2 Access



20.0t 16.5t 20.0t 16.5t 6.5t

GML^: 79.5t

21.0t 17.0t 21.0t 17.0t 6.5t

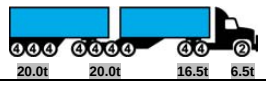
CML^: 81.5t**

22.5t 17.0t 22.5t 17.0t 6.5t

HML^: 85.5t***

PBS Super B-Double Combination (Quad Tri)****

≤ 30.0 metres at Level 2 Access



20.0t 20.0t 16.5t 6.5t

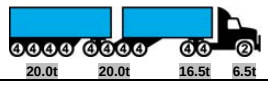
GML^: 63.0t

22.5t 27.0t 17.0t 6.5t

HML^: 73.0t***

PBS Super B-Double Combination (Quad Quad)****

≤ 30.0 metres at Level 2 Access



20.0t 20.0t 16.5t 6.5t

GML^: 63.0t

27.0t 27.0t 17.0t 6.5t

HML^: 77.5t***

* Under Gazette Notices published in NSW, vehicles with a GVM of 15 tonnes or more meeting Front Under-run Protection Systems, cabin strength and engine emissions standards (ADR80/01) can operate at 6.5 tonnes on the steer axle. The extra 500kg permitted on the steer axle increases the total gross mass of the combination by 500kg.

** Vehicles accredited under the NHVAS Mass Management Accreditation Scheme are permitted 1 tonne above the total combination mass for a vehicle or vehicle combination with an allowable gross mass not exceeding 55 tonnes and 2 tonnes above the total combination mass for a vehicle or vehicle combination with an allowable gross mass exceeding 55 tonnes.

*** Requirements for HML operation: enrolment into the Intelligent Access Program (IAP), accreditation under the NHVAS Mass Management Accreditation Scheme and certified Road Friendly Suspension fitted on all axle and axle groups except the steer axle on the prime mover

**** A PBS Permit is required for operation on NSW Roads.

GML General Mass Limits.

CML Concessional Mass Limits.

HML Higher Mass Limits.

^Mass limits refer to the Total Combination Mass (TCM) of a heavy vehicle combination.

Endnotes

1 Hyder 2012

2 ABS, 2000 and ABS, 2008

3 10 year cumulative average annual growth rate (CAGR)

4 Sydney Ports

5 Australian Harmonised Export Commodity Classification

6 Australian Harmonised Export Commodity Classification

7 Sydney Ports, 2012

8 Port Kembla Corp, 2012

9 BIS Shrapnel, 2012

10 RMS, 2011; RMS, 2012a

11 RMS, 2011

12 RMS, 2012

13 ABS 9208.0, Survey of Motor Vehicle Use, 2012 (NSW) and BTS, Freight forecasts, 2010 (Sydney GMA). NB: LCVs are assumed to be broken into 25 per cent deliveries only and 75 per cent service related, based on the Melbourne Commercial Vehicle Video Study, 29 November 2012. Equivalent data for Sydney was not available at the time of writing.

14 RailCorp ICM, September 2012

15 RailCorp, ICM, September 2012

16 CRN website, Fast Facts, accessed September 2012

17 SAHA, 2010

18 Sydney Airport Corporation Limited, Preliminary Draft Master Plan 2013

19 Sydney Airport Corporation Limited, Preliminary Draft Master Plan 2013

20 Department of Infrastructure and Transport, 2012b

21 Department of Infrastructure and Transport, 2012b

22 Department of Infrastructure and Transport, 2012a

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Rail route distances by ownership structure (Appendix C)

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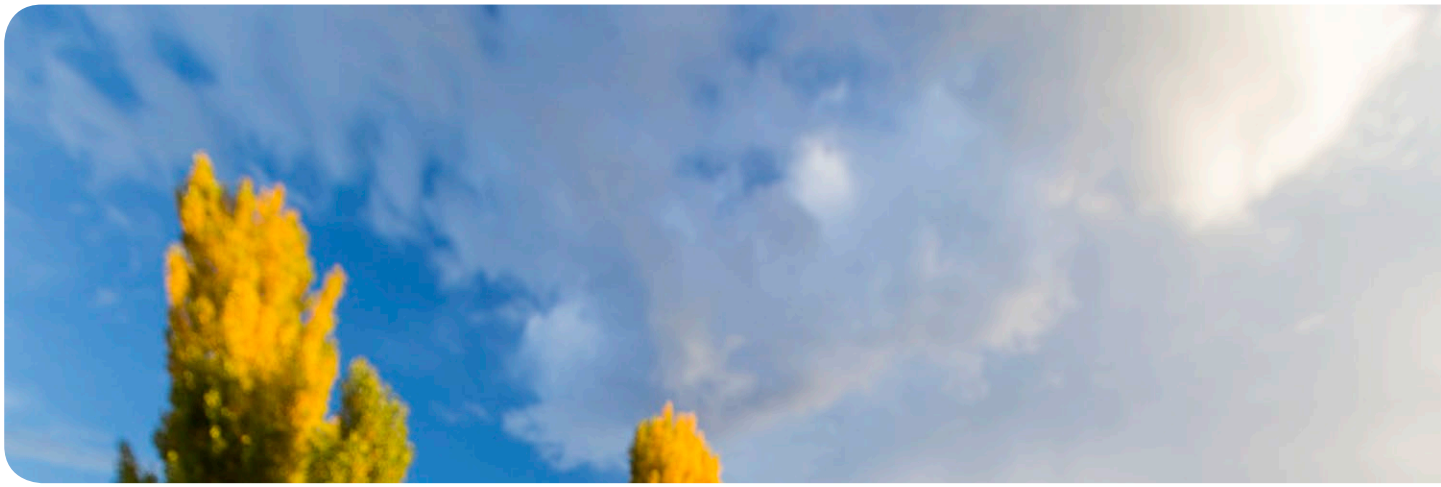


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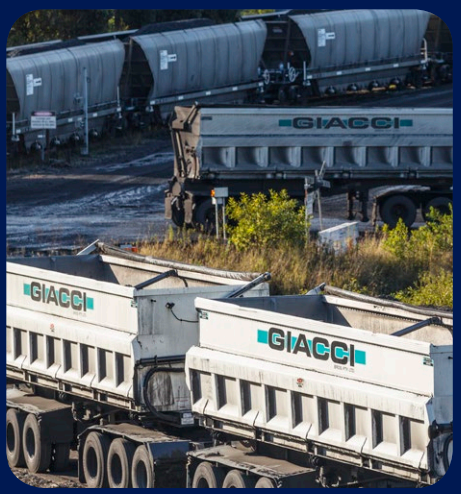
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