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Traffic and Transport Planning Assessment

Traffic and Transport Planning Assessment by Carter Rytenschild
Group dated 26 September 2007



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Proposed Rezoning
Junction Hill

**TRAFFIC & TRANSPORT
PLANNING ASSESSMENT**

Prepared For

SJ Connelly Pty Ltd

On behalf of
M & R Dougherty



DOCUMENT REGISTER



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1 INTRODUCTION

CRG Traffic and Acoustics Pty Ltd has been engaged by M & R Dougherty to prepare a Traffic Impact Assessment for a proposal to rezone a property at Junction Hill, north of Grafton.

As shown in Figure 1.1, the subject site is located approximately four kilometres north of Grafton on the Summerland Way.

2 PROPOSED REZONING

The proposed Structure Plan reflects traditional neighbourhood planning principles where opportunity for non-motorised travel is optimized through the provision of a connective road and footpath network.

The Plan allows for 1004 dwellings, community facilities such as schools, playing field and parks, and neighbourhood style commercial activities such as child care centres and convenience shopping. The residential component allows for a mix of traditional, relocatable and retirement style dwellings.

It is proposed that access to the community be gained via three new intersections with the Summerland Way and two intersections with Trenayr Road. The proposed road network will consist of two Collector routes with a connecting local street network.

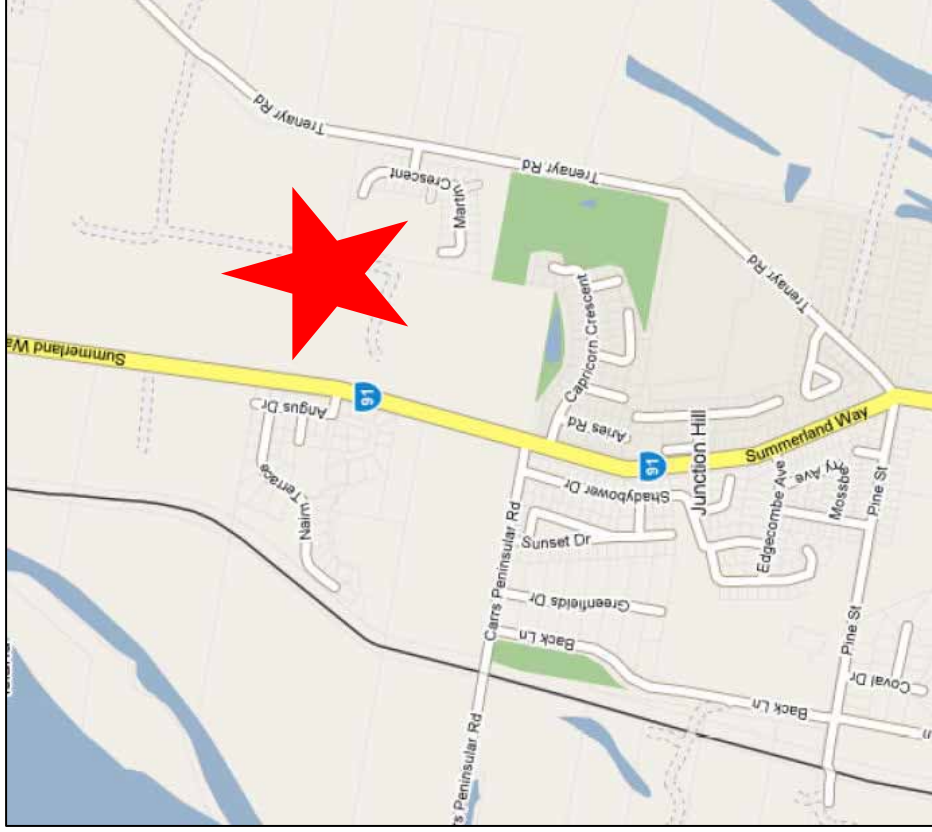


FIGURE 1.1 – LOCATION OF SUBJECT SITE



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FIGURE 2.1 – PROPOSED STRUCTURE PLAN

3 LOCAL TRANSPORT ENVIRONMENT

3.1 Existing Road Network Conditions

Summerland Way is a declared road and provides for sub-regional travel between Grafton and Casino. The road is a two lane road and has a 50 Km / Hr speed limit through Junction Hill. The speed limit increases to 100 Km / Hr adjacent to the site, on the northern fringe of the existing village.

As shown in Figure 3.1, intersections with the Summerland Way at Junction Hill are generally priority 'T' junctions with the exception for Trenayr Road which is a four way cross junction. A dedicated right turn lane or passing lane is provided for side roads located on the eastern side of the Summerland Way to accommodate the major turning volume (traffic approaching from Grafton).

Trenayr Road, located to the east of the site, extends from the Summerland Way and provides access to adjacent residential development and industrial development further to the north. The pavement width of the road is generally 6 -7 metres.

Traffic counts undertaken by Clarence Valley Council indicate that Summerland Way currently carries in the order of 6,800 vehicles per day on the northern outskirts of Grafton, 3,200 vehicles per day through Junction Hill and 1,400 vehicles per day to the north of Junction Hill. Side roads including Trenayr Road generally carry in the order of 500 – 1000 vehicles per day. Existing traffic volumes in the Junction Hill area are summarised in Figure 3.2.

3.2 Public Transport Access

Busways Grafton operates three daily bus services between Junction Hill and Grafton (9:15am, 12:40pm and 4:37pm).

3.3 Current & Future Traffic Volumes

Future background traffic growth in the area is not expected to be significant. Application of a 2% per annum growth rate indicates that future background (i.e. excluding traffic generated by the proposed development) traffic volumes on the Summerland Way will be approximately 4,000 vehicles per day, in the vicinity of the subject site and 8,300 vehicles per day on the northern fringe of Grafton.

Austroads Type C right turn and Type B left turn to the north at **Angus Dr**



FIGURE 3.1 – EXISTING INTERSECTION CONDITIONS ON THE SUMMERLAND WAY THROUGH JUNCTION HILL

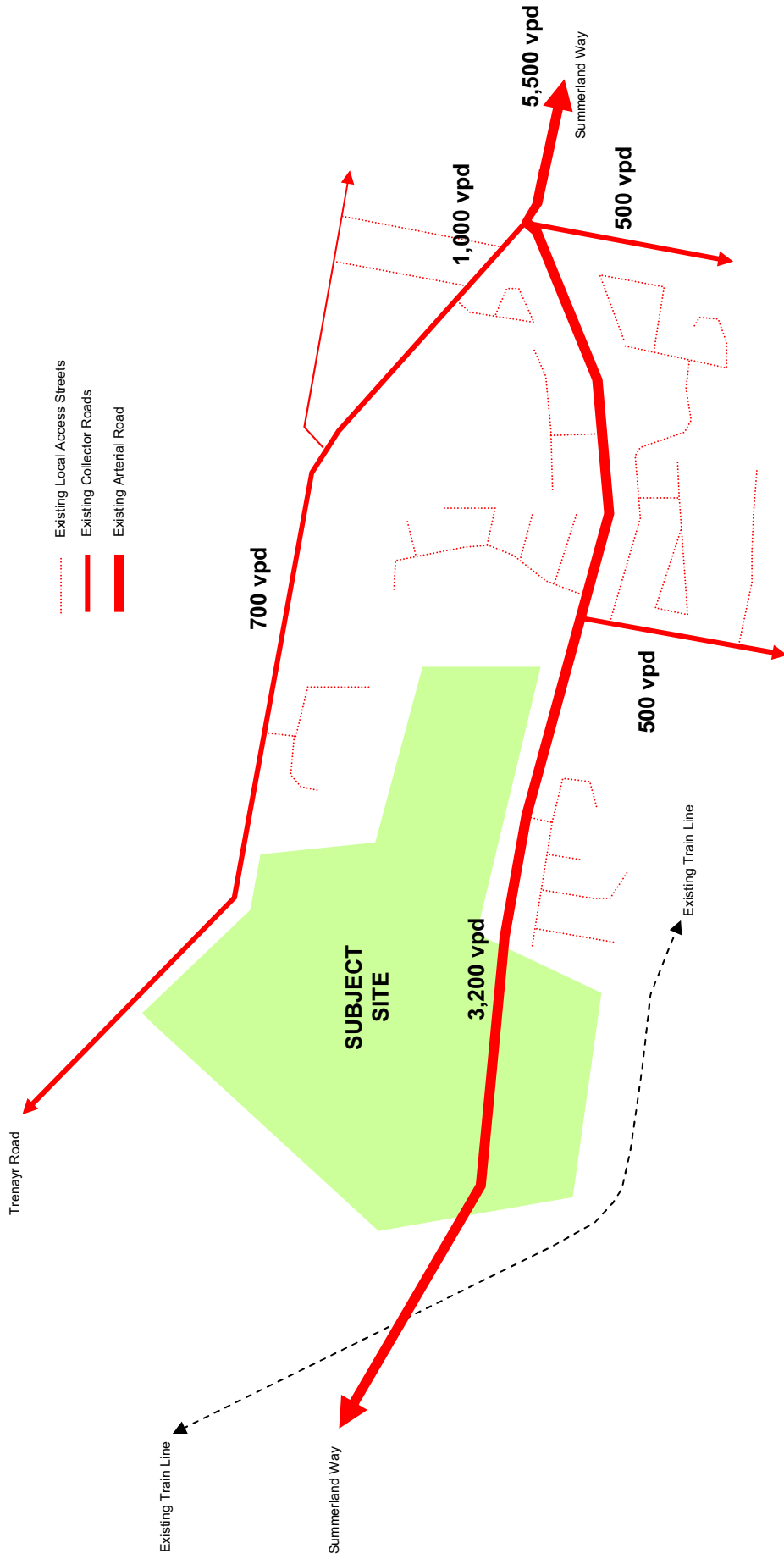


FIGURE 3.2 – EXISTING ROAD NETWORK & DAILY TRAFFIC VOLUMES

4 DEVELOPMENT TRAFFIC

4.1 Traffic Generation

An indication of the traffic generation potential of the development proposal is provided by reference to the NSW Road and Traffic Authority's *Guide to Traffic Generating Developments*. This publication suggests that the following trip generation rates are applicable to standard detached house allotments:

Daily trips:	9 trips per dwelling
Peak hour trips:	0.85 trips per dwelling

The above rates are considered to be conservative (high) for the proposed development given the rural environment and relative isolation from regional shopping and employment centres. Also, it is expected that a significant proportion of the future population of the development will be retirees. However, for the purposes of this assessment, the above rates have been adopted.

Application of the above rates to the proposed development plan (1004 dwellings) results in the following trip generation estimates:

Daily trips:	9,036 vehicles per day (1004 x 9 trips per dwelling)
Peak hour trips:	853 vehicles per hour (1004 x 0.85 trips per dwelling)

It is noted that the above volumes include trips within the development such as those generated by the proposed child care, school and commercial uses. These uses will also generate some additional traffic as residents from outside the proposed estate will access them.

4.2 Trip Distribution & Network Assignment

Surveys of residential estates of the scale proposed and containing community and neighbourhood shopping facilities, indicate that approximately 50% of trips generated will leave the estate. In the case of the proposed development, the following trip distribution is considered to be reasonable:

Distribution	% Trip Destination	Daily Traffic Vol.
Internal trips within the estate -	30%	2,711 vpd
Local trips around Junction Hill -	15%	1,355 vpd
External trips to Grafton -	50%	4,518 vpd
External trips to the north (Casino, Lismore etc) -	5%	452 vpd
Total -	100%	9,036 vpd

In addition to the above, it is estimated that the proposed commercial uses will generate in the order of 1,500 vehicles per day on the local road network. These trips would be generated by residents external to the site (but local to Junction Hill) accessing the proposed commercial and community facilities. Resultant estimates of proposed development traffic volumes on the surrounding road network are shown in Figure 4.1.

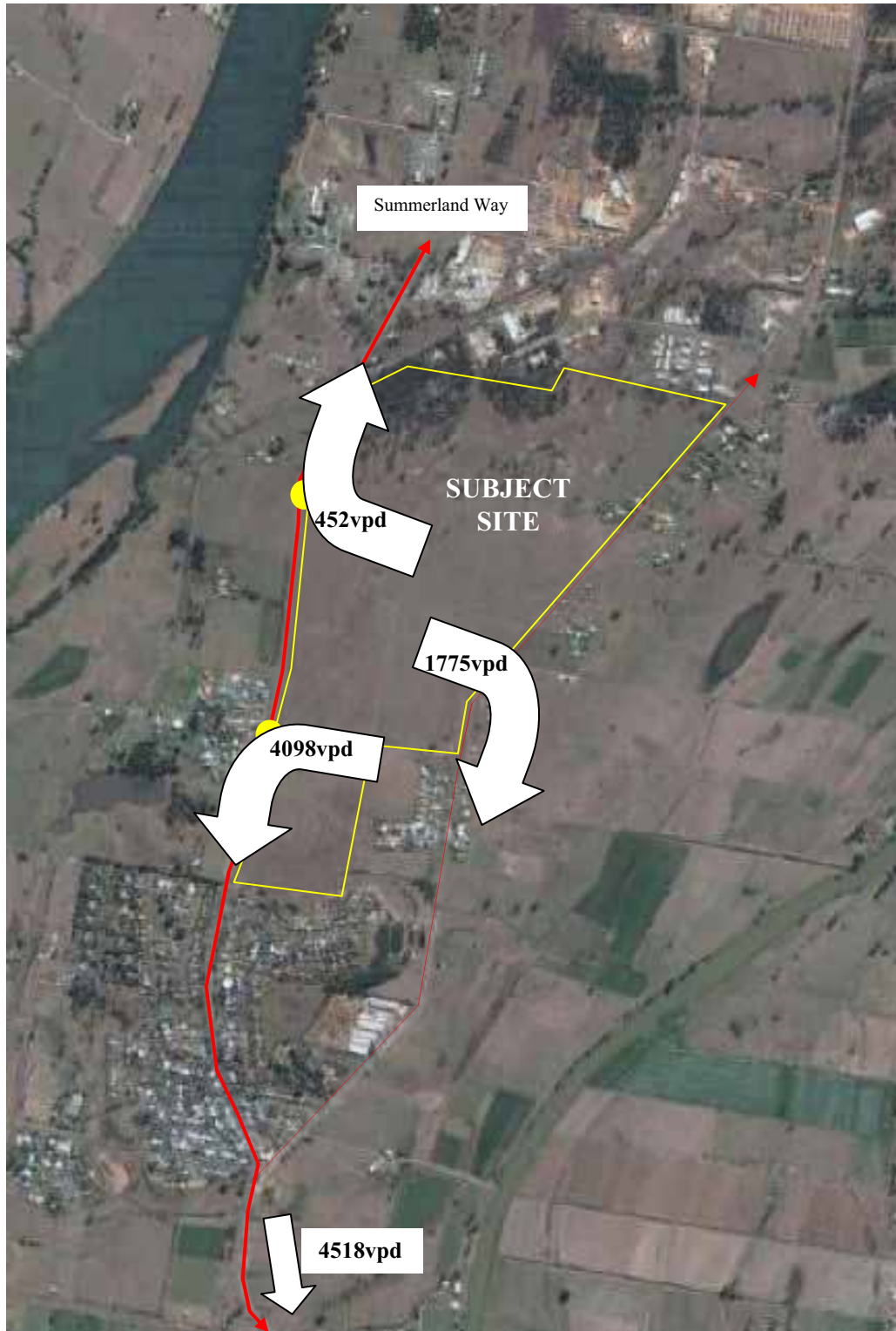


FIGURE 4.1 – ESTIMATED DAILY TRAFFIC VOLUMES GENERATED BY THE PROPOSED DEVELOPMENT

5 ROAD NETWORK IMPACTS

5.1 Proposed Road Network

The layout of the proposed road network is such that traffic generated by the proposed development will spread throughout the Collector network and access the major road network via several intersections. It is not expected that any road within the development will carry more than 4,100 vehicles per day. These volumes will allow a high level of residential amenity to be achieved and safe access conditions in the vicinity of the proposed school.

The predicted low volumes will allow intersections to function satisfactorily as simple priority junctions with roundabouts only considered to be desirable at the two primary junctions with the Summerland Way.

5.2 External Road Network Impacts

It is proposed that the primary points of connection with the Summerland Way be controlled by roundabouts. The form and geometry of these intersections will be consistent with the function of the Summerland Way as an arterial road, however projected future traffic volumes are such that single lane operation will be satisfactory.

It is estimated that the proposed development will increase existing volumes on the Summerland Way (south of Junction Hill) by approximately 4,500 vehicles per day. The resultant change in Level of Service will be approximately as follows:

Table 5.1 – Resultant Impact upon Capacity of Summerland Way

Section of Summerland Way	Existing		Resultant	
	Volume	LoS	Volume	LoS
Through Junction Hill	3,300 vpd	A	9,200 vpd	C
Just south of Junction Hill	5,000 vpd	B	9,500 vpd	C
Just north of Grafton urban area	6,800 vpd	B - C	11,300 vpd	C

As indicated above, the proposed development will not cause the Summerland Way to function at an unacceptable Level of Service (i.e. beyond Level of Service D).

5.3 Resultant External Road Upgrade Works

The proposed development will significantly increase traffic volumes on Trenayr Road between the proposed northern new road connection and Summerland Way. This section of road will require upgrading to Collector Road standard.

It is not expected that the proposed development will require an upgrade of the Summerland Way / Trenayr Road intersection as it will only increase left turn volumes from Trenayr Road, and right turn volumes from the Summerland Way.

The existing formation of the Summerland Way between Junction Hill and Grafton has adequate capacity to accommodate the resultant increase in traffic volumes. It is unlikely that the proposed development will result in a need to upgrade intersections within the Grafton urban area given the grid road network pattern and multiple opportunities for traffic to disperse through the network.

As discussed previously, it is proposed that a single lane roundabout be implemented at the two primary intersections with the Summerland Way. Pedestrian refuge islands will also need to be provided on the Summerland Way to link existing residents located on the western side of the road to the proposed community (incl. school) and commercial facilities.

The existing 50 Km / Hr speed zone on the Summerland Way through Junction Hill will need to be extended to approximately 100 metres north of the northern primary intersection (roundabout).

6 PEDESTRIAN & CYCLIST PROVISIONS

The future street network and lot layout will be such that opportunities for walking and cycling around the site will be optimized.

Extensive on and off street pedestrian and cycle paths will be provided throughout the site and between the site and surrounding attractions.

The proposed development, particularly the commercial component, will generate some pedestrian activity across the Summerland Way. It is considered that pedestrian refuges will need to be implemented at strategic locations.

7 PUBLIC & SCHOOL BUS ACCESS

The proposed Structure Plan allows a school or public bus to travel through the site and circulate between the Summerland Way and Trenayr Road. All residents of the proposed development will be located within 400 metres of a bus route.

The resultant increase in population will allow the provision of public transport between Junction Hill and Grafton to be more economically sustainable.

8 SUMMARY OF CONCLUSIONS & RECOMMENDATIONS

- CRG Traffic and Acoustics Pty Ltd have been engaged by M & R Dougherty to prepare a Traffic Impact Assessment for a proposal to rezone a property at Junction Hill, north of Grafton. The Plan allows for 1,004 dwellings, community facilities such as schools, playing field and parks, and neighbourhood style commercial activities such as child care centres and convenience shopping. The residential component allows for a mix of traditional, relocatable and retirement style dwellings.
- It is proposed that access to the community be gained via three new intersections with the Summerland Way and two intersections with Trenayr Road. The proposed road network will consist of two Collector routes with a connecting local street network.
- Intersections with the Summerland Way at Junction Hill are generally priority 'T' junctions with the exception for Trenayr Road which is a four way cross junction. The Summerland Way currently carries in the order of 6,800 vehicles per day on the northern outskirts of Grafton, 3,200 vehicles per day through Junction Hill and 1,400 vehicles per day to the north of Junction Hill. Side roads including Trenayr Road generally carry in the order of 500 – 1000 vehicles per day.
- It is estimated that the proposed development will generate in the order of 9,000 vehicles per day with 4,500 using the Summerland Way to Grafton. A review of existing road network conditions indicates that:
 - The Summerland Way has adequate capacity to accommodate the proposed development;
 - Trenayr Road will need to be upgraded between the proposed development and the Summerland Way to Collector standard.
- It is proposed that a single lane roundabout be implemented at the two primary intersections with the Summerland Way. Pedestrian refuge islands will also need to be provided on the Summerland Way to link existing residents located on the western side of the road to the proposed community (incl. school) and commercial facilities. The existing 50 Km / Hr speed zone on the Summerland Way through Junction Hill will need to be extended to approximately 100 metres north of the northern primary intersection (roundabout).
- The proposed development, particularly the commercial component, will generate some pedestrian activity across the Summerland Way. It is considered that pedestrian refuges will need to be implemented at strategic locations.
- The proposed Structure Plan allows a school or public bus to travel through the site and circulate between the Summerland Way and Trenayr Road. All residents of the proposed development will be located within 400 metres of a bus route. The resultant increase in population will allow the provision of public transport between Junction Hill and Grafton to be more economically sustainable.