

10 Traffic, transport and economics

The potential construction and operation phase traffic and transport impacts are discussed here in Chapter 10, with the full Traffic and Transport paper provided as working paper 1 in Appendix F. This chapter also provides discussion on road user cost benefits.

10.1 Existing traffic and transport conditions

10.1.1 Existing road conditions

The road network within the study area consists of a hierarchy of roads, with the highest function being performed by the Pacific Highway as the major north-south route connecting Coffs Harbour to Woolgoolga (and Grafton) to the north and Bonville in the south. Bucca Road forms a sub-regional route, connecting Nana Glen to the coastal villages and the Pacific Highway. There are a number of important local road intersections with the Pacific Highway which are relevant to the Proposal within the study area, none of which have traffic signals:

- Headlands Road, Split Solitary/ Gaudrons Road (Sapphire).
- Moonee Beach Road, Bucca Road, Killara Avenue (Moonee Beach).
- Smiths Road, Fiddaman Road, Graham Drive South, Graham Drive North, (Emerald Beach / Sandy Beach).
- River Street, Clarence Street/ Pullen Street, Newmans Road (Woolgoolga).
- Safety Beach Drive, Mullaway Drive, Arrawarra Beach Road (Mullaway / Arrawarra).

The hierarchy of roads, including major regional, sub-regional and local roads, of relevance to the Proposal are illustrated in Figure 10.1. Within the study area, the Pacific Highway has the dual role of an interstate tourist and freight route as well as being a local travel route for residents on a daily basis. It is the only road that connects all coastal villages with each other and the larger centres of Woolgoolga and Coffs Harbour.

The Pacific Highway, within the study area, currently has a posted speed limit of 100km/h except for sections at Moonee Beach, north and south of the Woolgoolga township and within Woolgoolga itself where the highway is signposted at either 80km/h (Moonee Beach and north and south of the Woolgoolga township) or 60km/h. A 40km/h speed limit applies in the

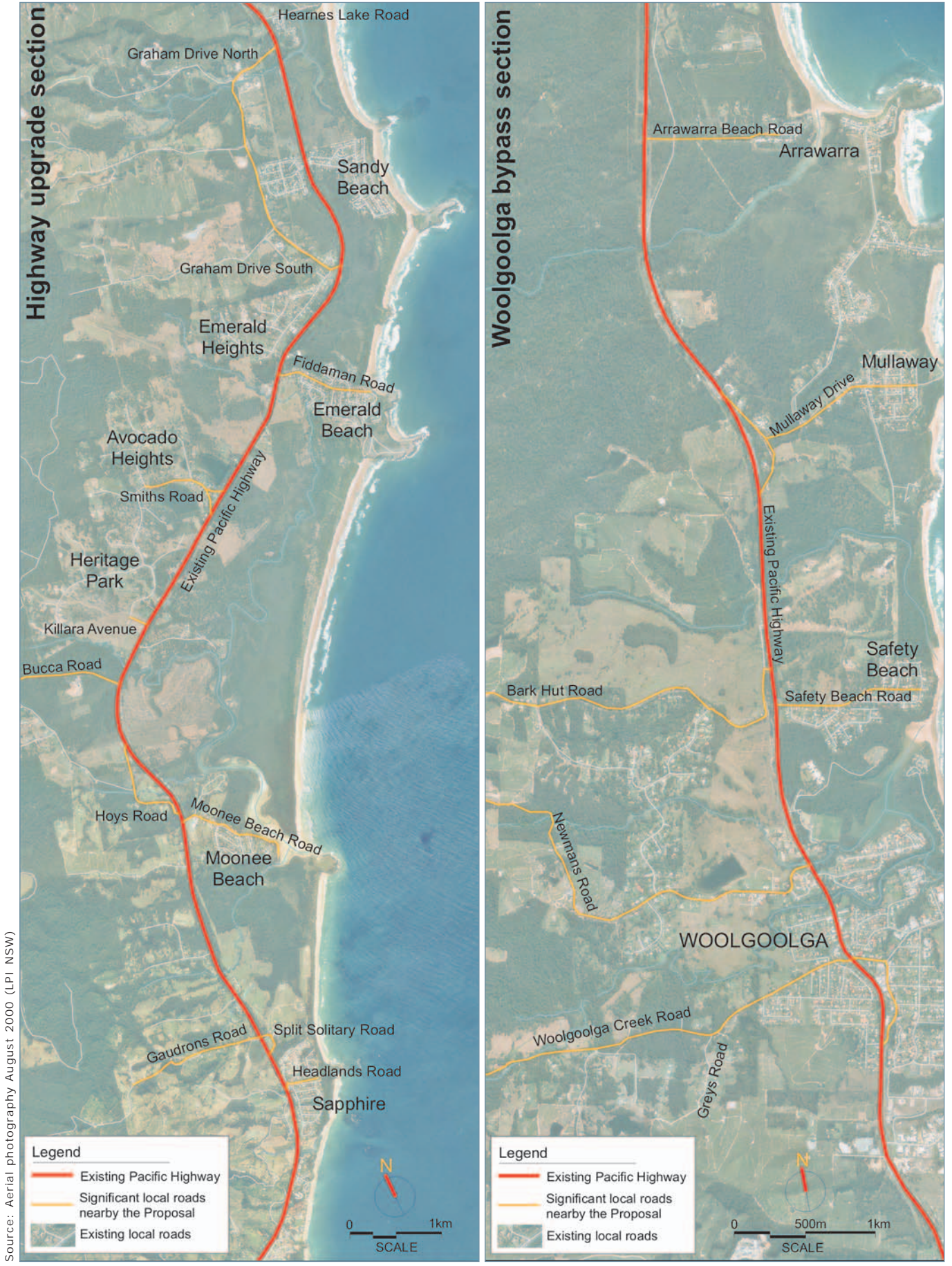


FIGURE 10.1 HIERARCHY OF ROADS

Woolgoolga town area during the school opening and closing times. Travelling along the highway, it would take, in normal traffic flow conditions, 10 minutes to get from Sapphire to Graham Drive North. It takes an additional six minutes from Graham Drive North to Mullaway.

Mid-block performance of the existing highway is currently unacceptable (level of service D) between Sapphire and Moonee Beach Road and is on the borderline between acceptable and unacceptable on the section between Moonee Beach Road and Graham Drive South. At locations further to the north of this point, the performance of the existing highway is acceptable (level of service C or better). Qualitative descriptions of the level of service criteria are provided in Appendix A of working paper 1 (refer Appendix F).

The existing performance of the intersections that are situated within the study area is generally assessed as being acceptable (level of service C or better) with the exception of the following intersections:

- Headlands Road, Split Solitary / Gaudrons Road and Hoys Road intersections during the morning peak hour period.
- Fiddaman Road intersection during the morning and afternoon peak hour periods.

10.1.2 Existing traffic volumes

Within the study area, traffic along the highway comprises both through and local traffic. At the southern approaches of the Proposal, the current annual average daily traffic volume is just over 20,500 while at the northern end of the Proposal, this number falls to just under 11,000 vehicles per day. Table 10.1 provides a further breakdown of the 2006 traffic volume along the project length.

There is considerable variability in traffic volumes throughout the day (peak hour versus non-peak hour) and throughout the year with school holidays, particularly the Christmas holidays, providing a large boost to the traffic numbers along the highway. There is also traffic variability along the length of the highway with a decrease in traffic volumes between Sapphire and Arrawarra Beach. Permanent counting stations located south of Grafton indicate that the traffic from Arrawarra Beach to Grafton remains fairly constant. It also indicates the influence of local traffic (within the northern beaches and Coffs Harbour) on the total traffic numbers.

TABLE 10.1 EXISTING ANNUAL AVERAGE DAILY TRAFFIC VOLUMES (2006)

LOCATION	ANNUAL AVERAGE DAILY TRAFFIC volume (veh/day) ¹
South of Headlands Road	20,508
North of Headlands Road	19,690
North of Gaudrons Road/Split Solitary Road	19,464
North of Moonee Beach Road	19,067
North of Bucca Road	18,851
North of Killara Avenue	18,649
North of Fiddaman Road	17,775
North of Graham Drive South	15,096
North of Graham Drive North	17,424
North of River Street	11,476
North of Pullen Street/Clarence Street	15,636
North of Newmans Road	14,539
North of Safety Beach Drive	12,735
North of Mullaway Drive	10,773

¹ Traffic volumes derived from vehicle classification surveys conducted in 2005 in conjunction with intersection surveys undertaken in 2001. An allowance for growth to 2006 has been included.

The annual average daily traffic volumes include local and through traffic comprising light and heavy vehicles (including light trucks, buses, semi-trailers and B-doubles). Through traffic along this section of highway varies between 28 and 54 per cent of the total annual average daily traffic volumes (refer Figure 10.2, Table 1). When comparing annual average daily heavy vehicle traffic with through heavy vehicle traffic, the proportion of heavy vehicles as through traffic is substantially higher, being between 59 and 79 per cent (refer Figure 10.2, Table 2). The majority of traffic at the southern end of the Proposal is local traffic, while the majority of traffic at the northern end of the study area is the longer distance through traffic. This indicates the influence of urban development on the local traffic generation and that the growth in local traffic outweighs the growth in through traffic.

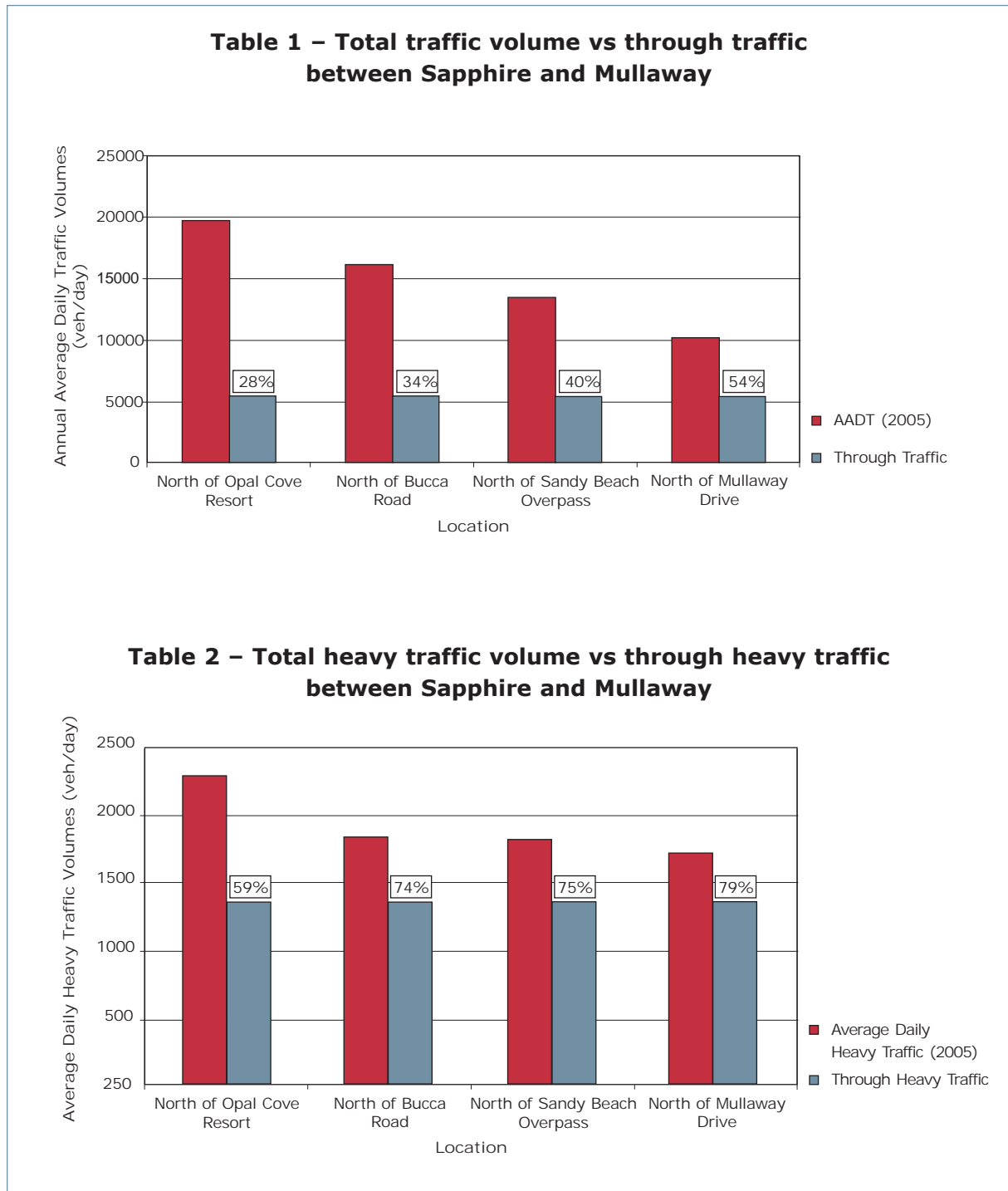


FIGURE 10.2 TRAFFIC VOLUMES

A substantial increase in the volume of through (especially heavy vehicle) traffic occurred during 2002 / 2003 following the opening of the Yelgun to Chinderah section of the Pacific Highway. This increase has not been repeated in subsequent years.

Table 10.2 indicates that, while the percentage of heavy vehicles (Austroads Classes 3-12) in the traffic stream gradually increases from the south to the north of the study area, the actual number of heavy vehicles decreases. Heavy vehicles also make up a substantially higher proportion of the total night-time traffic, even though there is a large reduction in heavy vehicle numbers. The percentage of heavy vehicles to total traffic varies from 11 per cent (Sapphire) to 17 per cent (north of Mullaway Drive). Not all heavy vehicle traffic is through traffic. Between 60 per cent (Sapphire) and 80 per cent (north of Mullaway) of the heavy vehicle movement is through traffic, with the remaining 20 per cent to 40 per cent of heavy vehicle movement being local traffic.

TABLE 10.2 HEAVY VEHICLE MOVEMENTS (2005)

LOCATION ALONG PACIFIC HIGHWAY	HEAVY VEHICLE VOLUMES (percentage of total traffic volume) *		
	DAYTIME (7AM-10PM)	NIGHT-TIME (10PM-7AM)	TOTAL (24 HOUR)
South of Campbell Close	1668 (10%)	588 (33%)	2256 (11%)
North of Bucca Road	1243 (9%)	572 (38%)	1815 (11%)
North of Diamond Head Drive overpass	1218 (11%)	572 (45%)	1790 (13%)
North of Mullaway Drive	1138 (14%)	559 (54%)	1696 (17%)

* Volumes and percentages calculated from 7-day average traffic counts

10.1.3 Travel time

Travel times were measured on 18 May 2005 during the morning peak hour period from Sapphire (at the Opal Cove Resort) to Arrawarra Beach Road. The following travel time information was recorded during the site inspection:

- Travel time between Sapphire and Graham Drive North – 10 minutes.
- Travel time between Graham Drive North and Arrawarra – 6 minutes.

10.1.4 Road safety

An historical crash analysis was undertaken for the five year period from July 2001 to June 2006, between Campbell Close and Arrawarra Beach Road. This analysis is summarised as follows:

- A total of 192 crashes occurred during this period, including 10 fatal crashes and 84 injury crashes with nine fatalities and 142 injuries reported.
- 25 of the crashes were reported as speed-related crashes and 29 crashes were reported as fatigue-related crashes.
- 27 of the crashes (approximately 15 per cent of the total crashes) involved heavy vehicles, 25 crashes were reported as speed-related and 27 reported as fatigue-related.
- Approximately 38 per cent of crashes were reported as run-off road crashes.
- Approximately 22 per cent of crashes were recorded as rear-end crashes.
- Approximately 16 per cent of crashes were recorded as occurring at intersections.
- Approximately nine per cent of crashes were recorded as head-on crashes.
- Approximately six per cent of crashes were reported as pedestrian-related crashes.

The publication *Road Environment Safety Update 22, April 2004* (NSW Roads and Traffic Authority (RTA) 2004) indicates that the stereotypical crash rate for a two-lane non-divided highway is 32.8 crashes per 100 million vehicle kilometres travelled, and for a two-lane non-divided highway with

auxiliary lanes (ie overtaking lanes, turning lanes etc) the stereotypical crash rate is 30.4 crashes per 100 million vehicle kilometres travelled. The crash rate for the existing highway between the analysis period is 29 crashes per 100 million vehicle kilometres travelled. There are 1.4 fatal crashes per 100 million vehicle kilometres travelled and 14 injury crashes per 100 million vehicle kilometres travelled. One of the objectives of the Proposal is to reduce the overall crash rate to 15 crashes per 100 million vehicle kilometres travelled over the length of the Proposal.

10.1.5 Pedestrians, cyclists and public transport

Existing pedestrian and cyclist facilities within the study area are mainly confined to the urban areas. Coffs Harbour City Council adopted the *Northern Beaches Cycleway Plan* in 2001, with construction of the first stage currently underway. There are currently no dedicated pedestrian access / crossings across the Pacific Highway except north of Clarence Street, Woolgoolga, where a school crossing is provided.

Bus services operating in the region comprise local and interstate bus services, providing local and regional travel between major cities and towns. Local bus services within the study area are shown in Table 10.3. In addition, several coach companies provide interstate bus services between Sydney and Brisbane stopping at various locations along the Pacific Highway including Woolgoolga within the study area.

TABLE 10.3 BUS SERVICES BETWEEN COFFS HARBOUR, WOOLGOOLGA AND GRAFTON (JUNE 2007)

ROUTE	MAJOR STOPS	OPERATES
Coffs Harbour to Grafton via Woolgoolga	<ul style="list-style-type: none"> ■ Coffs Harbour ■ Korora ■ Sapphire ■ Moonee Beach ■ Emerald Beach ■ Sandy Beach ■ Woolgoolga ■ Safety Beach ■ Mullaway ■ Arrawarra 	<ul style="list-style-type: none"> ■ School days – two return services to Coffs Harbour include services with limited stops. ■ School holidays – two return services. ■ Weekends and public holidays – no service.
Coffs Harbour to Woolgoolga	<ul style="list-style-type: none"> ■ Coffs Harbour ■ Korora ■ Sapphire ■ Moonee Beach ■ Emerald Beach ■ Sandy Beach ■ Woolgoolga 	<ul style="list-style-type: none"> ■ Monday to Friday – four return services. ■ School days – one service to Woolgoolga. ■ Saturdays – two return services. ■ Sundays and public holidays – no service.
Coffs Harbour to Red Rock via Woolgoolga	<ul style="list-style-type: none"> ■ Coffs Harbour ■ Korora ■ Sapphire ■ Moonee Beach ■ Emerald Beach ■ Sandy Beach ■ Woolgoolga ■ Safety Beach ■ Mullaway ■ Arrawarra 	<ul style="list-style-type: none"> ■ School days only – one return service.
Woolgoolga to Red Rock	<ul style="list-style-type: none"> ■ Woolgoolga ■ Safety Beach ■ Mullaway ■ Arrawarra 	<ul style="list-style-type: none"> ■ Monday to Friday – two services to Red Rock / one service to Woolgoolga ■ School days – one service to Red Rock ■ Weekends and public holidays – no service

10.1.6 Rest areas

There are no formal rest areas for either light or heavy vehicles along this length of the existing Pacific Highway. The Proposal includes the provision of a rest area for both light and heavy vehicles at the Arrawarra interchange.

10.2 Potential traffic and transport impacts

10.2.1 Construction

Potential construction related traffic impacts, including temporary access arrangements and traffic management are addressed in Section 8.2.3 and 8.4.2 of this report.

10.2.2 Changes to regional and local roads

The Proposal would result in some changes to access arrangements to the highway. The Proposal includes the construction of local access roads along the whole length of the highway. At the southern approach to the upgrade, there would be two at-grade intersections, one a left-in / left-out intersection into Campbell Close and a right-in / left-out intersection with the eastern local access road (the existing highway). All other access onto and off the highway would only be provided through grade-separated interchanges. The interchanges would be located at: Gaudrons Road / Split Solitary Road (Sapphire), Moonee Beach Road / Hoys Road (Moonee Beach), Fiddaman Road / Graham Drive South (Emerald Beach) and Graham Drive North (south Woolgoolga).

10.2.3 Predicted traffic volumes

The predicted daily traffic volumes in 2011 and 2031 for the Proposal are presented in Table 10.4.

As Table 10.4 indicates, the Proposal is predicted to carry approximately 25,400 vehicles per day along the upgrade section and 8,300 vehicles per day along the bypass section in 2011. These traffic volumes are predicted to increase to approximately 39,800 vehicles per day for the upgrade section and 13,800 vehicles per day for the bypass section of the Proposal in 2031.

TABLE 10.4 PREDICTED DAILY TRAFFIC VOLUMES FOR THE PROPOSAL

LOCATION	2011		2031	
	Annual average daily traffic volume (veh/day)	Average daily heavy traffic volume (veh/day)	Annual average daily traffic volume (veh/day)	Average daily heavy traffic volume (veh/day)
Upgrade section				
South of Headlands Road	25,427	2898	39,806	4738
North of Gaudrons Road / Split Solitary Road	24,187	2824	38,003	4630
North of Moonee Beach Road	21,621	2670	33,806	4378
North of Fiddaman Road	18,166	2462	29,760	4135
North of Graham Drive South	18,627	2490	30,233	4163
Bypassed section	8329	1813	13,784	3047
Bypass				
North of Graham Drive North ¹	12,809	548	19,325	854
North of River Street	5410	417	8572	709
North of Pullen Street / Clarence Street	10,438	499	16,706	833
North of Newmans Road	9341	487	15,153	828
North of Safety Beach Drive	7075	462	11,803	814
North of Mullaway Drive	5073	392	9585	788

¹ North of Hearnese Lake Road

The daily traffic volumes along the bypassed section of the existing highway through Woolgoolga are predicted to range from approximately 12,800 vehicles per day (with 550 heavy vehicles) north of Graham Drive North to 5100 vehicles per day (with 400 heavy vehicles) north of Mullaway Drive in 2011. These volumes are predicted to increase to approximately 19,300 vehicles per day (with 850 heavy vehicles) north of Graham Drive North and 9,600 vehicles per day (with 800 heavy vehicles) north of Mullaway Drive in 2031. Overall, the forecast daily traffic volumes in 2031 along the bypass section of the highway are predicted to be at levels that are similar to the existing traffic volumes, while the heavy vehicle traffic volumes would be substantially lower.

Increase in local traffic

Due to the large increase in population expected to be housed within the Coffs Harbour local government area, there is also expected to be a large increase in the amount of local traffic. Data on future development from the *Coffs Harbour Land Capacity Assessment 2004* (Coffs Harbour City Council 2004) was utilised to predict the level of traffic generation from each of the proposed developments.

Table 10.5 summarises the daily increase in both local and through traffic at 2011 and 2031 predicted to occur at various points along highway. From Table 10.5 it can be seen that in both 2011 and 2031, the proportion of local traffic is far greater than through traffic. This proportion is greater at the southern end of the Proposal than at the northern end. In fact, Table 10.5 indicates that the volume of through traffic is consistent along the length of the Proposal in both 2011 and 2031, with the volume of local traffic decreasing towards the northern end of the Proposal.

TABLE 10.5 FORECAST INCREASE IN LOCAL AND THROUGH TRAFFIC AT 2011 AND 2031

LOCATION	2011		2031	
	TOTAL TRAFFIC INCREASE ¹	LOCAL / THROUGH TRAFFIC SPLIT	TOTAL TRAFFIC INCREASE ¹	LOCAL / THROUGH TRAFFIC SPLIT
South of Headlands Road	5902	4744 / 1158	20,281	15,263 / 5018
North of Moonee Beach Road	4461	3303 / 1158	16,437	11,419 / 5018
North of Fiddaman Road	4457	3299 / 1158	16,428	11,410 / 5018
North of Mullaway Drive	3154	1996 / 1158	13,121	8103 / 5018

¹ Total traffic increase as vehicles per day.

As the Proposal would incorporate a local access road network, it is predicted that the access roads would be primarily trafficked by local traffic. The local access road runs the full length of the Proposal, enabling residents who only have to travel to any of the neighbouring townships to travel along the access road rather than the highway. Predicted volumes on the local access roads are included in Table 10.6.

TABLE 10.6 PREDICTED TRAFFIC VOLUMES USING THE LOCAL ACCESS ROAD NETWORK ¹

LOCAL ACCESS ROAD LOCATION	Estimated annual average daily traffic volume	
	2011	2031
South of Headlands Road	1199	1199
North of Gaudrons Road	430	430
North of Hoys Road	3415	4453
North of Bucca Road	1815	1815
North of Killara Avenue	1073	1073
North of Fiddaman Road	3560	3922

¹ Traffic is predicted to use the proposed highway and the Gaudrons Road / Split Solitary Road and the Moonee Beach Road / Hoys Road interchanges to access the Moonee Beach development control plan area.

10.2.4 Predicted road performance

The predicted performance of the Proposal in 2011 and 2031 based on the predicted traffic volumes is shown in Table 10.7.

TABLE 10.7 PREDICTED PERFORMANCE OF MIDBLOCK SECTIONS

YEAR	DESIGN VOLUME (VEH/HR) ¹	LEVEL OF SERVICE (LOS)
Upgrade section		
2011	2429	B
2031	3803	C
Bypass section		
2011	1083	A
2031	1792	A

¹ Morning peak hour volume at Sapphire used for the upgrade section; design hour volume used for the bypass section.

The midblock performance for the predicted traffic volumes of the upgrade section of the Proposal is predicted to be level of service B in 2011. By 2031, the performance of this section of the Proposal is predicted to be level of service C.

Overall, the results indicate that the Proposal would potentially maintain a level of service which provides for free flow with speeds at or near free-flow speeds of the highway through to 2031, providing a substantial improvement in performance relative to the existing highway (Chapter 2 of working paper 1 (Appendix F) provides an assessment of the performance level of the existing highway). The Proposal would also result in a substantial increase in average speed thereby reducing travel times.

10.2.5 Predicted travel times and freight costs

Table 10.8 shows the predicted travel times during the morning peak hour period in 2011 (opening year) and in 2031 (20 years after opening) for the existing situation (base case) and the Proposal.

The Proposal would result in quicker travel times for users, in 2011 reducing the overall travel time from Sapphire to Arrawarra Beach Road by almost five minutes compared with the "future existing" situation. In 2031, this increases to a 9.3 minute saving in travel time.

TABLE 10.8 ESTIMATED FUTURE TRAVEL TIMES

SECTION	ESTIMATED TRAVEL TIME (MINS)	
	Existing highway	Proposal ¹
2011		
Between Sapphire at Opal Cove and Graham Drive North	11.7	8.1
Between Graham Drive North and Arrawarra Beach Road	6.3	5.2
Total travel time between Sapphire and Arrawarra Beach Road	18.0	13.3
2031		
Between Sapphire at Opal Cove and Graham Drive North	15.6	8.1
Between Graham Drive North and Arrawarra Beach Road	7.0	5.2
Total travel time between Sapphire and Arrawarra Beach Road	22.6	13.3

¹ Estimated for travel along the upgrade and bypass sections of the Proposal

10.2.6 Predicted road safety

The Proposal would facilitate a safer mode of travel, removing conflicts that include local traffic attempting to merge with the faster flowing highway traffic. Table 10.9 shows the estimated reduction in the annual number of crashes and crash rates in 2011 (opening year) and in 2031 (20 years after opening) for the existing highway and the Proposal.

TABLE 10.9 ESTIMATED NUMBER OF CRASHES AND CRASH RATES

YEAR	Number of crashes (crash rate in crashes per 100 Mvkt) ¹	
	EXISTING HIGHWAY	PROPOSAL
2011	50 (29)	36 (20)
2031	79 (29)	56 (20)

¹ Mvkt = million vehicle kilometres travelled

The crash rates are predicted to reduce from the existing rate of 29 crashes per 100 million vehicle kilometres travelled to 20 crashes per 100 million vehicle kilometres travelled as a result of duplicating the highway. The estimated crash rate for the Proposal (20 crashes per 100 million vehicle kilometres travelled) is based on advice provided in the RTA *Economic Analysis Manual* in relation to crash rates for the economic analysis of dual carriageway highways. The rate of 20 crashes per 100 million vehicle kilometres travelled in the RTA *Economic Analysis Manual* is higher than both the stereotypical crash rate (18.8 crashes/100Mvkt) for a 4-lane freeway in *Road Environment Safety Update 22, April 2004* (RTA 2004) and the target crash rate of 15 crashes per 100 million vehicle kilometres travelled for the upgrade of the Pacific Highway. Consideration of the recorded crash rate for a 4-lane freeway (18.8 crashes/100Mvkt) and the benefits likely to be obtained from ongoing road safety improvements (eg. improvements to road and vehicle design, driver education etc.) suggests that the upgraded highway may provide greater road safety improvements than those indicated in Table 10.9.

10.2.7 Pedestrian / cyclist / public transport

It is anticipated that pedestrians and cyclists would use the local access roads proposed as part of the Proposal to access the townships and land uses along the coast. Coffs Harbour City Council has proposals for an off-road regional cycleway facility along the northern beaches. The Proposal would provide pedestrian and cycle facilities on key overbridges across the proposed highway that would be consistent with council's cycleway strategy for the northern beaches area.

In order to assist in pedestrian safety, bus services would travel along the local access road, rather than the highway. A number of bus bays have been incorporated into the Proposal along the access roads to facilitate bus movement. This would remove the need for bus patrons and school children to wait unprotected along the side of the highway.

10.2.8 Rest areas

The Proposal includes a rest area for both light and heavy vehicles at the Arrawarra interchange. Currently there are no rest areas for drivers and a "Stop, Revive, Survive" station during the holiday periods only operates when there are volunteers available.

10.3 Proposed management measures

The Proposal was designed to accommodate the expected future increase in traffic and reduce the congestion and crash rate of the existing highway. The following features were specifically included to respond to the existing traffic situation:

- The upgrade of approximately 25 kilometres of the Pacific Highway from Campbell Close, Sapphire to Upper Corindi Road, Arrawarra to a four-lane dual carriageway, controlled-access highway.
- A continuous local access road network to separate local and through traffic and to provide for public transport movement.
- Interchanges and overpasses / underpasses to rationalise access points and to provide continued local access across the highway.
- Pedestrian and cycle facilities on key overbridges across the proposed highway consistent with Coffs Harbour City Council's cycleway strategy for the northern beaches area.
- Bus bays along the access roads to facilitate bus movement.
- A rest area for both light and heavy vehicles at the Arrawarra interchange.

In addition, as part of the draft Statement of Commitments (Appendix A):

- (i) Pre-construction road condition reports will be prepared for all non-arterial roads likely to be used by construction traffic.
- (ii) Post-construction road condition reports will be prepared for the roads assessed prior to construction. Copies of the reports will be provided to the relevant roads authority. Any damage resulting from construction, (not normal wear and tear), will be repaired at the RTA's cost, unless an alternative arrangement for road damage is agreed with the relevant roads authority.
- (iii) Construction vehicle movement arrangements will be developed to limit impacts on other road users (including pedestrians, vehicles, cyclists and disabled persons), with specific regard to other road works in the area, local traffic movement requirements and peak traffic volumes, including long weekends and holiday periods.
- (iv) Where any legal property access is permanently or temporarily affected by the project, alternative access to an equivalent standard will be provided where feasible and reasonable in consultation with the property owner.
- (v) Where alternative access arrangements are not feasible or reasonable and a property is left with no access, negotiations will be undertaken with the property owner for the acquisition of the property.

10.4 Economic analysis

The following general parameter values have been used for the road user cost benefit analysis for the Proposal:

- Estimated cost of Proposal at \$464 million (\$2006).
- A discount rate of seven per cent has been used to discount future capital costs and road user costs to the base year.
- An evaluation period of 30 years from the anticipated opening year of the Proposal (2011) has been used for the economic analysis.

Road user benefits were measured in terms of the reduction in road user costs that arise from construction of the Proposal compared to the base case scenario of doing nothing. The road user costs assessed for this purpose include:

- Vehicle operating costs.
- Travel time costs.
- Accident costs.

The changes in vehicle operating costs, travel time and accident costs were derived between the base case and the Proposal for the future traffic volume prediction years of 2011 and 2031.

The assessment indicated that based on a Proposal cost of \$464 million and a discount rate of seven per cent, the Proposal returns a benefit cost ratio of two. The Proposal is therefore predicted to achieve the RTA's highway improvement program target for benefit cost ratios of two (refer working paper 1, Appendix F).

The Proposal would have an overall cost of \$464 million and would induce some short and long term costs (impacts) to the biophysical and social environment. In balancing those costs, the Proposal would provide, among others, the following benefits:

- Reduced travel time, both individually as a Proposal and also as part of the larger Pacific Highway Upgrade Program.
- Travel time savings would also benefit local and regional businesses and improved freight efficiency and reliability on a nationally strategic freight corridor.
- Improved road user safety through the introduction of grade separated interchanges that would separate local and through traffic conflicts. This would also result in improved accessibility to local and regional centres.
- Increased opportunity for tourism development based on improved accessibility to tourist attractors on the mid north coast.
- Longer term reduction in greenhouse gasses individually as a Proposal and also as part of the larger Pacific Highway Upgrade Program as a result of an improved level of service and travel times.