

This chapter discusses the need for the Proposal in strategic planning, transport and road safety, and environmental terms. The consequences of not proceeding with the Proposal or delaying it for a long period are also discussed.

4.1 Pacific Highway strategic planning

The need for the Proposal is considered in relation to broader transport and road network planning. This planning context has been presented in a number of recent studies and documents on the upgrading of the Pacific Highway, including:

- *North Coast Road Strategy* (RTA 1992a)
- *State Road Network Strategy* (RTA 1994)
- *North Coast Urban Planning Strategy* (NSW DIPNR 1995)
- *Upgrading the Pacific Highway* (RTA 1997)
- *Pacific Highway - Managing the Impact of Delay* (RTA 1999b).

Working Paper No. 1 provides the background to the details of this chapter.

4.1.1 *Upgrading the Pacific Highway*

Upgrading the Pacific Highway (RTA 1997) provides a ten-year commitment to develop the existing highway between Hexham and the Queensland border. The objective of this \$2.2 billion program is to significantly improve the standard of the highway and provide a safer and more efficient transport link, with the result that accident 'blackspots' be eliminated and travel times reduced. The agreed Program ends in June 2006, however the State and Australian Governments have both committed to extending the program. Through the AusLink White Paper (see Section 4.1.3), the Australian Government has committed \$160 million per year for the three years after the completion of the current Program, thereby matching the State commitment over that period. Further agreements are expected for years beyond that time.

Through these arrangements, the NSW and Australian Governments acknowledged that historical funding levels were not adequate to properly develop the highway and committed to a significant level of additional funding.

As stated in the Program, the aim is to reduce travel time by 60 to 90 minutes by 2006 for the 677 km route length from Hexham to the Queensland border and to achieve approximately 50% of dual carriageways.

By May 2003, a travel time saving of approximately 55 minutes had already been achieved through the completion of 23 major and 19 smaller projects under the Program (RTA 2003a). Four major projects are currently under construction and 15 projects are in various stages of development (see Figure 1.1).

Works to the south of the Proposal that are currently under construction are:

- Karuah to Bulahdelah – a contract has been awarded for the first stage of construction of this 34.2 km upgrade
- Bundacree Creek to Possum Brush Upgrade – construction started in September 2004 on the 9.7 km upgrade near the township of Nabic

- Taree to Coopernook Upgrade – construction of a 7.3 km dual carriageway section of highway began in February 2002 and it will connect the Taree and Coopernook Bypasses
- Coopernook Bypass – 4.2 km of dual carriageway construction began in February 2002.

Major projects currently in developmental stages under the Program are:

- Bulahdelah Upgrade (8.7 km)
- Coopernook to Moorland Upgrade (10 km)
- Kempsey to Eungai Upgrade (39 km).

4.1.2 *Action for Transport 2010*

Action for Transport 2010 - An Integrated Transport Plan for NSW (NSW Department of Transport 1998) is a long-term vision for the expansion of the public transport network and major roads. It is a twelve-point action plan, and those that are relevant to the Proposal are:

- improving access for rural communities by maintaining current services, upgrading of roads and supporting rural industries
- improving the competitiveness of freight through the implementation of the *NSW Freight Strategy*, introduction of a seamless freight system, and improving the competitiveness of the freight system
- keeping the network in good order through continuation of proper maintenance of the existing network, and continual upgrades
- preventing accidents and saving lives through improving the quality of roads and vehicles, encouraging safer driving and improving safety for pedestrians and cyclists
- safeguarding the environment, by improving environmental management and construction techniques, including protection of flora, fauna and Aboriginal and European heritage.

The Plan outlines the NSW Government's continued commitment to improving the standard of the Pacific Highway.

4.1.3 *AusLink White Paper*

AusLink is an Australian Government initiative designed to improve planning, decision-making and funding for national land transport infrastructure (Australian Department of Transport and Regional Services 2004).

The principal objective of AusLink is to promote sustainable national and regional economic growth, development and connectivity by contributing to the establishment of an integrated national network. Specifically, the objectives are:

- to improve national and interregional connectivity for people, communities, regions and industry
- to improve national, interregional and international logistics
- to enhance national, interregional and international trade
- to enhance health, safety and security
- to be consistent with the obligation to current and future generations to sustain the environment
- to be consistent with viable, long-term economic and social outcomes
- to be linked effectively to the broader transport network.

Key components of AusLink include:

- a defined National Network of important road and rail infrastructure links and their intermodal connections
- the Green Paper *AusLink: Towards the National Land Transport Plan*, which outlines the Government's approach to improving and integrating the National Network and the investments it will make
- a single funding regime, under a new AusLink program, for the National Network
- separate funding allocations for local and regional transport improvements
- new legislative, intergovernmental and institutional instruments.

The AusLink National Network will provide a single integrated network of land transport linkages of strategic importance. It will improve land transport access to major airports and seaports through establishing major road and rail intermodal connections. This is considered crucial to the integration of all transport modes.

The AusLink Roads to Recovery Program is anticipated to commence on 1 July 2005. The Proposal already forms an integral part of this program in that it will assist in achieving AusLink objectives, namely, the Proposal will improve connectivity within and between communities, improve logistics and trade, enhance safety and health, incorporate environmentally sustainable principles, have views 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.

4.1.4 *Pacific Highway - Managing the Impact of Delay*

A discussion paper, *Pacific Highway - Managing the Impact of Delay* (RTA 1999a), on managing traffic delays along the Pacific Highway during the upgrading program, has been prepared. The paper emphasises the need to coordinate construction activities to minimise delays through:

- coordination of all RTA works, and any works by other agencies which affect traffic flow
- coordination with emergency services
- coordination with transport operators regarding schedules and abnormal loads
- provision of sufficient traffic capacity at work sites to cater for the traffic demand at the time
- identification, evaluation and documentation of other routes (in consultation with Local Councils)
- managing incidents.

A number of these actions are relevant to the Proposal, especially those sections where upgrading is proposed to occur by means of duplication of the existing highway. Such actions would be detailed in the preparation of a Construction Environmental Management Plan developed by a construction contractor prior to commencement of work (see Chapter 21).

4.2 The Pacific Highway network

4.2.1 The roles of the Pacific Highway at Moorland to Herons Creek

As it passes from Moorland to Herons Creek, the Pacific Highway serves national, regional and local transport and accessibility roles.

In **national terms**, the Pacific Highway links Australia's largest city, Sydney, with Brisbane, which is located at the northern end of Australia's fastest growing urban corridor along the Gold Coast north from Tweed Heads. The highway passes through the North Coast region that has, and is forecast to continue to have, the highest population growth rate in NSW. Many areas along the highway experience increases of up to 50% to 100% in traffic volumes during peak holiday periods throughout the year.

Based on the traffic projections presented in the *Pacific Highway Upgrading Program - Strategic Assessment* prepared by Sinclair Knight Merz in 2000, annual average traffic volumes on the Pacific Highway between Sydney and Brisbane are estimated to grow by approximately 4.3% per annum between 1999 and 2006, and 2.7% between 2006 and 2021 (SKM 2000).

In **regional terms**, the Pacific Highway links the rapidly growing coastal areas on the NSW North Coast between Bulahdelah and Coffs Harbour, including population centres such as Foster, Taree, Port Macquarie and Kempsey. Population growth is occurring in response to population shifts based on lifestyle factors for families and retirees who seek residential locations with high environmental amenity, as well as a response to economic development related particularly to tourism.

In February 2004, heavy vehicles accounted for approximately 17% of all traffic on the Pacific Highway at the junction with Ocean Drive, Kew. This is comparable with the Hume Highway, one of Australia's busiest freight routes (see Working Paper No. 1).

In **local terms**, within the Greater Taree and Hastings LGAs, no other road provides equivalent north-south access to that provided by the Pacific Highway. South of the Camden Haven River, there is no other realistic alternative for local north-south vehicular trips because of the presence west of the highway of Middle Brother National Park (including Middle Brother Mountain) and State Forest; and east of the highway the presence of Watson Taylors Lake and Crowdy Bay National Park which extend to the coast.

North of the Camden Haven River, an alternative north-south route to the Pacific Highway is provided by Ocean Drive. This road diverges eastwards from the Pacific Highway at Kew for approximately 11 km before heading north near North Haven. It passes through the coastal townships of Bonny Hills and Lake Cathie prior to connecting into Port Macquarie. Through the northern part of the study area and the areas beyond, only Ocean Drive (via Kew, Laurieton, North Haven, Bonny Hills and Lake Cathie) and Pacific Drive in Port Macquarie provide additional north-south access. However, this route is significantly longer than the equivalent section of the Pacific Highway and serves mainly a local and tourist function. As a result of the lack of alternative main roads, the highway provides the only road access for many properties in rural and township areas, particularly within the southern part of the study area.

This combination of national, regional and local transport and accessibility roles for the highway must be appropriately recognised in the development of upgrade options (see Chapter 5).

4.3 Existing road conditions

4.3.1 The condition of the Pacific Highway between Moorland and Herons Creek

The nature and condition of the Pacific Highway between Newcastle and Port Macquarie varies from high standard divided carriageways to stretches of two-lane road with narrow shoulders. Overtaking lanes are provided at regular intervals to assist traffic flow. There are also constant variations and inconsistencies in road pavement conditions and road geometry, which affect road user comfort and vehicle operating costs.

Between Moorland and Herons Creek, road pavement conditions on the highway are generally satisfactory. There is presently no dual carriageway within the study area or generally to the south but the Proposal will join with existing dual carriageway which runs from north of Herons Creek to the Oxley Highway interchange some 5 km to the west of Port Macquarie.

The existing highway is a single carriageway roadway, generally with one lane in each direction. The speed limit on this section of the highway is 100 km/h except through the townships of Johns River (80 km/h speed limit) and Kew (60 km/h speed limit).

The highway has been widened at a number of locations to provide overtaking lanes for both the northbound and southbound directions. In total, northbound overtaking lanes are available for a total of 4.9 km or about 22% of the total length and southbound overtaking lanes are available for 5.6 km or about 25% of the total length. The northbound and southbound overtaking lanes are generally at separate locations, so just less than 50% of the existing highway is three lanes wide. Opportunities for overtaking are limited at other locations along the highway within the study area.

There is only one major intersection between Moorland and Herons Creek – in Kew where MR538 (Kendall Road to the west and Ocean Drive to the east) intersects with the highway and traffic control is provided by signals. The highway approaches to the intersection each consist of a single through lane, a right turn storage bay and a separate left turn lane.

All minor accesses within the study area are by simple priority controlled junctions. Turning lane locations are described in Working Paper No. 1.

In terms of vertical geometry, there are 14 crest vertical curves which are below minimum requirements for the 100 km/h design speed specified for vertical geometry (see Working Paper No. 2).

Where the horizontal and vertical geometry met the design requirements and the pavement is in good condition, consideration was given in the design of the Proposal to use of the existing highway as one carriageway of the upgrade.

Existing bridges

There are six existing bridges within the section of highway under consideration that could be incorporated into the upgrade:

- Stewarts River bridge
- Stony Creek bridge
- Rossglen rail bridge
- Camden Haven River bridge
- Herons Creek flood channel bridge
- Herons Creek bridge.

Visual inspections of these bridges were undertaken in December 2000. A preliminary assessment was made to identify existing deficiencies requiring repair or maintenance and also to identify existing structures which are nearing the end of their useful life and for which allowance should be made for replacement in the Proposal. The condition of these bridges based on this preliminary assessment is shown in Table 4-1.

Table 4-1 Preliminary assessed condition of existing bridges

Bridge	Total span length	Existing width between kerbs	Construction date	Assumed design loading	Works required to support planning and design process
Stewarts River	289 m	9.2 m	1985	NAASRA 1976, T44 & Abnormal Vehicle	Repairs to both abutments joints and pier bearings, barrier repainting and deck drainage modification
Stony Creek	15.5 m	9.2 m	1938 (widened 1979)	DMR 1927 Standard UDL + Pt. Loads	Replace with 15.5 m long x 10.5 m wide bridge
Railway at Rossglen	42 m	9.2 m	1982	NAASRA 1976, T44 & Abnormal Vehicle	Repairs to expansion joints and guardrail repainting
Camden Haven River	164 m	9.2 m	1986	NAASRA 1976, T44 & Abnormal Vehicle	Vehicle barrier repainting and further detailed inspections
Hérons Creek flood channel	32 m	8.5 m	1963	DMR 1948 Standard Truck	Minor repairs to deck joints, realignment of kerb and possible new vehicle barriers and wearing surface
Hérons Creek	24.5 m	9.2 m	1938 (widened 1979)	DMR 1927 Standard UDL + Pt. Loads	Replace with 24.5 m long x 10.5 m wide bridge

The Stewarts River bridge, Rossglen rail bridge, Camden Haven River bridge and the Herons Creek flood channel bridge were all assessed to be in good condition. These bridges require minor maintenance to joint seals, barriers, scuppers and deck surfacing.

All these bridges (with the possible exception of the Herons Creek flood channel bridge) were designed for at least NAASRA 1976 T44 vehicle loading. It is possible that they could be retained for one carriageway when the highway is upgraded. The following actions would be necessary to support the planning and design process:

- Checking the structural adequacy of the Herons Creek flood channel bridge, particularly for abnormal vehicles, and applying restrictions if necessary (abnormal vehicles would travel under escort and could use the new bridge on the adjacent carriageway). Further checks will be carried out in the detail design phase of the Proposal.
- Minor maintenance and repair work on all four bridges.
- Check of corrosion to the bearings at the Stewarts River bridge – this may be the most expensive element to repair on these structures if the corrosion is found to be more than surface rust.

The Stony Creek and Herons Creek bridges are both 60 years old and of a similar design. They were both widened but not strengthened in the late 1970s and an initial assessment suggests they would be replaced as part of the Proposal due to their narrow width, poor condition and inadequate load capacity. Refer to Chapter 6 for more detail.

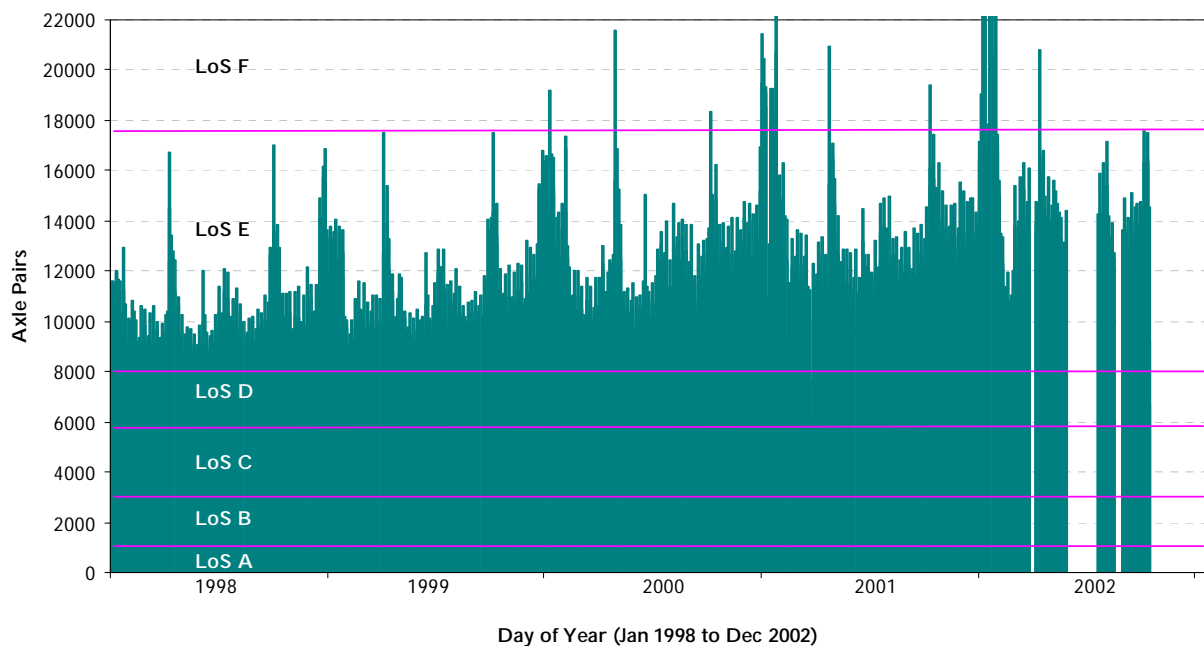
4.4 Existing traffic data and projections

4.4.1 Existing traffic volumes

Average Annual Daily Traffic (AADT) represents the average number of axle pairs passing in both directions during a 24-hour period estimated over a period of one year. For example, a typical car produces one axle pair and a three-axle truck one and a half axle pairs. AADT is different from Average Annual Daily Vehicles (AADV), which is the average number of vehicles passing in both directions during a 24-hour period estimated over a period of one year.

The closest RTA maintained Permanent Traffic Count Station (No. 09.043) is located to the south of the intersection of the Pacific Highway with the Oxley Highway (approximately 5 km to the west of Port Macquarie). The AADT for the Pacific Highway at this station has progressively increased from 8,061 axle pairs in 1990 to 15,071 axle pairs in 2003. Data from RTA Temporary Count Station No. 09.122 at Kew indicates that in terms of vehicles rather than axle pairs, heavy vehicles on average account for approximately 17% of total daily vehicles (24 hour period) and 54% of night-time vehicles (10pm-6am only). Traffic volumes on Ocean Drive/Kendall Road, to the east of the highway, have increased from 4298 axle pairs in 1990 to 6321 axle pairs in 2001. Traffic volumes on all other roads within the study area such as Stewarts River Road, Station Street, Thomas Street, Algona Road and Sunnysvale Road are low by comparison, with AADTs of less than 500 axle pairs (see Working Paper No. 1).

Traffic flows on the highway peak during the major holiday periods such as Easter, Christmas and school holidays. At these times, flows are 50% to 100% greater than the average weekday level. The variation in daily flow in vehicles per day over time is shown in Figure 4-1. During these peak holiday periods, considerable delays and congestion can occur on the highway at Kew as traffic is slowed in the built-up area by local traffic and by the operation of the traffic signals at the intersection of Kew Road/Ocean Drive and the highway. These signals became operational on 30 November 2001. For non-holiday weekdays, traffic on the Pacific Highway at Kew is more evenly spread throughout the day, without the major 'commuter peak' that is evident in metropolitan regions.



Note: zero count indicates tube failure
 Source: RTA Permanent Count Station 09.043 data

Figure 4-1 Daily two-way traffic volumes (AADT)

4.4.2 Existing Level of Service

For a given number of traffic lanes, Level of Service (LoS) analysis provides a means of determining the traffic-carrying performance of a road or any element of it under the prevailing roadway and traffic control conditions. This form of analysis is fundamental to the planning, design and operation of roads, and provides a basis for determining the number of traffic lanes to be provided in the road network. It takes into account the volume and composition of traffic as well as the prevailing roadway, traffic and traffic control conditions.

Part 2 - Roadway Capacity - of the *Guide to Traffic Engineering Practice* (AUSTRROADS 1988) documents procedures for calculating LoS for all prevailing roadway, traffic and traffic control conditions. The LoS parameters for two-lane two-way traffic on rural roads with conditions similar to those for the existing Pacific Highway between Moorland and Herons Creek are presented in Table 4–2.

The AADTs over a ten year period at Kew range from 8,086 (1990) to 11,898 (2001). This equates to an AADV of 9595 (2001) indicating that the existing LoS for the Pacific Highway between Moorland and Herons Creek is LoS E – at capacity and incidents will cause excessive delays.

It is to be noted, however, that there are a number of overtaking lanes available in this section of the highway. These provide some additional capacity over and above that taken into account in these calculations.

Table 4–2 Existing highway Level of Service parameters

Level of Service	Description	Maximum Flow (vpd)*
A	Good	1,000
B	Good with minimal delays and spare capacity	2,500
C	Satisfactory with spare capacity	4,700
D	Satisfactory but operating near capacity	7,200
E	At capacity and incidents will cause excessive delays	13,500
F	Unsatisfactory and requires additional capacity	> 13,500

* From Table 3.9 (AUSTRROADS 1988) assuming two lane road, rolling terrain, K factor = 0.11 and 60/40 directional split.

4.4.3 Predicted traffic volumes

The *Pacific Highway Upgrading Program – Strategic Assessment* (SKM 2000) contains detailed traffic projections along the Pacific Highway. Volumes were projected for numerous locations between Hexham and Tweed Heads and considered baseline traffic; diverted traffic (mainly from the New England Highway); and induced traffic.

The RTA Temporary Count Station 09.122 at Kew is listed in the *Strategic Assessment*. Traffic projections were given at this location for the years 2007, 2016 and 2022. A subsequent update to the *Strategic Assessment* in 2001 provided traffic forecasts of Pacific Highway traffic at the Kempsey Shire boundary for the years 1999, 2006 and 2021. These indicate an initial annual traffic growth rate of 4.3% between 1999 and 2006 and 2.7% between 2007 and 2021, resulting in a predicted cumulative increase of almost 100% between the years 1999 and 2021.

Traffic counts at RTA Station 09.122 have been used to assess existing traffic flow over the Moorland to Herons Creek section of the highway. Counts at this location have also been used as a base from which to develop future traffic flows on the basis of the above forecasts for this section of the highway. Since traffic volumes for 1999 (base year for *Strategic Assessment*) are not available for RTA count site 09.122, the 4.3% growth rate has been assumed to apply from the actual 1998 counts. It has also been assumed that the projected 2.7% growth rate can be extrapolated beyond the 2007-2021 period.

Historical data and detailed analysis of growth rates are presented in Working Paper No. 1.

4.4.4 Road capacity required for projected traffic demands

The RTA brief for the Proposal specified 110 km/h for horizontal alignments and 100 km/h for vertical alignments as the design speed for the upgraded highway. A four-lane dual carriageway cross-section was also specified as the most appropriate design. The road will be configured as two 3.5 m lanes and a 2.5 m breakdown lane/bicycle lane in each direction with an additional 0.5 m right hand shoulder.

Peak hour traffic volumes have been derived for capacity analysis purposes from the AADT volumes shown in Table 4-3. Peak hour traffic volumes are used instead of daily volumes (as discussed previously) for more accurate analysis of upgrade options. This methodology is discussed in greater detail in Working Paper No. 1.

Figure 4-2 provides an estimate of the LoS that the design configuration would provide. It is predicted that the Proposal would operate at LoS B in 2011 and reach LoS D by the end 2027, 16 years after the proposed opening year 2011. LoS E is predicted to be reached in 2035. This is considered acceptable as LoS D continues through to 24 years after opening. The provision for widening to three lanes in each direction in the future is therefore not considered necessary at this stage.

Table 4-3 Projected Pacific Highway traffic volumes at Kew, 1998-2031

Year	North of Ocean Drive	
	AADV*	AADT*
1998	9,331	11,570
2001	10,587	13,128
2011	15,253	19,705
2021	19,910	25,720
2031	25,988	33,572

* Predicted AADT volumes and AADV volumes north of Ocean Drive, Kew have been derived growth projections and historical data as follows:

- i. The traffic growth rate is based on 1998 AADT counts from RTA Temporary Count Station 09.122, the *Pacific Highway Upgrading Program – Strategic Assessment* (SKM 2000) and additional RTA advice on heavy vehicles.
- ii. For comparison with measured AADT count data, see Working Paper No. 1.

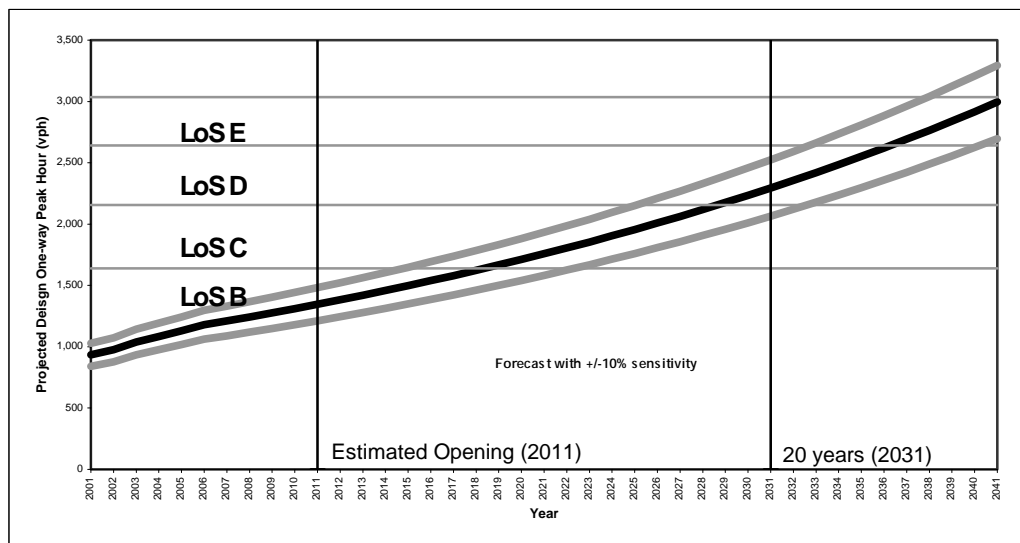


Figure 4-2 Volume and level of service on Proposal

4.5 Accident data

4.5.1 Recorded accidents on the Pacific Highway

Accident data was supplied by the RTA for three sections for the highway between Moorland and Herons Creek:

- Section 1 - Moorland to Camden Haven River (12.5 km)
- Section 2 - Camden Haven River to Kew (4 km)
- Section 3 - Kew to Herons Creek (5.5 km)

Accidents in each of the three sections were analysed separately for the most recent five-year period (October 1998 to September 2003 inclusive) and are presented in Table 4–4.

Table 4–4 Accidents by severity and description (October 1998 to September 2003)

By severity	Section 1	Section 2	Section 3	Total	Percentage
Fatal accidents	3	1	2	6	8.6
Injury accidents	6	8	6	20	28.6
Tow-away	9	20	15	44	62.9
Total	18	29	23	70	100

By accident description	Number of accidents	Percentage
Vehicle-Vehicle (Head on)	10	14
Vehicle-Vehicle (Right angle)	14	20
Vehicle-Vehicle (nose – tail)	13	19
Vehicle-Vehicle (Other angle)	2	3
Vehicle-object	20	29
Vehicle (off carriageway)	7	10
Vehicle U-Turning	1	1
Other	3	4
Total	70	100

Source: RTA accident database

The average accident rate along this section of the highway during the five years (1998 to 2003) is, based on 70 accidents and the traffic volumes listed for Site 09.122 (linearly interpolated between 1998 and 2003), 18 accidents per 100 MVK (million vehicle kilometres). When analysed by section there is considerable variance, with eight accidents per 100 MVK in Section 1, 40 accidents per 100 MVK in Section 2, and 23 accidents per 100 MVK in Section 3. The rate for Section 2 is above the state-wide accident rate for a rural two-lane undivided road of 32.8 accidents per 100 MVK (RTA 2004).

Six fatal accidents (in which eleven people were killed) occurred within the study area during the five-year period; four of which were head-on collisions. The majority of these accidents occurred at night or in wet weather conditions. Further accident details and analysis can be found in Working Paper No. 1.

In the five-year period, 8.6% of reported accidents resulted in a fatality, compared with a state-wide average of 1.0% (RTA 1999c, 2001a). The highest number of fatal accidents occurred between Kew and Herons Creek with four people killed. This number is high and exceeds the state-wide average, thus suggesting that upgrading of the highway is necessary as the current fatal accident rates could increase as traffic volumes increase along this section of the highway. The number of casualty accidents per kilometre per year for the Pacific Highway

overall between Moorland and Herons Creek was 0.18. This is below the route average of 0.68 for the Pacific Highway between Hexham and Tweed Heads (RTA 1997). Of the 70 accidents recorded, 22 (or 31%) involved heavy vehicles. Significantly, this is more than double the state-wide average of 14% (RTA 2001a).

4.5.2 Road safety and road design issues

Based on the key findings from analysis of the recorded accident statistics, a reduction in accident rates along the Moorland to Herons Creek section of the highway would be achieved by the adoption of a number of road design strategies for the Proposal, including:

- a straighter alignment than the existing alignment which contains a number of sub-standard curves (the present accident profile shows a high number of 'run off the road' accidents which are generally associated with/resulting from poor road alignment)
- the provision of dual carriageway, which would be effective in virtually eliminating head on accidents and reducing 'run off the road' accidents
- the separation of 'through' traffic (higher speed, heavy traffic) from 'local' town traffic (vehicles, pedestrians, and cyclists) which would be achieved through bypassing the townships of Johns River and Kew
- removal of through traffic from the townships which would preclude the necessity to stop at the traffic signals and eliminate the rear end accidents that this can generate.

State-wide analysis of accident statistics shows that higher standard roads have lower accident rates as shown in Table 4–5.

Table 4–5 Accident rate by rural road type

Rural road type	Accident rate (per 100 MVK)
Freeway (two lanes per direction)	18.8
Divided road (two lanes per direction)	30.5
Undivided road (two lanes wide)	32.8

Source: RTA 2004 (1997-2001 data)

As illustrated in Table 4–5, the overall accident rate of 18.8 per 100 MVK for all rural freeways is higher than the present performance over the Proposal length, but also higher than the Proposal objective of 15 accidents per MVK.

Given that the Proposal length currently performs relatively well, the implementation of the strategies described above should enable the Proposal objective to be met or exceeded. The major benefit would occur over the length of Section 2 (Camden Haven River to Kew) where the current rate is well above the figures of Table 4–5. This length would become the Kew bypass with its attendant removal of through traffic.

4.6 Need to upgrade the Pacific Highway between Moorland and Herons Creek

The need to upgrade the Pacific Highway between Moorland and Herons Creek is based on a combination of factors including regional growth, economic issues, road safety issues and environmental issues. Each of these factors is discussed below.

4.6.1 Regional growth

The sustained recent population growth and forecasts for continued growth both in the Greater Taree and Hastings Council LGAs and the entire North Coast Region indicate an increasing pressure on the existing transport system. It is necessary that transport infrastructure improvements occur to ensure that community expectations for safe and efficient road transport are met and accommodate the current and projected growth trends. Highway improvements are necessary to provide safe, efficient access for social activity, trade, tourism, and emergency services.

4.6.2 Economic issues

Levels of economic development are closely tied to population growth and related investment. A high standard, reliable road network linking regional areas with larger urban and metropolitan areas is essential to provide access to both markets and sources of goods and services. Transport costs can be a major input to production costs so road improvements have a direct and positive impact on regional and national economic efficiency.

In the Moorland to Herons Creek context, an example of the role of the highway in a significant regional industry is the number of loads of locally produced timber products from the Boral Timber mill at Herons Creek that are transported each day to local and regional markets. Discussions with Boral Timber confirmed that there are currently 36 (two-way) heavy vehicle movements in and out of the mill each day. This number is expected to rise to 64 movements in 2005, a 78% increase.

4.6.3 Road safety issues

The need for the Proposal can be argued in road safety terms, both at the local and regional level. Based on the nature and type of recent traffic accidents occurring on the highway between Moorland and Herons Creek and the issue of pedestrians and cyclists safely crossing the highway in the townships of Johns River and Kew, there is a demonstrated need to provide a higher standard of road.

In regional terms, it is desirable that motorists have a uniform standard of safe roads for as much of their journey as possible. Continuity of high quality road conditions directly correlates with lower levels of accidents, especially fatalities. Also, predictability of uniform road conditions reduces driver fatigue and frustration, both of which are contributing factors to accidents. As noted in Section 1.5, the Pacific Highway either side of the Proposal is already duplicated or duplication is planned.

The Proposal should be considered in the context of the overall highway upgrade so it does not cause safety concerns by being the only unimproved section. Given current construction works and plans to upgrade the highway between Coopernook and Moorland, the continued presence of the Moorland to Herons Creek section in its current state may result in an increased accident rate associated with a change in road conditions. Specifically, lower speed limits and reduced road standards compared to upgraded sections and increased conflicts with other transport modes, especially cycle and foot, would reduce road safety.

4.6.4 Environmental issues

With increasing levels of traffic between Moorland and Herons Creek, amenity for residents is reduced as a result of:

- high levels of traffic noise, particularly that generated at night by heavy vehicles and as a result of vehicle speed changes at the traffic signals in the centre of Kew
- constraints on social interaction between residents who live on either side of the highway in the townships of Johns River and Kew because of the physical barrier presented by the highway traffic
- local reduction in air quality caused by vehicle emissions and exacerbated by traffic having to start and accelerate after stopping at the traffic signals at Kew.

Upgrading the highway, especially in the vicinity of the townships of Johns River and Kew, would significantly improve the local environmental amenity for residents adjacent to the existing highway.

4.6.5 Implications for ESD

The need for the Proposal can be considered in relation to the four principles of ESD (see Section 2.4):

- *The precautionary principle:* The analysis provided above is a clear demonstration that the Proposal is needed in strategic, operational and environmental terms. The Proposal represents a pragmatic approach to resolving the existing issues underlying the need for the upgrade of the highway such as accident reduction and capacity for traffic growth. Although the Proposal is likely to result in some environmental impacts, the management of adverse impacts to acceptable levels would be undertaken as detailed in this EIS.
- *Intergenerational equity:* The provision of a carefully planned Proposal will assist intergenerational equity in general terms because of the more efficient road system provided and resultant reduction in fossil fuel usage over the nominal 30 year life of the Proposal (see Chapter 12). In local terms, the Proposal will provide the opportunity for potential urban improvement in the townships of Johns River and Kew. Such improvement could result in enhanced future amenity consistent with improved local economic activity.
- *Conservation of biological diversity and ecological integrity:* The road transport sector is a major user of fossil fuels which are a non-renewable resource and which, upon consumption, contribute to climate change. In general terms, the Proposal will 'tie-in' with the overall highway network resulting in a more efficient use of fossil fuels over the 30 year life if the Proposal proceeds (see Chapter 12). The Proposal would therefore make a contribution to slowing the rate of climate change. In addition, the upgrade options could include design improvements that may reduce current rates of native fauna mortality within the study area and maintain or increase opportunities for safe regional connectivity for various species.
- *The improved valuation and pricing of environmental issues:* The consideration of the environmental issues in the early stages of Proposal planning has assisted in achieving improved valuation and pricing of environmental resources by ensuring that these issues are incorporated into strategic planning and establishment of the need for the Proposal.

4.7 Consequences of no action

The consequences of no action being taken to develop the Proposal would include adverse implications for local and regional growth patterns; for the overall efficiency and safety of the Pacific Highway system; and for local environmental amenity and road safety (especially within the townships of Johns River and Kew).

4.7.1 Local and regional growth

An efficient, safe and reliable transport system is one of the key elements in the encouragement and support of regional population growth and economic development. As the Pacific Highway is the most significant transport infrastructure element between Newcastle and Brisbane, it is an important contributor to the continued economic development of the NSW North Coast region. If the highway is not upgraded to provide an appropriate standard of service for existing and forecast levels, it is likely that:

- inefficiencies and cost increases would be experienced by existing businesses and residents
- the attractiveness of these regions for new economic development would reduce in response to diminishing road transport service.

4.7.2 The Pacific Highway system

If the Proposal does not proceed or is deferred for a long period, current levels of service would deteriorate.

Without the Proposal, specific implications for Pacific Highway operations would be:

- increasing congestion along the highway - traffic volumes now experienced only during peak holiday periods would become daily occurrences and at holiday times the road system would virtually fail (for example, the projections show that, perhaps as early as 2010, traffic volumes in Kew on a daily basis will be the same as those now occurring only during the highest volume weekends during the year)
- commercial traffic would experience delays which would adversely affect productivity and economic performance
- the mobility of people in the sub-region would be reduced - those affected would include commuters to and from Taree to the south and Port Macquarie to the north, commercial operators, tourists, shoppers, and the local workforce
- an increase in road user costs through increased congestion and decreased road safety levels.

As discussed in Section 4.4.4, in order to meet the LoS targets set for the Proposal, duplication of the highway will be necessary to accommodate projected traffic growth over a 20 year period.

4.7.3 Road safety issues

As a result of the lower LoS for traffic and the continued use of a lower standard road for major long distance traffic flows with a high proportion of heavy vehicles, there would be implications for road safety if the Proposal did not proceed or is delayed for a long period. Specific road safety implications would include increases in:

- the number and severity of accidents on those sections of the highway beyond the built-up areas of Johns River and Kew, especially where road conditions are currently sub-standard

- the level of risk for pedestrians when crossing the highway in the township of John River and the built-up section of Kew at locations other than at the traffic signals
- the difficulty for residents adjacent to the highway to gain access to and from the highway
- the level of risk for cyclists using the highway.

4.7.4 Environmental issues

If this section of the highway were not upgraded, specific environmental implications would be:

- continued increases in the already high levels of traffic noise experienced by residents living close to the highway and pupils of Johns River Public School
- continued deterioration of air quality experienced by residents and local businesses
- further loss of the traditional township character and its associated visual qualities of the main street (which is also the Pacific Highway) of both Johns River and Kew
- increased levels of hazard including the risk of a major traffic accident in the townships or of an accidental spillage of hazardous materials or chemicals resulting from a traffic accident on or near the bridges over the major watercourses that could cause serious water quality impacts in Watson Taylors Lake or other downstream areas
- reduced social interaction between the residents to the east and west of the highway in the townships of Johns River and Kew as the continued presence of the highway (in a non-upgraded condition) becomes more of a physical and social barrier.

4.8 Conclusions

The conclusions that can be drawn from this analysis are that the Proposal is needed:

- to contribute to the significant local, regional and interstate transport role of the Pacific Highway
- to ensure that the current configuration and condition of the Pacific Highway between Moorland and Herons Creek is consistent with the highway's strategic role, especially its ability to appropriately accommodate projected traffic growth
- to ensure that there would not be a decrease in the LoS and related increases in the days on which unacceptable traffic congestion occurs
- to prevent an increase in the number and severity of accidents on the highway that could be expected as traffic volumes and congestion increase and as the discontinuity with the improved standard of the highway to the north and south of the town becomes more apparent
- to improve the environmental amenity of the townships of Johns River and Kew
- to support continued regional growth and economic development through improved efficiencies in transport.