

10.0 Regional and interstate transport

Summary

- Regional and interstate transport infrastructure supports the economy and quality of life of NSW by allowing people to access employment opportunities, connecting regional communities and supporting freight movements.
- Regional NSW has extensive and well-developed regional road and rail networks connecting population and employment centres across the state. In recent years, the NSW State and Commonwealth Governments have undertaken major investment to improve the quality and capacity of these networks.
- The road network is the backbone of regional transport. Over 90 percent of passenger trips and almost two thirds of freight journeys are by road. Rail primarily moves bulk freight to local markets and port gateways for export.
- NSW's economic success relies on reliable, efficient rail connections between the regions and NSW's export ports. The Hunter Valley Coal Chain has been a good example of the private and public sector working together to achieve this. This model may be suitable for the rail lines to Port Kembla.
- A number of major road programs are underway. These include upgrades to the Pacific Highway and Princes Highway. Getting the best value for these major investments is essential. Infrastructure NSW is concerned that cost estimates for these programs appear very high.
- Unlocking the key constraints along the road and rail networks that limit freight movements are likely to have some of the highest economic benefits in the regions. This includes upgrading understrength road bridges, providing rail passing loops and ensuring roads and rail lines are well-maintained and effectively managed.
- Incremental measures to relieve pinch points are recommended over new major 'single' investments such as the proposed high speed rail and inland rail projects although corridor preservation is recommended to preserve optionality in some cases.
- Growing freight movements bring both benefits and challenges to local communities. The local road and rail infrastructure of communities in coal areas or along key highways may require investment as trade grows.

10.1 Snapshot

- Long distances, low population densities and the nature of regional employment means the demands placed by passengers on the transport networks of Regional NSW are very different to those of metropolitan NSW.
- The road network is the dominant mode for regional passenger travel. Over 90 percent of the 7.5 million journeys made each day are by car¹.
- There is limited usage of regional and interstate public transport. Regional train services carry less than 6,000 passengers a day. Regional bus and coach services transport around almost three times as many, approximately 15,000 passengers a day².
- 63 percent of freight movements in Regional NSW by volume are by road, 33 percent by rail³. Freight modal share varies substantially depending on the task. Most bulk freight, is transported via rail and sea, whereas most non-bulk freight is moved by road. For example:
 - 70 percent of coal movements by volume are by rail
 - 80 percent of interstate freight movements (by volume) are by road
- Air travel plays a limited but valuable role for travel within NSW, both for passengers and freight movements.

¹ NSW Bureau of Transport Statistics 2006, Journeys to Work in Regional NSW.

² NSW Bureau of Transport Statistics 2006, Journeys to Work in Regional NSW.

³ Transport for NSW 2012, Draft Transport Master Plan.

- Regional passenger transport demand is forecast to grow relatively slowly over the next 20 years, at around one percent per annum⁴.
- Freight demand is forecast to grow more rapidly than passenger demand. Over the next 20 years, the volume of freight being moved in NSW is expected almost to double⁵.
- Major investment has been undertaken in recent years on the regional road network in Regional NSW. This has been supported by Commonwealth Government funding through the Nation Building Program, which will invest around \$11 billion in regional NSW's roads over the period from 2008-09 to 2013-14. Projects have included investment in the duplication of the Hume and Pacific Highways, and in new routes such as the Hunter Expressway.
- Significant investment has also been undertaken in NSW's regional and interstate rail freight networks during the same period. The Australian Rail Track Corporation (ARTC) is making major investments to upgrade rail links between Sydney and Melbourne as well as between Sydney and Brisbane, and to increase capacity in the Hunter Valley Coal Chain.

10.2 Transport infrastructure in Regional NSW

10.2.1 Introduction

The passenger and freight transport infrastructure networks of Regional NSW are intertwined. All of the road network, and much of the rail network accommodates both forms of transport. These infrastructure networks interconnect with the transport networks of both the metropolitan area and other States.

The road network underpins travel in Regional NSW. It serves both passenger and freight demand, particularly for intrastate and interstate freight movements. The rail network is primarily used for the important role of carrying bulk freight from regional operations (agricultural and resource based) to access domestic processing, local markets, and port gateways.

Investment in regional transport infrastructure has to be appropriate to the tasks placed on it. Section 5 noted that focus is needed on investing in support of growing regions (particularly those around Sydney, along the coast, and in mining regions) while ensuring wider freight and passenger networks function effectively.

In developing the regional perspective, Infrastructure NSW engaged with representatives of Regional Development Australia across the State. A common theme that emerged from these discussions was perceived constraints in the current road freight network. Other specific proposals are outlined in Sections 10.2.2–10.2.4.

⁴ BITRE 2002, Regional Public Transport in Australia: Long – Distance Services, Trends and Projections.

⁵ Infrastructure Partnerships Australia and PwC 2009, Meeting the 2050 Freight Challenge.

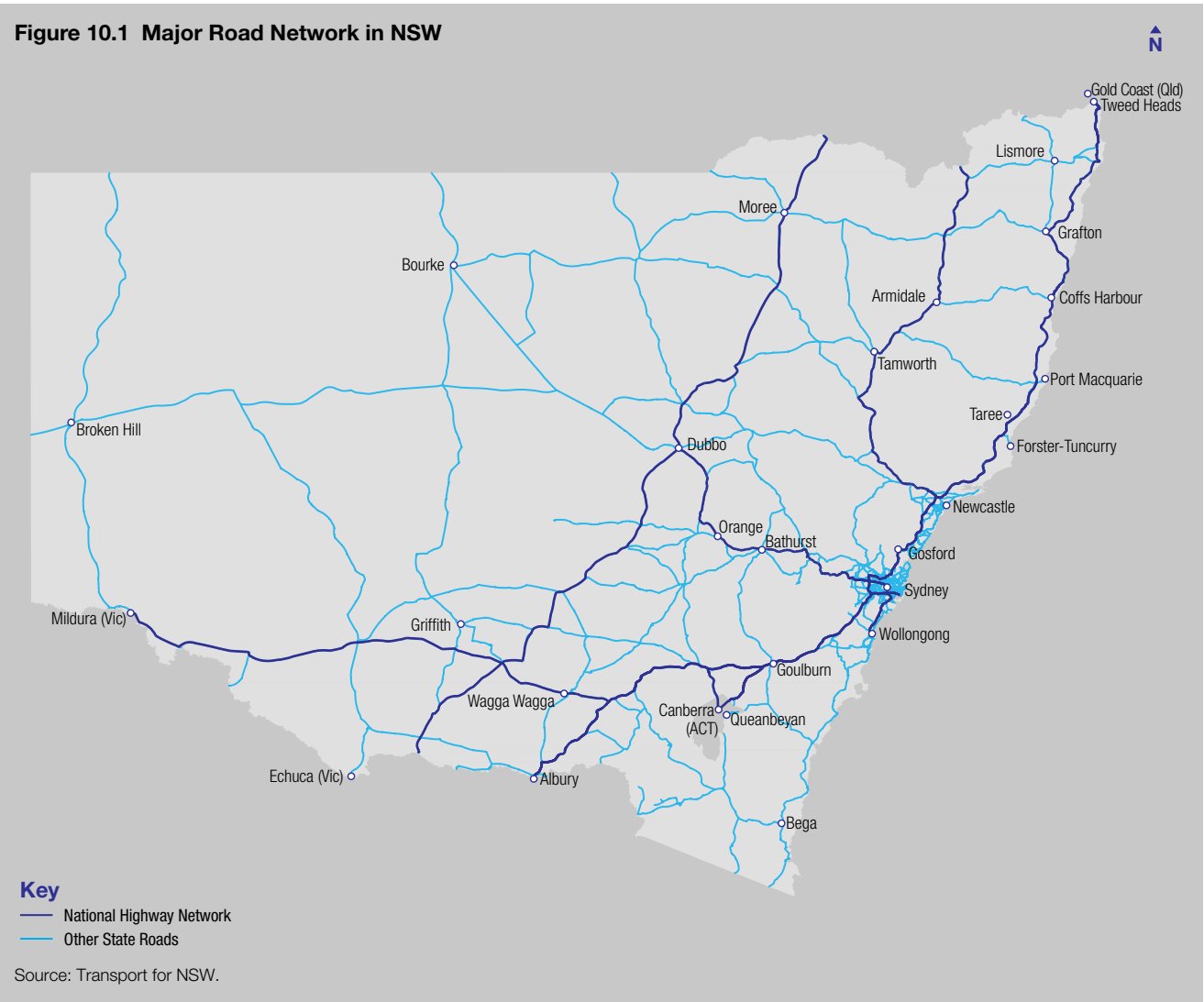
10.2.2 NSW Highway Network

NSW has an extensive, well-developed network of highways connecting the State's major population centres. In total, NSW has over 18,000 kilometres of State roads and 3,000 kilometres of regional and local roads, and over 5,000 bridges. Around 4,200 kilometres of these roads comprise the National Highway Network. State managed roads also connect to over 160,000 kilometres of council managed roads. The network of major roads is shown in Figure 10.1.

Principal highways that form part of the National Network include the Pacific Highway, New England Highway, Hume Highway, Great Western Highway, Newell Highway and Sturt Highway.

A number of investments have been proposed by regional authorities to upgrade these highways and other regional and rural roads, such as through the provision of passing lanes, route duplication or community bypasses. The ongoing Pacific Highway duplication is one of the largest infrastructure programs in the State.

Figure 10.1 Major Road Network in NSW



10.2.3 Public Transport in Regional NSW

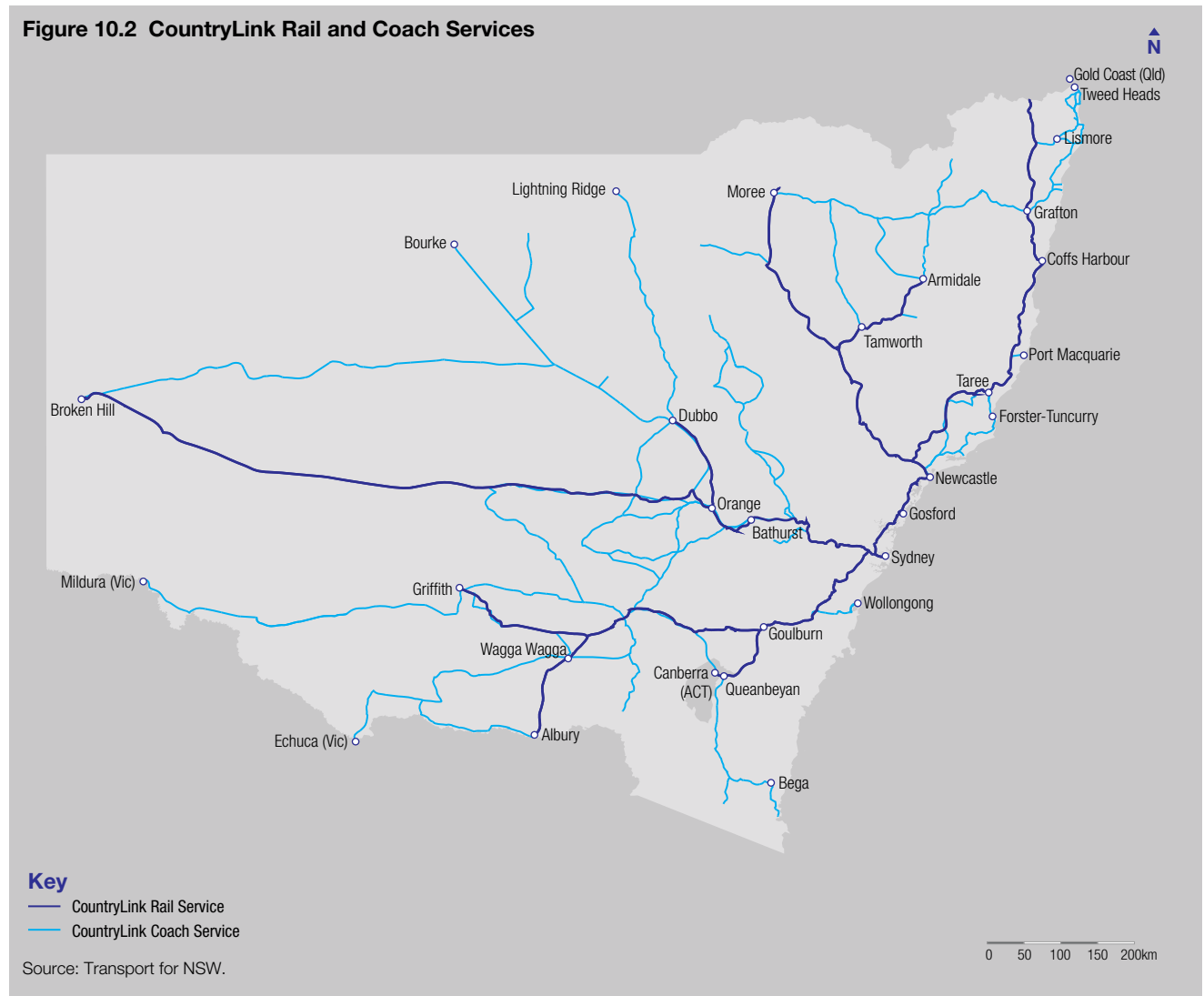
Outside of Sydney, the passenger rail network totals 3,450 kilometres of track. Much of this network is leased by the ARTC. In 2012, the NSW Government announced that NSW Trains would be established, taking on the role of CountryLink in providing regional services and CityRail's intercity routes. CountryLink also offers coach services to regional centres not currently served by rail.

Countrylink's regional rail and coach network is shown in Figure 10.2.

The rolling stock used on longer distance rail services is close to age expired, and a decision is needed on the future of these services. Options to re-open regional rail lines to passenger traffic have been advocated by regional authorities and the private sector, for example the Casino to Murwillumbah Line on the North Coast.

In addition, a variety of regulated and deregulated private operators run bus and coach services in NSW. Community transport is also available, particularly in remote communities.

Figure 10.2 CountryLink Rail and Coach Services



10.2.4 Regional Air Travel

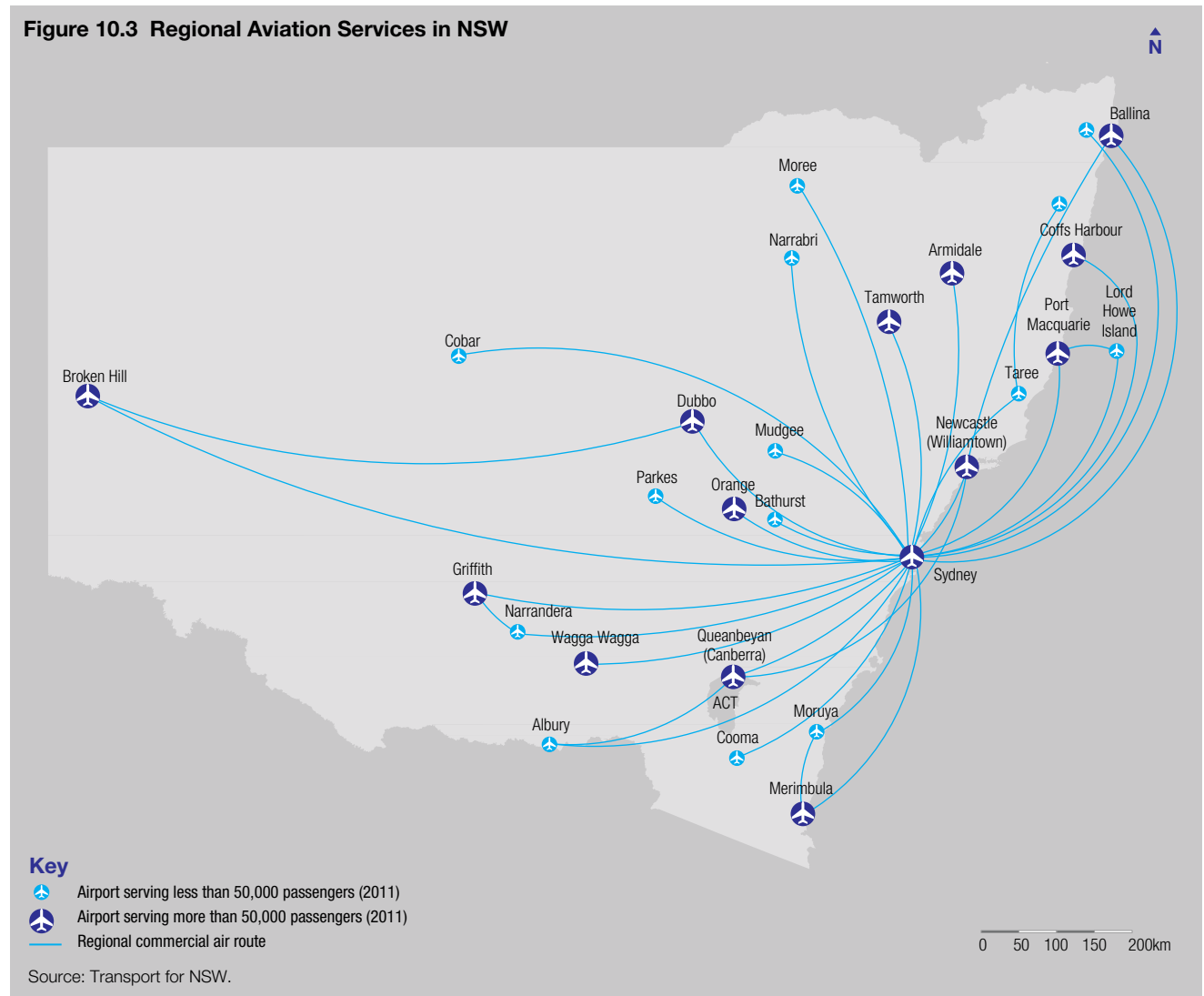
Regional aviation infrastructure supports scheduled services within NSW (primarily to Sydney), across Australia and general aviation services. Current scheduled services are shown in Figure 10.3.

Air travel is an effective way of moving high value freight and passenger movements between NSW's dispersed regional centres. It also allows efficient travel to remote worksite, for example for fly-in-fly-out movements.

Most regional airports are owned by local governments. In some areas, regional authorities have identified that these facilities, and/or the landside infrastructure that support them, may have insufficient capacity to accommodate demand growth over the next 20 years.

These include airports at Wagga Wagga, Dubbo, Parkes, Orange and Cowra.

Figure 10.3 Regional Aviation Services in NSW



10.2.5 NSW Freight Network

The NSW freight network shares much of the road and rail networks shown in Sections 10.2.2 and 10.2.3. It also includes the parts of the regional rail managed by the ARTC and the Country Regional Network that do not offer passenger services. In addition, the freight network includes:

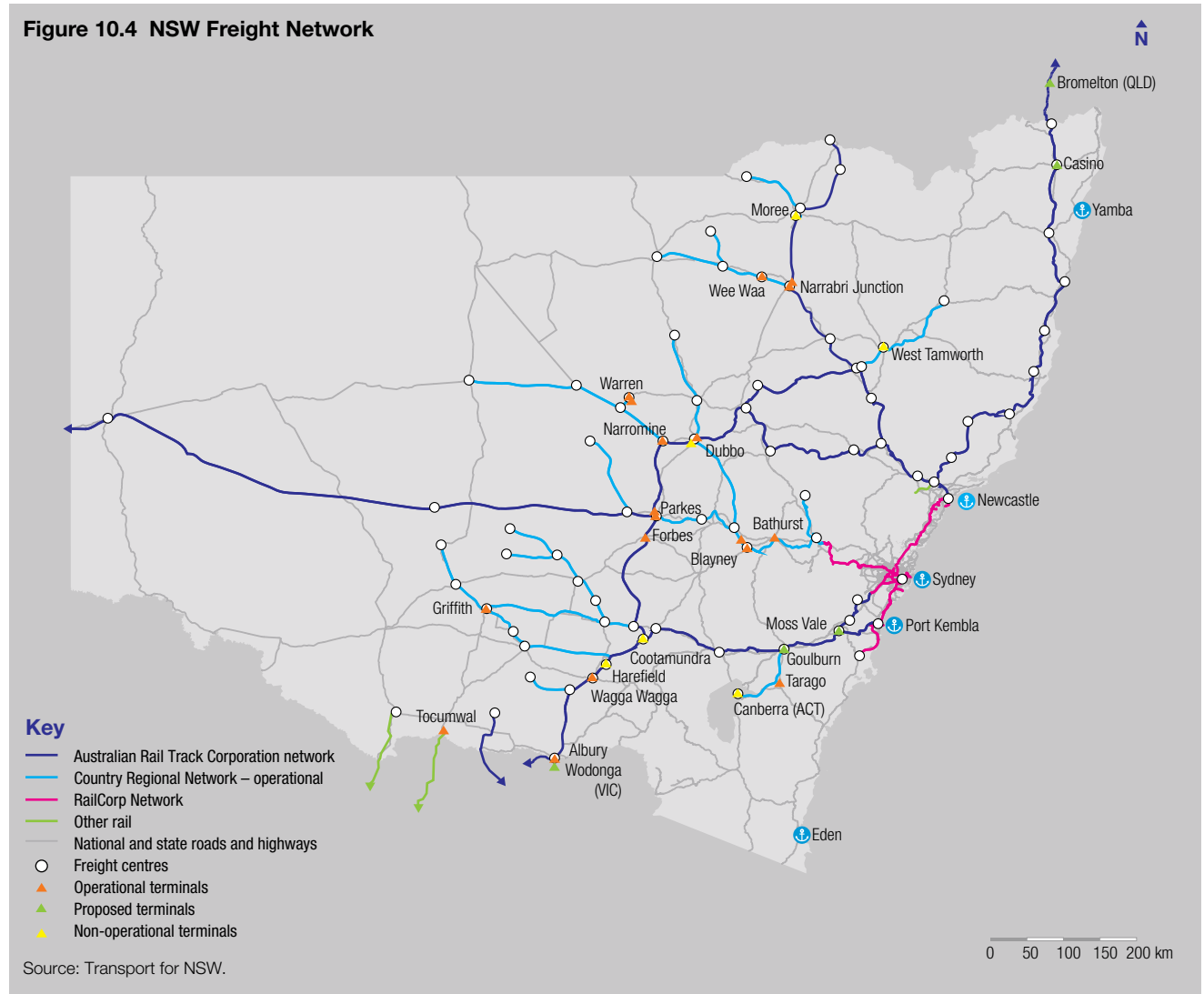
- NSW’s primary sea ports (Port Botany, Port Kembla and the Port of Newcastle), along with 28 smaller ports and harbours (such as Eden and Yamba)
- Sydney Airport
- 23 intermodal freight terminals.

The NSW freight network is shown in figure 10.4

A number of potential upgrades to this network have been suggested by regional authorities and/or the private sector, including investment to create an inland rail route for interstate freight between Brisbane and Melbourne through regional NSW, and investment to upgrade the coastal rail corridor between Sydney and Brisbane.

It should also be noted that regional road freight will benefit from ongoing upgrades to the National Highway Network.

Figure 10.4 NSW Freight Network



10.3 Connecting people

This section considers infrastructure investments that could improve connections between regional communities and improve interstate travel.

Investments proposed or underway for the National Highway Network are discussed in Section 10.6, due to their important function as freight routes.

10.3.1 Improving access to the Metropolitan Area

Section 5 highlights the importance of connecting regional areas to Sydney, particularly those proximate to the metropolitan area. Already, 17 percent of the Illawarra workforce travel to Sydney for work each weekday⁶.

The Grattan Institute has shown how improved connectivity can improve economic outcomes for both State capitals and their satellite areas⁷. For example, Ballarat in Victoria has benefited by investments to improve its road and rail links to Melbourne, and is now one of the fastest growing areas in Victoria.

The Illawarra and lower Hunter regions are blessed by natural beauty that make them attractive places to live.

At present, 80 percent of journeys from the Illawarra are by car⁸. The area will also benefit from the proposed extension of the F6 recommended in Section 6, particularly for journeys to some of Greater Sydney's dispersed employment opportunities.

Section 8 sets out options to accelerate rail services to the Illawarra and, over the longer term, to the Hunter region, which will improve access to Global Sydney from these regions.

10.3.2 Improving regional and interstate public transport

Over the next 10 years, the XPT fleet used on long distance rail services will approach the end of its economic life. A decision will need to be taken on whether the substantial investment required for new rolling stock is justified given very low regional rail patronage, or whether alternative approaches should be a priority.

Alternatives could include greater use of coach services or service sharing on some routes with Great Southern Railway, a private sector operator of interstate passenger trains. These options may be more economically viable and could provide faster journey times.

The very limited role rail plays in regional transport leads Infrastructure NSW to conclude that the case for investment to reopen historic railways lines to passenger traffic will need careful assessment on a case by case basis and is unlikely to be viable in most cases.

Infrastructure NSW has not assessed any of these proposed projects due to the absence, at this stage, of sufficiently detailed business cases. Transport for NSW is currently assessing the proposed reopening of the Casino to Murwillumbah rail corridor.

10.3.3 Supporting regional aviation

As Section 5 notes, regional air travel access is needed not only to connect people to and from jobs across

NSW and interstate (including for Fly-In-Fly-Out (FIFO) employment), but also to bring health and other professional services to regions.

The role of the NSW Government in this sector is limited to its role in licencing regional aviation. Market driven investment should fund airport expansion where required. Landside infrastructure upgrades around airports will primarily be on local roads.

As Section 9 notes, however, there is a case for expanding aviation capacity in Western Sydney over the longer term. State investment in supporting infrastructure would be needed to enable this.

From a regional perspective, additional aviation capacity in Sydney could improve connectivity to the metropolitan area. Potentially, a Western Sydney Regional Airport could also be used as a hub for FIFO mining flights, improving regional access to these valuable employment opportunities.

10.3.4 Assessing the potential for high speed rail

The Commonwealth Government has been considering the potential to develop high speed rail services between Melbourne and Brisbane via Sydney. By definition, most of this infrastructure would be in NSW.

Project proponents argue that high speed rail could transform connectivity along the east coast, open up regional areas for development and improve the productivity and competitiveness of Australia's economy. The success of similar projects in Asia and Europe is often noted. This debate is not new. The Hawke Government considered the opportunities for a scheme in the 1980s.

6 NSW Bureau of Transport Statistics 2011, Journey to Work data.

7 Grattan Institute 2011, Investing in Regions: Making a Difference.

8 NSW Bureau of Transport Statistics 2011, Journey to Work data.

The proposed scheme is expensive (\$68 – \$108 billion)⁹. Operating costs (due to the long distances noted) would also be high, relative to air travel¹⁰. A commitment of this scale requires a high degree of certainty that it will achieve its identified objectives.

To date, Infrastructure NSW believes the case has not been made as to why a rail option would provide such transformative benefits that it would compete with aviation, even with a heavy subsidy.

High speed rail services are most competitive with short haul air travel where journey times are around three hours or below¹¹.

These journey times are challenging to achieve along the east coast using proven technology as the major capital cities are so far apart. By way of comparison, the distance from Paris to Lyon, one of the world's most successful high speed services, is 465 kilometre, whereas the identified route from Sydney to Melbourne is 823 kilometre and that from Sydney to Brisbane 821 kilometre¹².

In addition, there is a trade off between offering faster end to end journey times, which implies fewer intermediate stops, and the achievement of the perceived regional economic benefits.

⁹ Department of Infrastructure and Transport 2011, High Speed Rail Study: Phase 1.

¹⁰ Steer Davies Gleave 2006, Air and Rail Comparison and Complementarity, prepared for the European Commission.

¹¹ Steer Davies Gleave 2006, Air and Rail Comparison and Complementarity, prepared for the European Commission.

¹² Department of Infrastructure and Transport 2011, High Speed Rail Study: Phase 1.

For these reasons, Infrastructure NSW does not see high speed rail as a priority for State investment over the next 20 years. Incremental improvements to the existing National Highway Network and intercity rail lines, reflecting our “first things first” approach, should take priority.

10.4 Improving local transport for regional communities

This section considers options to reduce localised congestion, improve safety and mitigate amenity impacts in regional communities, particularly those experiencing rapid increases in demand, such as in mining regions.

10.4.1. Bypassing communities along major highways

In recent years, significant investment has been made to bypass communities, for example along the Newell Highway. However town bypasses are not appropriate in all areas.

Bypasses can benefit regional communities by reducing the number of trucks that travel through town centres, improving the amenity of regional towns, and, more widely, can improve freight and passenger journey times along major highways.

Conversely, bypasses can also reduce ‘passing trade’ in these bypassed communities.

Transport for NSW has set out the approach it uses to prioritise which communities along major highways are bypassed and the type of bypass it builds. Criteria include traffic volumes in the area, the hierarchy classification of the road and the town size.

Infrastructure NSW endorses this approach. Transport for NSW intends to set out its final program of proposed

town bypasses in the final Long Term Transport Master Plan by the end of 2012.

10.4.2. Managing the transport challenge in coal communities

Coal communities, particularly in the Hunter region, face a specific set of transport challenges. Rapid population growth, combined with increased through-traffic (particularly for heavy vehicles and on the rail network) can have adverse congestion, safety and amenity impacts that emerge relatively quickly.

For example, it is reported that Scone, which has the last rail level crossing on the New England Highway, could soon be ‘cut off’ for up to four hours a day due to the projected increase in the number of coal trains¹³. Other towns heavily affected by coal traffic include Singleton and Muswellbrook.

Recommendation Infrastructure NSW recommends that targeted investments are made to improve local infrastructure in coal community towns.

There is also the need to improve the connectivity of the Hunter Valley to Newcastle. The Hunter Expressway, due to open in 2013, will improve east-west connectivity between the Lower Hunter and Newcastle for passenger and freight movements, providing relief to the New England Highway in this area.

Further investment to augment the New England Highway may also be needed over the next decade as the coal sector grows.

¹³ Hunter Valley Research Foundation 2010.

10.4.3 Upgrading the Princes Highway

One of the largest road programs proposed outside of the National Highway Network is on the Princes Highway.

This road, which connects Sydney to the South Coast, suffers congestion at peak periods primarily from local and holiday traffic, and also has a number of accident black spots.

Freight traffic on this route is limited, with most Port Kembla related freight travelling along Mount Ousley Road and then via Picton Road or Appin Road and the Hume Highway.

A strategic needs assessment has been conducted into duplicating the Princes Highway from Wollongong south to the turn off at Jervis Bay¹⁴. The analysis demonstrates that traffic flows south of Wollongong are relatively low outside of holiday periods.

Construction costs for duplicating this section of the Princes Highway are magnified by the area's undulating geography and environmental sensitivity. For example, the Foxground to Berry Bypass is estimated to cost \$550 million to bypass a community of 1,500 people¹⁵. Total project costs for the proposed upgrade to the Princes Highway exceed \$1.1 billion.

Infrastructure NSW expects that this upgrade will be completed during the early 2020s, noting other pressures on the State's capital budget.

¹⁴ Roads & Maritime Services 2011, Southern Coastal Corridor Strategy.

¹⁵ Roads & Maritime Services, Princes Highway Upgrade – Proposed Foxground and Berry Bypass.

Recommendation Infrastructure NSW recommends a review of costs and scope of the Princes Highway program.

10.4.4 Maintaining the road network effectively

The condition of the regional and interstate road network is fundamental to supporting freight and other economic activity, and also for road safety. The extent of the existing network means that maintenance and renewal activity will be an important priority over the next 20 years.

State and Regional Roads

Table 10.1 shows NSW Government is spending more to maintain state and regional roads than other jurisdictions for the same or lesser road quality outcomes. A major reason for this difference is the higher freight task in NSW than other jurisdictions, but higher costs may also be partly due to less efficient procurement in NSW.

Table 10.1 Road maintenance in selected jurisdictions

	WA	VIC	QLD	NSW
Roads managed (000's of lane km)	53	51	71	80
Estimated maintenance spend (\$,000's/lane km)	5	4.5	6	7
Road quality measure (%)	99	91	94	91

Source: Third Horizon Consulting Partners.

Of the total road maintenance managed by NSW Roads and Maritime Services (RMS), 63 percent is carried out by an internal RMS labour force and a further 17 percent is contracted to local councils on a non-competitive basis. Only 19 percent is competitively outsourced, through a single contract for northern Sydney roads¹⁶.

Inefficient maintenance practices can lead to asset deterioration and/or higher longer term rectification costs. Longer term condition-based contracts could help to lock in a minimum level of economically efficient maintenance work, whilst still allowing some flexibility to vary discretionary asset standards.

Infrastructure NSW therefore endorses the finding of the NSW Commission of Audit for Roads and Maritime Services (RMS) to extend competitive tendering for roads maintenance in NSW.

Local Roads

Prioritising and funding road maintenance in regional NSW is challenging, given the lower population, traffic levels and rate base. These issues are important and are often as much about governance (who is responsible for what) and funding arrangements as they are about procurement approach.

Consultation with regional local councils, (undertaken as part of the COAG Road Reform Plan), identified the following overarching issues:

- **Shortfall of funding to cover life cycle cost of roads:** The Australian Local Government Association states that expenditure on roads has been less than the funding needed to sustain the networks at current

¹⁶ Third Horizon Consulting Partners 2010, RTA Efficiency Review.

levels of service. For instance, life cycle expenditure (maintenance and renewal) for 2008–09 was estimated to be 79 percent of life cycle cost¹⁷.

- **Weak link between users and funding:** Much road damage on regional roads can be attributed to heavy vehicles. However fees, charges and taxes imposed on heavy vehicles are collected at the State level.

International and domestic experience suggests outsourcing of road maintenance has the potential to deliver cost efficiencies and (where performance contracts are adequately designed and benchmarked) improved asset conditions.

Infrastructure NSW supports the approach set out by the NSW Commission of Audit to improve the efficiency, of local road maintenance. This includes greater bundling of multiple council road contracts to realise economies of scale.

10.5 Access to markets: bulk export freight

This section considers the portside and landside infrastructure required to support bulk export freight movements through Port Kembla and the Port of Newcastle. These exports are important to the NSW economy and are forecast to grow rapidly.

Bulk exports include coal, grain, timber and minerals. The majority of export bulk commodities utilise rail infrastructure to access the port gateways. Coal is by

far the largest export commodity by weight in NSW with over 80 percent of the total bulk export volume or over 122 million tonnes in 2011, most of which moves through the Port of Newcastle. By 2031, the total coal freight task in NSW is expected to grow to 370 million tonnes¹⁸.

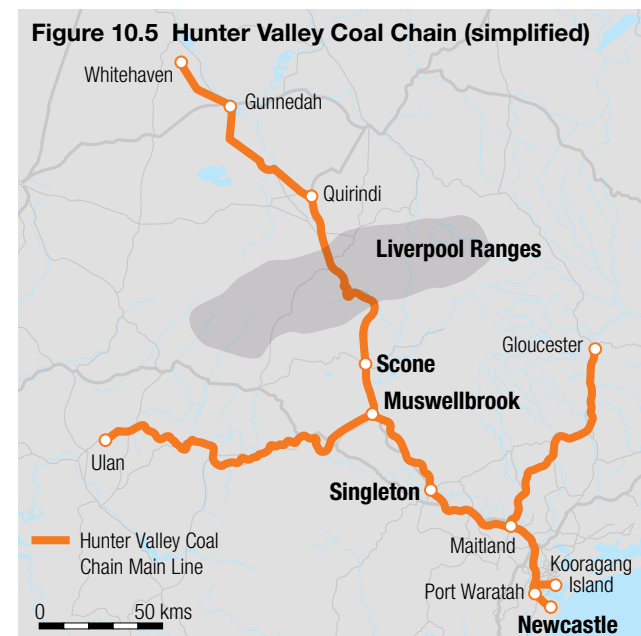
Some NSW produce is exported through ports in other states, such as through Melbourne and Brisbane. Due to distance, transport costs can be lower to these ports than to NSW ports from some parts of the state. Infrastructure issues relating to these ports are outside the scope of this Strategy.

10.5.1 Port of Newcastle and the Hunter Valley Coal Chain

Newcastle is the largest coal exporting port in the world. The volume of coal moved through the port could more than double to 275mtpa by 2025¹⁹. Coal exports currently represent 95 percent of the total volume of freight through the Port²⁰.

Coal terminal owners have approved plans in place to develop portside infrastructure to deliver capacity in line with bulk demand forecasts. By 2031, the Port will have potential coal export capacity of 330 mtpa. This includes planned investment in a fourth terminal (T4) by Port Waratah Coal Services, which will increase capacity by 60 to 120 mtpa by itself²¹.

As with other NSW export gateways, the key infrastructure issue for the Hunter region freight supply chains is efficient landside access to port facilities. Most coal is transported



to the Port using the Hunter Valley Rail Network, managed by the ARTC. Branch lines feed off this line to individual coal mines. Collectively, the coal extraction and distribution network is known as the Hunter Valley Coal Chain. This network is shown in figure 10.5.

Rail infrastructure investment planning for the Coal Chain is coordinated through the Hunter Valley Coal Chain Coordinator (HVCCC) with different participants, including the ARTC, the Port of Newcastle, coal terminal operators and train operators working together to manage and develop capacity that matches demand generated through agreed coal volume contracts with landside and terminal capacity at the Port.

¹⁷ Australian Local Government Association 2010, The Local Roads Funding Gap.

¹⁸ Ports Australia 2011; Trade Statistics for Bulk Cargo and Coal Exports.

¹⁹ Newcastle Port Corporation 2011, Long Term Coal Export Forecast.

²⁰ Newcastle Port Corporation 2011, Trade Statistics.

²¹ Newcastle Port Corporation 2011, Annual Report 2010-11.

This capacity is aligned only to coal exports and allows limited access for the demands of the grain and other bulk commodity markets.

The HVCCC has proven itself effective in expanding the Coal Chain capacity as demand has increased substantially in recent years.

Over the next 20 years, significant investment is needed to increase the capacity of the Hunter Valley Coal Chain rail network. This will be funded by the private sector.

The ARTC has assessed options to increase capacity through the Liverpool Ranges to support coal volumes being transferred to the Port of Newcastle for export from the Gunnedah Basin. The ARTC has concluded that staged duplication of the existing line on the existing gradient is the best value solution.

An alternative alignment has been proposed that involves tunnelling through the Liverpool Ranges. While this option is significantly more expensive than the ARTC's preferred solution, it would provide higher line capacity to the Gunnedah Basin, operational cost savings and improved transit times (and hence productivity improvements).

Current arrangements can make it challenging to develop major rail projects such as the proposed Liverpool Ranges tunnel.

At present, the forecast period used by the ARTC as the basis for their investment decisions only runs to 2020. This relatively short forecast period is partly used due to the difficulty of getting contractual commitments from potential rail users further in to the future and partly due to regulatory timeframes.

While this means that incremental approaches to capacity augmentation are generally favoured – which Infrastructure NSW supports – it risks, in some cases, necessary infrastructure not being provided in time to meet demand.

One option could be for the Commonwealth Government to take a more active role in underwriting demand risk in some circumstances to allow the ARTC to proceed with major rail investments.

This approach recognises Australia's comparative advantages in resource extraction in some commodity sectors but relative disadvantages in getting resources from mine to market due to distance and other geographic factors.

Any move towards this more interventionist approach would need to appropriately balance the increased risks being borne by the public sector with the potential rewards on offer. It is likely that the access pricing regime on any rail link financed in this way would differ from that on the wider freight rail network.

Recommendation Infrastructure NSW recommends increased capacity in the Hunter Valley Coal Chain through the Liverpool Ranges.

The rapid growth in demand for coal has priced grain off rail networks that supply the Port of Newcastle. This outcome reduces the competitiveness of grain exports through the port due to the higher costs associated with road transport.

Infrastructure NSW has not considered issues relating to the grain rail network in detail in this Strategy following

a comprehensive review by the Commonwealth Government. The previous NSW Government committed to stabilise grain freight lines, a process that is currently underway²².

10.5.2 Access to Port Kembla

Exports through Port Kembla include coal, iron ore, and, to a less extent, minerals and grains. Port Kembla is also the NSW port for vehicle imports.

Port Kembla Ports Corporation forecasts that volumes through the port could grow from the current 33 to between 50–65 million tonnes per annum over the next 20 years²³, depending on the Port's ability to capture opportunities in the bulk export market.

The Government has also identified Port Kembla as a supplementary container port facility for NSW, once capacity at Port Botany is exhausted (discussed in Section 9).

Port Kembla has plans in place to provide the portside capacity that is forecast to be required over the next 20 years.

This will include expansion of capacity through its Outer Harbour development, and possible reuse of Inner Harbour quayside land. As a staged development, the Outer Harbour is well placed to deliver the required capacity uplift as demand grows through to 2031.

Growth at Port Kembla will increase the demands placed on the road networks that support the Port, including for journeys to Sydney (imported vehicles/cars) and journeys

²² Commonwealth Government 2009, NSW Grain Freight Review.
²³ Port Kembla Ports Corporation 2012.

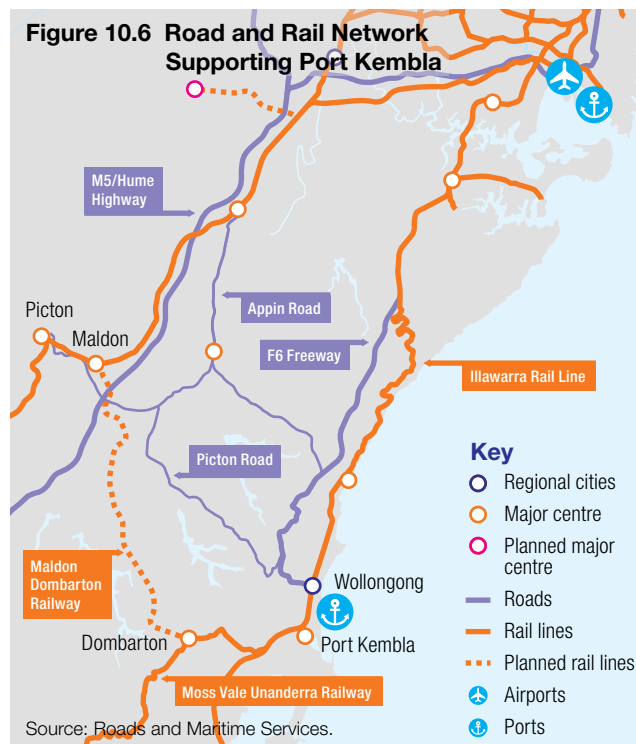
from regional NSW (for bulk exports). Around 20 percent of traffic volumes on Wollongong’s arterial roads are heavy vehicles²⁴.

Specific areas of the road network that will need to be prioritised include Mount Ousley Road and Picton Road, which are already heavily used by freight. Investment in the second half of this strategy in the F6 Extension, discussed in Section 6, will support Port Kembla by providing an alternative route to the metropolitan area.

The rail network has around a 60 to 65 percent modal share by volume for bulk exports through Port Kembla²⁵. The port is served by three rail lines, as shown in Figure 10.6

The Illawarra line, where freight and passenger traffic share rail paths, operates close to capacity. The Illawarra escarpment limits the additional capacity that can be provided cost-effectively along the Illawarra Line without significant investment. There are limited opportunities to expand freight volumes along this line.

An alternative for freight is the Moss Vale–Unanderra line, which is underutilised and has spare capacity for approximately an additional 6.5 million tonnes per annum²⁶.



Recommendation Infrastructure NSW recommends the ARTC undertake the series of incremental investments it has identified for the Moss Vale–Unanderra line to increase its capacity. These investments are estimated to cost approximately \$125 million in total.

Should Port Kembla grow as rapidly as forecast, there will be a need for major investment in rail capacity over and above the potential offered by the Moss Vale–Unanderra Line over the medium term.

The lead investment proposal is to construct a rail line from Maldon to Dombarton. This requires the construction of a 4 kilometre tunnel through the Illawarra escarpment and has a relatively high price tag of \$625 million²⁷. It is likely this project will not be progressed until the 2020s.

The funding model applied by the HVCCC, could be applied to this project, with an open access regime allowing cost and risk to be spread among multiple investors.

Recommendation Infrastructure NSW recommends the Maldon to Dombarton rail line (not required for ten years on current demand forecasts) be predominantly funded by the private sector.

24 NSW Bureau of Transport Statistics, 2011.

25 Port Kembla Ports Corporation 2011.

26 Hyder and Acil Tasman 2011, Maldon – Dombarton Rail Link Feasibility Study.

27 Hyder and Acil Tasman 2011, Maldon – Dombarton Rail Link Feasibility Study.

10.6 Access to markets: intrastate and interstate freight

This section assesses transport infrastructure investments to support intrastate and interstate freight movements. Intrastate freight comprises the majority (around 60 percent) of the freight task by volume. Interstate freight makes up around 20 percent of volumes²⁸. These movements are primarily made by road.

This section also considers container freight exports from the regions through Port Botany. Wider issues relating to Port Botany are discussed in Section 9. Almost two thirds of exports through Port Botany travel by road²⁹.

The freight tasks discussed in this section are diverse. They include agricultural and manufactured products accessing urban markets or container ports, timber and construction materials, and bulk minerals such as coal for power stations and iron ore for the steel industry.

10.6.1 Road and Rail freight movements from Western NSW

The Great Western Highway and Bells Line of Road form the main road freight corridors from Western NSW to Sydney and its ports. They are also the main road access routes for residents of these areas to the city (and vice versa).

Both routes suffer from constraints that limit their freight movements. The Great Western Highway limits over height freight vehicles due to low level bridges along its route. The Great Western Highway allows high mass vehicle movements, but these are restricted on the Bells

Line of Road. Both the Great Western Highway and the Bells Line of Road constrain longer (19 metre plus B – double) vehicle movements.

Constraints for freight also exist on the rail network that connects Western NSW to Sydney and Port Botany. These include delays due to passenger train movements taking priority, steep gradients and inadequate passing loops on some sections of the network.

The restrictions on the Great Western Highway as a freight route and the rail network have led for calls for investment in Bells Line of Road as an alternative route.

However a needs assessment led by Transport for NSW notes that these investments would be difficult to justify for the foreseeable future based on current low traffic volumes (below 5,000 vehicles per day)³⁰. The challenging terrain means that the costs of any substantial upgrade could outweigh the benefits provided.

Existing investment plans will complete the duplication of the Great Western Highway to Katoomba over the next five years.

As noted in sections 10.6.3 and 10.6.4, further investigation is needed as to what investment and reform is needed to support freight movement from Western NSW to Sydney and its ports. This would include assessment of rail alternatives to develop a holistic picture.

Prior to this, the case for substantial investment in Bells Line of Road as a whole is unproven.

It is sensible however, given the limited road alignments available over the Blue Mountains, that action be taken to identify a corridor, should the Bells Line of Road be needed in the future. This should include the western extent of the road between Kurrajong and Richmond, which has been designated for future development as the Castlereagh Freeway.

Recommendation Infrastructure NSW recommends that a potential corridor be identified for the Bells Line of Road and the Castlereagh Freeway.

10.6.2. Duplicating the Pacific Highway

Current Status

The Pacific Highway runs 670 kilometres from the F3 at Hexham to the Queensland border. It carries over half the freight task between Sydney and Brisbane, as well as a mix of long distance and local vehicle traffic. Road safety has been another major driver of investment in this corridor.

As at April 2012, 52 percent of the Highway (346 kilometre) had been upgraded to dual carriageway and another nine percent (60 kilometre) was under construction. A further \$7.7 billion is forecast to be needed for remaining unfunded works (giving a total program cost of over \$16 billion). The NSW and Commonwealth Governments are in discussion around funding options for remaining works.

28 Saha International 2008, Innovation in the NSW Freight Logistics Industry.
29 Sydney Ports Corporation 2011.

30 Roads & Maritime Services 2011, Bells Line of Road: Long Term Strategic Corridor Plan.

Scope of Remaining Work

The remaining undivided sections of the Pacific Highway comprise two main sections:

- Port Macquarie to Urunga
- Woolgoolga to Ballina

The economic merit of the remaining sections is much lower at 0.8 (Benefit Cost Ratio) than that of the Highway as a whole³¹. This reflects the relatively low traffic volumes on the remaining sections – for example the traffic between Woolgoolga and Ballina is generally below 10,000 vehicles per day.

Given competing priorities for NSW and Commonwealth Government funds, the high cost and relatively limited benefits of these remaining sections raises questions about the:

- relative merit of prioritising busier sections of the Pacific Highway corridor for upgrade sooner, (in particular from the F3 to Raymond Terrace 40,000 vehicles per day)
- appropriate scope of works and priority for those sections with relatively light traffic.

F3 Freeway to Raymond Terrace

The proposed investment to upgrade the F3 to Raymond Terrace appears to have a lot of merit. Traffic flows along this section of the Pacific Highway are high and congestion can be an issue at peak hours.

By providing an uninterrupted highway and improved connectivity between the F3 and the Pacific Highway, the upgrade scheme would be likely to improve journey times and improve safety.

³¹ NSW Government 2011, Pacific Highway upgrade, submission to Infrastructure Australia.

Recommendation Infrastructure NSW recommends a detailed assessment of the proposed upgrade to the F3 to Raymond Terrace be undertaken, with a view to it being built within the next ten years.

Construction costs

Construction costs on the Pacific Highway appear to have increased significantly as the upgrades have progressed. The cost of the currently unfunded sections are estimated to be some 20–40 percent more per kilometre than the already delivered or committed sections, even after allowing for normal industry cost escalation³².

Current highway planning seems more focussed on delivering an outstanding engineering outcome than on controlling costs. The Ballina Bypass provides a recent illustration of the consequences of having high performance standards. For 12 kilometres of new road, the cost was \$640 million – more than twice the cost per kilometre of previous sections³³.

Given the scale of the forecast spending and the limited resources available, Infrastructure NSW recommends that now is an appropriate time for an independent review of the scope of work, with a focus on value engineering (discussed in section 16). The independent review should also consider how constraints such as work practices and planning approval conditions are adding to the budget.

RMS should also consider options to improve contracting efficiency. Currently the Highway is being

³² Infrastructure NSW analysis.
³³ Infrastructure NSW analysis.

constructed through a large number of different contracts, which reduces the scope for economies of scale and in practice limits potential bidders to local suppliers.

Lower costs may be achieved if the remaining unfunded sections were issued as fewer, but much larger packages, which may attract international suppliers and increase competitive pressure.

Recommendation Infrastructure NSW recommends a review of the scope and costs of the Pacific Highway. This will also consider alternative procurement strategies which could improve value for money, subject to funding availability.

10.6.3. Improving Road Freight Productivity

Road freight productivity is linked to vehicle size and the amount of weight that can be carried. Over the last 40 years, road freight productivity in Australia has more than doubled, although analysis by the Bureau of Infrastructure, Transport and Regional Economics has shown that productivity growth has slowed in recent years³⁴.

Moving heavier, larger vehicles requires road networks that can support them. NSW has a number of gaps in its High Mass Limits (HML) and High Productivity Vehicle (HPV) networks that can cause freight costs to be higher in NSW than in some other States.

While a significant proportion of the forward transport program is committed to major road upgrades, targeted minor projects need to be progressed also. In many cases, investments in ‘pinch point’ schemes can have very high returns because they can unlock constraints

³⁴ BITRE 2011, Truck Productivity: Sources, Trends and Future Prospects.

hindering HML and HPV movements along a whole corridor and the wider road network.

A network is only as strong as its weakest link. A constraint on one part of the NSW road network can reduce productivity across the whole network. A network-wide approach that takes account of the different types of freight movements and their transport requirements is therefore essential.

The traditional road hierarchy and boundaries between local government roads, state and federal roads appears to have sometimes held up necessary investment by preventing any single entity adopting a network-wide view.

One option that has been suggested to reduce some of the most pressing physical constraints on the road network is the Bridges to the Bush program. This project carries very high economic benefits at a relatively low cost.

Bridges to the Bush seeks to address constraints in the network by enabling the key corridors to take heavier axle loads and longer vehicles by:

- implementing a programme to improve the mass limits of selected bridges throughout NSW to increase the capacity of the road network to carry freight and HML vehicles on key freight corridors. Currently 249 bridges have been assessed as unsuitable for HML B-double vehicles³⁵.
- improving the condition, geometry and durability of regional road pavements

The program aims to prioritise investment on the bridges and connecting infrastructure that will have greatest economic impact.

³⁵ Road and Maritime Services 2012, Bridges for the Bush.

Recommendation Infrastructure NSW recommends the Bridges to the Bush program be progressed and implemented as soon as possible to address pinch points constraining the use of HML vehicles.

Wider pinch point investment will also be required to the road network. For example, highways will need investment where they travel through regional towns to allow more efficient truck movements without unacceptable amenity impact and local roads also need upgrading in some cases to allow “last mile” movements.

Recommendation Infrastructure NSW recommends Transport for NSW develop and implement, with local authorities and other relevant agencies, a targeted program of local, regional and state road “pinch point” upgrades designed to overcome constraints impeding HML and HPV access in Regional NSW.

Transport for NSW has proposed piloting HPV access to the Hume Highway to potentially offer a HPV route from Sydney to Melbourne. This pilot is made possible by the completion of the Hume Highway duplication in 2013.

This is an important pilot for the future regulation of road freight in NSW. Three quarters of the nation’s road freight moves through NSW for at least part of its journey.

It is suggested that additional infrastructure costs required to further upgrade the Hume Highway to support HPV movements could be met by direct

contributions from haulage users. Infrastructure NSW supports this approach.

Should this pilot prove successful, there is a case for the introduction of more cost reflective road pricing for heavy vehicles on all major interstate highways. Analysis by the Productivity Commission suggests that reducing the disconnect between road user revenues and spending decisions would improve freight efficiency.

10.6.4. Improving Rail Freight Productivity

It has been argued that intrastate and interstate freight productivity could be enhanced by increased use of rail freight. Rail freight has lower marginal costs than road, but higher fixed costs. Over a long enough distance, rail can be cheaper than road for freight movements given sufficient volume.

Balanced against this, is the Productivity Commission’s view that road and rail freight are complements rather than substitutes for much of the freight task and that, as Section 9 discusses, there is not a compelling case that road freight be subsidised relative to rail, even accounting for externalities. Road freight also benefits from inherent cost and service quality advantages over rail as costs can be shared with the dominant user, i.e. passengers³⁶.

Major investment programs

A number of major rail freight infrastructure projects have been suggested in recent years including:

- Creation of an inland rail route between Melbourne and Brisbane via NSW

³⁶ Productivity Commission 2006, Road and Rail Freight Infrastructure Pricing.

- The Northern Sydney Freight Corridor program, intended to reduce constraints on the rail network between Sydney and Newcastle and support Sydney–Brisbane freight movements.

The rationale for these programs is based upon the assumption of substantial modal shift to rail, leading to overall economic benefit through productivity improvements. However, the absence of significant congestion constraints on much of the interstate highway networks would appear to lessen the case for these major projects.

The Hume, Newell and New England Highways facilitate the road transport task effectively, with congestion only experienced around the major urban centres where freight is competing with the dominant passenger and commuter road and rail tasks, particularly during peak periods. The duplication of the Pacific Highway will lessen constraints on this important corridor also.

It is also unclear whether there is potential for these interstate goods to be switched to rail. Without greater certainty about future demand, and reflecting the high costs of these proposed options, Infrastructure NSW is not able to support the prioritisation of these programs within the next 20 years at this stage, where they are additional to existing commitments.

In the case of inland rail, Infrastructure NSW concurs with the ARTC's view that a new inland route, at a cost of around \$5 billion, would not be viable until the early 2030s at the earliest³⁷.

³⁷ ARTC 2010, Melbourne to Brisbane Inland Rail Alignment Study.

Northern Sydney Freight Corridor³⁸

There are currently a number of infrastructure impediments which limit the effectiveness of rail freight in the North – South rail corridor between Sydney and Newcastle including:

- a lack of passing loops (for passenger services to overtake freight trains)
- several steep inclines, especially adjacent to the Hawkesbury River
- junctions causing critical delays such as at North Strathfield and Hornsby
- passenger trains having priority over freight trains in urban Sydney.

In late 2010, the Commonwealth and the NSW Governments signed an inter-governmental agreement to commence work on a \$1.1 billion upgrade (including \$840 million funded by the Commonwealth and \$214 million by the NSW Government) to this corridor. Works include the following:

- North Strathfield rail underpass
- Hexham passing loops
- Gosford North passing loops
- Epping to Pennant Hills third track

In the longer term a more ambitious infrastructure works program is being considered which could include providing a dedicated rail freight track from

North Strathfield to the Hawkesbury River, additional passing loops north of the Hawkesbury as well as potentially improved train control systems.

The challenging geography this route passes through makes these options very expensive. The estimated cost of these works is around \$6.8 billion.

Further assessment is needed to identify whether there is a robust business case for these proposed investments, particularly given the high modal share of road for freight journeys along this corridor and the small (although fast growing) share of the freight market that interstate movements comprise.

Focus may be better placed on addressing key constraints on the rail network to Brisbane, rather than more comprehensive programs.

One area within the wider Northern Sydney Freight Corridor program, which appears of strategic merit, is the proposed option to provide a rail bypass of Newcastle.

Current track alignments force all traffic (including interstate freight) on a circuitous route through the city. A bypass could improve transit times, and help alleviate pressure on an urban rail network increasingly under strain from the growth in the coal export task.

More detailed work is needed to identify a viable bypass option. The existing proposal – the Fassifern to Hexham Bypass is costly relative to the benefits it offers. Cost savings may be available through construction progressing in tandem (and sharing alignment with) the proposed F3 to Raymond Terrace Project discussed above.

³⁸ NSW Government 2010, M5 East, M2F3, Northern Sydney Freight Corridor, Container Freight Improvement Strategy, submission to Infrastructure Australia.

Minor Investment Programs

As with the road network, the existing rail network used by freight suffers from a number of constraints that limit the efficiency and reliability of rail freight movements. Discussion with regional authorities and freight producers has identified the following issues:

- Inefficiency exists in train control practices, particularly due to the use of manual rail points in some regional areas. This requires freight trains to stop while the points are changed.
- An absence of regular passing loops or short passing loops on some sections of track can create delays.

Delays can also occur due to co-ordination issues between freight and passenger rail services on shared lines. For example, long distance XPT passenger trains can cause delays of multiple hours to freight trains.

Action to address these constraints and co-ordination issues are likely to have substantial productivity benefits. Again, as with the road network, governance issues – multiple state and federal rail infrastructure operators – have sometimes held up investment or created network management challenges.

The establishment of a specific freight division within Transport for NSW means a network wide program of rail ‘pinch point’ investments and operational reforms can be developed.

Recommendation Infrastructure NSW recommends Transport of NSW develop (with the Commonwealth Government and other relevant agencies) a targeted program of rail upgrades and reforms designed to overcome constraints impeding rail freight movements in Regional NSW.

10.7 Conclusions

The road network forms the backbone of Regional NSW passenger and freight transport infrastructure. Infrastructure NSW does not believe this will change over the next 20 years.

Regional NSW has seen a majority of roads investment in recent years as the Commonwealth Government has invested to extend and improve the National Highway Network. The highest value projects have largely been completed however and therefore future investment needs to balance the benefits to local communities and the State as a whole.

Given the scale of major road programs in Regional NSW, action is needed to contain costs and where possible, particularly with the Pacific Highway and Princes Highway programs. Finite funding means the alternative is likely to be further delay in delivering these programs.

In many cases, pinch point upgrades will be sufficient to meet the transport demands placed on the regional roads network over the next 20 years. Focus should

be placed on freeing up bottlenecks on corridors and around the ports and investing in regional bridges and bypasses. Maintaining the existing asset base is also essential.

The rail network has an important role in providing access to the metropolitan area and transporting bulk freight, particularly for export. It is less clear that its limited role for other passenger and freight markets will grow substantially over the next 20 years, relative to other modes.

Accordingly, priority on the rail network should be on incremental improvement – for example, accelerating services to Global Sydney and freeing up constraints that hinder regional freight movement.

Mega projects (inland rail, extending the Northern Sydney Freight Corridor and re-opening dormant passenger rail lines – are likely to be less of a priority. The capital costs of these investments are extremely high relative to the likely modal shift (and therefore benefits) that could be expected.

In most cases, the Hunter Valley Coal Chain presents an effective model for freight rail investment. Where demand is robust (rather than speculative) investment to relieve constraints and support rail networks is progressed by the private and public sectors working in partnership.

10.7.1 Recommended Actions

37	Review scope and costs of Pacific Highway duplication and Princes Highway upgrade	0 – 5	Review	Cost of review is not material
38	Freight pinch point program for key road and rail links	0 – 10	Program	Scoping of \$1 billion
39	Bridges for the Bush Program to improve freight productivity	0 – 5	Program	Estimate of \$300 million stages 1 and 2
40	Identify Bells Line of Road / Castlereagh Freeway corridor	0 – 5	Corridor	Cost of corridor planning is not material
41	Coal Community road and rail schemes	0 – 5	Program	Scoping of \$500 million
42	Complete Pacific Highway duplication	5 – 10	Major project	Existing Government commitment
43	Incremental upgrades of Moss Vale to Unanderra freight rail line	5 – 10	Major project	Assume delivery by ARTC based on user funding model
44	Hunter Valley Coal Chain improvements – Liverpool Range	5 – 10	Major project	Assume delivery by ARTC based on user funding model
45	F3 extension to Raymond Terrace	5 – 10	Major project	Scoping of \$900 million
46	Complete Princes Highway duplication to Jervis Bay turnoff	5 – 10	Major project	Existing Government commitment
47	Maldon – Dombarton freight rail line	10 – 20	Major project	Assume delivery by ARTC based on user funding model