

APPENDIX H

Traffic Impact Assessment

PROPOSED TOURIST AND VISITING COMPLEX DEVELOPMENT

96 Rose Valley Road in Gerringong

Prepared for: Endo Technik Nord Pty Ltd

N1414103N (Version 1a)

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1. INTRODUCTION

Motion Traffic Engineers was commissioned by Endo Technik Nord Pty Ltd to undertake a traffic and parking impact assessment of proposed tourist and visiting complex at 96 Rose Valley Road in Gerringong.

The proposed development has the following features:

- Restaurant with covered parking
- Abattoir, holding area and observation deck

The site is currently a farm with a residence and “farmstay” accommodation.

The proposed development will have vehicle access and egress via Rose Valley Road.

This traffic report focuses on the proposed development and changes in car usage and car park utilisation and additional trips from the proposed development.

In the course of preparing this assessment, the subject site and its environs have been inspected, plans of the development examined, and all relevant traffic and parking data collected and analysed.

2. BACKGROUND AND EXISTING CONDITIONS OF THE PROPOSED LOCATION

2.1 Location and Land Use

The proposed tourist and visiting complex development is located on Rose Valley Road in a rural setting with farm/rural lots adjoining Rose Valley Road.

Figure 1s show the location of the development site from the aerial perspective.

Figure 2 shows a photograph of the development site.



Figure 1: Location of the Subject Site on Aerial



Figure 2: Photograph of the site from Rose Valley

2.2 Road Network

This section discusses the road network adjacent to the site.

Rose Valley Road is a rural road with one traffic lane each way with a gravel shoulder. The speed limit is 60km/hr. Figure 4 shows a photograph of Rose Valley Road looking west from the proposed/being constructed Rose Valley Road Interchange interchange.



Figure 3: Rose Valley Road looking west from the Rose Valley Road Interchange

2.3 Interchange Description

As part of this traffic impact assessment, the Rose Valley Road interchange is assessed. External traffic will need to travel through this interchange.

The interchange is currently being constructed and will be completed before the proposed commercial development is in operation (assuming approval). The design of the interchange is not publicly available. Based on the site visit, aerial photography (nearmp.com) details of the interchange when completed have been obtained for the traffic assessment as presented. Figure 4 presents the interchange using SIDRA (an industry standard intersection program). The north-and south-bound through movement on Princes Highway is unimpeded (does not need to stop) and hence these movements are not assessed.

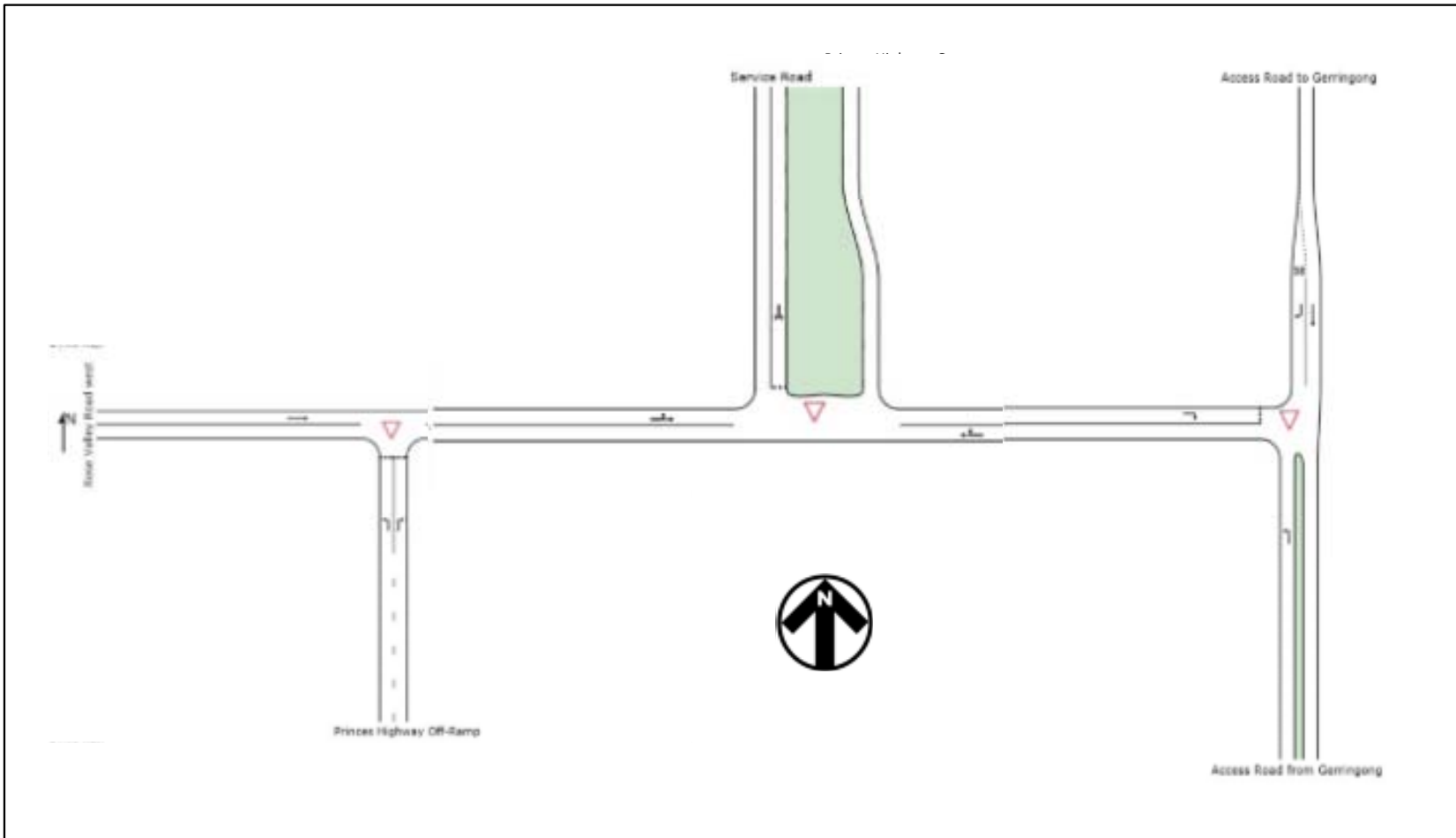


Figure 4: Rose Valley Road Interchange with Princes Highway (as completed using SIDRA)

2.4 Existing Traffic Volumes

As part of the traffic assessment, traffic counts have been undertaken at the interchange (as it was in December 2014) for the weekday PM (5pm to 6pm) and Saturday lunch (midday to 1pm). The traffic counts were undertaken in December 2014. The traffic counts included the Princes Highway northbound and southbound “through” traffic.

The following Figures present the traffic volumes in vehicles for the weekday peak hours.

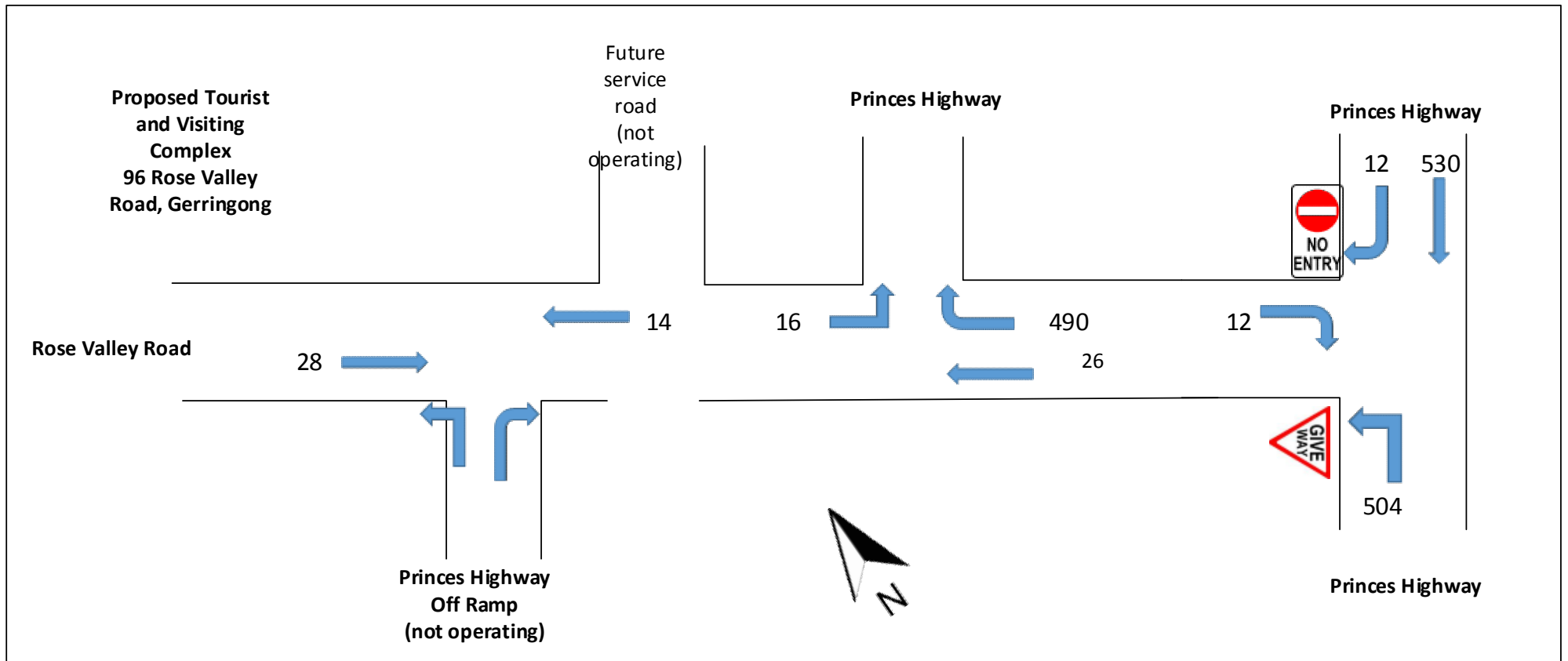


Figure 5: Existing Weekday Traffic Volumes PM Peak Hour

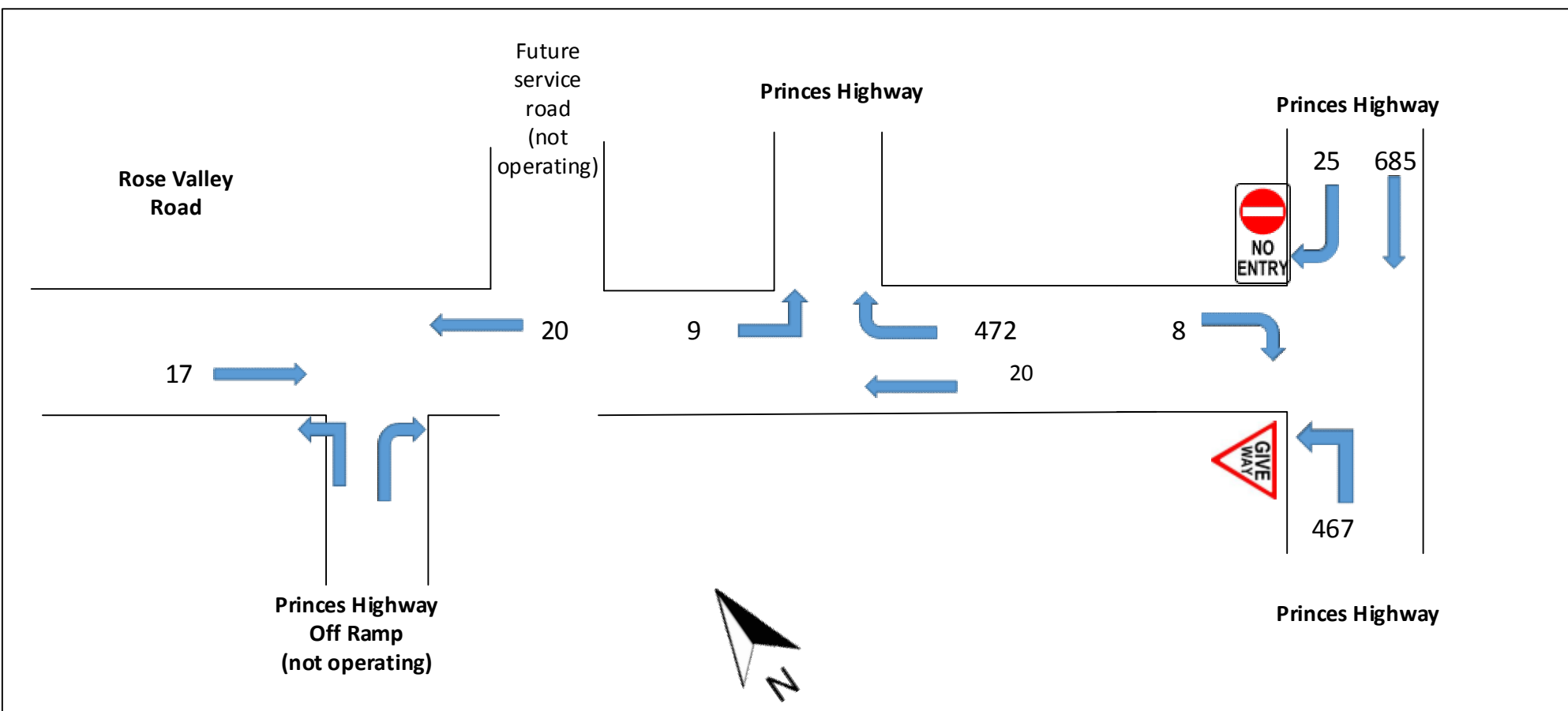


Figure 6: Saturday Traffic Volumes PM Peak Hour

2.5 Intersection Assessment

The interchange as it was in December 2014 is part construction site with the service road and the Princes Highway off ramp not operating. As discussed previously, the interchange is currently being constructed and will be completed before the proposed commercial development is operating (assuming approval). As a consequence the intersection assessment will be based on the interchange as completed with the development traffic (as shown in Figure 4).

2.6 Public Parking Opportunities

There is no convenient public parking near the development site.

2.7 Public Transport

There is no convenient public transport near the development site.

3. PROPOSED DEVELOPMENT

The landuses for the proposed tourist and visiting complex development are as follows:

- Abattoir with observation deck (88m²)
- Rotating restaurant/cafe with 60 seats (145.72m²) and kitchen area and veranda
- Covered parking (below the restaurant) with 25 car spaces provided
- An abattoir will be constructed with 120 animals processed per year with the meat used at the restaurant or sold to people visiting the business

The abattoir and observation deck is part of the experience of visiting the complex where people afterwards will have a light snack or full meal at the café/restaurant.

The peak staff numbers will be six.

Currently the site has “farmstay accommodation” as a commercial business. There is a residential house, sheds, machinery store shed as well.

A full scaled plan of the proposed development is provided as part of the Planning Proposal.

4. CAR PARKING ASSESSMENT

4.1 Kiama Municipal Council's Planning Scheme for Car Parking Assessment

The parking requirements for the development are presented as follows:

Restaurant

- 15 car spaces per 100m² or 1 space per 3 seats plus 1 space per 2 (restaurant staff)

The higher car space requirement is the number of seats with 23 car spaces required (six staff at the peak usage).

The site has 25 covered car spaces for staff and visitors of the restaurant.

Service vehicle parking can be easily accommodated in the wide open areas of the rural property.

5. TRAFFIC ASSESSMENT

The RTA Guide to Traffic Generating Developments publishes weekday peak hour trip rates for restaurants at a rate of 5 trips per 100m² for the evening peak hour.

Based on a floor space of 145.72m², then eight trips are expected to be generated in the peak hour.

The assumed trip generation in the weekday PM and Saturday peak hour is 3 arrival and 3 departure trips.

Figure 7 and 8 present the development trips on the local road network for the AM and PM peak hour with the origin development trips in red and bold and blue for the destination trips. The net increase of trips onto the gateway and nearby intersections are low.

The trip distribution onto the Rose Valley Interchange show a small increase in trip numbers and represents a low percentage of the estimated capacity of the intersections concerned. For most drivers the increase in trips will not be noticeable. The increase in trips in the local road network will not lead to a noticeable increase in congestions, queues or delays.

The traffic assessment is of the expected layout of the Rose Valley Road interchange with the Princes Highway northbound and southbound through traffic excluded since these two traffic patterns are unimpeded.

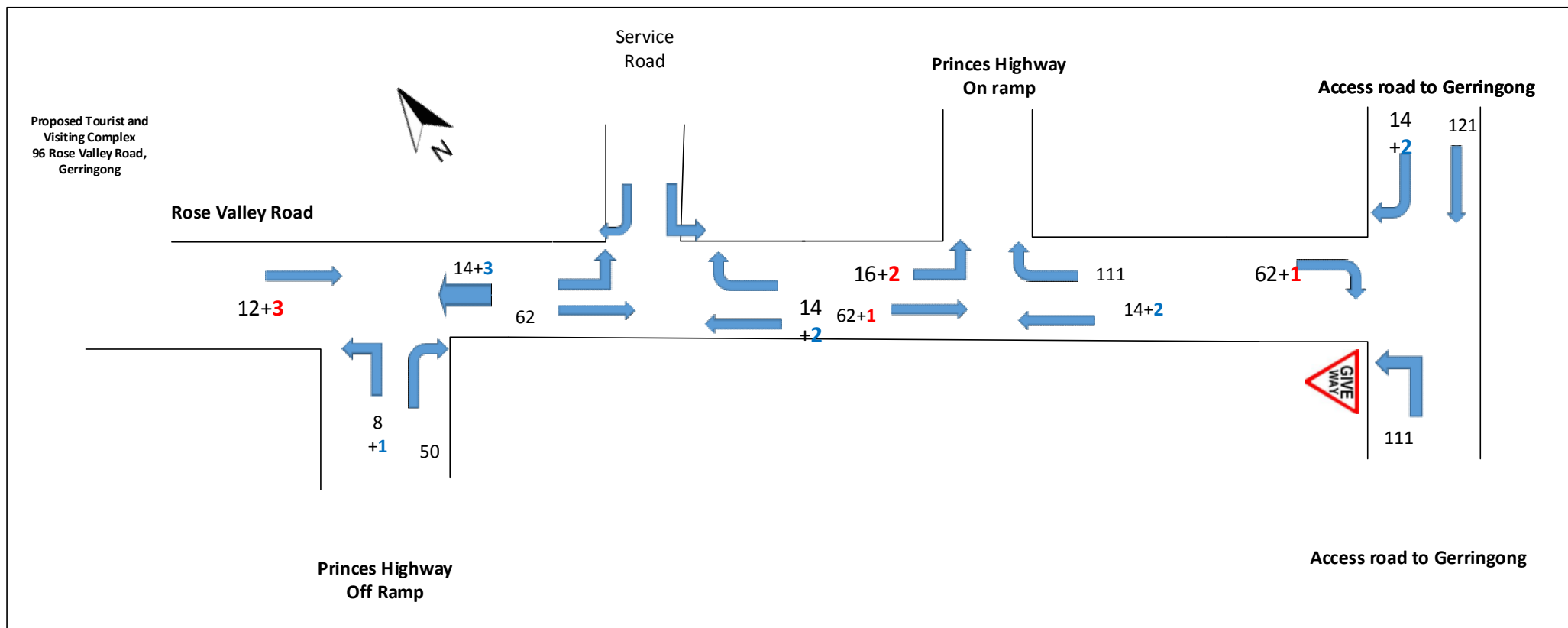


Figure 7: Weekday PM Peak Hour Car Trip Distribution (Development origin trips in red, destination trips in blue)

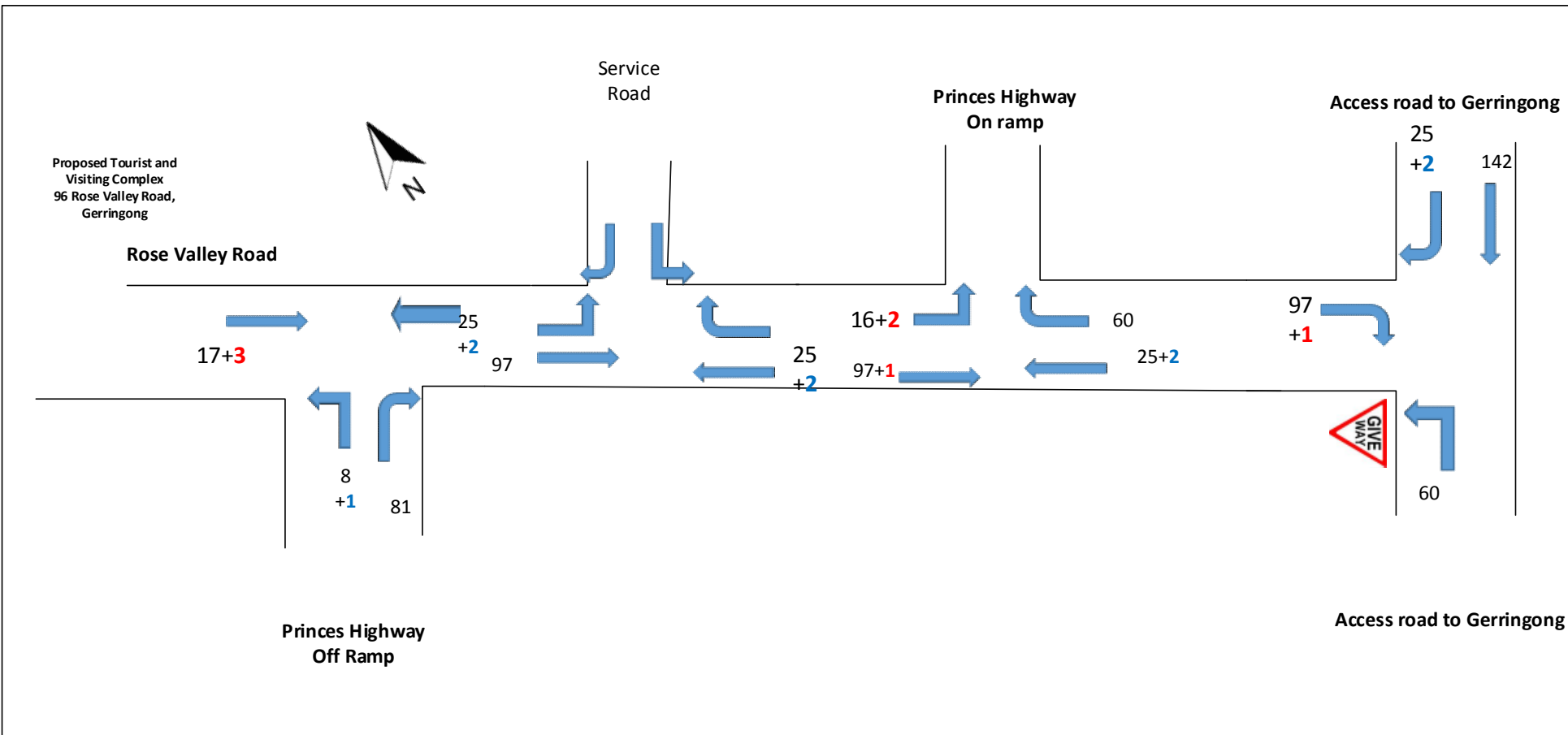


Figure 8: Saturday Peak Hour Car Trip Distribution (Development origin trips in red, destination trips in blue)

5.1 Rose Valley Road Interchange Assessment with Development Traffic Volumes

The expected intersection operating performance for the Rose Valley Road Interchange was assessed using the SIDRA software package (version 6) to determine the Degree of Saturation (DS), Average Delay (AVD in seconds) and Level of Service (LoS) at each intersection. The SIDRA program provides Level of Service Criteria Tables for various intersection types. The key indicator of intersection performance is Level of Service, where results are placed on a continuum from 'A' to 'F', as shown in Table 1.

LoS	Traffic Signal / Roundabout	Give Way / Stop Sign / T-Junction control
A	Good operation	Good operation
B	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	Satisfactory	Satisfactory, but accident study required
D	Operating near capacity	Near capacity & accident study required
E	At capacity, at signals incidents will cause excessive delays.	At capacity, requires other control mode
F	Unsatisfactory and requires additional capacity, Roundabouts require other control mode	At capacity, requires other control mode

Table 1: Intersection Level of Service

The Average Vehicle Delay (AVD) provides a measure of the operational performance of an intersection as indicated below, which relates AVD to LOS. The AVD's should be taken as a guide only as longer delays could be tolerated in some locations (i.e. inner city conditions) and on some roads (i.e. minor side street intersecting with a major arterial route). For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (sign control) the critical movement for level of service assessment should be that movement with the highest average delay.

LoS	Average Delay per Vehicles (seconds/vehicle)
A	Less than 14
B	15 to 28
C	29 to 42
D	43 to 56
E	57 to 70
F	>70

Table 2: Intersection Average Delay (AVD)

The degree of saturation (DS) is another measure of the operational performance of individual intersections. For intersections controlled by traffic signals both queue length and delay increase rapidly as DS approaches 1. It is usual to attempt to keep DS to less than 0.9. Degrees of Saturation in the order of 0.7 generally represent satisfactory intersection operation. When DS exceed 0.9 queues can be anticipated.

The results of the intersection analysis are as follows:

Gerringong Access Road with Rose Valley Road with Burnett Street

- All turn movements have a LoS A for both peak hours

Rose Valley Road with Princes Highway on Ramp

- All turn movements have a LoS A for both peak hours

Rose Valley Road with Princes Highway off Ramp

- All turn movements have a LoS A for both peak hours

The full SIDRA outputs are presented in Appendix B for the existing and development traffic conditions. The existing conditions are presented in Appendix A.

6. CONCLUSIONS

The traffic and parking demand of the proposed tourist and visiting complex development showed the following:

Parking

- The proposed tourism and visiting complex development complies with Council's car parking requirements

Traffic

- The proposed development is a modest net trip generator for the weekday PM and Saturday peak hours.
- The additional trips from the proposed development can be accommodated at the nearby Rose Valley Road interchange without noticeably affecting intersection performance, delays or queues.
- There are no traffic engineering reasons why a planning permit for the proposed tourist and visiting complex development at 96 Rose Valley Road, in Gerringong, should be refused.

APPENDIX A

SIDRA Intersection Results for Existing Traffic Conditions with Development Traffic

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Access Road from Gerringong											
1	L2	111	0.0	0.060	5.5	LOS A	0.0	0.0	0.00	0.58	53.6
Approach		111	0.0	0.060	5.5	NA	0.0	0.0	0.00	0.58	53.6
North: Access Road to Gerringong											
8	T1	121	0.0	0.062	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	16	0.0	0.010	5.2	LOS A	0.0	0.3	0.21	0.54	45.5
Approach		137	0.0	0.062	0.6	NA	0.0	0.3	0.02	0.06	57.8
West: Rose Valley Road west											
12	R2	63	0.0	0.065	5.6	LOS A	0.3	1.8	0.32	0.57	48.6
Approach		63	0.0	0.065	5.6	LOS A	0.3	1.8	0.32	0.57	48.6
All Vehicles		311	0.0	0.065	3.4	NA	0.3	1.8	0.08	0.35	54.2

Table A1: Weekday PM Peak Hour Intersection Performance of Gerringong Access Road with Rose Valley Road

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Rose Valley Road east											
5	T1	16	0.0	0.075	0.2	LOS A	0.4	2.5	0.18	0.46	47.0
6	R2	111	0.0	0.075	4.8	LOS A	0.4	2.5	0.18	0.46	46.1
Approach		127	0.0	0.075	4.2	NA	0.4	2.5	0.18	0.46	46.2
North: Service Road											
7	L2	1	0.0	0.002	5.0	LOS A	0.0	0.0	0.15	0.50	46.3
9	R2	1	0.0	0.002	5.0	LOS A	0.0	0.0	0.15	0.50	46.1
Approach		2	0.0	0.002	5.0	LOS A	0.0	0.0	0.15	0.50	46.2
West: Rose Valley Road west											
10	L2	18	0.0	0.042	4.6	LOS A	0.0	0.0	0.00	0.12	48.8
11	T1	63	0.0	0.042	0.0	LOS A	0.0	0.0	0.00	0.12	49.3
Approach		81	0.0	0.042	1.0	NA	0.0	0.0	0.00	0.12	49.2
All Vehicles		210	0.0	0.075	3.0	NA	0.4	2.5	0.11	0.33	47.3

Level of Service (LOS) Method: Delay (RTA NSW).

Table A2: Weekday PM Peak Hour Intersection Performance of Rose Valley Road with Princes Highway on Ramp

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Highway Off-Ramp											
1	L2	9	0.0	0.006	5.6	LOS A	0.0	0.2	0.06	0.55	49.8
3	R2	50	0.0	0.040	5.8	LOS A	0.1	0.9	0.09	0.60	48.9
Approach		59	0.0	0.040	5.8	LOS A	0.1	0.9	0.08	0.59	49.1
East: Rose Valley Road east											
5	T1	17	0.0	0.009	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		17	0.0	0.009	0.0	NA	0.0	0.0	0.00	0.00	60.0
West: Rose Valley Road west											
11	T1	15	0.0	0.008	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		15	0.0	0.008	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		91	0.0	0.040	3.8	NA	0.1	0.9	0.05	0.39	52.4

Table A3: Weekday PM Peak Hour Intersection Performance of Rose Valley Road with Princes Highway off Ramp

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Access Road from Gerringong											
1	L2	60	0.0	0.032	5.5	LOS A	0.0	0.0	0.00	0.58	53.6
Approach		60	0.0	0.032	5.5	NA	0.0	0.0	0.00	0.58	53.6
North: Access Road to Gerringong											
8	T1	142	0.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	25	0.0	0.015	5.0	LOS A	0.1	0.5	0.15	0.55	45.6
Approach		167	0.0	0.073	0.8	NA	0.1	0.5	0.02	0.08	57.3
West: Rose Valley Road west											
12	R2	98	0.0	0.102	5.7	LOS A	0.4	2.9	0.33	0.58	48.6
Approach		98	0.0	0.102	5.7	LOS A	0.4	2.9	0.33	0.58	48.6
All Vehicles		325	0.0	0.102	3.1	NA	0.4	2.9	0.11	0.32	53.7

Level of Service (LOS) Method: Delay (RTA NSW).

Table A4: Saturday Peak Hour Intersection Performance of Gerringong Access Road with Rose Valley Road

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Rose Valley Road east											
5	T1	27	0.0	0.051	0.3	LOS A	0.2	1.7	0.22	0.37	47.4
6	R2	60	0.0	0.051	4.9	LOS A	0.2	1.7	0.22	0.37	46.5
Approach		87	0.0	0.051	3.5	NA	0.2	1.7	0.22	0.37	46.8
North: Service Road											
7	L2	1	0.0	0.002	5.0	LOS A	0.0	0.0	0.20	0.50	46.2
9	R2	1	0.0	0.002	5.0	LOS A	0.0	0.0	0.20	0.50	46.0
Approach		2	0.0	0.002	5.0	LOS A	0.0	0.0	0.20	0.50	46.1
West: Rose Valley Road west											
10	L2	18	0.0	0.060	4.6	LOS A	0.0	0.0	0.00	0.08	49.0
11	T1	98	0.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.08	49.5
Approach		116	0.0	0.060	0.7	NA	0.0	0.0	0.00	0.08	49.4
All Vehicles		205	0.0	0.060	1.9	NA	0.2	1.7	0.10	0.21	48.2

Table A5: Saturday Peak Hour Intersection Performance of Rose Valley Road with Princes Highway on Ramp

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Highway Off-Ramp											
1	L2	9	0.0	0.006	5.6	LOS A	0.0	0.2	0.08	0.54	49.7
3	R2	81	0.0	0.065	5.9	LOS A	0.2	1.5	0.11	0.60	48.9
Approach		90	0.0	0.065	5.8	LOS A	0.2	1.5	0.11	0.60	49.0
East: Rose Valley Road east											
5	T1	27	0.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		27	0.0	0.014	0.0	NA	0.0	0.0	0.00	0.00	60.0
West: Rose Valley Road west											
11	T1	20	0.0	0.010	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		20	0.0	0.010	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		137	0.0	0.065	3.8	NA	0.2	1.5	0.07	0.39	52.3

Table A6: Saturday Peak Hour Intersection Performance of Rose Valley Road with Princes Highway off Ramp