

2. Context and need for the proposed upgrade

2.1 Growth context

2.1.1 Sydney–Brisbane corridor

The Sydney–Brisbane corridor is expected to experience significant population growth over the next 20 years and a corresponding increase in economic activity. Already the coastal area between and including the Sydney and Brisbane metropolitan areas, contains approximately 40% of Australia's total population (Australian Bureau of Statistics 2002).

The Pacific Highway plays a vital role in linking coastal regions between Sydney and Brisbane, providing access to markets and sources of goods and services. Many of these regions are recording high rates of population and economic growth, particularly due to the development of strong tourism-based industries.

Figure 2-1 identifies those regions predicted to experience significant population growth within NSW. As shown in the Figure 2-1, significant population growth is likely to occur in the Mid North Coast and South Coast regions of NSW.

2.1.2 Mid North Coast region

The Mid North Coast region is generally described as being between Bulahdelah and Coffs Harbour and includes the urban centres of Taree, Port Macquarie and Kempsey.

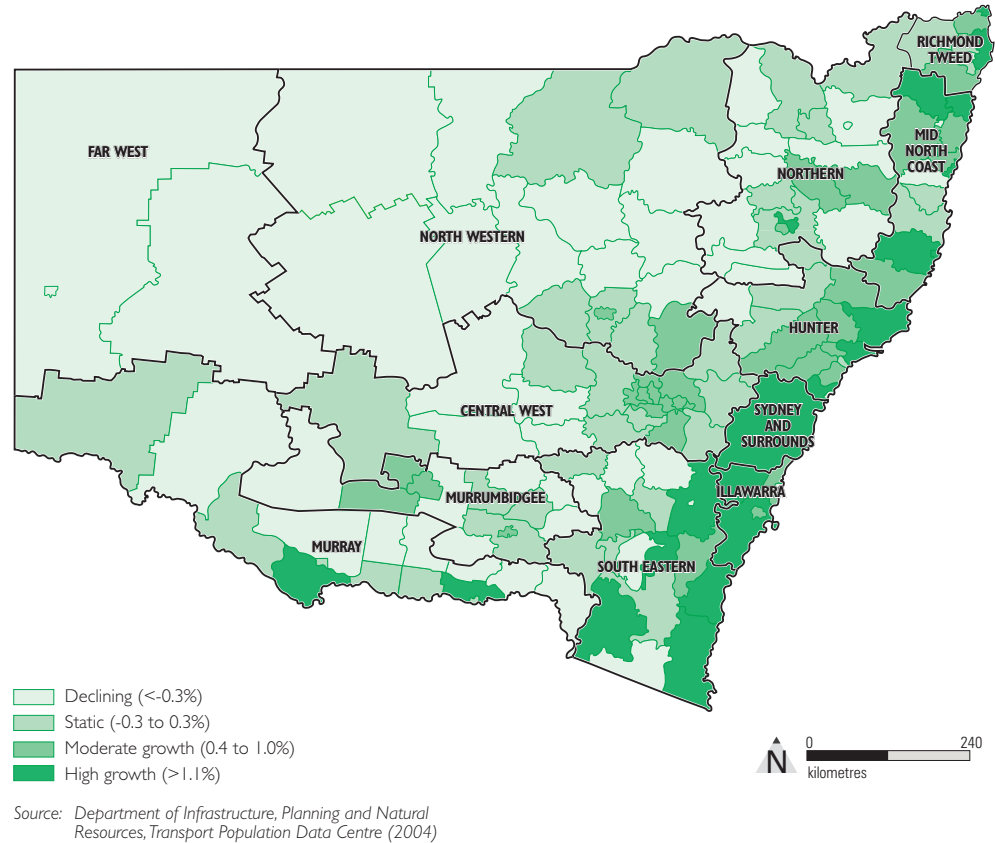
This region is expected to experience the most significant gains (through internal migration) of any region in NSW. Its population is set to grow from a current population of 333,400 to 424,400 by 2031, an increase of 27% over 25 years (Department of Planning 2006a). The average annual growth rate for the region during this period is estimated to be 1% (Department of Planning 2006a). Projected population growth rates in the Mid North Coast region are shown in Figure 2-1.

The majority of growth in the region's population and economy is likely to be focused on coastal towns within the Port Macquarie–Hastings and Coffs Harbour local government areas, including the urban centres of Port Macquarie and Coffs Harbour. Approximately 4,500 residential development lots in these two centres are currently under consideration by the Department of Planning under Part 3A of the EP&A Act (Department of Planning 2006b). Other significant proposed developments in the region include tourist resorts, sewage treatment plants and multi-storey apartment buildings, indicative of substantial urban growth in the region.

The high growth rates can be attributed to both an influx of retirees and others relocating from larger urban centres, and improved employment prospects for those seeking to establish businesses or seek employment, to meet demand for tourism and retail services in coastal towns.

Inland areas are expected to grow at much slower rates. The Kempsey and Greater Taree areas are expected to grow at a rate of 0.2% annually to 2031 (Department of Infrastructure, Planning and Natural Resources 2004).

Figure 2-1 Growth rates by statistical local areas and regions (NSW)



2.1.3 Macleay Valley

The Macleay Valley region is characterised by coastal settlements, such as Crescent Head, South West Rocks and Stuarts Point in the east; agricultural land uses on the alluvial floodplains of the Macleay River; inland townships such as Kempsey and Frederickton on the Macleay River; and agriculture, bushland, forests and small settlements on the fringe of the Great Dividing Range in the west.

The town of Kempsey has developed a strong role as a mid-journey service centre for those travelling on the Pacific Highway and has been an important employment centre for the region's forestry, agriculture, education and tourism industries.

Although more recently it has experienced a decline in agriculture and other primary industries, Kempsey has maintained a strong employment economy with significant growth in wholesale/retail trade, transport, education and health and other tourism-based industries (Kempsey Shire Council 2006).

The recent opening of the Mid North Coast Correctional Centre at Aldavilla to the west of Kempsey, and the location of various other regional facilities and government agencies in Kempsey, have improved employment prospects in the Macleay Valley. These prospects include the district hospital; offices for the Department of Water and Energy (formerly Department of Natural Resources), Department of Primary Industries (NSW Forests) and Department of Environment and Climate Change (National Parks and Wildlife); education facilities (including local schools, Kempsey College of TAFE, Booroongen Djugun College and the Macleay River Community College); and police and emergency services (Kempsey Shire Council 2006).

There has also been significant growth in building approvals in recent years (Kempsey Shire Council 2006). Building and development in general have increased, with a number of residential and commercial subdivision and dwelling approvals in South and West Kempsey, South West Rocks and Crescent Head.

At the 2001 Census, the Kempsey statistical local area had a population of 27,370. Good employment growth and demand for coastal property in South West Rocks and Crescent Head are likely to drive population growth at a rate of 0.2% annually to 29,070 by 2031 (Department of Infrastructure, Planning and Natural Resources 2004).

2.2 Planning for growth

Strategic planning for infrastructure provision is required to ensure that the predicted high levels of population growth within the Sydney-Brisbane corridor are balanced with sufficient major infrastructure provision. The relationship of the proposed upgrade to strategic infrastructure planning in both the national and State contexts is outlined below.

2.2.1 AusLink White Paper

The AusLink White Paper *Building our National Transport Future (the White Paper)* (Commonwealth of Australia 2004) is the Australian Government's formal policy statement on land transport that identifies national objectives for the AusLink investment program. The Pacific Highway is identified as part of the national network defined in the National Land Transport Plan under the AusLink investment program and is also the key road in the Sydney to Brisbane transport corridor.

The proposed upgrade would improve connectivity within and between communities in the growing region, improve logistics and trade, enhance safety and health, incorporate environmentally sustainable principles, have a view to long-term economic viability and social outcomes, and contribute to improving the effectiveness of the Pacific Highway and the broader transport network to which it is linked.

2.2.2 NSW State Infrastructure Strategy

Released in May 2006, the *State Infrastructure Strategy – New South Wales 2006-07 to 2015-16* (NSW Treasury 2006) provides strategic direction for planning and delivery of infrastructure in NSW. The strategy commits the NSW Government to funding of capital expenditure, links the planning embedded in the *Sydney Metropolitan Strategy: City of Cities – A Plan for Sydney's Future* (Department of Planning 2005a) and other regional strategies with the State budget, and delivers on identified infrastructure commitments. The strategy is aimed at implementing infrastructure identified in the NSW State Plan and lists roadwork initiatives planned throughout NSW, including the Pacific Highway Upgrade Program. It also acknowledges a need for additional funding to be sourced from the Australian Government.

2.2.3 Draft Mid North Coast Regional Strategy 2006-31

The primary purpose of the *Draft Mid North Coast Regional Strategy 2006-31* (Department of Planning 2006a) is to ensure that adequate land is available and appropriately located to accommodate the projected housing and employment needs of the Mid North Coast region's population over the subject 25 year period. The draft strategy puts some limitations on growth in areas where the value of environmental/cultural assets and natural resources is high.

The draft Strategy incorporates the specific regional infrastructure requirements identified in the *State Infrastructure Strategy – New South Wales 2006-07 to 2015-16* (NSW Treasury 2006).

The proposed upgrade would complement the draft Strategy by providing road transport infrastructure through the Macleay Valley, connecting the Kempsey area to other regional centres and presenting opportunities for employment growth. The Kempsey to Eungai Pacific Highway upgrade is listed in Appendix 3 of the draft Strategy as being a project in the Mid North Coast Regional Strategy area under the *State Infrastructure Strategy – New South Wales 2006-07 to 2015-16* (NSW Treasury 2006).

2.2.4 North Coast Urban Planning Strategy 1995

The *North Coast Urban Planning Strategy* (Department of Planning 1995) was prepared to supplement the *North Coast Regional Environmental Plan* (1988). It provides a more detailed implementation framework, based on the principles of ecologically sustainable development and provisions of the *North Coast Regional Environmental Plan*.

The strategy defines a settlement hierarchy that will provide a framework for growth management and service provisions designed to maximise service efficiency, equity and access for the areas between Port Macquarie and Tweed Heads, where population projections forecast 605,000 people in the region by 2016.

The strategy recognises that current dispersed settlement patterns also increase the need for road travel for all road users, and the Pacific Highway is a vital link.

The proposed upgrade would improve the safety and efficiency of a major section of the Pacific Highway between Port Macquarie and Coffs Harbour, two of the fastest growing regional centres in NSW. The proposed upgrade would, therefore, complement the strategic planning for urban development within the North Coast region envisaged under the Strategy.

The strategy would be superseded by the *Draft Mid North Coast Regional Strategy 2006-31* once it is adopted.

2.3 Transport context

2.3.1 Road conditions

The condition of the Pacific Highway between Hexham and the Queensland border varies considerably from high standard, divided carriageways, to long sections of narrow two-lane roads. The roads also vary in their pavement condition and road geometry, which impacts on driver safety and transportation efficiency.

Between Kempsey and Eungai, the Pacific Highway is restricted to a two-lane single carriageway road, with passing lanes and right-turn lanes line-marked at key intersections. The highway passes through the towns of Kempsey and Frederickton, has varying posted speed limits, including 40, 50, 70 and 100 kilometre per hour speed zones, and limited opportunity for passing. Other significant constraints include:

- The narrow two-lane bridge over the Macleay River and tight geometry on its approaches.
- Limited capacity at the Smith Street and Belgrave Street intersection, Kempsey, which becomes congested during weekday and holiday peak periods.

- Conflicts between through and local traffic in the Kempsey and Frederickton town centres.
- Poor sight lines at intersections with local roads in the Barraganyatti area.

The combination of these factors contributes to unacceptable road conditions on the Pacific Highway between Kempsey and Eungai.

2.3.2 Local road network

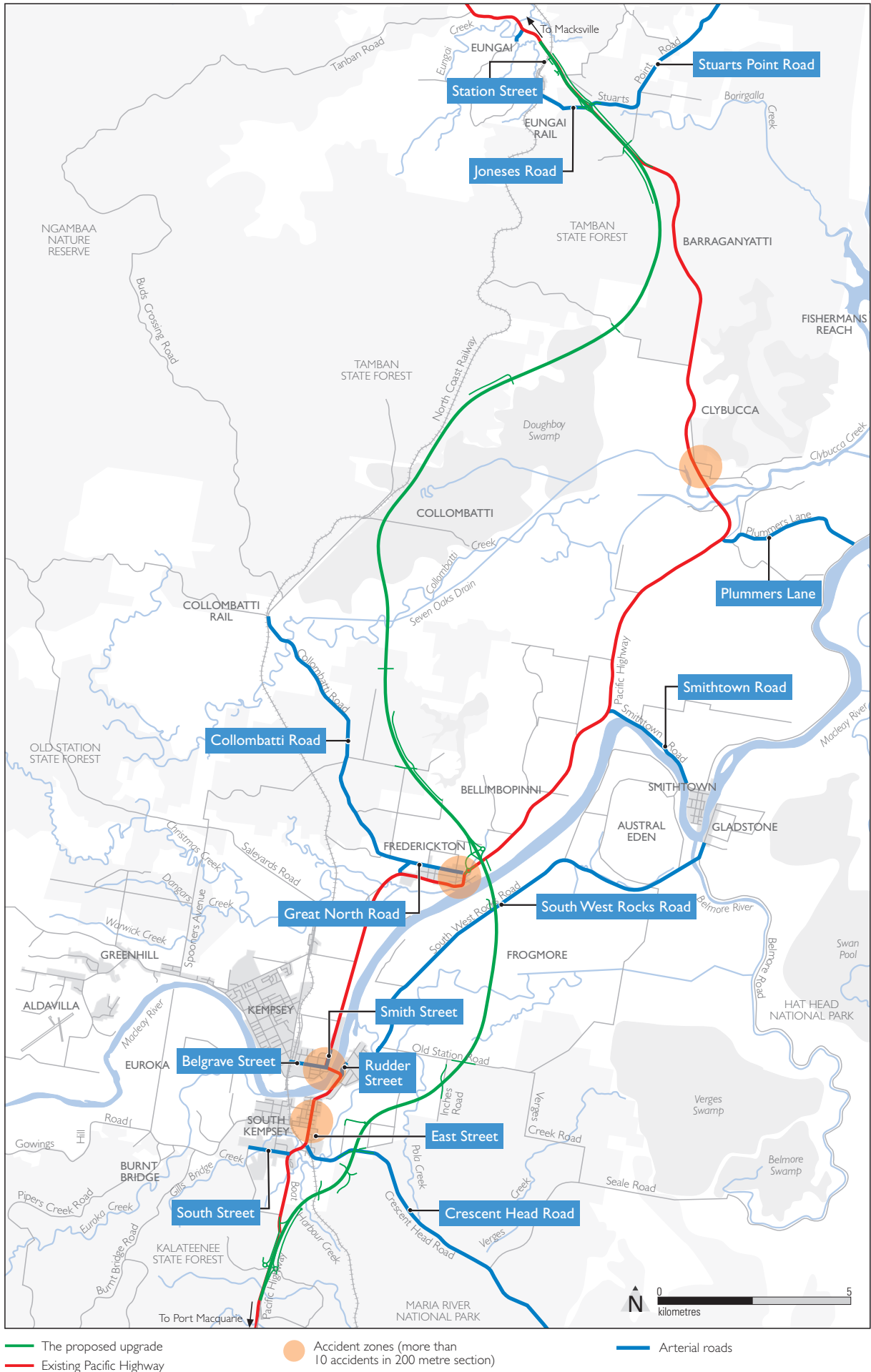
The existing highway passes through the town centre of Kempsey, the main commercial centre of Frederickton and other residential areas. This creates conflicts between local traffic, pedestrians and highway through-traffic. The local road network is shown in Figure 2-2.

Local traffic is based around the Pacific Highway and the majority of trips involve travel on the highway.

The highway intersects several key roads that provide access to residential and commercial, coastal and inland areas, as follows:

- *South Street* – provides access to the South Kempsey industrial area, including major local industries, such as the Boral Bricks plant, Akubra factory and other industrial and commercial land uses.
- *East Street* – provides access to the Kempsey Greyhound Racing Club, businesses and residential areas in East Kempsey surrounding Crescent Head Road, and to the coastal town of Crescent Head.
- *Rudder Street* – provides access to residential areas in East Kempsey and to South West Rocks Road.
- *Belgrave Street* – acts as the main east–west collector road within Kempsey and continues into Armidale Road, which provides access to the Macleay Valley from Armidale and areas west of Kempsey.
- *Smith Street* – is the main north–south connection through Kempsey's commercial district, where the highway is an urban dual carriageway with kerbside parking. Three signal-controlled intersections lie between Belgrave Street and the northern extent of the town at First Lane. Commercial and tourism facilities have frontage access off the highway.
- *Collombatti Road (access to)* – provides access to the residential areas of Frederickton and the rural areas of Collombatti and the Tambar State Forest.
- *Great North Road* – provides access to Frederickton school, Frederickton golf course, Collombatti Road, and commercial and residential properties.
- *South West Rocks Road (access via Rudder Street)* – provides access to rural areas east of the highway and to the towns of South West Rocks, Gladstone and Smithtown.
- *Smithtown Road* – provides access to Smithtown, Gladstone and rural areas east of the highway.
- *Plummers Lane* – provides access to South West Rocks and rural areas east of the highway.
- *Stuarts Point Road* – provides access to rural areas east of the highway and to the coastal town of Stuarts Point.
- *Joneses Road* – provides access to Eungai Rail from the south.
- *Station Street* – provides access to the village of Eungai Rail and the North Coast Railway from the north.

Figure 2-2 Local road network and accident zones



2.3.3 Traffic and road safety

Existing traffic volumes

Average annual daily traffic (AADT) volume is defined as the total volume of traffic passing a roadside observation point over a period of a year, divided by the number of days in the year.

There are two road observation points in close proximity to the Kempsey town centre: one at the Macleay River bridge and one immediately north of the town centre (south of First Lane) on the existing Pacific Highway. These observation points record traffic volumes (in axle pairs) at each location over a whole calendar year. Table 2-1 shows traffic growth on the Pacific Highway at these locations from 1986 to 2004.

Table 2-1 AADT (in axle pairs) on the Pacific Highway, 1986 to 2004

Year	Macleay River bridge, Kempsey	South of First Lane, Kempsey
1986	17,442	8,856
1995	21,535	11,736
1998	22,887	11,560
2004	21,538	16,147

Source: NSW Roads and Traffic Authority (2006b)

These figures show a 19% increase in traffic on the Pacific Highway at the Macleay River bridge from 1986 to 2004 (NSW Roads and Traffic Authority 2006b). The higher volumes of traffic on the Pacific Highway within the Kempsey town centre show that a substantial proportion of traffic on the Pacific Highway in the Kempsey town centre is local traffic.

In 2004, the RTA carried out further surveys to confirm existing traffic characteristics on the Pacific Highway in and around Kempsey (NSW Roads and Traffic Authority 2006b). The traffic data collected showed that, in 2004, south and north of the Kempsey town centre, the Pacific Highway carried average weekday traffic volumes of about 10,000 to 12,000 vehicles per day over the survey period. Further north, near Eungai Rail, the average weekday daily traffic fell to about 8,000 vehicles per day. In the Kempsey town centre, the highway traffic reached approximately 24,000 vehicles per day. This indicates that the town centre generates a substantial proportion of traffic on the Pacific Highway at the Macleay River bridge.

Outside of Kempsey, heavy vehicles comprised 21–24% of all vehicles during weekday non holiday periods (6am to 10pm) and 50–60% of total traffic during night-time hours (10pm to 6am) in 2004. In the Kempsey town centre, heavy vehicles comprised approximately 12% of all traffic during the day and 38% at night (NSW Roads and Traffic Authority 2006b).

Future traffic volumes

Traffic volumes on the Pacific Highway have grown in recent years due to natural growth in demand for travel, improvements to the Pacific Highway, population growth in the Mid North Coast region and along the eastern seaboard, and the resultant increase in economic activity.

With the overall improved efficiency of the Pacific Highway, some freight transport has shifted from the New England Highway corridor to the Pacific Highway. Although the town of Kempsey is expected to contribute little to the projected overall travel demand, the Mid North Coast region in general will generate significant travel demand over the next 20 years.

As indicated in Figure 2-3, without the proposed upgrade, average daily traffic volumes on the Pacific Highway north of Frederickton are expected to increase from approximately 9,600 vehicles per day in 2004 to around 15,000 vehicles per day in 2021, and 20,000 vehicles per day in 2031 (NSW Roads and Traffic Authority 2006b).

What is level of service?

Level of service (LoS) is a performance measure used in the planning design and operation of roads. It provides the basis for determining the number of lanes to be provided in the road network. The following level categories apply:

- A Good
- B Good with minimal delays and spare capacity
- C Satisfactory with spare capacity
- D Satisfactory but operating at capacity
- E At capacity and incidents will cause excessive delays
- F Unsatisfactory and requires additional capacity

Source: AustRoads (1988)



Photo: Heavy vehicle traffic at the intersection of Belgrave and Smith Streets in Kempsey town centre.

Level of service

At present, sections of the Pacific Highway at Kempsey under non-holiday period peak traffic conditions are operating at capacity, with an LoS of 'D' to 'E'. The LoS deteriorates further during holiday peak periods. During the holiday peak periods, considerable delay and congestion occurs on the Macleay River bridge at Kempsey, as traffic is slowed by local traffic and the operation of traffic signals at the intersection of Belgrave Street and Smith Street (Pacific Highway) (refer above photograph), particularly in the South Kempsey and Kempsey town centre areas.

As shown in Figure 2-3, the overall LoS of the Pacific Highway north of Frederickton, is expected to worsen, with increasing traffic, from LoS D to LoS E by 2031.

Road accidents

During the period from 1996 to 2005, 414 crashes occurred along the Pacific Highway between Kempsey and Eungai. Seventeen people were killed and 179 people were injured, while 218 vehicles were towed away due to accidents. This equates to around 4% of total crashes being fatalities, compared to a statewide average of 1% over the same period (NSW Roads and Traffic Authority 2006b). Accident zones, where more than 10 accidents have occurred in a 200 metre section of the existing highway, were calculated from available accident data. These are shown in Figure 2-2.

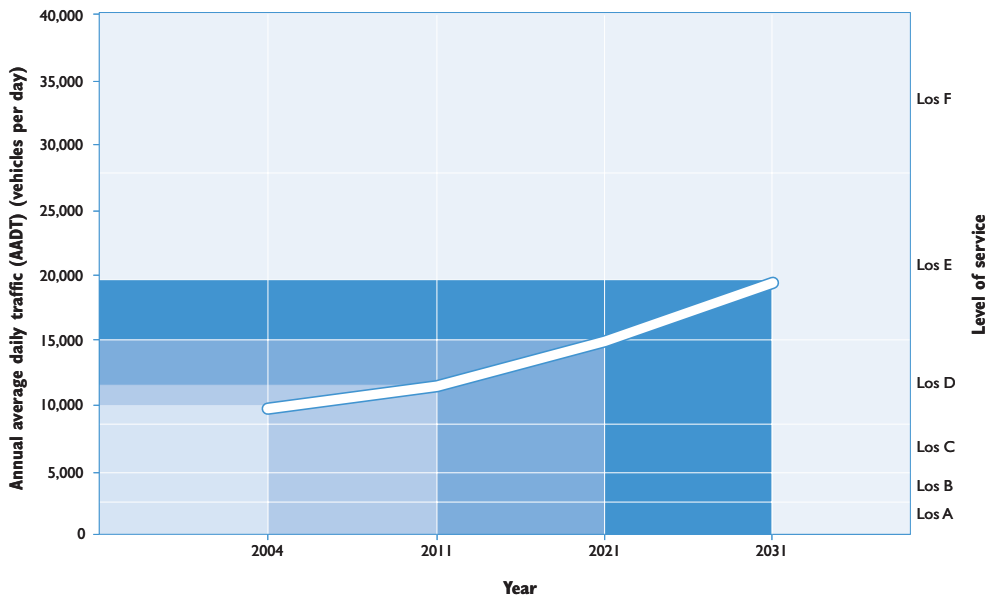
It is likely that, with increasing traffic volumes and congestion, the rate of accidents would increase without the proposed upgrade.

2.3.4 Transportation

Although there have been significant improvements to the Pacific Highway in the past 10 years, which have resulted in a reduction of travel times between Sydney and Brisbane, the Kempsey to Eungai section of the highway remains a major bottleneck for road traffic. This particularly applies to heavy vehicles, which must travel at low speed through urban areas at Kempsey and Frederickton.

Over 20% of all traffic during weekdays through Kempsey is heavy vehicles (NSW Roads and Traffic Authority 2006b). This includes freight transport, logging and cattle trucks, and commercial buses travelling on the Pacific Highway on inter-regional and inter-state routes.

Figure 2-3 **Projected AADT volumes and level of service on the Pacific Highway (north of Frederickton)**



Note: AADT and level of service - Pacific Highway, north of Frederickton (no build scenario)
Los - Level of service, for definition see text

Source: NSW Roads and Traffic Authority (2006b)

2.4 Need and anticipated benefits

2.4.1 Need for the proposed upgrade

Regional growth and economic sustainability

Current and forecast population growth rates, and the growth in tourism within the Sydney–Brisbane corridor and the Mid North Coast region, will place increasing pressure on transport networks on the NSW coast. Improvements to road transport infrastructure are required to meet community expectations for safe and efficient travel, and to accommodate current and projected travel demand.

Levels of social and economic development are linked with population growth and investment. There is a strong connection between land use and transport infrastructure in terms of regional economic development. A high standard road network, linking regional areas and centres of growth, provides more efficient access to markets and sources of goods and services.

As transport is a major component of the costs of production, road improvements have a direct and positive impact on local, regional and national economies. Therefore, as a vital link in the NSW road network, the proposed upgrade is needed to support growth in the region and the long-term sustainability of the regional economy.

Travel efficiency and road safety

The Pacific Highway is a vital link for various forms of traffic and types of journey. It serves as the through-highway route for north–south regional and interstate traffic, but also as a local access thoroughfare for domestic and commercial traffic within Kempsey and the surrounding area.

The interaction of highway through-traffic with local traffic and local road conditions, including pedestrians and cyclists, significantly affects the efficiency of travel between the existing dual carriageway south of Kempsey and at Eungai and, in turn, the efficiency of travel between

Sydney and Brisbane on the Pacific Highway. The proposed upgrade is needed to reduce travel times and avoid the significant congestion that currently occurs within the Kempsey and Frederickton town centres.

The proposed upgrade is also needed to reduce accident risks. Accident statistics show that the majority of road accidents are located in close proximity to Kempsey and Frederickton, in particular on the southern side of the Macleay River bridge, where significant congestion occurs. As noted above, over the past 10 years, there have been over 400 road accidents between Kempsey and Eungai. Around 4% of these have resulted in fatalities (NSW Roads and Traffic Authority 2006b).

Regionally, it is desirable for motorists to have a continuous and uniform standard of arterial road, allowing safe and efficient traffic movement. High quality road conditions reduce driver fatigue and frustration, and contribute to a reduction in accidents.

As illustrated in Figure I-1, a number of Pacific Highway Upgrade projects are currently in development or under construction. The completion of these projects would significantly improve the safety of the highway and reduce travel times. The upgrading and improvement of the Kempsey to Eungai section of the highway is, therefore, an important part of the overall Pacific Highway Upgrade Program.

Amenity and environmental sustainability

Congestion in Kempsey and Frederickton creates an inefficient driving environment. Stop/starting in these urban areas results in inefficient use of fuel and increased wear and tear on vehicles. Over long periods of time, increased fuel use and vehicle running costs have a significant impact on the community and the environment.

Without the proposed upgrade, increasing traffic volumes and resultant increased congestion on the existing highway between Kempsey and Eungai would further reduce urban amenity. It would also further reduce travel efficiencies, increase vehicle running costs and increase the use of fossil fuels, further contributing to greenhouse gas emissions.

The proposed upgrade would help to reduce the environmental and amenity impacts associated with the existing highway. If the proposed upgrade does not proceed, the forecast growth in traffic volumes on the existing highway could be expected to increase the traffic noise and air quality impacts in surrounding residential areas. The physical barrier created by the highway would also worsen, increasing difficulties in accessing the town centres and community facilities from the residential areas in both localities.

The proposed upgrade would remove the majority of through-traffic from urban areas, significantly improving local amenity for residents living adjacent to the existing highway. It would also reduce travel times and improve fuel efficiency for users, reducing the contribution of vehicle emissions to overall greenhouse gas emissions.

2.4.2 Anticipated project benefits

The proposed upgrade is part of a wider initiative to improve the efficiency and safety of travel between Sydney and Brisbane on the Pacific Highway. The proposed upgrade would provide approximately 40.8 kilometres of motorway standard dual carriageway, reducing travel times between South Kempsey and Eungai Rail by around 23 minutes in 2011 and by 35 minutes in 2031 (NSW Roads and Traffic Authority 2006b).

Other benefits of the proposed upgrade include:

- A reduction in financial costs associated with travel on the Pacific Highway due to reduced travel time.
- Improved access and safety for local traffic, pedestrians and cyclists by removing through-traffic from the streets of Kempsey and Frederickton.
- Improved accessibility to towns and villages in the Macleay Valley and Mid North Coast through the provision of interchanges at locations that connect to the regional road network.
- Lower noise levels for some residents, especially at night.
- Improved air quality for residents by relocating through traffic to outside of urban areas.
- Reduced greenhouse gas emissions and energy consumption.

The consequences of not proceeding with the proposed upgrade are described in Chapter 22 – *Justification and conclusions*.

2.5 Objectives to address identified needs

Objectives for the proposed upgrade have been developed to both guide the proposed upgrade's development and to assess whether it satisfies the identified needs (see Table 2-2). These objectives have been developed from the Pacific Highway Upgrade Program objectives (Section 1.1.1) and incorporate input from consultation with the community and other stakeholders.

Table 2-2 Objectives to address identified needs

Travel	<ul style="list-style-type: none"> • To improve the reliability and efficiency of travel between Kempsey and Eungai. • To improve the safety of travel between Kempsey and Eungai. • To improve or maintain accessibility to local and regional centres.
Economic development	<ul style="list-style-type: none"> • To support the region and economic development.
Environment	<ul style="list-style-type: none"> • To enhance the potential beneficial environmental effects of the proposed upgrade and manage potential adverse environmental impacts by: <ul style="list-style-type: none"> – Conserving biological and ecological integrity. – Reducing as far as practicable the threat of serious or irreversible environmental damage. – Improving air quality and reducing greenhouse gas emissions. – Minimising the use of energy and non-renewable resources. – Encouraging the use (where practicable) of renewable resources or energy (green energy).
Local community	<ul style="list-style-type: none"> • To enhance the potential benefits to the community in the short and long term. • To manage potential adverse impacts on the community.
Cost	<ul style="list-style-type: none"> • To minimise construction and related project risks. • To minimise the financial cost to government.

