

2 Strategic context

2.1 Introduction

The New England Highway is a major link from the Hunter Region to the New England area and beyond.

Bolivia Hill is a steep winding section of the New England Highway between Glen Innes and Tenterfield. The existing highway corridor is narrow with a rock face to the east and a steep drop to the west.

The Australian Government has committed \$6 million for planning of safety works at Bolivia Hill and a future Tenterfield heavy vehicle bypass as part of the Nation Building Program.

2.2 Planning context

The study area is located within the New England region of NSW within the local government area of Tenterfield. The *New England North West Strategic Land Use Plan 2012* (the Plan) prepared by the NSW Department of Planning and Infrastructure guides development and land use planning within this region.

The Plan sets out a planning framework to develop the New England region over the next 20 years and manage growth. The population within this region is predicted to increase because of growth within the mining sector, which is subsequently expected to create a demand for additional housing and infrastructure.

The Plan aims to address challenges associated with future growth within the region, having particular regard to potential land use conflict between mining and agricultural industries. The Plan also identifies essential infrastructure required to support population growth. The New England Highway is acknowledged as performing a vital role in providing a means of regional freight distribution, and an important connection to other state roads.

The project's planning context is further documented in **Chapter 4**.

2.3 Transport

2.3.1 Existing traffic and transport conditions

A detailed analysis of the existing traffic and transport conditions can be found in **Appendix A**. The information following provides an overview of the findings within **Appendix A**.

2.3.1.1 *Existing daily traffic volumes*

Annual average growth rates have been determined by analysing historical Annual Average Daily Traffic (AADT) data as well as data collected in October 2010 and November 2012 from surveys that were carried out by RMS and commissioned by Cardno, respectively. It should be noted that the 2010 and 2012 survey data have been seasonally adjusted to represent AADT. Also, these survey data were collected as vehicle counts and subsequently converted to axle pairs to compare against RMS count station data. **Figure 2-1** illustrates the changes in traffic volumes for the AADT figures (based on a seven day week) and provides an indication of the annual changes in traffic volumes from preceding survey years to the latest available figures. It can be seen that there has been a continuous decline in average traffic volumes at an increasing rate since 1998.

It is noted that the period of continuous decline coincided with the gradual shift of freight movements from semi-trailers to B-Double trucks. Since two B-Doubles are able to convey the same volume of freight as three semi-trailers, this partly contributed to the decline in AADT. Further to this, the upgrade of the Pacific Highway from Yelgun to Chinderah (completed in August 2002) removed the major constraint on B-Doubles operating on the Pacific Highway. Because of this upgrade, B-Double movements have been shifting towards the Pacific Highway and this has expedited the decline in AADT on the New England Highway at Bolivia Hill.

A summary of the average weekday traffic volumes is presented in **Table 2-1** that indicates an average of 2001 vehicles per day. The average daily volumes represent the five day average of weekday traffic volumes.

Table 2-1 Average weekday traffic volumes (5 day week)

Location	Average weekday volumes (VPD)		
	Northbound	Southbound	Total
New England Highway at vehicle pull over, Bolivia Hill*	933	1068	2001

* 8.5km north of Bridge over Four Mile Creek

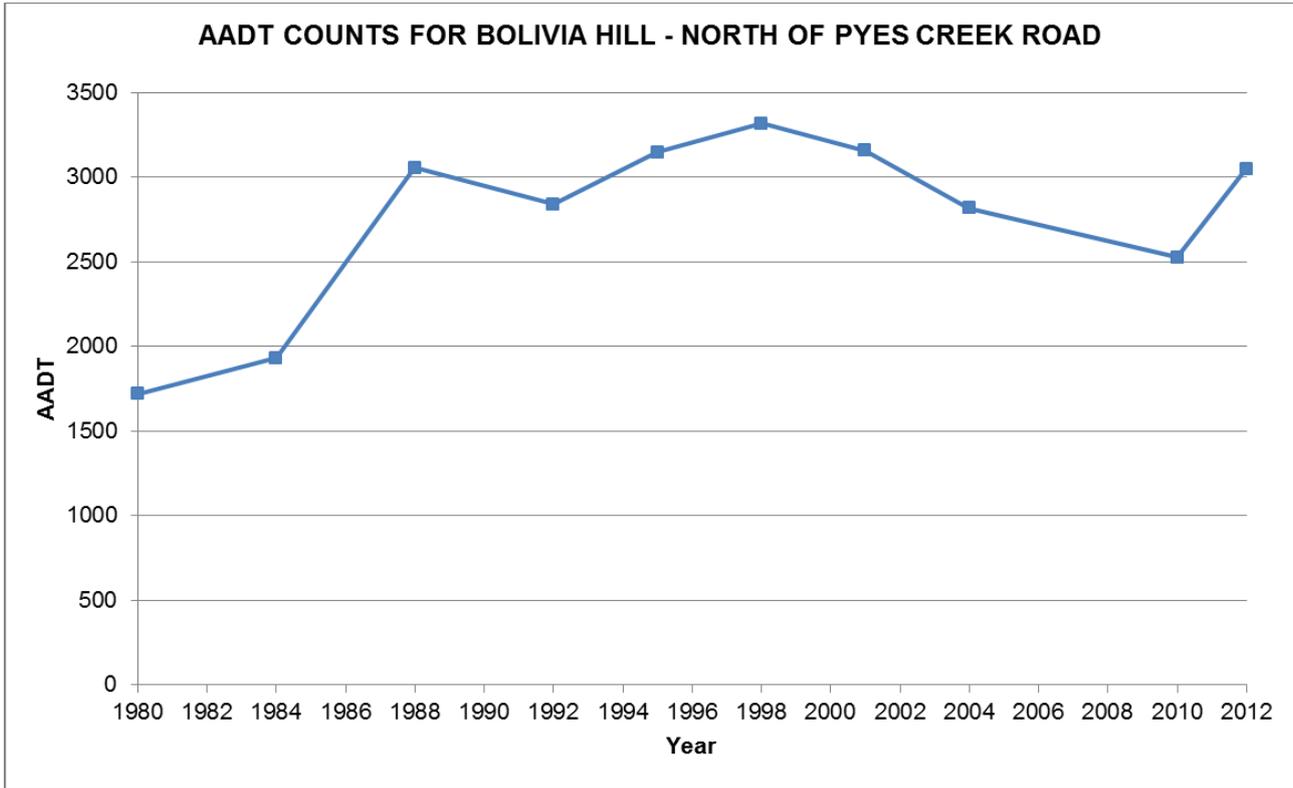


Figure 2-1 AADT growth in the New England Highway corridor (7 day week)

2.3.1.2 Peak traffic flows

Traffic volumes collected in November 2012 along the subject section of the New England Highway were observed to be relatively consistent between 10pm and 5am. The peak traffic flows occur between 12pm and 1pm (164 vehicles) and 3pm and 4pm (163 vehicles). **Figure 2-2** highlights the daily two-way traffic volumes composition.

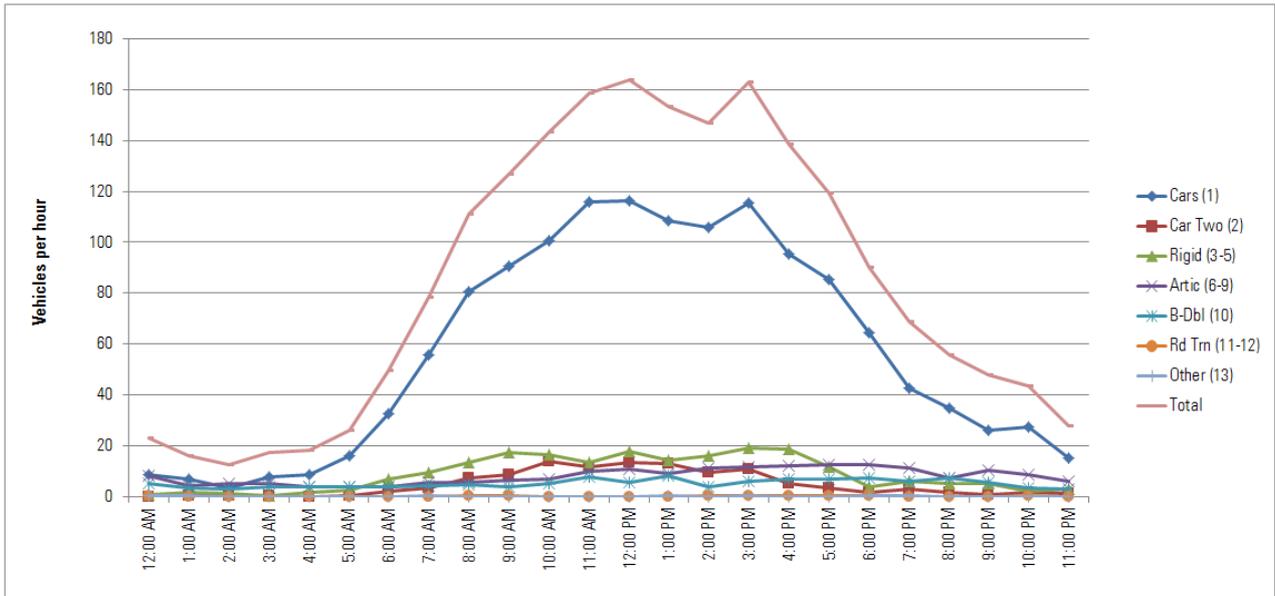


Figure 2-2 Daily traffic volumes composition: Two-way

2.3.1.3 Vehicle speeds

The 85th percentile speeds in the area from the November 2012 data are generally above the posted speed limit of 80 kilometres per hour. Note that the speed limit on the subject section of the New England Highway was changed on 9 October 2012 from 100 kilometres per hour to 80 kilometres per hour to better reflect the roadside environment and alert drivers to the change in the road alignment. Northbound vehicles usually travel at higher speeds than the southbound vehicles. **Figure 2-3** illustrates the 85th percentile speeds in both the northbound and southbound directions.

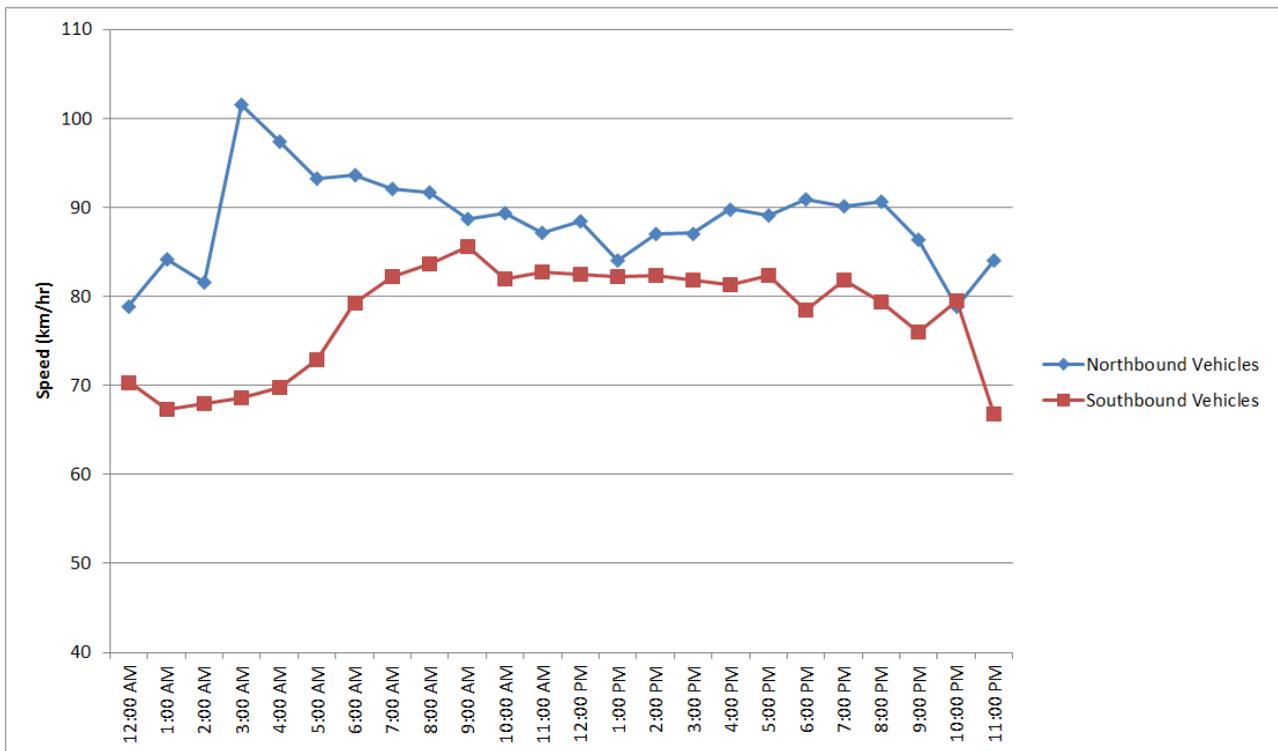


Figure 2-3 85th percentile speeds

2.3.1.4 Freight movements

From the data collected in November 2012, **Table 2-2** presents a summary of the proportion of heavy vehicles during an average weekday. The heavy vehicle proportions are shown as a percentage of total volumes for two-way average weekday daily traffic volumes.

Table 2-2 Vehicle composition

Location	Direction	% Composition				
		LV	HRV*	AV^	Tot HV~	AV of HV
Bolivia Hill at vehicle pull over, 8.5 km north of Bridge over Four Mile Creek	Northbound	73%	12%	15%	27%	57%
	Southbound	74%	9%	17%	26%	64%
	Both directions	74%	10%	16%	26%	60%

LV = Light Vehicle * HRV = Heavy Rigid Vehicles ^ AV = Articulated Vehicles ~HV = Total Heavy Vehicles

The daily percentage of light and heavy vehicle distribution is shown in **Figure 2-4**, while **Figure 2-5** highlights the daily two-way heavy vehicle traffic volumes composition.

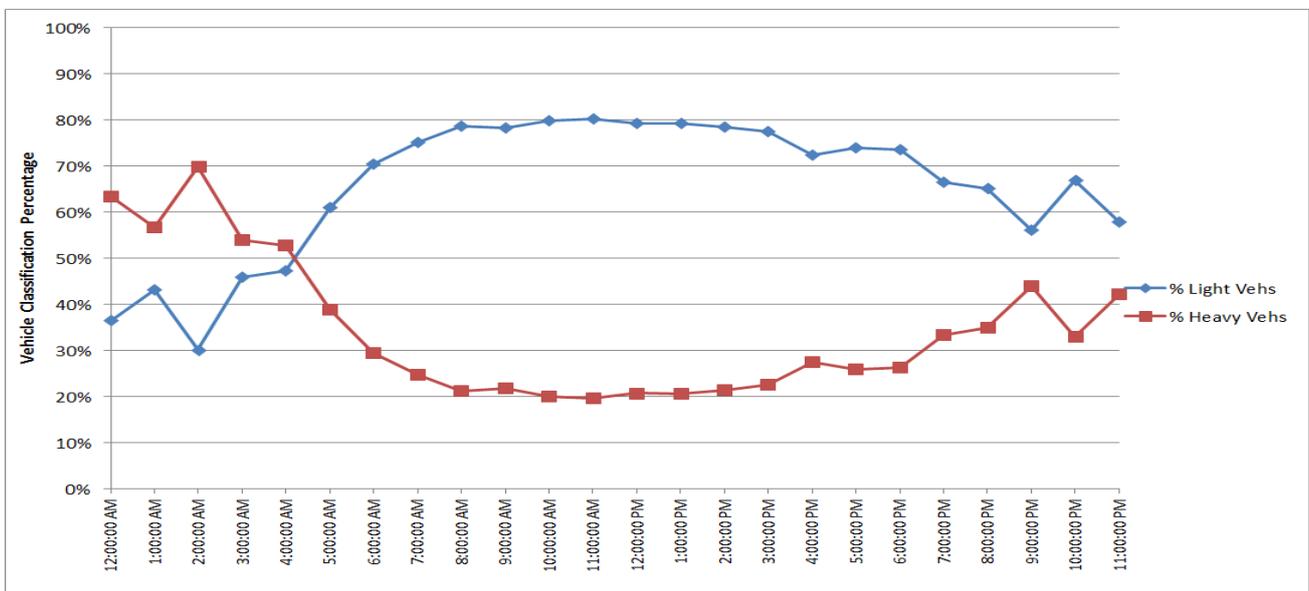


Figure 2-4 Daily percentage traffic composition two-way

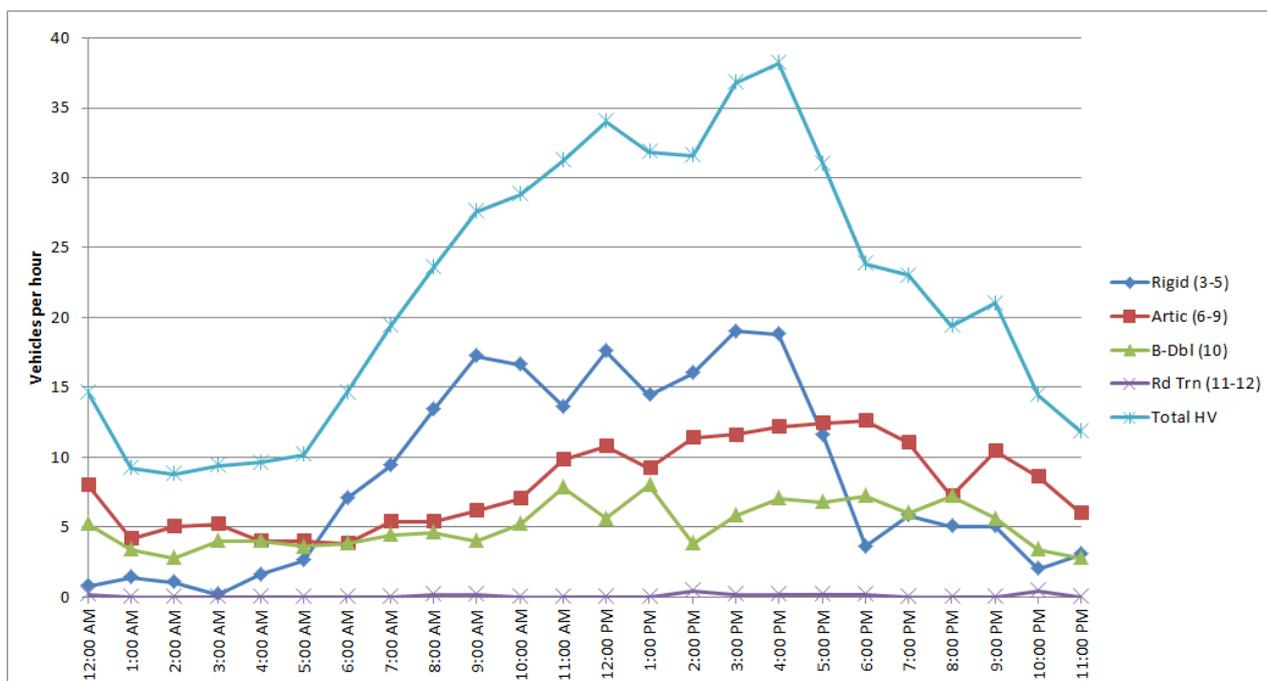


Figure 2-5 Daily heavy vehicle traffic volumes composition two-way

2.3.1.5 Public transport movements

Although there are no major public transport routes along the New England Highway within the study area, there are two long distance coaches operating along the Tenterfield-Armidale corridor (327 and 328) which pass through Bolivia Hill once daily in each direction. There is also a school bus service that operates along the Tenterfield / Bolivia / Bungulla route once in the morning and once in the afternoon period.

2.3.1.6 Existing overtaking lane provision

The following overtaking lane provisions are contained both within and in the vicinity of the study area.

For northbound traffic:

- 1.0 kilometre overtaking lane starting from 5.1 kilometres south of Pyes Creek Road (outside study area)
- 1.6 kilometre overtaking lane starting from 3.8 kilometres north of Pyes Creek Road (outside study area).

For southbound traffic:

- 1.9 kilometre overtaking lane starting from 2.2 kilometres south of Pyes Creek Road (within study area)
- 1.0 kilometre overtaking lane starting from 6.4 kilometres north of Pyes Creek Road (outside study area).

2.3.1.7 Headway – per cent following

Roads and Maritime Services *Network Performance Measures and Network Planning Targets* (2010) stipulates that an overtaking lane is warranted in locations where per cent time following is greater than 65 per cent. The time spent following is defined as vehicles with less than six seconds headway (ie distance measured in time between the front of the leading vehicle and the front of the trailing vehicle).

The traffic survey undertaken in November 2012 showed that the per cent following is as follows:

- Northbound – 37 per cent
- Southbound – 23 per cent.

Hence, based on per cent following, current conditions suggest no requirement for overtaking lanes in either direction based on existing traffic operations. However, future growth in the corridor may alter this requirement.

2.3.1.8 Road safety

RMS supplied crash data for the study area for the five year period from 2008 to 2013.

The road section considered for the crash analysis is the stretch of New England Highway that lies 56.4 kilometres to 59.4 kilometres north of Glen Innes (**Figure 1-1**). The crash data received from RMS was applied to the appropriate length of road to allow for a detailed crash investigation. **Table 2-3** presents the tow away, injury and fatal crashes for the period from March 2008 to February 2013 (inclusive).

Table 2-1 Summary of crash types (2008–2013)

No. of crashes by crash type (08–13)				Severity index	%HV crashes	Casualty crash rate per kilometre
Tow (T)	Injury (I)	Fatality (F)	Total			
5	0	3	8	1.75	0%	0.20
Crashes per 100MVKT			Casualty Rate per 100MVKT		Fatality Rate per 100MVKT	
72.73			27.27		27.27	

The number of incidents and their severities were assessed along with a severity index and the number of casualties. The purpose of calculating the severity index was to enable a comparison of the impact of crashes from a wider community perspective. This severity index considers the total number of crashes on a road and assigns a weighting to fatal and casualty crashes aimed at reflecting their relative importance to the community. The upper limit for this severity index is three, while the lowest figure possible is one (provided there has been one crash on the length of road being considered). The data shows that the severity of crashes is 1.75, which is worse than the average severity index for undivided rural roads within NSW (1.25) as provided by RMS for the Newell Highway Study. This suggests that when crashes do occur they tend to be more severe than those occurring on similar classes of roads.

The proportion of heavy vehicle crashes was compared to the corresponding percentage of heavy vehicle movements. It is noted that there are no crashes involving heavy vehicles during this period. However, the heavy vehicle proportion of the total traffic flow is 26 per cent.

The annual average casualty crash rate per kilometre was calculated at 0.20, which is below the NSW state wide average annual casualty crash rate per kilometre of 0.40. This suggests that per length of road this section of the New England Highway is performing better than the state average.

The annual casualty crash rate per kilometre does not take into account the significant variations in traffic volumes along routes, and may therefore understate relatively high crash rates on particular lengths of road operating with significantly lower traffic volumes. For this reason, a second measure, of casualty crashes per 100 million vehicle kilometres travelled (100MVKT) is also used, especially to compare casualty crash rates on roads that carry higher and lower traffic volumes. Based upon this additional measure, the crashes per 100MVKT is 72.73, while the corresponding casualty and fatality rates are both 27.27, due to the absence of injury (non-fatal) crashes during the period analysed.

According to the detailed crash data received from RMS, most of the crashes have occurred in fine weather when the surface condition was dry. It is noted that the two fatal crashes recorded were because of speeding motorists (one light vehicle and one motorcycle), with the light vehicle being pursued by a law enforcement authority. The data analysis did not indicate any common recurring vehicle crash themes or vehicle crash types.