



2007

Sydney–Wollongong Corridor Strategy

Building our National Transport Future



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AUSLINK IS A MAJOR AUSTRALIAN GOVERNMENT INITIATIVE DESIGNED TO ACHIEVE BETTER NATIONAL LAND TRANSPORT PLANNING, FUNDING AND INVESTMENT DECISION MAKING.

One of the key components of the AusLink process is the development of a strategy for each corridor of the AusLink National Network. A Corridor Strategy is a statement of the shared strategic priorities of the Australian and State/Territory Governments for the long-term (20-25 year) development of the corridor. Corridor strategies provide guidance to decision-makers and project proponents formulating network initiatives, and most importantly, inform development of the next and subsequent National Land Transport Plans.

Consistent with the spirit of AusLink, the Sydney–Wollongong Corridor Strategy is a collaborative initiative that was jointly developed by:

- Australian Government Department of Transport and Regional Services;
- NSW Department of Planning;
- NSW Roads and Traffic Authority; and
- NSW Ministry of Transport.

The strategy was prepared by a project team comprising representatives from these agencies, and builds on planning work undertaken by the Government of New South Wales.



SYDNEY–WOLLONGONG CORRIDOR STRATEGY – AT A GLANCE

The Sydney–Wollongong Corridor is the key link between Sydney and Wollongong, providing the connection between the greater Illawarra region and the southern suburbs of Sydney. It is the primary conduit from Sydney to the south coast of NSW and Port Kembla, one of the major economic drivers in the region.

The Princes Highway, Southern Freeway and Mount Ousley Road provide an essential link for freight and passengers between Sydney and Wollongong, and for through traffic such as freight and tourists destined for regional centres along the south coast of NSW. As the primary link into Wollongong, Mount Ousley Road will continue to play a major role into the future, especially when the expansion of Port Kembla is complete. The Moss Vale–Unanderra rail line, running from the interstate mainline to Port Kembla, provides a direct link for predominantly coal and grain movements to the Port for export. The Illawarra rail line from Sydney is not on the AusLink National Network, being part of the NSW CityRail network, but has a role to play in both freight and passenger movements between the regions.

The standard of the road links in the Sydney–Wollongong Corridor is relatively good. It is entirely divided carriageway from Blakehurst to Gwynneville. Safety is a concern, with a higher than average crash rate especially in fog and wet weather, along

Bulli Pass and Mount Ousley Road. Congestion is an issue for road transport on Mount Ousley Road and the Princes Highway between Heathcote and Blakehurst during peak periods.

The Moss Vale–Unanderra rail line to Port Kembla is in good condition. It is currently underutilised due to the geographic nature of the track and its gradient, as it is difficult for trains to pull heavy loads from Port Kembla to the interstate mainline. The line is generally used for export coal and grain movements to the Port. The AusLink road corridor is supported by the Illawarra rail line, carrying large amounts of freight and passengers.

Total freight between Sydney and Wollongong is expected to be in the vicinity of 27 million tonnes by 2025, an average growth of 3.3 per cent a year. The expansion of Port Kembla following the closure of Port Jackson will mean a much increased freight task from 2008 onwards. With road remaining the dominant form of transportation for freight (with the exception of most bulk export commodities such as coal and grain), this will mean an increase in the number of heavy vehicles that will be traversing the corridor heading towards central and Western Sydney.

The challenges facing the Sydney–Wollongong Corridor and the short-term priorities for the corridor are summarised below.

TABLE 1 Summary of Key Challenges and Short-Term Strategic Priorities

Key Challenges	Short-Term Priorities
Rapid growth in corridor freight of 3.3 per cent a year.	Manage increased freight on the corridor as a result of the Port Kembla expansion.
Providing safe and reliable interstate and local connections, especially for export industries and the local community.	Improve linkages from Gwynneville to Port Kembla for freight traffic and to facilitate implementation of higher mass limit vehicles.
Managing congestion and capacity on sections of the corridor such as Mount Ousley Road and the Princes Highway.	Improve the safety and efficiency of Mount Ousley Road, especially in wet and peak periods.
Improving safety on the road corridor, particularly in sections that have a higher crash history.	Capacity improvements to Picton and Appin Roads.
Improving utilisation of the Moss Vale–Unanderra rail line to ease demand for freight paths on the Illawarra line.	Improve the competitiveness for rail on the Moss Vale–Port Kembla rail line.
	Improve traffic flow between Heathcote and Blakehurst.
	Consider alternatives to Mount Ousley Road.

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AUSLINK

AusLink is a major Australian Government initiative designed to achieve better national land transport planning, funding and investment decision making. The AusLink National Network and its connections to the broader transport network are the passenger and freight backbone of Australia's national land transport system and are the focus of the Australian Government's planning and funding responsibility. The smooth and efficient operation of this network is a crucial element in achieving integration of all transport modes and supporting economic development.

AUSLINK NETWORK OBJECTIVES

The Sydney–Wollongong Corridor Strategy is based on the AusLink Network objectives. The AusLink Network will support national economic growth by developing sustainable transport solutions that:

- increase its efficiency and infrastructure handling capacity;
- improve its safety and security;
- improve the productivity of its nationally strategic and export-oriented freight corridors;
- improve the reliability of travel on interstate and inter-regional corridors; and
- are consistent with viable, long-term economic and social outcomes, and with the obligation to current and future generations to sustain the environment.

These objectives guide the activities of the Australian Government and the States and Territories working collaboratively to develop corridor strategies and plan further development of the AusLink Network.

This strategy also aims to help achieve New South Wales Government priorities and objectives, especially those linked to the NSW Governments:

- Ports Growth Plan;
- Sydney Metropolitan Strategy;
- State Plan;
- State Infrastructure Strategy; and
- Draft Illawarra Regional Strategy.

AUSLINK CORRIDOR STRATEGIES

A key component of the AusLink process is the development of a strategy for each corridor of the AusLink National Network that takes an integrated approach to road and rail issues. These corridor strategies take a broad multi-modal systems view of the operation of the transport corridor; look at both freight and passenger movements; and actively consider innovative approaches and alternatives to build infrastructure solutions.

This corridor strategy is a statement of the shared objectives and strategic priorities of the Australian and NSW Governments for the long-term (to 2020-25) development of the Sydney–Wollongong Corridor. It diagnoses the current and future condition and adequacy of the transport links that make up the corridor; and establishes strategic priorities for the integrated development of the corridor, based on the best available information and economic projections.

This corridor strategy was prepared jointly by the Australian and NSW Government transport agencies, with input from industry and community stakeholders. It provides guidance to decision-makers and project proponents formulating network initiatives, and informs development of the next and subsequent National Land Transport Plans.

PROCESS AND METHODOLOGY

The Sydney–Wollongong Corridor Strategy is the result of a process of research, analysis and consultation that has drawn on information from a wide range of sources, including Australian and State Government policy settings, strategies and objectives; and inputs from industry and stakeholders. In particular, the strategy was informed by:

- NSW Government Metropolitan Strategy (2005);
- Sydney–Wollongong Corridor Study Report (Maunsell 2006);
- Sydney–Wollongong Inter-regional Freight Demand Study Report (Maunsell 2006);
- Inquiry into Port Infrastructure in New South Wales (Standing Committee on State Development 2005);



This corridor strategy examines the Sydney–Wollongong Corridor. It focuses predominantly on the road and rail links on the AusLink National Network, but sets the analysis in the context of the national and regional transport system. This is necessary due to traffic from the Princes Highway south of Wollongong, freight movements from the greater Sydney region, and the impact of the southern and western NSW coalfields on the Sydney–Wollongong Corridor and Wollongong/Port Kembla region as a whole. The Moss Vale–Unanderra rail line to Port Kembla is also examined. The Illawarra rail line, although not part of the AusLink National Network, is also examined as its role in the region and the issues associated with its impact on the defined AusLink road and rail connections.

Although the Port Kembla precinct is examined in detail, the urban connections to ports and intermodal terminals in Sydney are only considered in the context of their impact on the corridor. These urban links are considered separately in the Sydney Urban Corridor Strategy. Likewise, more detailed analysis of the Princes Highway and its associated traffic volumes is considered in the Sydney–Melbourne Corridor Strategy.

A draft strategy was posted for public comment on the AusLink website for a four week period in 2007. Written submissions were received from various stakeholders and these views have been considered by the project team in the finalisation of this strategy document.



DESCRIPTION OF THE CORRIDOR

The Sydney–Wollongong Corridor connects the industrial, commercial and residential areas of Wollongong and the Illawarra to Sydney and the broader AusLink Network.

Road

The key road links in the corridor from Sydney to Wollongong are the Princes Highway from its intersection with King Georges Road at Blakehurst; the Southern Freeway (F6) to Bulli Tops; Mount Ousley Road to its intersection with the F6 at Mount Ousley; and the Southern Freeway (F6) to its intersection with the Northern Distributor at Gwynneville. Figure 1 illustrates the connection to the Sydney Metropolitan Area and the major regional transport links that influence the traffic on the Sydney–Wollongong Corridor.

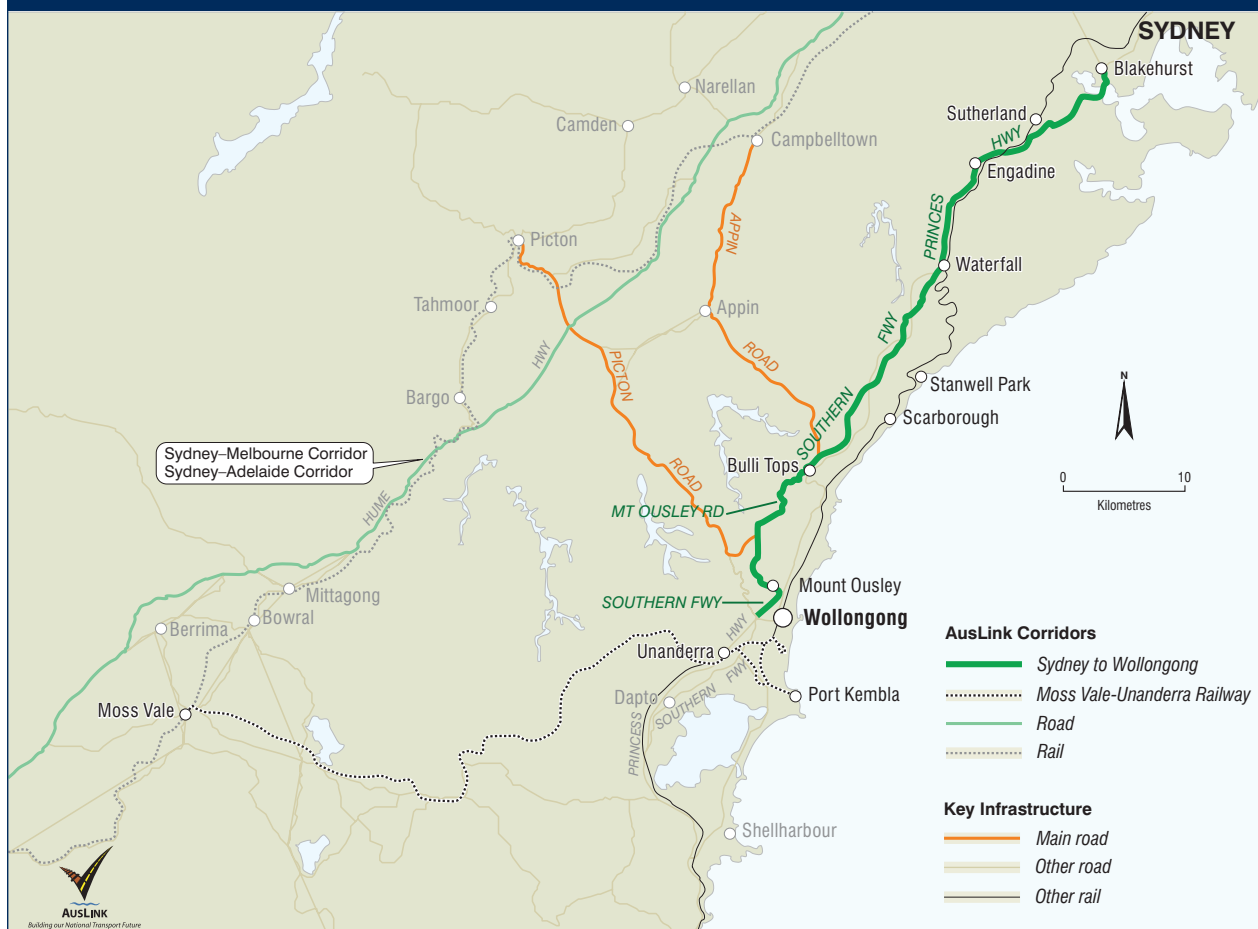
The total length of the defined AusLink Sydney–

Wollongong road link is 64km, with varying speed limits and road configurations due to safety concerns and the environment of the Illawarra escarpment. The configuration and speed limits of the corridor are as follows:

- Blakehurst to Waterfall: 50-110km/hr four-six lane divided carriageway;
- Waterfall to Bulli Tops: 110km/hr four lane rural divided carriageway;
- Bulli Tops to Bulli Pass: 80km/hr four lane rural divided carriageway;
- Bulli Pass to top of Mount Ousley: 100km/hr four lane rural divided carriageway; and
- Mount Ousley to Gwynneville interchange: 80km/hr (40km/hr for heavy vehicles).

The road links south of Gwynneville to Port Kembla are currently not on the AusLink National Network, but are included in this strategy following agreement by the Council of Australian Governments to extend AusLink planning to regional ports.

FIGURE 1 Sydney–Wollongong Corridor and Major Regional Transport Links





Rail

The Moss Vale–Unanderra rail line runs from the interstate mainline to Port Kembla. Its primary role is in the movement of coal and grain to Port Kembla for export.

The Illawarra rail line runs from the Sydney metropolitan region, along the coast and through Wollongong before terminating at Nowra¹. Although it carries some bulk export freight (coal) destined for Port Kembla, and rails finished product from the BlueScope steelworks north to Sydney and beyond, it is not part of the AusLink National Network. It is primarily a part of the Sydney CityRail passenger network. However, the efficiency and operation of this line affects the levels of traffic on the road corridor and so is assessed in this corridor strategy, albeit only to the extent that it affects the AusLink National Network links.

ROLE AND FUNCTION OF THE CORRIDOR

The Sydney–Wollongong Corridor is vital to the economy of the Wollongong/Illawarra region and the south coast of NSW. It has two distinct roles:

- export pathway – the corridor is the key link between Sydney and Wollongong servicing the Port Kembla port and industrial precinct, including the BlueScope steelworks. Port Kembla is one of Australia’s key coal export ports, handling 10 million tonnes in 2005-06 from the southern and western NSW coalfields. Overall trade during this time was 24.4 million tonnes, comprising coal, steel, grain, and general and break-bulk cargo. The expansion of Port Kembla to encompass the relocation of several import industries from Darling Harbour and Glebe Island, including cars and break-bulk cargo, will substantially increase the role of the corridor in the future.
- intrastate and regional transport – the corridor provides the primary road commuter link between the Wollongong region and Sydney, particularly the southern and south–western suburbs. It is increasingly important as a commuter link, although substantial levels of passengers utilise the Sydney metropolitan Illawarra rail line as well. Both road and rail traffic is predominantly

northbound to Sydney in the morning peak period and southbound to Wollongong in the evening peak period. The corridor also contains high recreational travel volumes, particularly during the school holiday period, as the corridor is the main arterial connecting Sydney to the NSW south coast. As well as passenger traffic, the corridor serves as a key link in the provision of freight from Sydney to Wollongong and the south coast of NSW.

Current Pattern of Road Transport Activity

The main features of road transport activity on the Sydney–Wollongong Corridor are:

- road traffic volumes are highest at the northern end of the corridor near Sydney, reflecting high levels of commuter traffic. Commuters from Illawarra’s northern beaches region intersect the corridor via Bulli Pass or Lawrence Hargrave Drive when commuting to Sydney. This contributes to steadily increasing vehicle counts towards the northern end of the corridor approaching Sydney’s outskirts. From Waterfall to Blakehurst average daily morning peak hour traffic counts range from 2,000 to 4,000 vehicles (see Figure 2). Average Annual Daily Traffic (AADT) on the Waterfall to Blakehurst section is in the range of 40,000 (Waterfall) to 61,000 (Blakehurst) vehicles a day. It is substantially higher at Tom Ugly’s Bridge, with approximately 88,000 vehicles a day;
- there is a high proportion of freight vehicles between Bulli Tops and Wollongong, as this is where coal freight accesses the corridor to connect to Port Kembla. Increased activity at the Illawarra collieries and the expansion of Port Kembla is expected to increase heavy vehicle volumes both to and from the port. In 2003, traffic volumes were in the range of 34,500 vehicles a day along the top of Mount Ousley Road, and this is likely to have increased;
- there is a substantial level of traffic that exists on the upper reaches of Mount Ousley Road (34,500 vehicles a day), some of which (11,700) enters and leaves the corridor via Picton Road. There are 36,500 vehicles a day to the immediate north of the Appin Road/Mount Ousley Road intersection;

¹ The rail line from Sydney to Wollongong is the Illawarra line, and south of Wollongong to Nowra the rail line is known as the South Coast Rail Line.



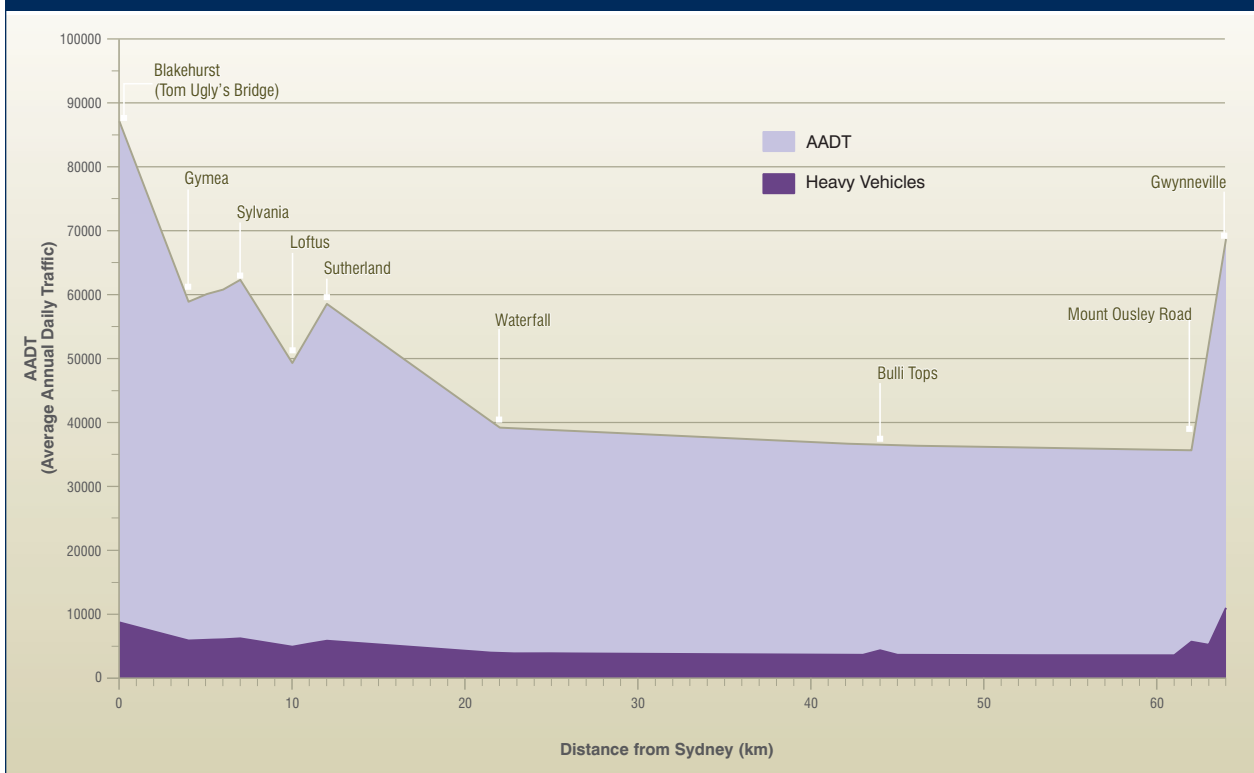
- the lowest traffic volumes generally occur along the sections of the corridor between Bulli Tops and Waterfall due to the limited access and through traffic on the F6. There are approximately 36,000 vehicles a day to the south of Waterfall;
- heavy vehicles account for approximately 16 per cent of road traffic to the immediate north of Wollongong along Mount Ousley Road (due in large part to coal traffic heading to and from Port Kembla), before dropping to 12 per cent between Mount Ousley Road and Bulli Tops. From Bulli Tops northbound to Waterfall and continuing through to Sydney heavy vehicles account for 10 per cent of all traffic; and
- strong traffic volumes are also found to the immediate south of Port Kembla in the Shellharbour industrial area (approximately 55,000 AADT), but this traffic drops off substantially as the Princes Highway heads further south, to less than 30,000 AADT at Kiama. Much of this activity can be attributed to local traffic heading to and from Wollongong/Sydney.

Current Pattern of Rail Transport Activity

The current pattern of rail freight activity is primarily based around the movements of bulk products to and from Port Kembla and the BlueScope steelworks. The majority of this freight travels along the Illawarra line, but a significant amount of bulk freight arrives at Port Kembla via the Moss Vale–Unanderra railway.

- the Moss Vale–Unanderra line features three main tasks. Coal and limestone are hauled by Pacific National. Grain is hauled by Pacific National and GrainCorp. There is a single train each week that carries flour from Narrandera to Nowra (operated by QR National) and a passenger train twice a week operated by a heritage operator; and
- the Illawarra Line via Sutherland – Bomaderry carries approximately 14 freight trains daily in each direction, the majority of which exit at Coniston. This constitutes 61 per cent utilisation of the timetabled daily train paths which are potentially available for freight services. The trains primarily carry coal to/from the Western

FIGURE 2 AADT on Sydney–Wollongong Corridor





coalfields plus stone and ballast (to/from Enfield) and a limited number of steel, ore, flour and grain services (Port Kembla–Perth or Newcastle, Port Kembla–Blayney, Bomaderry to Manildra or Gunnedah, Bomaderry–Clyde or Cooks River). The dominant passenger focus of the Illawarra line tends to restrict freight movements.

Bureau of Transport and Regional Economics (BTRE) figures show that in 1999 rail passenger travel accounted for 11.4 per cent of the Sydney–Wollongong passenger transport task.

Competition between Transport Modes

Freight movements and modal choice are largely determined by the geographic nature of the corridor and location of freight generators:

- road transport is the dominant mode of choice for non-bulk freight between Sydney and Wollongong due to the relatively short distance involved;
- the Illawarra rail corridor faces an effective restriction on freight train operations during peak periods due to passenger trains utilising the available track capacity. The result is that for approximately seven hours a day (6:00 to 9:00 in the morning peak and 15:00 to 19:00 in the evening peak) there is in no scope to run freight trains on the Illawarra rail corridor within the Sydney metropolitan area. Furthermore, it is often difficult to find paths for freight trains, as there are only two rail tracks south of Hurstville. This creates particular congestion problems between Hurstville and Sutherland, due to the convergence of South Coast and Cronulla Branch passenger trains at Sutherland, the role of Sutherland Station as a key terminus for many passenger trains and the role of Mortdale as a major maintenance centre for the electric passenger train fleet;
- coal is conveyed from mines in the southern and western coalfields to Port Kembla utilising a mixture of road and rail. All coal from the western coalfields is railed via the Sydney metropolitan network before travelling down the Illawarra passenger line to Port Kembla, as road transport is impractical. Rail is also used to move coal (via the Moss Vale–Unanderra line) from the Tahmoor Colliery in the southern coalfield. Road

based coal movements occur from the Appin, West Cliff, and Russell Vale mines to Port Kembla via Appin and Picton Roads and Mount Ousley Road; and

- the expansion of Port Kembla to handle car imports (potentially 250,000 a year), and an increase in break-bulk cargo and containers from Darling Harbour may allow rail to increase its share of contestable freight between Sydney and Wollongong. However, this is ultimately dependent on the final destination of goods and the current limitations of the Illawarra rail network where passenger trains have priority for rail paths.

CURRENT PERFORMANCE

Capacity

The capacity of most of the road corridor is sufficient to meet current needs, and from a passenger transport perspective, the Sydney–Wollongong Corridor is generally performing well. There is congestion on the northern end of the corridor in patches between Heathcote and Blakehurst, and this is attributable to traffic entering the corridor from Cronulla and elsewhere in Sutherland Shire and heading north into Sydney. There is also congestion in the morning peak through Wollongong and Mount Ousley Road due to both large numbers of passenger and commercial vehicles such as coal trucks. This congestion leads to peak spreading (in effect increasing the peak period) and slower travel times. Heavy freight vehicles are more adversely impacted than passenger vehicles due to their lower power to weight ratio.

Population growth could lead to an increase in commuter traffic, but this is unlikely to have any major effects in the short-term. Current congestion points and their volume/capacity ratios in the morning peak are detailed in Table 2².

The increase in coal mining in the region will inevitably lead to more trucks on the roads around Wollongong, as will the relocation of a number of import activities from Sydney to Port Kembla. Given the Illawarra rail corridor has a focus on passenger trains, there is limited scope to increase freight capacity on this route. This places potential constraints on both current and future capacity, and could lead to increasing truck movements.

² V/C is a conventional level-of-service measure for roadways, comparing roadway demand (vehicle volumes) with roadway supply (carrying capacity). A volume/capacity ratio of 0.8 indicates a road is approaching capacity, and a level of 1.0 and above indicates high levels of congestion. It is a measure of the utilisation of the road, such as 80 per cent = 0.8.



TABLE 2 Volume Capacity Ratio³

Corridor Link	V/C Ratio
Gwynneville interchange to top of Mount Ousley Road.	0.9 – 1.1
Heathcote to Bangor Bypass Road/Princes Highway.	0.8 – 0.9
Port Hacking Road/Princes Highway to King Georges Road/Princes Highway, including Georges River Bridge and Tom Ugly's Bridge.	0.8

The Moss Vale–Unanderra line is currently operating well below capacity. Overall tonnages on the corridor are mainly affected by the size of the grain harvest. Due to the gradient of the railway it is not feasible to haul large tonnages from Port Kembla to Moss Vale without allowing for extra locomotives. This limits its economic viability.

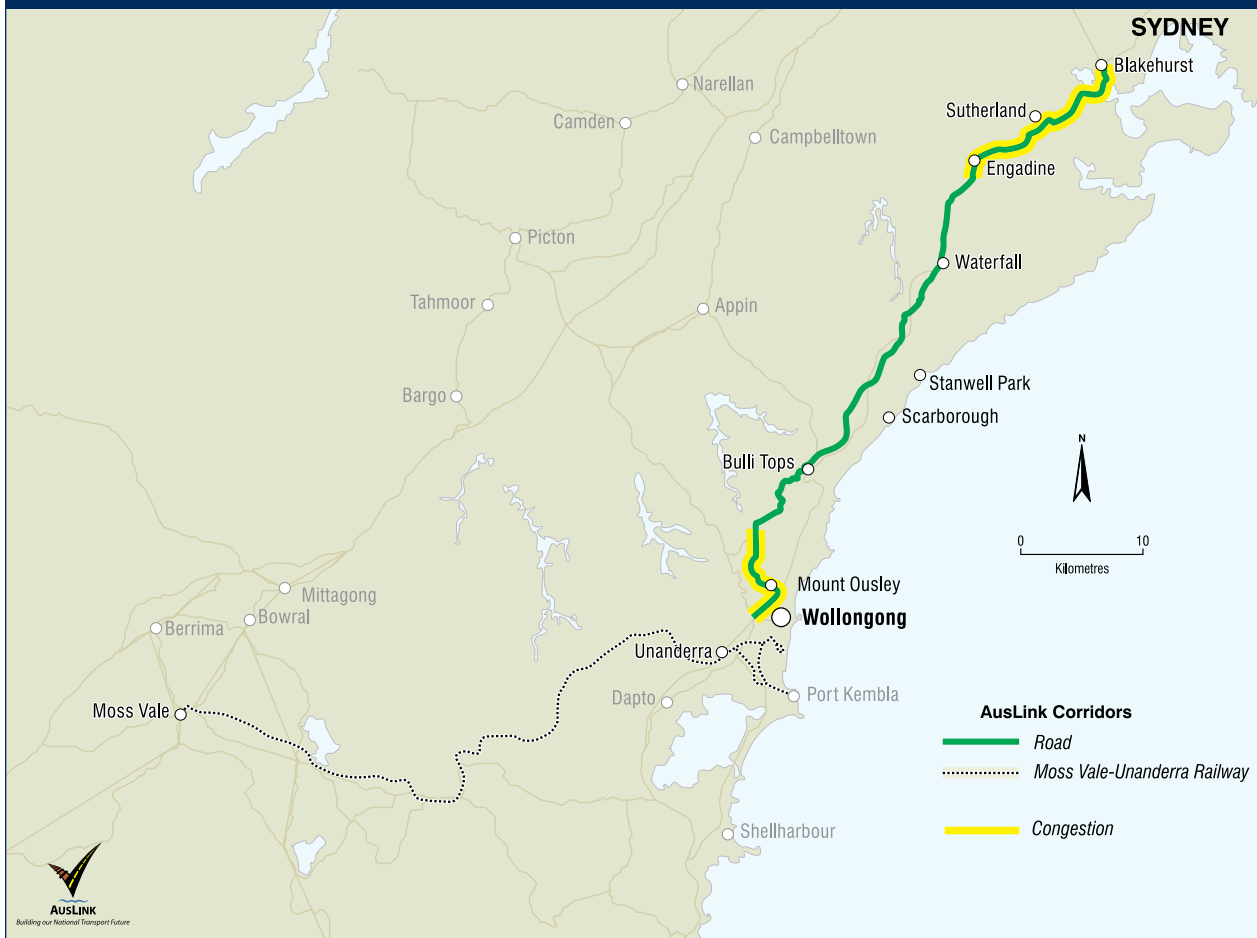
A map illustrating the current levels of congestion around the southern end of the Sydney–Wollongong

Corridor is shown at Figure 3. A map showing morning peak hour congestion on the northern sections of the corridor approaching Sydney can be found in the Sydney Urban Corridor Strategy.

Efficiency and Productivity

Most of the Sydney–Wollongong road corridor is in good condition and from an infrastructure point of view provides a solid level of performance in

FIGURE 3 Mount Ousley Road Morning Peak Hour Congestion Indicator (Volume/Capacity)⁴



³ A V/C ratio range accounts for variation in traffic volumes and/or road capacity in different sections of the same road.

⁴ Halcrow (2006)



meeting demand. Some sections of Mount Ousley Road, for example, have three lanes in each direction, including specific heavy vehicle lanes which have been provided to accommodate the high proportion of heavy vehicles. The Moss Vale–Unanderra rail line is in good condition and the Illawarra rail line has some issues with congestion. Generally, rather than road and rail infrastructure constraints, issues with efficiency and productivity are the main concern.

Current impediments to efficiency and productivity on the Sydney–Wollongong Corridor include:

- road congestion northbound from Heathcote to Blakehurst in the morning commuter peak;
- freight traversing the Sydney metropolitan area by rail faces an effective operational restriction during peak periods, which generally means the line is not available for freight trains for at least seven hours a day so as to allow passenger services to pass;
- the lengths of trains on the Illawarra rail line are generally restricted to a maximum of 850 metres for Port Kembla (maximum standard length of a coal train), although the interstate steel trains to and from Port Kembla are able to load to 1,200 metres. There is a lack of crossing loops along the Illawarra rail line, and steep grades exist between Como and Sutherland which constrains freight operations;
- signage at the local level in Wollongong is inadequate, which sometimes leads to freight vehicles exiting the corridor either before or after the appropriate exit and becoming lost;
- under the 1982 State Environment Planning Policy Number 7 (SEPP 7) road based coal deliveries to the Port Kembla Coal Terminal (PKCT) are restricted to between 7:00am and 6:00pm. If coal exports were to increase (as expected), then the constraint imposed on road transport by SEPP 7 will impact the PKCT and surrounding road interface; and
- although the link between Gwynneville and Port Kembla is not on the AusLink Network it is understood that Higher Mass Limit (HML) vehicles are able to access sections of the Port subject to compliance with the necessary vehicle regulations. Further works will be required to make HML access to the Port fully compliant.

As the impediments mentioned above indicate, the performance of the Illawarra rail line has implications for the Sydney–Wollongong road corridor as rail freight is effectively restricted to certain times and passenger traffic takes precedence.

Reliability

Overall reliability of the corridor is good, although there are some issues to do with congestion along key choke points. Reliability performance issues currently include:

- congestion on the road corridor, particularly between Heathcote and Jannali, and extending to Blakehurst;
- the need for freight to share rail track with passenger trains on the Illawarra line, and only having a duplicate line from Hurstville to Wollongong limits the amount of freight that can utilise the rail network; and
- the effect of random incidents such as crashes and weather, which can close sections of both the road and rail corridor for extended periods of time.

The route is the only high volume corridor between Sydney and Wollongong and no satisfactory alternative is available in the event of its closure. In the past 30 years there have been geological issues in the Mount Ousley area, such as ground slippage, that have significantly reduced traffic capacities (at times of lower traffic volumes). There are permanent dewatering systems in place to reduce the risk of this reoccurring⁵. Because of this, incidents on the Sydney–Wollongong Corridor have the capacity to shut down the only major link into Wollongong for significant periods of time.

As such, an alternative Bulli Pass corridor reserve is being investigated by the NSW RTA as a longer-term alternative to Mount Ousley Road.

Safety, Security and Sustainability

In terms of maintenance, the corridor is generally in good condition with a regular maintenance routine. There are a couple of locations where maintenance is required outside of the rolling maintenance program, and the proliferation of coal mining could be expected to add subsidence issues on the

⁵ These “dewatering systems” consist of large wells over 20 metres deep and 1.5 metres wide, designed to collect sub-surface water and pump it to a nearby culvert, thus limiting damage to the road



corridor between Bulli Tops and Wollongong/Port Kembla.

The section of road from Bulli Pass to the top of Mount Ousley exhibits a relatively higher crash history than other sections of the corridor, with a crash rate four times the regional average. This can be largely explained by the convergence of vehicles from Picton Road onto Mount Ousley Road heading to and from Wollongong, coupled with the topographical nature of the link and its undulating terrain.

Fog and wet weather frequently occur along the higher altitude sections of the Sydney–Wollongong Corridor, particularly from north of Bulli Tops to halfway down Mount Ousley. These conditions tend to occur seasonally during the early morning and late afternoon, however climatic events can occur at random on any day or time. Wet weather crashes represent over 66 per cent of all crashes, about eight times the rate expected for a road of this type. In extreme instances visibility can reduce significantly, such that a preceding vehicle with hazard lights on cannot be seen from 30 to 50 metres away. As sections of the road are 110km/hr here, this exacerbates the safety issues on this section of road. There is a variable message sign (VMS) system between Bulli Tops and Helensburgh that is activated automatically when visibility reduces due to fog or adverse weather. This can also be used for traffic management in the event of a crash.

The transport of coal to Port Kembla also creates a number of safety issues. As rail paths are limited and a number of coal mines operate at a distance from rail facilities, there is significant trucking of coal into the port during daylight hours which can create conflicts with passenger vehicles. Despite this, technology has progressed to the point where the safety and operability of B-Double vehicles has improved substantially. Existing weight limits on heavy vehicles also leads to more trucks utilising Mount Ousley Road than is arguably necessary, especially when it is considered that the road is designed to cater especially for this heavy vehicle task, with a separate truck lane on both north and southbound lanes.



INFLUENCES THAT WILL SHAPE THE FUTURE OF THE CORRIDOR

The future of the corridor will be shaped by factors that influence demand for movement of passengers and freight along the corridor; and by the outcomes of projects already underway or committed.

Demand for Movement of Passengers and Freight

Factors that are expected to shape demand for travel in the corridor include:

- the expansion of Port Kembla to include car imports, containers and break-bulk cargo, most of which will ultimately need to pass through or into Sydney; and
- population growth and land use changes, especially to the southwest of Wollongong in the West Dapto region.

Expansion of Port Kembla

Port Kembla is the key driver of economic growth in the Illawarra region, and is a major generator of traffic flows. Under the *NSW Ports Growth Plan*, Port Kembla will ultimately assume the import tasks from Port Jackson, including East Darling Harbour (containers, cars and break-bulk) and Glebe Island (cars). The Port is undergoing substantial redevelopment and expansion to handle this increase in throughput, including construction of the Multipurpose Berth Number 3, development of Eastern Basin Number 4 and realignment of Tom Thumb Road to cater for car imports.

The expansion of Port Kembla will have the following effects:

- the progressive relocation of cars from Glebe Island (from 2008) will result in approximately 250,000 cars arriving at Port Kembla yearly. It is anticipated that approximately 50 per cent of these will be processed on site, and the remainder delivered by B-Double road transport to Western Sydney (Minto or Ingleburn) for pre-delivery inspection. Allowing for both single run and return trips, this is estimated to result in an additional 93,750 truck movements a year, or approximately 120 B-Double and 250 rigid/single articulated daily return trips. It is likely that such trucks would use Mount Ousley Road, then Picton/Appin Roads and the Hume Highway to access Western Sydney rather than heading north along the F6;

- containers and general cargo will be relocated from Port Jackson from June 2007. This trade represents approximately 250 additional ship calls, 40,000-50,000 containers, and 125,000 tonnes of break-bulk cargo such as timber, machinery and steel; and
- the total impact of this expansion will result in Mount Ousley Road seeing an increase in traffic of less than one per cent, but all of this will be heavy vehicles travelling up and down the escarpment.

Population Growth and Land Use Changes

Population growth is expected to occur in the southern and south-western regions of Sydney, in the vicinity of 80,000 in the south and almost 250,000 in the south-west. This will have impacts on the Sydney-Wollongong Corridor, particularly in the northern region of the corridor approaching Blakehurst which is already affected by congestion. Although there will be significant local impacts, the substantial growth in the south-west is expected to play a lesser direct role on the Sydney-Wollongong Corridor. Some impacts may be felt on the corridor as a result of increased traffic movements along Picton and Appin Roads, especially if the growth in population in the south-west leads to increases in employment that may draw people from the Illawarra region.

Substantial population and industrial growth is also expected to the south and southwest of the Sydney-Wollongong Corridor over the next 25 years. The NSW Government's *Draft Illawarra Regional Strategy* estimates the Illawarra population will grow by an additional 47,600 people in the next 25 years, and that 38,000 new dwellings will be required. Some 19,000 dwellings will be constructed in the West Dapto region alone. Continued population growth along the corridor will also contribute to growing traffic demand.

The key factors shaping changes in demand for movement of passengers and freight include:

- population growth in the Wollongong region (especially West Dapto) and Illawarra's northern beaches will lead to increased passenger travel on the Illawarra rail line. Nearly 16 per cent of the region's workforce currently commutes to Sydney, and this number is expected to increase;
- the release of land in West Dapto, which will create demand for consumer goods and generate



additional freight and domestic travel movements into the Sydney–Wollongong Corridor from the south; and

- the expansion of Port Kembla, which is expected to generate approximately 1000 direct and indirect jobs and boost the local economy by \$200 million a year.

This growth and changes to industrial development are expected to have two major impacts on the corridor:

- there will be growth in the overall level of demand for both private and public passenger transport and freight along the corridor; and
- there are likely to be conflicts with freight traffic at key points, such as Mount Ousley Road, as increasing passenger transport and freight compete for road space with local and commuter traffic.

Projects Already Underway

The defined links of the Sydney–Wollongong AusLink Corridor are currently in reasonably good condition. Although there are some safety and congestion issues at various points along the road network, no projects are currently planned under the first AusLink five year plan. The Moss Vale–Unanderra railway to Port Kembla is also in good condition. Rail projects underway on the Moss Vale–Port Kembla line include an upgrade of the telemetry for the signalling control system, and relocation of the train control for the line from Sydney to Junee.

NSW and Victoria State Governments have responsibility for the Princes Highway between Wollongong and Sale. However, the Australian Government has provided funding for the Highway in the south-east coastal region. In NSW, between 2002-03 and 2006-07, over \$1.0 million has been approved for blackspot works on the Princes Highway under the Blackspot Programme.

The Australian Government also has committed:

- \$15 million to fix a series of safety trouble spots on the Princes Highway from the south of Nowra to Jervis Bay Road (in Shoalhaven Shire);
- \$10 million under under AusLink Strategic Regional Programme for the Conjola Mountain Deviation on the Princes Highway south of Nowra;

- \$5 million to upgrade the Pambula River Bridge (in Bega Valley Shire) to reduce frequency of flooding, under the AusLink Strategic Regional Programme;
- \$34 million to the North Kiama Bypass on the Princes Highway, which was opened in December 2005; and
- \$34 million to Main Road 92 where the upgrading works commenced in April 2006. The upgraded Main Road 92 will take some pressure off the Princes Highway by providing an alternative route to Nowra and the south coast, particularly for heavy vehicles including B-Doubles.

Competition between Modes

For the movement of people, road transport is expected to continue to be the dominant mode of choice for transport along the corridor. However, rail transportation between Sydney and Wollongong is expected to increase its share with the growth in population. It is likely that most of this traffic – for both road and rail – will be passengers commuting between Wollongong and Sydney for work purposes.

Given the geographic nature of the region, there is not expected to be strong modal competition between road and rail freight. The short distances involved between Sydney and Wollongong makes rail impractical for most freight apart from bulk commodities (none of which actually originates within Sydney), and passenger services take precedence over freight rail paths. Even with Port Kembla importing much more containerised freight in the future, without the addition of a dedicated rail freight link or expansion of the Illawarra rail line it remains unlikely that rail will become the dominant mode of transport to Sydney.

If demonstrated to be economically and technically feasible for diesel freight train operations, and supported by industry, the Maldon–Dombarton line may be able to play a future role if it were to be completed. Such a link would generally be able to remove bulk freight from the Illawarra rail line and some other parts of the Sydney passenger rail network, opening up rail paths for freight between Port Kembla and Sydney. Neither the Australian nor NSW Governments have committed to the Maldon–Dombarton link at this time, and a business case has yet to be made. Furthermore, there are significant engineering and design issues that would need to be addressed for this to occur. However, the



corridor has been reserved in perpetuity by the NSW Government for future use and the railway could be completed through private sector investment.

MOST LIKELY FUTURE SCENARIO

Expected Growth

The most likely future scenario is strong growth in demand for the movement of freight and passengers along the Sydney–Wollongong Corridor. Movements of freight between Sydney and Wollongong are forecast by BTRE to increase by 235 per cent by 2025⁶. Rail mode share on the Illawarra line is currently 10 per cent of the freight task. Although rail tonnages are expected to more than triple by 2025, there will still only be 13 per cent of the total freight task shifted by rail. As such, even if there was a significant improvement in the market share of rail, the vast majority of freight will continue to be moved on the road network.

Key features of this scenario are:

- strong growth in the tonnage of freight moved by both road and rail. The total quantity of freight (both bulk and non-bulk) moving between Sydney and Wollongong is forecast by the BTRE to increase by 3.3 per cent a year to more than 27 million tonnes by 2025. This will make freight tonnages between Sydney and Wollongong the highest of all intercity links on the AusLink National Network⁷. This will have resulting effects on congestion at both ends of the corridor;
- total traffic volume is projected to grow by two per cent a year until 2025, with heavy vehicle traffic growing at a slightly faster pace of 2.7 per cent a year. A large number of these trucks will only operate during the day due to the SEPP 7 regulation where export coal trucks are only allowed to operate between 7:00am and 6:00pm Monday to Saturday. This will cause increasing conflict with commuter and local traffic around the roads leading to Wollongong and Port Kembla, such as Mount Ousley Road and Picton Road;
- commuter traffic increasing along the Sydney–Wollongong Corridor will lead to increasing congestion at key points. Mount Ousley Road

is already at capacity in the morning peak and this is expected to worsen. By 2016 the road is expected to be 20 per cent over capacity;

- commuter journeys along the Illawarra rail line are already operating at close to peak capacity. When population growth is taken into account, the Illawarra rail line will reach critical levels before 2016 during the morning peak (between 7:30am and 9:00am at Central). More services may need to be provided during the off-peak periods in the longer-term as well. This would necessitate either lengthening of existing south coast trains or the provision of additional services, which will lessen the availability of freight paths in non-peak times.

Ability of Corridor to Manage Forecast Demand

Port Kembla is a key driver of demand on the Sydney–Wollongong Corridor. Currently, the sections of the Princes Highway in the vicinity of Mount Ousley are congested and these are anticipated to worsen in future. The expansion of port activities including the transfer of the motor vehicle import trade, which will remain largely Sydney bound, together with the expansion of industrial activity in south–west Sydney is likely to put increasing pressure on sections of the corridor and arterial links such as Picton and Appin Roads. Increasing focus will need to be given to managing the interface with the corridor and heavily trafficked arterial roads such as the links between Picton Road and Mount Ousley Road.

As the Sydney–Wollongong Corridor is the primary transport route to the south coast of NSW, it is expected to also have increased demand in holiday periods as holidaymakers travel south via the Southern Freeway and Princes Highway. The population of the south coast increases markedly during holiday periods, with corresponding increases in freight services through the region. However, this increase in transport activity will be focussed during key holiday periods (such as October through to Easter) and should not impact the corridor in a large way outside these times. There is also little freight currently generated to the immediate south of Port Kembla or along the south coast of NSW that would significantly influence the Sydney–Wollongong

⁶ Unless otherwise specified, the analysis in this section of the corridor strategy refers to the Illawarra rail line and not the Moss Vale–Port Kembla line.

⁷ BTRE Working Paper 66.



Corridor in terms of traffic volumes or tonnage. Most heavy vehicles destined for locations south of Port Kembla (such as Nowra, Bega, Merimbula and Eden) are mainly resupply of retail and consumer staples.

Areas south of the Sydney–Wollongong Corridor such as Nowra and Dapto are expected to contribute to strong population growth of approximately 65,000 over the next 20 years. However, it is unlikely that there would be significant commuter traffic generated from areas such as Nowra that would influence the Sydney–Wollongong Corridor. Furthermore, growth located along the Princes Highway on the south coast will only have localised effects on the transport network, such as increased local traffic, as there is little in the way of long distance through traffic in these areas.

As such, with the exception of some pockets of localised congestion such as Mount Ousley Road and the northern sections of the Princes Highway approaching Sydney, the Sydney–Wollongong road corridor will be generally sufficient to meet forecast demand over the next 20 years.

Although capacity will be generally sufficient, there are still a range of ongoing issues that impact the efficiency and safety of the road corridor:

- managing growing traffic on Mount Ousley Road and the outer metropolitan sections of the Princes Highway approaching Sydney; and

- improving the safety and efficiency of Mount Ousley Road and its approaches, especially in wet weather.

Rail capacity on the Moss Vale–Unanderra line is currently sufficient, and the line is actually operating at well below capacity. It is estimated that only 80,000 tonnes of freight is moved from Port Kembla to the interstate mainline each year, due to the steep gradient of the line, although substantially more travels east towards Port Kembla (in the range of 3.5 million tonnes). It should be noted however that freight volumes on this line are largely dependent on seasonal factors such as large grain harvests. Whilst there is scope to increase the utility of the line, this is limited by the steep grades of the Illawarra escarpment.

PRESENT AND EMERGING CORRIDOR DEFICIENCIES

There are a range of present and foreseeable deficiencies that will adversely affect the safety, efficiency, productivity, reliability and amenity of the corridor.

The short and longer-term deficiencies are summarised in Table 3 and Table 4 where:

- short-term deficiencies – are deficiencies that are already apparent or foreseeable over the period to 2015 in the context of expected growth in

Short–Term Deficiencies

TABLE 3 Summary of Short-Term Deficiencies (to 2015)

SHORT-TERM (to 2015)	Road
	Higher crash rates on the stretch of road from Bulli Pass to the top of Mount Ousley Road, particularly in wet weather.
	Congestion on Mount Ousley Road, especially in the morning peak.
	Congestion on the Helensburgh to Blakehurst section of the Princes Highway in peak periods.
	At the local level, signage in Wollongong is inadequate.
	Increasing traffic on Picton and Appin Roads due to freight from Port Kembla destined for south–west Sydney, with Picton Road likely to be under more pressure than Appin Road – thus requiring a greater emphasis in the short to medium-term.
	Inadequate access for higher mass limit vehicles from Gwynneville to Port Kembla.
	Rail
	No short-term deficiencies with the Moss Vale–Port Kembla line.
	Passenger congestion and steep grades on the Illawarra rail line.



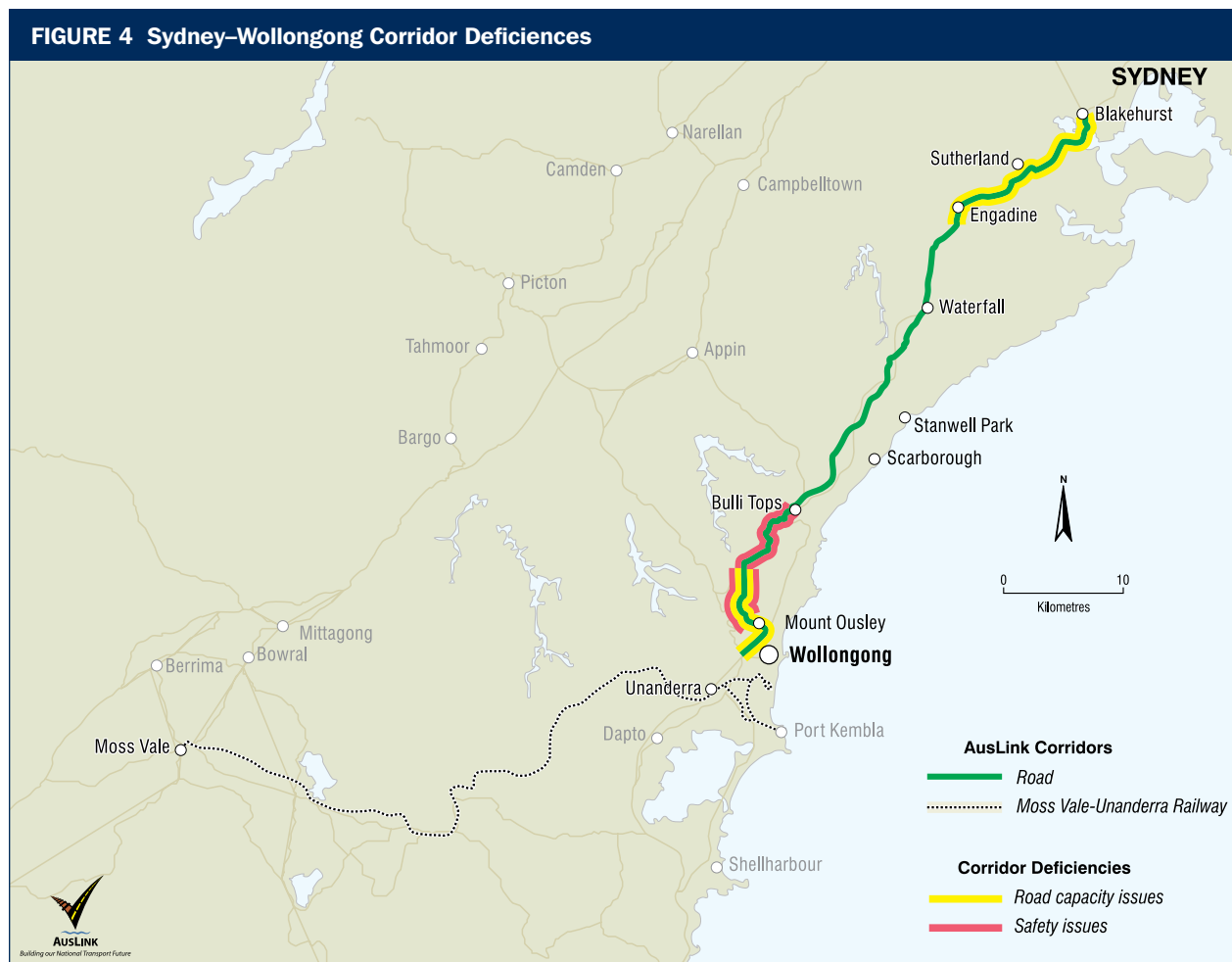
demand and the likely benefits of projects already underway or committed. This is the period of the current and next National Land Transport Plan.

- longer-term deficiencies – are deficiencies that are foreseeable for the period from 2015.

Longer-Term Deficiencies

TABLE 4 Summary of Longer-Term Deficiencies (from 2015)	
LONGER-TERM (from 2015)	<p>Road</p> <p>Congestion on the Princes Highway between Helensburgh and Blakehurst.</p> <p>Congestion on Mount Ousley Road.</p>
	<p>Rail</p> <p>Steep grades and loop lengths on Moss Vale–Port Kembla railway may limit freight efficiency and thus utilisation.</p> <p>Insufficient capacity on the Illawarra line for both passenger and freight services.</p>

A map illustrating the deficiencies for the Sydney–Wollongong Corridor is shown in Figure 4.





Corridor challenges sum up the current situation and strategic issues facing the future performance of the corridor. In conjunction with the AusLink Network objectives, they form the basis for developing strategic priorities for the corridor.

The Sydney–Wollongong Corridor is currently facing few issues outside those associated with congestion and safety on Mount Ousley Road and congestion on the Princes Highway approaching Sydney. Strategic issues that may emerge in future will ultimately depend on the growth and transport patterns of freight from Port Kembla and population growth within and along the corridor. However, there will be a growing need to cater for growth at either end of the corridor.

The specific challenges for the Sydney–Wollongong Corridor are:

- rapid growth in Sydney–Wollongong Corridor freight at a forecast rate of 3.3 per cent a year to 2025;
- providing safe and reliable interstate and local connections, especially for export industries and the local community;
- managing increased traffic on urban and near-urban sections of the road, specifically on Mount Ousley Road and increasingly on the northern end of the corridor approaching Sydney;
- safety of sections of the road corridor with mixed traffic conditions, especially sections with high proportions of heavy freight vehicles and tourists, such as Mount Ousley Road;
- managing the possible effects on the road network from an increase in passenger transport on the Illawarra rail line, which may force more freight onto road links;
- improving the utilisation of the Moss Vale–Port Kembla railway;
- maintaining the flexibility of the transport system in the corridor to respond quickly to the transport demands of major changes in industry such as the relocation of car imports to Port Kembla;
- increase traffic on road links from Wollongong to Port Kembla; and
- expected growth in freight movements between Wollongong and western Sydney.



STRATEGIC PRIORITIES

The strategic priorities are a response to objectives for the AusLink Network and the challenges facing the Sydney–Wollongong Corridor. They are measures that are of national importance; are consistent with the corridor objectives; and need the most urgent attention. The corridor priorities provide specific guidance to investment priorities and framing of projects for the corridor as a whole or a specific link.

The strategic priorities for the Sydney–Wollongong Corridor are in two groups:

- short-term (to 2015) – corresponding to the priorities for the next National Land Transport Plan and associated investment programme; and
- longer-term (from 2015) priorities.

Short–Term Priorities

The short-term priorities for the Sydney–Wollongong Corridor and how they relate to the AusLink Network objectives are shown in Table 5.

TABLE 5 Summary of Short-Term Strategic Priorities

SHORT-TERM Priorities (to 2015)	Capacity	Efficiency	Productivity	Reliability	Safety	Security	Sustainability
Improve linkages from Gwynneville to Port Kembla for freight traffic and to facilitate implementation of higher mass limit vehicles.	●	●	●				
Improve the safety and efficiency of Mount Ousley Road, especially in wet and peak periods.		○		●	●		
Capacity improvements to Picton and Appin Roads.	●	●	●		●		
Manage the increased freight on the corridor as a result of the Port Kembla expansion.	●	●	●		●		
Improve the competitiveness for rail on the Moss Vale–Port Kembla rail line.	●	○	●				●
Improve traffic flow between Heathcote and Blakehurst.	●	●	●	●			
Consider alternatives to Mount Ousley Road.	●			●	●		

● Direct linkage to objective ○ Indirect linkage to objective



Longer-Term Priorities

The longer-term priorities for the Sydney–Wollongong Corridor are shown in Table 6. These priorities focus on continuing to manage the performance and development of the transport system to meet the predicted increase in freight movements.

TABLE 6 Summary of Longer-Term Strategic Priorities

LONGER-TERM Priorities (from 2015)	<ul style="list-style-type: none"> Manage urban congestion on the corridor particularly in Wollongong and the southern Sydney suburbs. Continue capacity upgrading works on strategic links from Wollongong to south–west Sydney. Investigate alternative routes through southern Sydney to the Sydney Orbital Network. Manage the Illawarra rail line to ensure freight and passenger harmonisation. Implement outcomes of investigation of alternative routes for Mount Ousley Road.
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NEXT STEPS

Once the Corridor Strategies are complete they will be provided to the Council of Australian Governments (COAG), which has sought them by 30 June 2007. The Strategic Priorities identified in each of the Strategies will provide a basis for the Australian and State/Territory Governments to negotiate project funding priorities for future infrastructure development on the AusLink National Network.



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