193-201 Rocky Point Rd, 2-6 Targo Rd & 66-68 Ramsgate Rd, Ramsgate Proposed Mixed Use Development Planning Proposal

Prepared for:

Capital Hill Group

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The Transport Planning Partnership

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Traffic and Parking Impact Assessment Report

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APPENDICES

1 Introduction

This traffic and parking assessment report relates to a proposed mixed use development located at 193-201 Rocky Point Road, 2-6 Targo Road, and 66-68 Ramsgate Road, Ramsgate. This report accompanies a planning proposal to Georges River Council seeking approval to rezone the site from R3 Medium Density/B2 Local Centre to a mixed use development to accommodate a higher density residential development with ground floor and lower ground floor retail shops, supermarket and commercial uses.

The planning proposal involves the development of three new residential buildings accommodating 197 apartments and retail and supermarket uses on the ground floor and basement level. The development would be served by a three-level basement level car park which would be accessed from Targo Road and Ramsgate Road.

This report has been prepared by The Transport Planning Partnership (TTPP) on behalf of Capital Hill Group Pty Ltd. This report assesses the traffic and parking effects arising from the proposed development.

The remainder of the report is set out as follows:

- Chapter 2 discusses the existing road network conditions surrounding the site
- Chapter 3 describes the proposed development
- Chapter 4 assesses the parking demand
- Chapter 5 examines the traffic impacts arising from the proposed development
- Chapter 6 outlines the traffic signal warrants, and
- Chapter 7 presents the conclusions of the investigation.

2 Existing Conditions

2.1 Site Description

The subject site is located at 193-201 Rocky Point Road, 2-6 Targo Road and 66-68 Ramsgate Road, Ramsgate within the local government area of Georges River Council. The site has an area of approximately 7,116m^2 and includes the following properties:

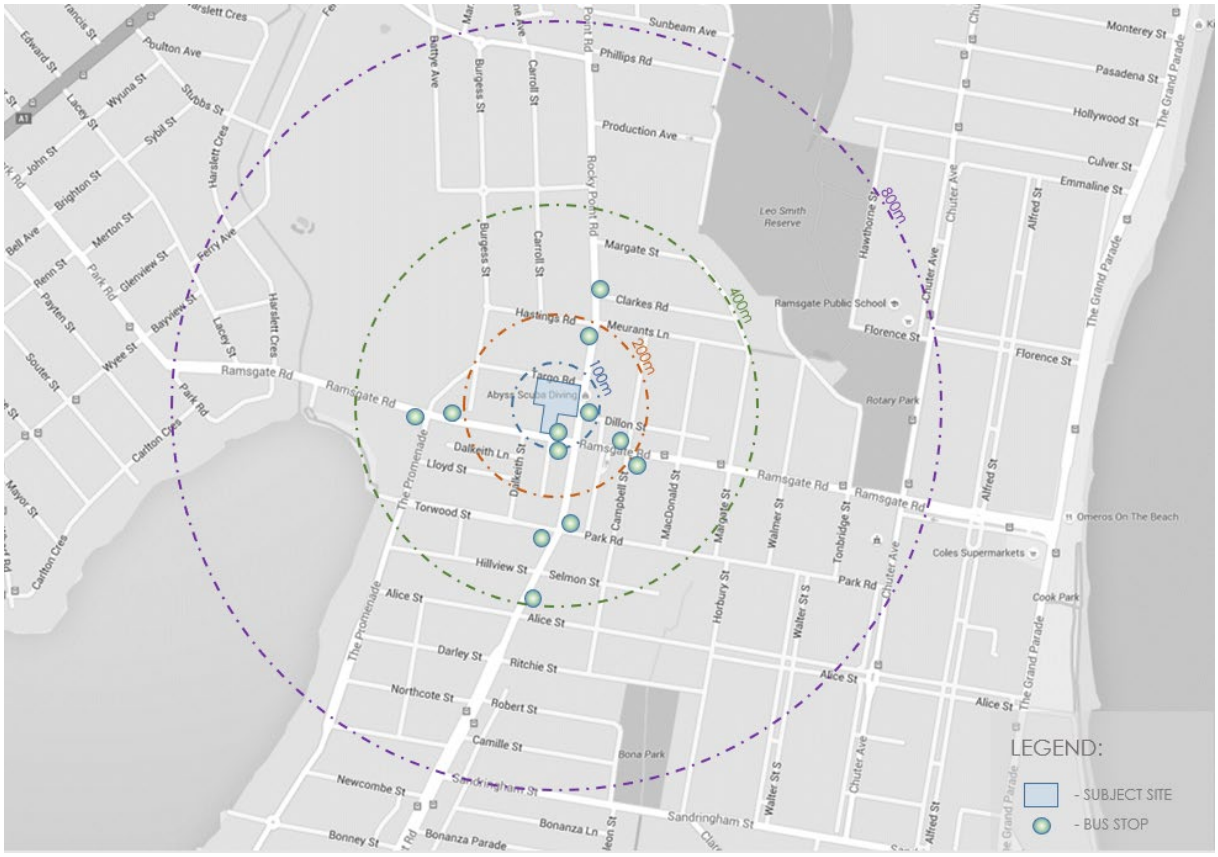
- 193-201 Rocky Point Road
- 2-6 Targo Road, and
- 66-68 Ramsgate Road.

Along Rocky Point Road, the site is currently occupied by ground floor retail uses with upper floor residential and commercial uses. Single residential dwellings are present along Targo and Ramsgate Roads. In the immediate vicinity of the subject site, the surrounding properties predominately include residential, commercial, light industrial, educational and public recreation land uses.

The site currently has a land use classification of B2 Local Centre at 193-201 Rocky Point Road and R3 Medium Density Residential elsewhere.

The location of the subject site and the surrounding environs are shown in Figure 2.1.

Figure 2.1: Subject Site and its Environs



Basemap Source: Google Maps Australia

2.2 Road Network

The roads in the vicinity of the site include Rocky Point Road, Ramsgate Road and Targo Road. Below is a description of these roads.

2.2.1 Rocky Point Road

Rocky Point Road is a State declared road aligned in a north-south direction and located along the eastern boundary of the site. It is a four lane, two-way road with a 12m carriageway within a 20m wide road reserve.

Kerbside parking on Rocky Point Road is permitted with clearway parking restrictions enforced as follow:

- northbound
  - one-hour parking restriction from 10:00am to 6:00pm Monday to Friday and from 8:30am to 12:30pm on Saturday
  - clearway parking restriction from 6:00am to 10:00am Monday to Friday
- southbound

- one-hour parking restriction from 8:30am to 3:00pm Monday to Friday and from 8:30am to 12:30pm on Saturday
- clearway parking restriction from 3:00pm to 7:00pm Monday to Friday.

Rocky Point Road has a posted speed limit of 60km/h.

In the vicinity of the site, Rocky Point Road is the retail spine of the suburb of Ramsgate.

2.2.2 Ramsgate Road

Ramsgate Road is declared as a Regional road. It is aligned in an east-west direction and is located along the southern boundary of the site. It is a four lane, two-way road with a 12m carriageway within a 20m wide road reserve.

Kerbside parking is generally not permitted along Ramsgate Road. Clearway parking restrictions are also enforced during the weekday peak periods.

The posted speed limit of Ramsgate Road is 60km/h.

2.2.3 Targo Road

Targo Road is a local road and is aligned in the east-west direction. It is located along the northern boundary of the site. It is a two-way, two lane road with an 11.5m carriageway set within a 20m road reserve.

Unrestricted kerbside parking is permitted on both sides of Targo Road.

The speed limit on Targo Road is 50km/h.

2.3 Surrounding Intersections

The following intersections currently exist in the immediate vicinity of the subject site:

- Rocky Point Road-Targo Road (priority controlled), and
- Rocky Point Road-Ramsgate Road (signalised).

2.4 Traffic Volumes

Intersection turning movement counts were conducted at two intersections in the vicinity of the site on Saturday 31 October 2015 and Thursday 5 November 2015 during the following periods:

- Thursday between 4:00pm and 6:00pm, and
- Saturday between 11:00am and 1:00pm.

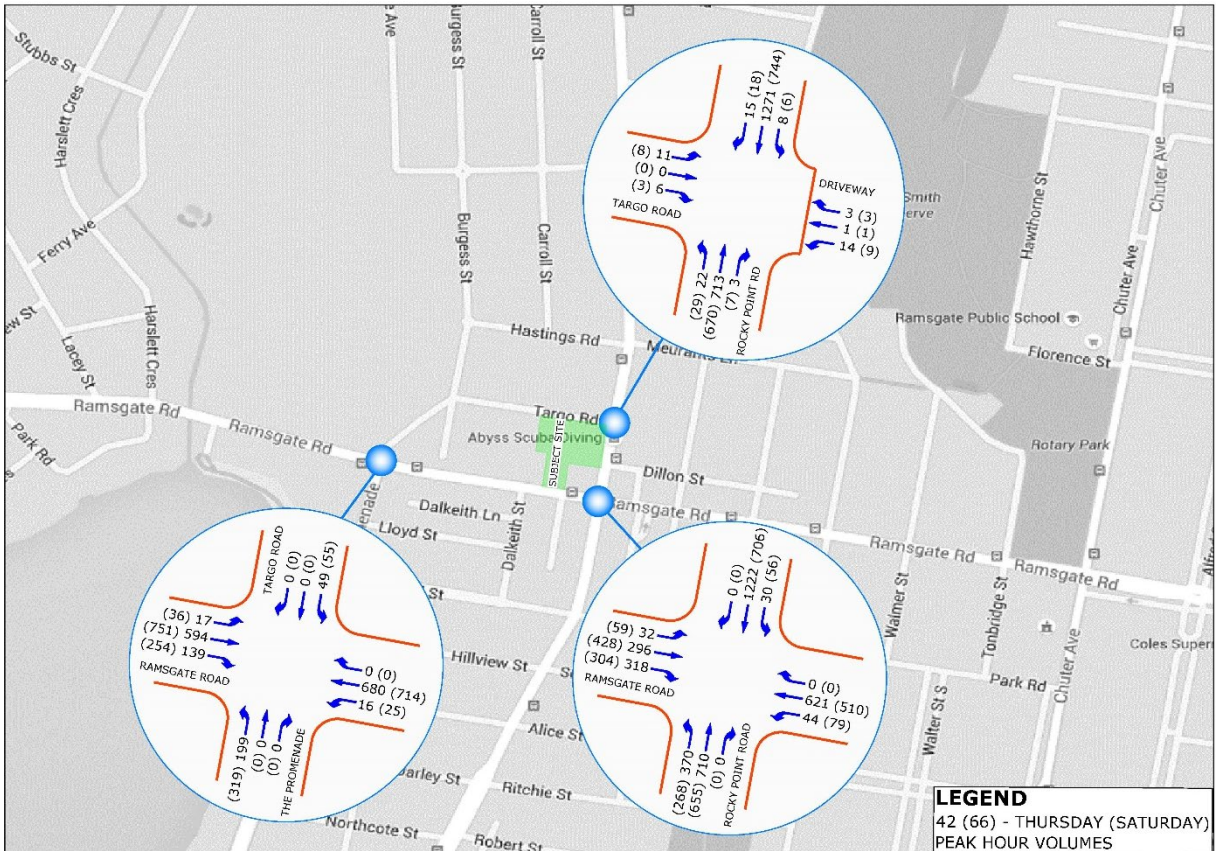
In addition to the above, intersections turning movement counts were conducted at the intersection of Ramsgate Road with Targo Road and The Promenade on Saturday 3 August 2019 and Thursday 8 August 2019 at the same times as above.

The above surveyed periods are considered to be the critical periods as the traffic impacts (if any) arising from the proposed development would be the greatest during these periods. In these periods, the background traffic would be the greatest which would also coincide with the periods of peak development traffic.

It is not expected that the proposed development would create traffic impacts during the weekday morning peak period as it is expected to generate only a very minimal volume of development traffic.

The Thursday and Saturday peak hour traffic volumes are summarised in Figure 2.2.

Figure 2.2: Existing Peak Hour Volumes



2.5 Public Transport

The subject site is serviced by the Sydney Buses with bus stops located adjacent to the site on Rocky Point Road and Ramsgate Road. Bus services provide access to the surrounding suburbs including Kogarah, Sans Souci, Dolls Point, Taren Point, Rockdale and Miranda.

A review of the public transport available in the vicinity of the site is summarised in Table 2.1.

Table 2.1: Existing Bus Services

Bus Route	Bus Stop	Route Description	Typical Weekday Services	
			Morning Peak Period [1]	Evening Peak Period [2]
477	Rocky Point Road near Ramsgate Road	Rockdale to Miranda	10	7
		Miranda to Rockdale	11	7
476	Rocky Point Road near Ramsgate Road	Rockdale to Dolls Point Loop	12	9

[1] 6:30am to 9:30am
[2] 3:30pm to 6:30pm

Frequency of services is generally every 15-30 minutes during peak periods. The off peak services are half hourly for each route.

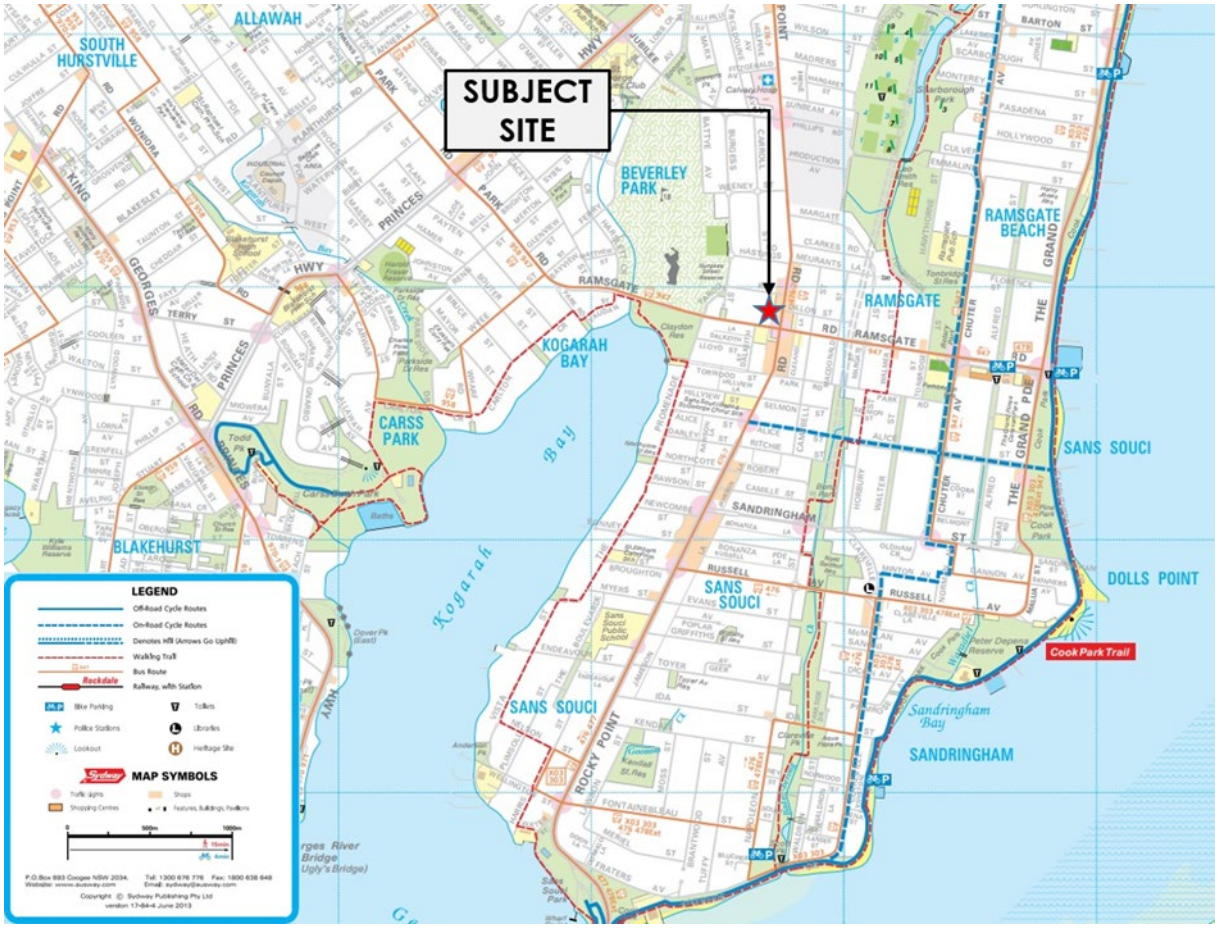
2.6 Pedestrian and Cycle Infrastructures

Pedestrian paths are located on all roads including a 3m-4m wide path on Rocky Point Road and 2m-3m wide paths on adjoining roads.

Dedicated crossing points in vicinity of the site include the signalised pedestrian crossings at the intersection of Ramsgate Road and Rocky Point Road as well as a signalised mid-block crossing on Rocky Point Road, just north of Targo Road.

The existing local on-street and off-street bicycle network in the vicinity of the site is shown in Figure 2.3. "WATCH FOR BICYCLE" and other bicycle warning signs are provided along Ramsgate Road.

Figure 2.3: Ramsgate Bicycle Network (West of Rocky Point Road)



Source: Rockdale City Council (it is noted that Georges River Council has published a cycle map to date).

3 Planning Proposal

3.1 Indicative Development Mix

A planning proposal has been prepared for lodgement with Georges River Council. The planning proposal will seek approval to amend the LEP floor space ratio and height controls as they apply to the site.

The planning proposal relates to a proposed mixed use development including residential, retail and commercial uses. The proposed development would be accommodated in four buildings of various heights.

For traffic analytical purposes, below is a summary of the indicative development yield:

- 197 residential dwellings including:
  - 80 x 1-bedroom units
  - 99 x 2-bedroom units
  - 18 x 3-bedroom units
- 4,680m^2 of supermarket and liquor shop
- 1,940m^2 of retail/restaurant/café
- 130m^2 of medical suites, and
- 97m^2 of community centre.

Following approval of the planning proposal, a subsequent detailed development application for the proposed buildings will be submitted to Council for approval, which will confirm the exact residential apartment numbers and mix, and other development statistics. However, it is not expected the final proposed development would vary significantly to the point that the results of traffic analysis and the findings of this assessment would become invalid.

3.2 Proposed Vehicle Access Arrangements

Vehicular access to the basement car park would be provided off Targo Road and Ramsgate Road.

The car park access on Ramsgate Road would be configured to permit only left-in movement from Ramsgate Road, while the access on Targo Road would permit all traffic movements.

In addition, a second access is proposed on Ramsgate Road to service the loading dock. This access is proposed to provide left-in and left-out movements only.

The access driveways and ramps to the car parking and the loading dock areas would be designed to comply with the relevant Australian Standard, AS2890.1 and AS2890.2. Compliance of driveway and ramp designs will be demonstrated in the DA stage.

The proposed access arrangements are generally consistent with the proposal discussed with Roads and Maritime Services in April 2017. Minutes of the meeting are provided in Appendix A.

3.2.1 Proposed Loading Area

The proposed development includes a loading facility located off Ramsgate Road. It would have three loading bays.

The loading bays will be designed to accommodate service vehicles up to an Australian Standard 19m articulated vehicle.

The loading access arrangement will be designed to allow vehicles to enter and exit in a forward direction, with the use of a turntable. These will be further developed during the DA process.

4 Parking Assessment

4.1 Car Park Provision

On-site parking requirements for the proposed development envisaged in the planning proposal have been assessed against the Kogarah City Council Development Control Plan (DCP) 2013.

The DCP stipulates specific car parking rates for various types of development including specific requirements for the Ramsgate Town Centre. Table 4.1 presents the assessment of car parking requirements for the proposed development envisaged in the planning proposal.

Table 4.1: On-Site Car Parking Assessment

Land Use	No. of Units/ Floor Area (m²)/ Capacity	DCP Parking Rates (minimum)	Minimum DCP Required Parking Provision
Residential			
- 1-Bedroom	80	1.0 space per dwelling	80
- 2-Bedroom	99	1.5 spaces per dwelling	149
- 3-Bedroom	18	2.0 spaces per dwelling	36
- Residential Tenant Sub-Total	*197*	-	*265*
- Residential Visitors	-	1.0 space per 5 dwellings	39
- Residential Sub-Total	-	-	*304*
Non-Residential			
- Supermarket + Liquor Shop	4,680m²	1 space per 40m²	117
- Specialty Shops	1,940m²	1 space per 40m²	49
- Medical suites	130m²	4.1 spaces per 100m² (1)	5
- Non-Residential Sub-Total	-	-	*171*
Total	**-**	**-**	**475**

Note: (1) parking rate for medical suites based on Roads and Maritime Services Trip Generation Surveys on Medical centres (2015)

Applying the above Council parking rates, the proposed indicative development mix requires a minimum of 475 car parking spaces including 265 spaces for residential car parking spaces, 39 residential visitor car parking spaces and 171 retail customer car parking car spaces. This includes the provision for accessible parking spaces.

Compliance of the above car parking requirement will be demonstrated in the DA stage.

It is noted that additional car parking above the DCP requirement may be required to offset the loss of existing kerbside car parking spaces due to the subject proposed development – see Section 5.5.5.

4.2 Bicycle and Motorcycle Parking Provision

For multi-dwelling residential developments, the DCP requires bicycle parking to be provided at a rate of one space per three dwellings for residents and one space per ten dwellings for visitors. It does not stipulate any bicycle parking requirements for retail or supermarket uses. However, it requires commercial uses to provide bicycle parking at a rate of one bicycle space per five car parking spaces provided.

Therefore, the proposed indicative development mix requires a minimum of 86 bicycle parking spaces for residents and residential visitors plus an additional 34 retail visitor bicycle parking spaces, equalling to 120 bicycle parking spaces in total.

Compliance of bicycle parking requirement will be demonstrated in the DA stage.

The DCP does not have any specific requirement for motorcycle parking.

4.3 Service Vehicle Loading Requirements

The DCP sets out provision rates for loading facilities for different development types. A review of these rates and the proposed floor area schedule results in a requirement as summarised in Table 4.2.

Table 4.2: Service Vehicle Loading Requirements

Proposed Uses	No. of Units/Floor Area (m^2)	DCP Loading Bay Provision Rates	DCP Required Loading Bays
Retail (Shops and Supermarket)	6,750m^2	For floor area greater than 500m^2 to 1,500m^2 - 2 bays required	2
Residential	197 Units	N/A	N/A
Total	**-**	**-**	**2**

Based on the above, the proposed development envisaged in the planning proposal is required to provide up to two loading bays. It is further noted that the DCP requires these loading bays to have a minimum width of 3.5m, while the minimum length is 6.5m long for one loading bay and 9.5m for the other loading bay.

Compliance with the above service vehicle loading requirements will be demonstrated during the DA stage.

4.4 Internal Car Park Arrangement

It is proposed that the car park and associated elements such as car parking space dimensions, circulation aisles and ramp to be designed in accordance with the relevant Australian Standard for car parking facilities, namely AS2890.1: 2004 and AS2890.6:2009.

Car parking spaces for retail customers would be designed to comply with a Class 3A car park facility as specified in the Australian Standard (AS2890.1:2004). Class 3A car parking spaces are required to have dimensions of 2.6m wide by 5.4m long with 6.6m wide aisles or dimensions of 2.7m wide by 5.4m long with 6.2m wide aisles.

Similarly, residential car parking spaces would be designed in compliance with Class 1A car park facility. Class 1A car parking spaces are required to have dimensions 2.4m wide by 5.4m long with an aisle width of 5.8m.

Detailed design of the car park has yet to be conducted. However, sufficient preliminary design has been undertaken to demonstrate that it is possible to accommodate Council's required car parking provision and at the same time complies with Australian Standard design requirements.

5 Traffic Assessment

5.1 Traffic Generation Rates

The proposed indicative development scheme envisaged in the planning proposal includes:

- 197 residential apartments
- 1,954m^2 of retail floor space
- 4,680m^2 of supermarket trading floor space
- 130m^2 of medical suites, and
- 97m^2 of community centre.

Roads and Maritime Services (Roads and Maritime) suggests traffic generation rates for different land uses in their *Guide to Traffic Generating Developments*, 2002. In May 2013, RMS released the *Technical Direction TDT2013/04* providing a summary of revised trip generation rates for various land uses to replace the suggested trip rates in their 2002 guidelines.

The applicable traffic generation rates for the residential uses are as follows:

- 0.29 trips per peak hour per apartment for high density residential developments.

The above rate is applicable to both Thursday evening peak period and Saturday peak period.

In relation to the traffic generation potential of the proposed retail uses, the following references have been adopted in this assessment:

- supermarket and liquor: 155 trips per 1,000m^2 GLFA for a Thursday evening peak period and 147 trips per 1,000m^2 GLFA for a Saturday evening peak period
- specialty shops: 46 trips per 1,000m^2 GLFA for a Thursday evening peak period and 107 trips per 1,000m^2 GLFA for a Saturday evening peak period, and
- medical suites: 4 trips per 100m^2 GFA for a Thursday evening peak period and 4.6 trips per 100m^2 GFA for a Saturday evening peak period.

The community centre is intended to serve the local community and is therefore not expected to be a traffic generating facility.

Using the above rates, traffic generation for the indicative development scheme has been estimated for the Thursday evening and Saturday peak periods and is summarised in Table 5.1.

Table 5.1: Expected Traffic Generation

Land Use	No. of Units/ Floor Area (m^2)/ Capacity	Thursday Evening Peak Hour		Saturday Peak Hour	
		Trip Rates	Peak Hour Estimated Trips	Trips Rates	Peak Hour Estimated Trips
Residential	197 Units	0.29 trips per unit	57	0.29 trips per unit	57
Supermarket	4,680m^2 GFA (3,510m^2 GLFA)	155 trips per 1,000m^2 GLFA	544	147 trips per 1,000m^2 GLFA	516
Specialty Shops/Restaurant/ Cafe	1,940m^2 (1,455m^2 GLFA)	46 trips per 1,000m^2 GLFA	67	107 trips per 1,000m^2 GLFA	156
Medical Suites	130m^2 GFA	4 trips per 100m^2 GFA	5	4.6 trips per 100m^2 GFA	6
Total	**-**	**-**	**673**	**-**	**735**

Based on the above, the proposed development will generate 673 vehicles per hour (vph) and 735 vph during the Thursday and Saturday peak periods respectively.

5.2 Traffic Distribution

Development traffic has been distributed to the local road network based on existing traffic. In terms of inbound/outbound distribution, the followings have been assumed:

- 20% outbound and 80% inbound for residents during the Thursday evening peak period
- 50% inbound and 50% outbound for retail/medical suites/ during the Thursday evening peak period, and
- 50% inbound and 50% outbound for all traffic during the Saturday peak period.

5.3 Future Background Traffic

Future traffic growth has been estimated based on the Sydney's Strategic Travel Model (STM) provided by Roads and Maritime Services. The STM is a strategic transport planning model that considers population and employment growths and is used for high level of assessment of major infrastructure proposals, transport strategies and policy decision making.

The STM provides future year traffic volumes to determine the relative traffic growth between years for application to the baseline traffic (e.g. surveyed traffic volumes) to provide estimations for future year traffic conditions.

It should be noted that the F6 Extension Stage 1 project has been assumed in the STM model. The F6 Extension project will deliver the missing link from Sydney's south to the wider motorway network. The F6 Extension Stage 1 is proposed to be opened to traffic late 2024.

Traffic data from the STM for the relevant roads in the local road network are presented in Table 5.2 which have been applied to both Thursday evening and Saturday peak periods.

Table 5.2: STM Traffic Flow and Growth Per Annum

Intersection	Road Name	Approach to Intersection	Evening Peak Period
Rocky Point Rd-Ramsgate Rd	Ramsgate Rd	East	4.6%
	Rocky Point Rd	South	1.0%
	Ramsgate Rd	West	1.7%
	Rocky Point Rd	North	0.7%
Rocky Point Rd-Targo Rd	Rocky Point Rd	South	1.0%
	Targo Rd	West	1.0% (1)
	Rocky Point Rd	North	0.7%
Ramsgate Rd-Targo Rd-The Promenade	Ramsgate Rd	East	1.2%
	The Promenade	South	1.0% (1)
	Ramsgate Rd	West	1.7%
	Targo Road	North	1.0% (1)

Note: (1) Assumed 1% p.a. growth in Targo Road as data of this local road is not available on STM

5.4 Future Intersection Volumes

From the above analysis, the resultant intersection volumes including 10 year background growth without and with development traffic are shown in Figure 5.1 and Table 5.1.

Figure 5.1: Future Base Case Peak Hour Volumes (without Development)

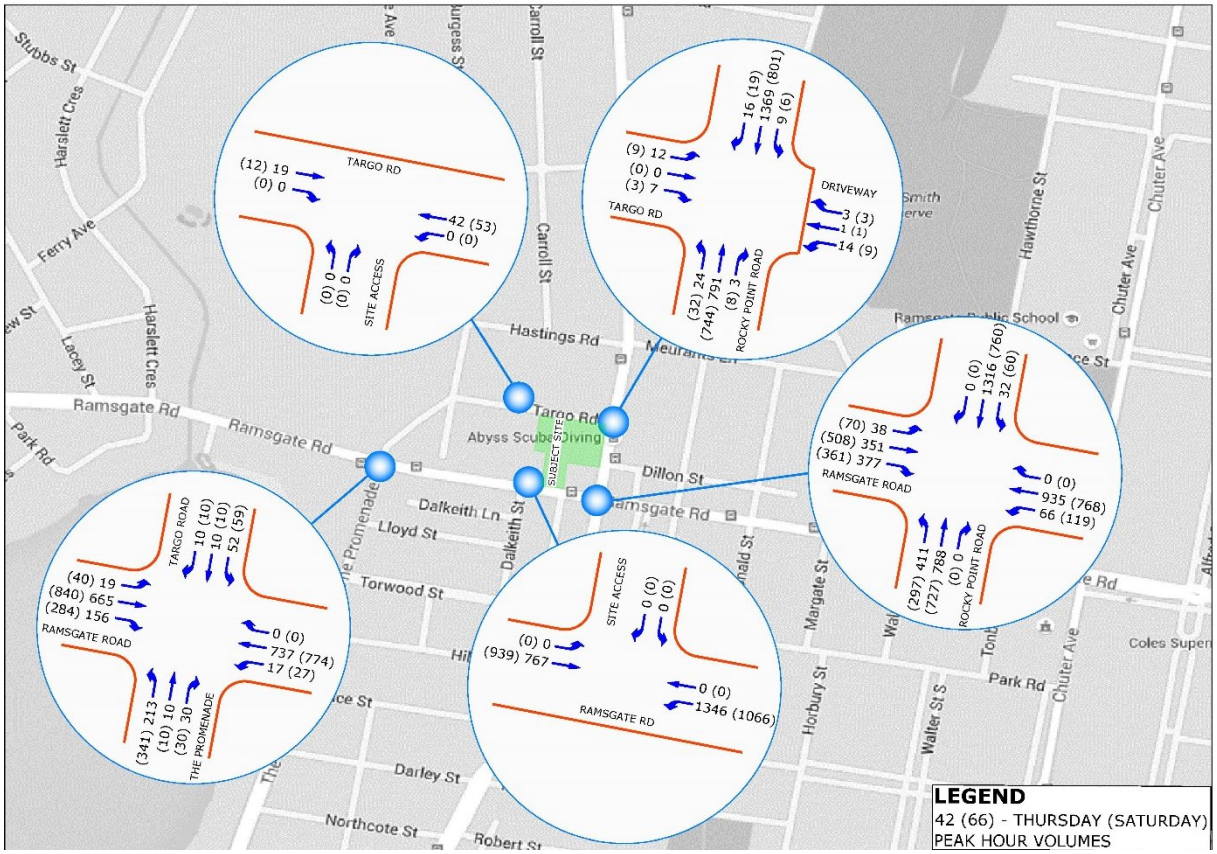
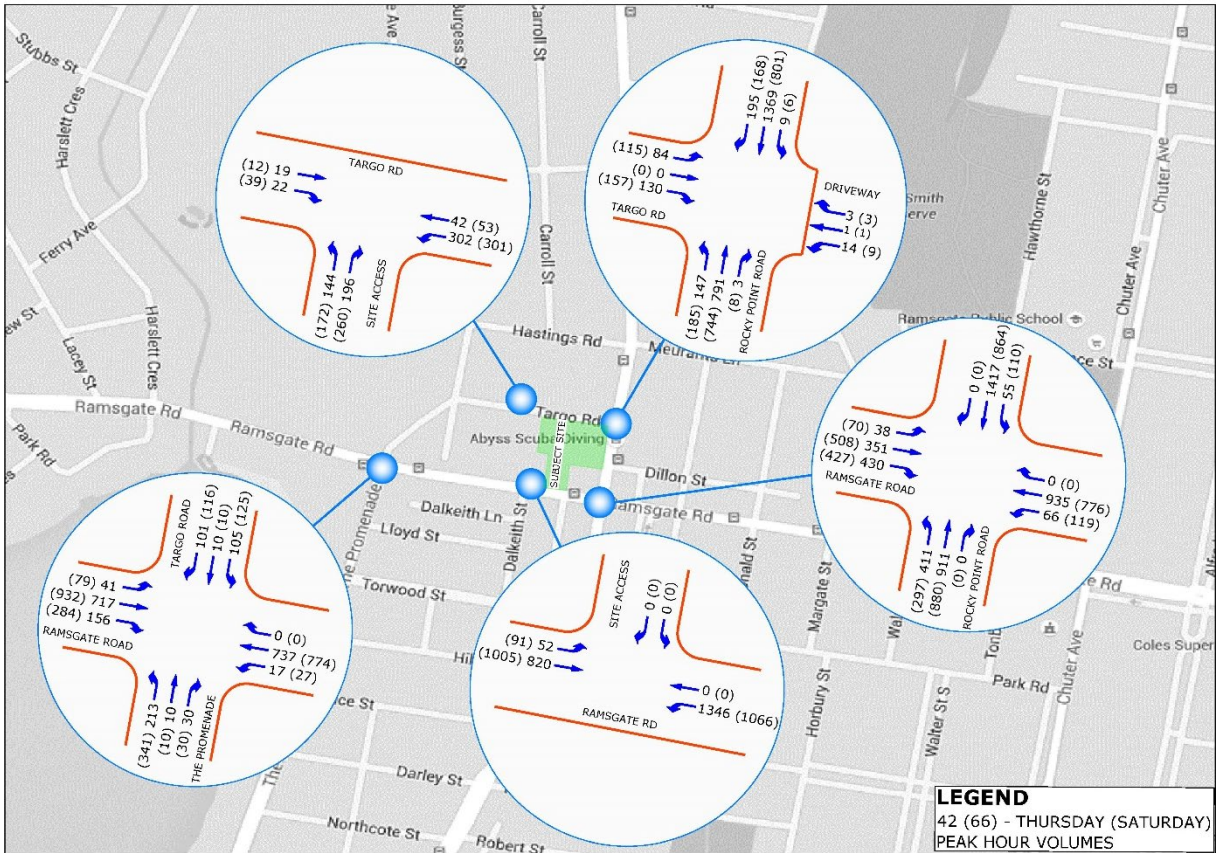


Figure 5.2: Future Development Case Peak Hour Volumes (with Development)



5.5 Traffic Capacity Analysis

The operation of the key intersections within the study area have been assessed using SIDRA Intersection Version 8, a computer based modelling package which assesses intersection performance under prevailing traffic conditions.

Roads and Maritime use level of service to determine how efficient a given intersection is operating under prevailing traffic conditions. The level of service is directly related to delays experienced by traffic travelling through an intersection.

Level of service ranges from LoS A to LoS F. LoS A indicates good intersection performance. LoS D indicates the intersection is operating within capacity and is the long term desirable level of service. LoS E and LoS F indicate the intersection is operating at overcapacity and requires to be upgraded.

Table 5.3 shows the criteria for the different level of service.

Table 5.3: Level of Service Criteria

Level of Service	Average Delay (seconds per vehicle)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity, at signals, incidents will cause excessive delays, Roundabouts require other control mode	At capacity, requires other control mode
F	Greater than 70	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing; requires other control mode

Source: RMS Guide to Traffic Generating Development, 2002

5.5.1 Assessment Scenarios

The following assessment scenarios have been undertaken to provide an analysis of the potential traffic impact of the proposed development on the surrounding road network:

- Existing Base Case – this scenario represents the current performance of the network and a starting point for comparative purposes (see traffic volumes in Figure 2.2)
- Future Base Case – this scenario included the 10-year background traffic growth without the proposed mixed use development (see traffic volumes in Figure 5.1), and
- Future Development Case – this scenario included the future ultimate traffic demand forecast which takes into account the Scenario 2 future base case traffic, plus the development traffic from the proposed development (see traffic volumes in Figure 5.2).

5.5.2 Existing Conditions

Intersection analysis was conducted for the three nearby intersections operating under existing traffic conditions using the surveyed peak hour flows shown in Figure 2.2.

The analysis results for existing traffic conditions are presented in Table 5.4.

Table 5.4: Existing Condition Intersection Modelling Results

Intersection	Intersection Type	Thursday Evening Peak Hour		Saturday Peak Hour	
		Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Rocky Point Rd-Ramsgate Rd	Signalised	31	C	47	D
Rocky Point Rd-Targo Rd	Priority	57	E	37	C
Ramsgate Rd-Targo Rd	Priority	10	A	12	A

The analysis indicates that the signalised intersection of Rocky Point Road with Ramsgate Road is operating satisfactorily during the Thursday evening peak period, but is operating near capacity during the Saturday peak period.

In relation to the priority intersection of Rocky Point Road with Targo Road, the analysis indicates it is currently operating at LoS E during the Thursday evening peak period and LoS B during the Saturday peak period. In both peak periods, the right turn movement from Targo Road would experience the greatest delay. This is due to the regional traffic issues arising from the traffic queues that developed outside (to the south) of the Ramsgate town centre.

From our on-site observations, it is apparent there are currently extensive queues in the southbound direction along Rocky Point Road. The front of the queue was observed to occur south of Ramsgate Road (outside of the Ramsgate town centre). It was observed to generally extend past the Targo Road intersection in the assessed peak periods. This results in vehicles on Targo Road not able to enter Rocky Point Road to travel in the southbound direction.

In addition, the kerbside lane on the eastern side of (southbound direction) Rocky Point Road is used as on-street parking lane during the Saturday peak period reducing the available traffic capacity to one lane.

It is also noted that existing traffic volume on Targo Road entering Rocky Point Road is less than 20 vph (one vehicle very three minutes on average) during the peak periods. The poor performance of this intersection is due to the identified congestion along Rocky Point Road.

At the priority intersection of Ramsgate Road with Targo Road, it is operating satisfactorily under existing traffic conditions.

5.5.3 Future Base Case Traffic Conditions

The intersection analysis was repeated for future traffic conditions based on background traffic growth as shown in Figure 5.1 with existing intersection layout and configuration.

The future condition analysis results are presented in Table 5.5.

Table 5.5: Future Base Case Intersection Modelling Results

Intersection	Intersection Type	Thursday Evening Peak Hour		Saturday Peak Hour	
		Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Rocky Point Rd-Ramsgate Rd	Signalised	55	D	95	F
Rocky Point Rd-Targo Rd	Priority	76	F	44	D
Ramsgate Rd-Targo Rd	Priority	11	A	13	A

In the future base case with the background traffic growth (but excluding development traffic from the proposed development), the operating condition of the Rocky Point Road

and Ramsgate Road intersection would reduce from LoS C to D in the Thursday evening peak period and from LoS D to F in the Saturday peak period. Similarly, the operating conditions of the Rocky Point Road and Targo Road intersection would reduce from LoS E to F in the Thursday evening peak period and LoS C to D in the Saturday peak period. The Ramsgate Road intersection with Targo Road would continue to operate with LoS A in all peak periods assessed.

It is noted that the worsening of the intersection performance in the future base case scenario would be triggered by growth in the background traffic alone.

5.5.4 Future Development Case Traffic Conditions

The intersection analysis was repeated for future development case traffic conditions i.e. background traffic growth plus future additional development traffic as shown in Figure 5.2, with the future existing intersection layout and configuration.

The analysis of future traffic conditions includes the new access intersections on Ramsgate Road and Targo Road which have been assumed to operate as priority controlled intersections. The Targo Road access has been assumed to allow full access while the Ramsgate Road access would permit left-in movements only.

The Rocky Point Road intersection with Targo Road continues to operate as a priority controlled intersection.

In addition, the Ramsgate Road intersection with Targo Road is proposed to be modified to permit the right turn movement from Ramsgate Road into Targo Road to service traffic accessing the proposed development from the east along Ramsgate Road. The intersection is assumed to continue to operate under priority control.

The future condition analysis results are presented in Table 5.6 based on the existing road network, with the proposed accesses on Targo Road and Ramsgate Road.

Table 5.6: Future Condition Intersection Modelling Results (with Proposed Development)

Intersection	Intersection Type	Thursday Evening Peak Hour		Saturday Peak Hour	
		Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Rocky Point Rd-Ramsgate Rd	Signalised	72	F	142	F
Rocky Point Rd-Targo Rd	Priority	>300	F	>300	F
Ramsgate Rd-Targo Rd	Priority	>300	F	>300	F
Targo Rd Access	Priority	7	A	8	A
Ramsgate Access	Priority	6	A	6	A

The analysis of the future case indicates that with the inclusion of the proposed development, the Rocky Point Road and Ramsgate Road intersection would operate poorly at LoS F.

In relation to the Rocky Point Road intersection with Targo Road, this would continue to operate at LoS F with long delays in the future if it continues to operate under priority control.

Similarly, the Ramsgate Road with Targo Road intersection operating under priority control would also operate poorly.

Excessive delays would be experienced by motorists at all three existing assessed intersections.

5.5.5 Intersection Improvements

Intersection upgrade works would be required to address the above intersection deficiency expected in the future. As such additional modelling has been undertaken to determine the required improvement works.

From the analysis, the Targo Road intersection with Rocky Point Road would be required to be signalised. In addition, the removal of kerbside parking along Rocky Point Road as well as Ramsgate Road (near Targo Road) is required as discussed below.

Under the proposed future road network, the new signalised Rocky Point Road and Targo Road intersection would operate with a three-phase traffic signal sequence with a leading right turn from Rocky Point Road southbound into Targo Road.

It is also anticipated that the existing mid-block pedestrian crossing in Rocky Point Road located some 40m to the north of Targo Road is to be removed as signalised crossings would be provided on all legs at the new Targo Road signalised intersection.

Similarly, the Ramsgate Road intersection with Targo Road intersection would need to be signalised so that a right turn movement from Ramsgate Road into Targo Road could be catered for. The proposed traffic signals would also operate with a three-phase traffic signal sequence. In addition, one of the eastbound departure lane on Ramsgate Road is proposed to be converted into an approach right turn lane.

In relation to kerbside parking removal, it is proposed that the timed parking would be removed in the following locations during the Saturday peak period:

- on the western side of Rocky Point Road between Ramsgate Road and Meurants Lane, and
- on the eastern side of Rocky Point Road between Ramsgate Road and Torwood Street.

It is noted that any loss of existing kerbside parking spaces would be replaced by the provision of additional car parking spaces within the proposed basement car park for the subject proposed development.

The existing road network is shown in Figure 5.3, while the above proposed road network changes are shown in Figure 5.4.

Figure 5.3: Existing Road Network

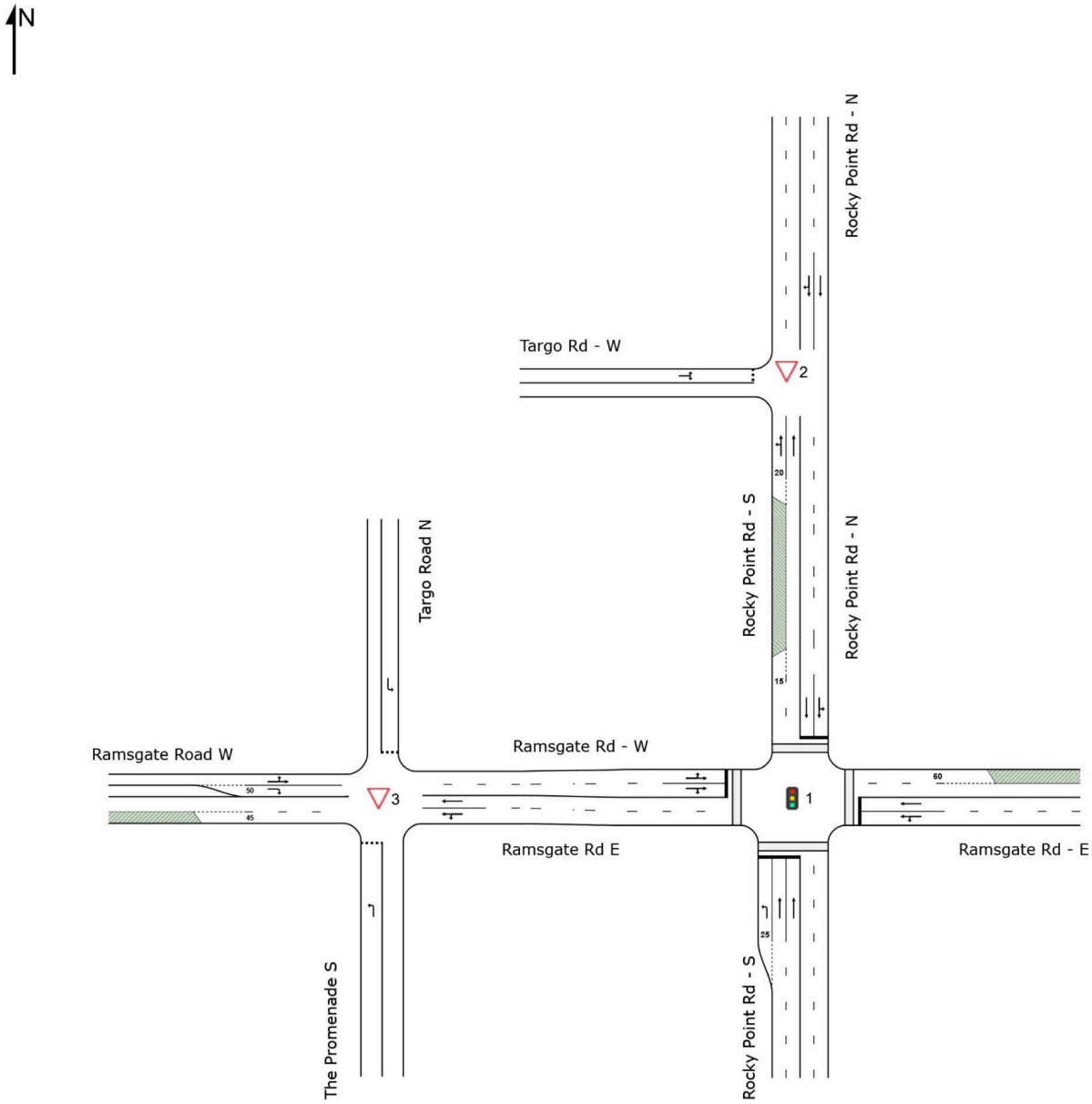
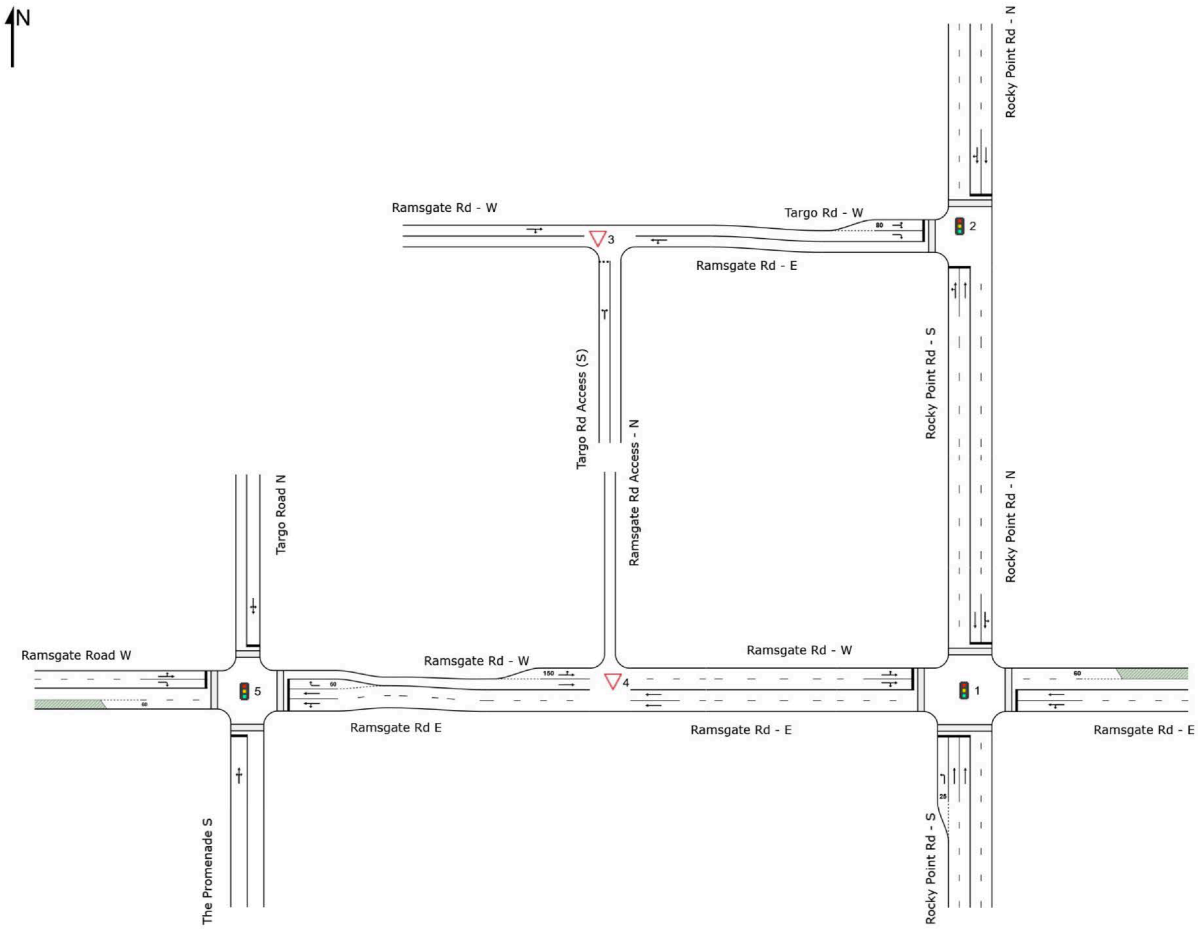


Figure 5.4: Proposed Road Network



The future development case traffic condition analysis results are presented in Table 5.7 based on the future road network with signalisation of the Targo Road intersections with Rocky Point Road and Ramsgate Road and proposed works described above.

Table 5.7: Future Condition Intersection Modelling Results (With Improvements)

Intersection	Intersection Type	Thursday Evening Peak Hour		Saturday Peak Hour	
		Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Rocky Point Rd-Ramsgate Rd	Signalised	56	D	55	D
Rocky Point Rd-Targo Rd	Signalised	50	B	12	C
Ramsgate Rd-Targo Rd	Signalised	31	B	45	D
Targo Rd Access	Priority	7	A	7	A
Ramsgate Access	Priority	6	A	6	A

With the proposed improvement works described above, all assessed intersections would operate satisfactorily following the completion of the proposed development.

In relation to the new access intersections, they are also expected to operate satisfactorily with good level of service in the future.

6 Roads and Maritime Traffic Signal Warrants

The additional development traffic arising from the subject development would require the Rocky Point Road intersection with Targo Road to be upgraded to operate as a signalised intersection.

Installation of traffic signals at any intersection requires the approval of Roads and Maritime. The approval process considers whether the Roads and Maritime warrants for traffic signals has been satisfied. An extract of the Roads and Maritime warrants for traffic signals from the Guide to Traffic Signals Design is presented below:

> *As a guide, a signalised intersection may be considered if one of the following warrants is met.*
>
> *(a) Traffic demand:*
>
> *For each of four one-hour periods of an average day:*
>
> *(i) the major road flow exceeds 600 vehicles/hour in each direction; and*
>
> *(ii) the minor road flow exceeds 200 vehicles/hour in one direction.*
>
> *OR*
>
> *(b) Continuous traffic:*
>
> *For each of four one-hour periods of an average day:*
>
> *(i) the major road flow exceeds 900 vehicles/hour in each direction; and*
>
> *(ii) the minor road flow exceeds 100 vehicles/hour in one direction; and*
>
> *(iii) the speed of traffic on the major road or limited sight distance from the minor road causes undue delay or hazard to the minor road vehicles; and*
>
> *(iv) there is no other nearby traffic signal site easily accessible to the minor road vehicles.*
>
> *OR*
>
> *(c) Pedestrian safety:*
>
> *For each of four one-hour periods of an average day:*
>
> *(i) the pedestrian flow crossing the major road exceeds 150 persons/hour; and*
>
> *(ii) the major road flow exceeds 600 vehicles/hour in each direction or, where there is a central median of at least 1.2 m wide, 1000 vehicles/hour in each direction.*
>
> *OR*
>
> *(d) Pedestrian safety – high speed road:*
>
> *For each of four one-hour periods of an average day:*
>
> *(i) the pedestrian flow crossing the major road exceeds 150 persons/hour; and*

(ii) the major road flow exceeds 450 vehicles/hour in each direction or, where there is a central median of at least 1.2 m wide, 750 vehicles/hour in each direction; and

(iii) the 85th percentile speed on the major road exceeds 75 km/h.

OR

(e) Crashes:

(i) The intersection has been the site of an average of three or more reported tow-away or casualty traffic accidents per year over a three year period, where the traffic accidents could have been prevented by traffic signals; and

(ii) the traffic flows are at least 80% of the appropriate flow warrants.

From the above, the Roads and Maritime warrants consist of five separate sections whereby compliance with only one of these sections is required for the consideration of traffic signals.

Under the "Traffic Demand" warrant, the major road flow is required to exceed 600 vph in each of four one-hour periods in a typical day. In addition, the minor road flow is required to exceed 200 vph in each of four one-hour periods.

With the inclusion of the additional traffic associated with the subject development, the two-way Thursday evening peak hour and Saturday peak hour flows on Rocky Point Road would be approximately 2,455 vph and 1,903 vph, respectively. Similarly, the two-way Thursday evening and Saturday peak hour flows on Targo Road would be 559 vph and 625 vph, respectively.

Therefore, future traffic flows at this intersection are such that it would meet the "Traffic Demand" warrant for traffic signals in which each of four hourly flows on Rocky Point Road and Targo Road would exceed the volumes specified in the warrant.

Similarly, the Ramsgate Road and Targo Road intersection would also meet the "Traffic Demand" warrant for traffic signals at this intersection as well.

7 Summary and Conclusion

This traffic and parking assessment report accompanies a planning proposal to Georges River Council. The planning proposal seeks approval for additional development uplift on the site located at 193-201 Rocky Point Road, 2-6 Targo Road and 66-68 Ramsgate Road, Ramsgate.

For traffic analytical purposes, the following development mix has been assessed:

- 197 residential dwellings including:
  - 80 x 1-bedroom units
  - 99 x 2-bedroom units
  - 18 x 3-bedroom units
- 4,680m^2 of supermarket use and liquor shop
- 1,940m^2 of retail use
- 130m^2 of medical suites, and
- 97m^2 of community centre.

The development yield will be subject to further refinements but is not expected to change significantly.

The salient findings from this study and analysis in the foregoing sections are provided below.

- The proposed development envisaged in the planning proposal requires a minimum of 475 car parking spaces to be provided based on the DCP parking requirements. It is proposed to comply with the specified DCP car parking provision (with additional parking provided to replace the loss of existing kerbside parking spaces as a result of the proposed development).
- The proposed development envisaged in the planning proposal is expected generate 673 vph and 735 vph for the Thursday evening and Saturday peak periods respectively.
- The traffic assessment of the proposed development has taken into consideration the traffic effects of the proposed F6 Extension Stage 1.
- The existing operation of the Rocky Point Road intersection with Targo Road is adversely affected by southbound queue on Rocky Point Road. This is an existing regional traffic issue as the queue originates outside of the Ramsgate town centre.
- The intersection of Rocky Point Road with Targo Road would be required to be upgraded to traffic signals to facilitate the right turn movements into and out of Targo Road. The future traffic volumes would meet the traffic signals warrant specified in the Roads and Maritime's Guide to Traffic Signals Design.
- The Ramsgate Road intersection with Targo Road would also be required to be upgraded to traffic signals to allow the right turn movement from Ramsgate Road into

Targo Road. The future traffic volumes at this intersection would also meet the traffic signals warrant.

- The suggested future road network involves signalisation of the Rocky Point Road and Targo Road intersection as well as the signalisation of the Ramsgate Road intersection with Targo Road and the removal of existing kerbside car parking spaces on Rocky Point Road. The proposed improvement works would result in satisfactory intersection performance of assessed intersections.

Overall, our assessment of the indicative development scheme that accompanies the planning proposal concludes that the traffic and parking impacts of the proposed development are expected to be satisfactory subject to the future signalisation of the Targo Road intersections with Rocky Point Road and Ramsgate Road.

Appendix A

RMS Meeting – Record of Meeting

Record of Meeting

Meeting Date:	21 April 2017
Meeting Time:	10:00am
Venue:	RMS, 27-31 Argyle Street, Parramatta
TTPP REF:	16125
Subject:	Planning Proposal: 193 - 199 Rocky Point Rd & 66-68 Ramsgate Rd & 2 - 6 Targo Rd, Ramsgate
Attendees:	James Hall, RMS (JH) Nicolas Kocoski, RMS (NK) Moosa Taouk, Capital Hill Group (MK) Kevin Driver, Turner (KD) Michael Lee, TTPP (ML)

- Ramsgate Road Access
  - RMS requires all vehicle accessed provided off Ramsgate to be restricted to left-in/left-out movements only
  - Options available to implement the turning restrictions:
    - Median island along the centre of Ramsgate Road. The island will need to be a minimum of 0.9m in width. It was noted in the meeting this option is not feasible as a 0.9m wide island cannot be provided within the existing road reserve and Ramsgate Road cannot be widened as there are heritage listed buildings on one side of Ramsgate Road and the proponent has not control over land that are required for road widening.
    - Channelisation of the driveways so that vehicles can only turn left in and left out to/from the site. It was noted in the meeting that this option would impact on pedestrians on Ramsgate Road.
    - Signage to restrict vehicles to left-in and left-out movements. However, RMS requires the section of the driveway adjacent to Ramsgate Road (up to 5m) to be dedicated as a public road so that the signage can be legally enforced. This will require agreement from all stakeholders including Council and adjacent land owners.
    - RMS also suggested an alternative option involving the creation of a one-way link connecting to Ramsgate Road to Rocky Point Road. This one-way link would permit entry movement from Ramsgate Road and exit movement would be via Rocky Point Road. The one-way link can be provided as shared zone where pedestrian and vehicular traffic share the road space. Within a shared zone, it is required by law that vehicle drivers are required to give way to pedestrians.
- RMS indicated that they have no issues with the proposed vehicle access off Ramsgate Road for the loading dock as it is expected to create low volume of traffic.

- Targo Road Access
  - RMS did not raise any issues in relation to the proposed Targo Road access.
  - RMS raised concerns regarding the available capacity to accommodate the additional development traffic from the planning proposal in particular the additional right turn volume from Rocky Point Road to Targo Road. Due to the available kerbside parking restricting southbound movement on Rocky Point Road to one lane, RMS is concerned that the right turn movement may block the southbound movement resulting in queues on Rocky Point Road.
  - It was pointed to RMS that the planning proposal is for an additional 50-100 residential apartments and that the retail uses are consistent with existing planning controls.
  - RMS requires SIDRA network modelling to determine the most appropriate treatment of Rocky Point Road and Targo Road intersection. Provision of traffic signals shall be a last resort and the proponent would need to demonstrate to RMS satisfaction that the provision of traffic signals is warranted and would not have a detrimental impact on the performance and travel times for motorists on Rocky Point Road.
- The meeting closed at 11:15am.

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