

Appendix H

Traffic impact assessment, December 2014

Traffic Impact Assessment

Planning Proposal for North Manyana

Prepared for Kylor Pty Limited | 3 December 2014



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Traffic impact assessment

Final

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Date 3 December 2014

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1 Introduction

EMGA Mitchell McLennan (EMM) has prepared this traffic impact assessment to support a rezoning proposal at North Manyana, NSW.

It is important to note that this assessment was based on a concept development with a residential footprint of approximately 34.2 ha, with a potential yield of up to 380 residential dwellings. This assessment now accompanies a planning proposal which has subsequently been updated to reduce the residential footprint by approximately 4.7 ha, resulting in a reduced yield of up to 320 residential dwellings. As this study assesses a larger number of residential dwellings it provides a conservatively high assessment of the impacts of the proposal.

The potential traffic impacts of a future residential development containing up to 380 residential dwellings on the subject land (the Proposal) have been investigated. The general layout of the future residential development and its relationship to the existing development at Manyana are described in Chapter 1 of the planning proposal.

Manyana is located on the South Coast of NSW and is accessible via Bendalong Road from the Princes Highway. Bendalong Road is 11.3 km in length between the Princes Highway and Inyadda Drive which is the local access road connecting to Manyana. Manyana is approximately 30, 35 and 55 kms by road respectively from, Milton, Ulladulla and Nowra which are the closest urban centres.

The assessment of the Proposal's traffic impacts has considered the following matters which were identified in consultations with Shoalhaven City Council:

- access to the area by public transport;
- potential negative impacts on the existing traffic network;
- traffic impacts at intersections and the potential need for infrastructure upgrades, such as rural turn lanes at intersections along Bendalong Road;
- road cross sectional requirements and overtaking lane provision along Bendalong Road;
- access for pedestrians and cyclists to and from the site to surrounding areas; and
- increased traffic loading and the need for pavement upgrades on Bendalong Road and Inyadda Drive.

2 Assessment method

The following is a summary of the methods used to assess the identified traffic issues.

2.1 Public transport

There are no regular scheduled public transport services travelling via Bendalong Road to and from the Manyana and Bendalong areas currently. However, the Proposal and a recently approved commercial centre at Manyana is likely increase the size of the local population. The extent to which this development will support regular public transport services in the future is examined.

2.2 Traffic issues

Baseline traffic conditions were surveyed in May 2013 including at the three intersections nominated by the Council, namely:

- Inyadda Drive and Curvers Drive;
- Inyadda Drive and Bendalong Road; and
- Princes Highway and Bendalong Road.

These intersection traffic counts provide a benchmark of the typical daily and peak hour “external” traffic movements generated by Manyana residents at Manyana when travelling via Bendalong Road to the Princes Highway. These “external” traffic generation rates provide the numerical basis for estimating future traffic volumes and impacts on the road network. As well as the external traffic there is local or “internal” traffic in Manyana itself. This has also been estimated to determine the total current traffic volumes on the affected road network.

The traffic impacts arising from the Proposal have been determined by comparing the future site generated peak hour and daily traffic movements to current traffic usage of these roads. This determines whether there will be any significant or noticeable traffic impact on these roads as a result of the Proposal.

Safety conditions and the need for additional turning lanes at the three identified intersections have been assessed using the Austroads warrant guide (Austroads 2010). This considers the relative volumes of through, left and right turning traffic at each intersection during both the morning and afternoon peak traffic periods, for the existing and future traffic situations.

The future road cross sectional requirements for Bendalong Road and other roads were assessed on the basis of the Shoalhaven Subdivision Code (Development Control Plan 100, Shoalhaven City Council, 2001). The need for additional overtaking lanes was assessed using the Austroads Guide to Rural Road Design for overtaking lanes on two lane rural roads.

The need for road pavement upgrades was determined by estimating future volumes of heavy vehicles that will use the affected road network.

2.3 Pedestrian and cycle access

Access for pedestrians and cyclists from the site to surrounding areas, including the beachfront and nearby residential precincts also used Council's Subdivision Code as a guide. The Code recommends that paved pedestrian footpaths, to a minimum width of 1.2 metres, be provided for all roads which are classified as local streets or collector streets, where the traffic volumes are likely to exceed 500 vehicle movements daily (vpd).



Figure 3.2 Local road network at Manyana

The results of morning and afternoon peak hourly intersection traffic surveys for the three intersections surveyed during May 2013 are included in Appendix A. A summary of peak hourly traffic volumes on each road entering the intersections is given in Table 3.1.

The proportions of heavy vehicles in traffic and the corresponding estimated daily traffic movements on each road are given in Table 3.2. As daily traffic volumes on most roads are normally between 10 to 12 times the peak hour volumes, the equivalent daily traffic can be estimated as 11 times the average of the morning and afternoon peak hourly volumes and these estimated daily flows are also given in Table 3.2.

Table 3.1 **Surveyed peak hourly traffic volumes at each intersection**

Road Location	Two way traffic in the am and (pm) peak hours	Northbound or eastbound	Southbound or westbound
Princes Highway, north of Bendalong Road	423 (529)	241 (229)	182 (300)
Princes Highway, south of Bendalong Road	461 (513)	226 (210)	235 (303)
Bendalong Road, east of the Princes Highway	87 (61)	22 (32)	65 (29)
Bendalong Road, west of Inyadda Drive	89 (81)	19 (58)	70 (23)
Bendalong Road, east of Inyadda Drive	42 (52)	23 (28)	19 (24)
Inyadda Drive, south of Bendalong Road	93 (95)	74 (32)	19 (63)
Inyadda Drive, north of Curvers Drive	91 (98)	71 (35)	20 (63)
Curvers Drive, west of Inyadda Drive	47 (59)	37 (26)	10 (33)
Curvers Drive, east of Inyadda Drive	52 (73)	14 (47)	38 (26)

Table 3.2 **Equivalent daily traffic volumes and % heavy vehicles at each intersection**

Road Location	Daily traffic volume estimated from the peak hours	Percentage of heavy vehicles in the am and (pm) peak hours
Princes Highway, north of Bendalong Road	5,200	6% (3%)
Princes Highway, south of Bendalong Road	5,400	6% (3%)
Bendalong Road, east of the Princes Highway	810	6% (3%)
Bendalong Road, west of Inyadda Drive	930	4% (2%)
Bendalong Road, east of Inyadda Drive	520	4% (2%)
Inyadda Drive, south of Bendalong Road	1030	4% (2%)
Inyadda Drive, north of Curvers Drive	1040	4% (2%)
Curvers Drive, west of Inyadda Drive	580	4% (2%)
Curvers Drive, east of Inyadda Drive	690	4% (2%)

The existing dwelling stock at Manyana and Bendalong is approximately 1010 residences, not including the caravan park at Bendalong Point. From the recorded traffic volumes for Bendalong Road west of Inyadda Drive, the estimated daily and peak hour residential traffic generation rates are as follows:

- daily external vehicular traffic = 0.92 vehicle trips per residence;
- morning peak hour external vehicular traffic = 0.088 vehicle trips per residence; and
- afternoon peak hour external vehicular traffic = 0.080 vehicle trips per residence.

In addition to the above there are local traffic movements to destinations within Bendalong and Manyana. These local or “internal” traffic movements will be similar in magnitude to the externally generated traffic movements, and are discussed further in Section 4.1. It is important to note that the internal traffic movements are recorded separately to traffic movements along Bendalong Road west towards the Princes Highway.

4 Impact assessment

4.1 Public transport services

There are no existing regular scheduled public transport services operating in the Manyana area. A search of the internet indicates there is a private minibuss operator (Paradise Mini Bus Service) based at 112 Curvers Drive Manyana which operates minibuses for hire in the area on weekdays and weekends. Along the Princes Highway between Milton, Ulladulla and Nowra, full size passenger bus/coach services are operated by Premier Motor Services.

The Proposal will increase the size of the population at Manyana and Bendalong and additional local commercial facilities will also assist in supporting the viability of more regular public transport services operating in the area in the future. As the population grows towards the latter stages of the Proposal, it is likely that the Manyana district will be able to support morning and afternoon bus services to Milton and Ulladulla coincident with school opening and closing times.

4.2 Traffic impacts on the road network

In general terms the traffic impacts of the Proposal on the external road network will be directly proportional to the ratio of the number of additional residences (380) to the existing number of residences in Manyana and Bendalong (1010 approximately).

The “external” traffic movements generated by the Proposal have been calculated using the rates given in Section 3. Local traffic generation has also been estimated from the observed proportions of the “local” and “external” turning traffic movements at the two intersections at either end of Inyadda Drive.

Estimated total daily and peak hour traffic movements from the Proposal are given in Table 4.1.

Table 4.1 Additional traffic volumes generated by the Proposal

Traffic generation route	Additional daily traffic (vehicle trips)	Additional morning peak hour traffic (vehicle trips)	Additional afternoon peak hour traffic (vehicle trips)
External traffic to and from the Princes Highway, via Bendalong Road (west)	350	33	29
Local traffic to and from Bendalong via Inyadda Drive and Bendalong Road (east)	108	10	9
Local traffic to and from Manyana (east) via Inyadda Drive and Curvers Drive	89	8	8
Local traffic to and from Manyana (west) via Inyadda Drive and Curvers Drive	89	8	8
Total generated traffic via all routes	636	59	54

Current traffic volumes, traffic generated by the Proposal and the percentage increases on local and external roads are summarised in Table 4.2. The results show that traffic from the Proposal will be most noticeable on Inyadda Drive to the north of the site and on Bendalong Road west towards the Princes Highway, where there will be 44% and 38% increases respectively in daily traffic volumes. Nevertheless, on both these routes, future daily traffic volumes will remain below the threshold level of 2,000 vehicles daily where a change in the road classification (and cross sectional design requirements) would be necessary.