



**AMENDED MASTERPLAN TRAFFIC AND PARKING IMPACT ASSESSMENT OF
THE PROPOSED MIXED USE DEVELOPMENT
AT 13 ENDEAVOUR ROAD, CARINGBAH**



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Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

Development Type: **Mixed Use Development**

Site Address: **13 Endeavour Road, Caringbah**

Prepared for: **Aliro Group**

Document reference: **200318.01FA / 200318.04FA**

Masterplan Traffic and Parking Impact Assessment - 200318.01FA

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Amended Masterplan Traffic and Parking Impact Assessment - 200318.04FA

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1 INTRODUCTION

McLaren Traffic Engineering was commissioned by Aliro Group to provide an Amended Masterplan Traffic and Parking Impact Assessment of the proposed Mixed Use Development at 13 Endeavour Road, Caringbah as depicted in **Annexure A** for reference. The subject site was previously operated by Toyota, with the existing site now operationally redundant and will be replaced with future development, the subject of this masterplan report.

It may be necessary to undertake further traffic modelling along the corridor of Captain Cook Drive in consultation with the relevant road authorities (Transport for New South Wales and Sutherland Shire Council) for areas that are not covered within this report.

This amended Masterplan Traffic Report relates to the change of scale as a result of the removal of the retail component of the site, that was originally proposed as part of the masterplan.

1.1 Description and Scale of Development

The proposed masterplan development consists of a variety of land uses which will be assessed to have the following scale relevant to this traffic and parking report as shown in **Table 1**.

TABLE 1: PROPOSED MASTERPLAN SCALE

Land Use	Masterplan Scale
Industrial	1,825m ² GFA
Ancillary Industrial Office	3,943m ² GFA
Warehouse	24,033m ² GFA
Ancillary Warehouse Office	7,285m ² GFA
Commercial Office & Business Premises	97,173m ² GFA
Food and Beverage	3,708m ² GFA
Recreation	861m ²
Hotel	5,186m ² GFA 125 rooms & 20 staff

It should be noted that the assessed scale within this report is preliminary and subject to change as the development progresses. This Traffic and Parking Impact Assessment report is limited with respect to external traffic impact to the local road network within close proximity to the site and may be further assessed under the Masterplan scale should the need arise with regards to regional impacts.

As part of the assessment, various vehicular access scenarios will be considered for the proposed Masterplan development and is detailed further in **Section 4.3** of this report. The access arrangements for the subject development will be consistent through all assessed scenarios, being an egress driveway onto Endeavour Road at the south-western portion of

the site. A two-way driveway from Endeavour Road at the north-western portion of the site and access from the intersection of Captain Cook Drive / Gannons Road.

1.2 State Environmental Planning Policy (Infrastructure) 2007

The proposed development does qualify as a traffic generating development with relevant size and/or capacity under *Clause 104* of the *SEPP (Infrastructure) 2007*. Accordingly, formal referral to the Transport for New South Wales (TfNSW) is necessary as part of the proposal.

1.3 Site Description

The existing site consists of a number of office buildings around the site and a large Industrial building on the western portion of the site. The existing facilities on-site are generally consistent with motor showroom and dealership operations, whereby parts delivery, car servicing, fleet management and other ancillary operations are undertaken. The existing site provides 722 car parking spaces. A breakdown of the floor areas associated with the existing use of the site is provided in **Table 2** below.

TABLE 2: EXISTING SCALE OF DEVELOPMENT

Land Use	Masterplan Scale
Industrial	27,880m ² GFA
Office Use	13,954m ² GFA

The subject site is zoned *B7 – Business Park* under Sutherland Shire Council's *Local Environmental Plan 2015* and is subject to their planning controls. It is expected that any land not permissible in the current zone as part of the Masterplan proposal will be subject to a rezoning application to ensure the proposed land uses are permissible on the site and that height requirements of the site comply with Council controls.

The proposed development is generally surrounded by industrial uses to the north, residential developments to the south-west, recreational facilities to the south-east (Woollooware Golf Club and playing fields) and east (Solander Grounds) and Shark Park and Leagues Club to the east, with Woollooware Bay to the north-east. Caringbah Train Station is located approximately 1.1km to the south-west and Woollooware Train Station is located approximately 1.5km to the south-east.

The site currently has three (3) existing vehicular access points, one (1) from Captain Cook Drive via the roundabout intersection of Captain Cook Drive / Gannons Road and two (2) from Endeavour Road. In addition, Solander Grounds adjacent to the site has vehicle access into the site via a one-way internal egress road facilitating access to the roundabout intersection of Gannons Road / Captain Cook Drive.

1.4 Site Context

The location of the site is shown in aerial imagery and a street map in **Figure 1** and **Figure 2** respectively.



FIGURE 1: SITE CONTEXT – AERIAL PHOTO

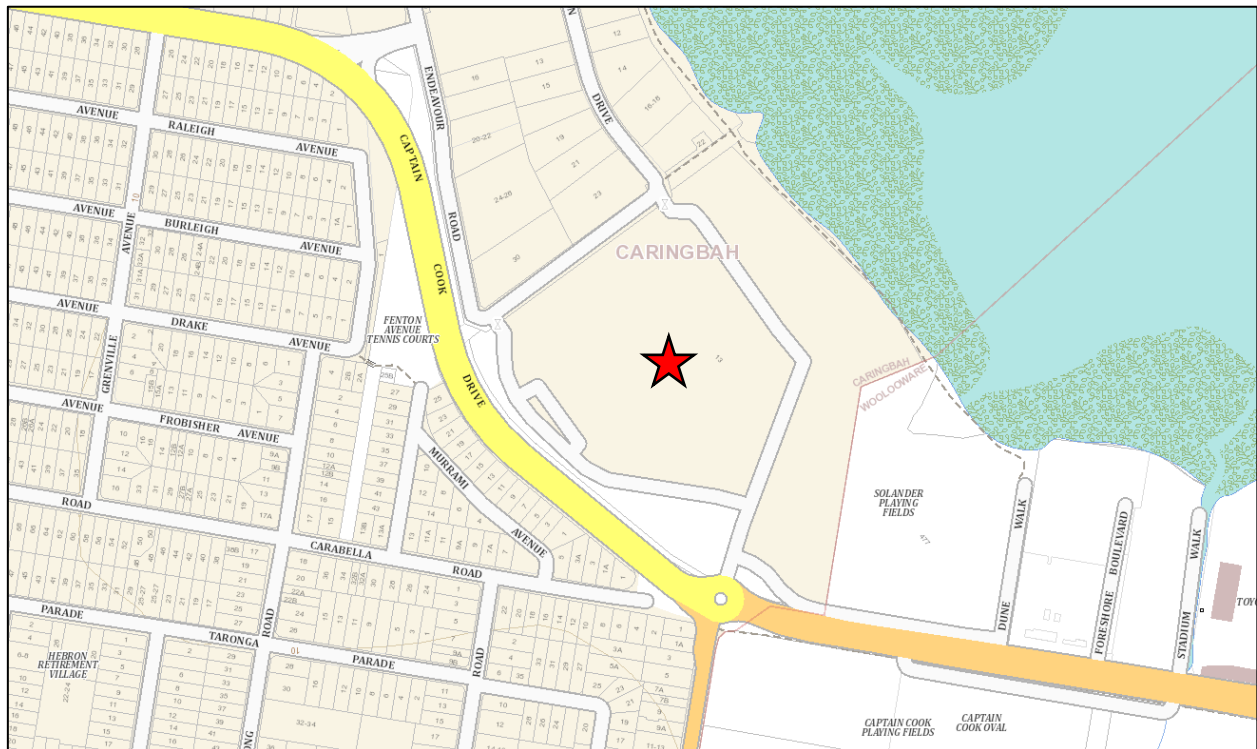


FIGURE 2: SITE CONTEXT – STREET MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 *Road Hierarchy*

The road network servicing the site has characteristics as described in the following sub-sections.

2.1.1 Captain Cook Drive - West of Gannons Road

- Classified State Main Road (No 662);
- Approximately 23m width carriageway, facilitating three traffic flow lanes in each direction, which reduces to two lanes on the approach to the roundabout of Captain Cook Drive / Gannons Road for vehicles travelling eastbound. Kerbside parking is permissible on both sides of the road but is not typically used;
- Signposted 70km/h to the east of Endeavour Road and 60km/h to the west of Endeavour Road;
- Unrestricted kerbside parking permitted along both sides of the road. Provision of “*No Parking*” signage along the southern side of Captain Cook Drive, within proximity to Gannons Road. Kerbside parking along both sides of Captain Cook Drive is typically only utilised between Gannons Road and Endeavour Road during game days at Shark Park;
- No pedestrian facilities are provided between Gannons Road to Endeavour Road;
- Approved 25/26m B-double Route.

2.1.2 Captain Cook Drive - East of Gannons Road

- Classified Regional Secondary Road (No. 2075);
- Approximately 21m width carriageway, facilitating two traffic flow lanes in each direction and on road bicycle lanes on both sides of the road;
- Signposted 70km/h speed limit;
- ‘*No Stopping*’ restrictions located on both sides of the road;
- Provision of off-road bicycle and pedestrian facilities on the southern side of the road within the verge;
- Approved 25/26m B-double Route.

2.1.3 Gannons Road

- Unclassified Regional Road (No 7031);
- Approximately 12m width carriageway, facilitating one traffic flow lane in each direction and a parking lane on both sides of the road;
- Signposted 60km/h speed limit;
- Unrestricted kerbside parking permitted along both sides of the road outside of “*No Stopping*” and “*Bus Zone*” signage;

- Provision of off-road bicycle and pedestrian facilities on the eastern side of the road within the verge.

2.1.4 Endeavour Road

- Unclassified Local Road;
- Approximately 12m width carriageway, facilitating one traffic flow lane in each direction and kerbside on both sides of the road;
- No speed limit signposted – 50 km/h speed limit applies;
- Approved 25/26m B-double Route;
- Unrestricted kerbside parking available on both sides of the road;
- No pedestrian facilities are provided on either side of the road.

2.2 **Existing Traffic Management**

- Roundabout controlled intersection Captain Cook Drive / Gannons Road;
- Signalised controlled intersection of The Kingsway / Gannons Road;
- Signalised controlled intersection of Cawarra Road / Captain Cook Drive;
- Priority controlled left in / left out intersection of Dune Walk / Captain Cook Drive
- Signalised controlled intersection of Captain Cook Drive / Foreshore Boulevard;
- Signalised controlled intersection of Captain Cook Drive / Woollooware Road;
- Give-way controlled intersection of Captain Cook Drive / Endeavour Road designed as a seagull intersection;
- Give-way controlled intersection of Endeavour Road / Endeavour Road;
- Give-way controlled intersection of Endeavour Road / Northumberland Road / Resolution Drive.

2.3 **Existing Traffic Volumes**

Intersection traffic surveys were conducted at the intersections of Captain Cook Drive / Gannons Road and Captain Cook Drive / Endeavour Road on Tuesday the 4th of February 2020, between 7:00am to 9:00am and 4:00pm to 6:00pm, representing a typical weekday. The detailed survey results are reproduced in **Annexure B** for reference. The following are relevant to note with respect to collected traffic data:

- Endeavour Road / Captain Cook Drive:
 - AM peak hour period occurred between 7:30am to 8:30am;
 - PM peak hour period occurred between 4:30pm to 5:30pm.
- Captain Cook Drive / Gannons Road:
 - AM peak hour period occurred between 8:00am to 9:00am;
 - PM peak hour period occurred between 4:30pm to 5:30pm.

It should be noted that at the time of surveys being undertaken, construction was underway along Captain Cook Drive along the frontage of the Sharks development which had reduced the carriageway to a single traffic flow lane in each direction through the construction site. This may have had impacts on observed traffic flows at the intersection of Captain Cook Drive / Gannons Road. It should be noted that the total traffic volumes observed during a traffic survey on the 4th of November 2016 during the PM peak hour period (survey duration 4:00pm to 7:00pm) at the roundabout of Captain Cook Drive / Gannons Road had a total traffic flow of 3,500 vehicles through the roundabout during the PM peak hour period (4:30pm to 5:30pm), whilst the current survey data observed 3,328 vehicles through the roundabout during the PM peak hour period. This is likely a result of the subject site being unoccupied or displaced vehicle traffic to other routes as a result of construction activity along Captain Cook Drive.

A review of the data from the 4th of November 2016, which is reproduced in **Annexure B** for reference, against the current survey results in 2020 indicate that approach flows along Captain Cook Drive east were approximately 100 less in 2020 compared to the 2016 surveys and the approach flows along Captain Cook Drive to the west were 100 less in 2020 compared to the 2016 surveys. Further the left turn movement from Gannons Road into Captain Cook Drive was 100 more in 2020 compared to 2016, which is likely a result of the infrastructure upgrade at the signalised intersection of The Kingsway / Gannons Road (duplication of the right turn lane into Gannons Road which occurred in 2018).

In view of the above, it is considered that the construction activity in front of sharks would have limited impact upon the observed traffic volumes as the surveyed 2020 traffic volumes provide a peak traffic volume of 1,205 and 1,235 vehicles travelling westbound and eastbound respectively. These volumes are within midblock capacities for a single lane (unrestricted) and would be operating at Level of Service (LoS) D based upon the '*RMS Guide to Traffic Generating Developments 2002*'.

2.3.1 Existing Road Performance

The performance of the surrounding intersections under the existing 2020 traffic conditions has been assessed using SIDRA INTERSECTION 8.0, **Table 3** summarises the resultant intersection performance data, with full SIDRA results reproduced in **Annexure C**.

As individual intersection modelling is being undertaken (no network model, or microsimulation), the modelled time periods are as that outlined in **Section 2.3** above. Further, the intersection of Captain Cook Drive / Endeavour Road has been modelled as two (2) stages due to the existing seagull arrangement. In addition, on the review of the video footage of the traffic surveys during the AM and PM peak hour periods, the right turn movements into and out of Endeavour Road largely benefited from platooning effects from the signalised intersection of Cawarra Road / Captain Cook Drive which enabled vehicles to turn in large quantities, gaps between southbound platooning vehicles were observed to be up to 70 seconds. To incorporate platooning impacts, the extra bunching input has been used for vehicles travelling southbound along Captain Cook Drive at the intersection of Endeavour Road / Captain Cook Drive.

In addition to this, a review of the right turn movement from Endeavour Road has been undertaken, with the following site observations relevant to note:

- AM Observations:
 - During the AM peak hour period, some vehicles would attempt to turn right from Endeavour Road but chose to turn left onto Captain Cook Drive due to the opposing right turn movement into Endeavour Road.
 - There was no significant queuing observed for right turn movements from Endeavour Road.
 - There was overflow outside of the right turning lane into Endeavour Road, but only occurred occasionally.
- PM Observations
 - The right turn movement from Captain Cook Drive into Endeavour Road did not overflow.
 - The right turn movement from Endeavour Road onto Captain Cook Drive sometimes had queues that backed up to Endeavour Road which runs north south, but never extended past.

To reflect the above condition, specifically the right turn queue from Endeavour Road during the PM peak hour period, the gap acceptance parameter has been modified for right turn movements from Endeavour Road onto Captain Cook Drive. Default gap acceptance parameters results in 95th percentile queue lengths in excess of 400m for the right turn from Endeavour Road during the PM peak hour period, which does not occur.

TABLE 3: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8.0)

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Captain Cook Drive / Gannons Road	AM	0.649	7.8 (Worst: 17.4)	A (Worst: B)	Roundabout	UT from Captain Cook Drive (E)
	PM	0.65	7.9 (Worst: 17.5)	A (Worst: B)		UT from Captain Cook Drive (E)
Captain Cook Drive / Endeavour Road ⁽⁵⁾	AM	0.865	10 (Worst: 36.5)	N/A (Worst: C)	Give Way (Seagull)	RT from Endeavour Road (E)
	PM	0.856	10.1 (Worst: 75.1)	N/A (Worst: F)		RT from Endeavour Road (E)

NOTES:

- (1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- (3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
- (4) N/A – Intersection LoS and Major Road Approach LoS values are Not Applicable for two-way sign control since the average delay is not a good LoS measure due to zero delays associated with major through road movements.
- (5) Results are based upon Stage 1 only

As shown above, the roundabout intersection of Captain Cook Drive / Gannons Road is operating at Level of Service (LoS) “A” during both the AM and PM peak hour period. Whilst the intersection of Captain Cook Drive / Endeavour Road is operating with worst turning movement of LoS “C” and LoS “F” during the AM and PM peak hour period respectively.

The right turn movement from Endeavour Road onto Captain Cook Drive during the PM peak hour period is providing a reported 95th percentile queue length of 60m. This is consistent with observed conditions and as such the model can be used to forecast future development impacts.

A LoS “A” indicates the roundabout intersection is operating at a high level of efficiency, with low delays and spare capacity. A LoS “C” conditions indicates that an intersection is operating satisfactory with some spare capacity and moderate delays. A LoS “F” condition reflects forced flow, with long delays and queues. The right turn movement from Endeavour Road during the PM peak hour period is operating at LoS “F”, indicating that this movement is operating at capacity.

2.3.2 Existing Approved Road Environment

As mentioned in **Section 1**, the subject site is operationally redundant and had an approved scale as outlined in **Section 1.3**. The traffic generation of the existing site, relying upon the same traffic generation rates applied in **Section 4** of this report, results in the following traffic generation of the existing approved development as outlined in **Table 4** below.

TABLE 4: ESTIMATED TRAFFIC GENERATION – EXISTING APPROVAL

Use	Scale	Peak Period	Generation Rate	Trips	Split
Industrial	27,880m ² GFA	AM	1 per 100m ²	279 ⁽¹⁾	223 in, 56 out
		PM			56 in, 223 out
Commercial Office	13,954m ² GFA	AM	2 per 100m ²	279 ⁽¹⁾	223 in, 56 out
		PM			56 in, 223 out
TOTAL	-	AM	-	558	446 in, 112 out
		PM		558	112 in, 446 out

Note: (1) Assumes 80% inbound, 20% outbound during AM peak: Vice versa for PM peak.

As shown above the existing approved development is anticipated to generate **558** vehicle trips in the AM (446 in, 112 out) and PM (112 in, 446 out) peak hour periods. Adopting the same trip assignment as outlined in **Section 4.2** and local distribution as Scenario 1 results in the following intersection performances as summarised in **Table 5** below.

The detailed SIDRA results are reproduced in **Annexure C** for reference.

**TABLE 5: EXISTING PLUS APPROVED SCALE INTERSECTION PERFORMANCES
(SIDRA INTERSECTION 8.0)**

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement
EXISTING PERFORMANCE + EXISTING APPROVED SCALE						
Captain Cook Drive / Gannons Road	AM	0.73	8.9 (Worst: 19.8)	A (Worst: B)	Roundabout	UT from Captain Cook Drive (E)
	PM	0.72	11.8 (Worst: 29)	A (Worst: C)		UT from Captain Cook Drive (E)
Captain Cook Drive / Endeavour Road ⁽⁵⁾	AM	1.04	35.2 (Worst: >70)	N/A (Worst: F)	Give Way (Seagull)	RT from Endeavour Road (E)
	PM	0.93	13.3 (Worst: >70)	N/A (Worst: F)		RT from Endeavour Road (E)

NOTES:

- (1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- (3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
- (4) N/A – Intersection LoS and Major Road Approach LoS values are Not Applicable for two-way sign control since the average delay is not a good LoS measure due to zero delays associated with major through road movements.
- (5) Results are based upon Stage 1 only

As shown above, the intersection of Captain Cook Drive / Gannons Road is operating at Level of Service “A” under the existing approved scale conditions, indicating acceptable delays and spare capacity. The intersection of Captain Cook Drive / Endeavour Road is

operating with worst turning movements of LoS “F”. This indicates that the intersection of Endeavour Road / Captain Cook Drive requires an infrastructure upgrade. The failing turn movements relate to both right turns into Endeavour Road from Captain Cook Drive during the AM peak hour period and right turns out of Endeavour Road onto Captain Cook Drive during the PM peak hour period.

It should be noted that the results above are based upon nil (0) additional right turns from Captain Cook Drive into Endeavour Road and nil (0) additional right turns out of Endeavour Road onto Captain Cook Drive during both the AM and PM peak hour period. The reason for this is alternative access onto Captain Cook Drive is available at the intersection of Gannons Road / Captain Cook Drive / Site Access, which users of the site would use over the intersection of Captain Cook Drive / Endeavour Road due to the known difficulty of turning right from Endeavour Road onto Captain Cook Drive.

2.4 Public Transport

The subject site has access to existing bus stops (ID: 222938 & 2230173) located approximately 200m to the south and 330m to the east of the roundabout intersection of Gannons Road / Captain Cook Drive. The bus stops service existing bus route 985 (Cronulla to Miranda via Woollooware Bay) provided by Transdev NSW and provides services every 30 minutes during peak commuter periods and 60 minutes outside peak commuter periods. Further, an existing bus stop (ID: 2229141) is located approximately 330m to the south-west of the site on Taronga Parade. The bus stop services existing bus route 969 (Cronulla to Sutherland) provided by Transdev NSW and provides services every hour.

Caringbah Train Station and Woollooware Train Station are located via a 2.2km walking distance to the south-west and 2.3km walking distance to the south-east from the Gannons Road site access respectively. Both stations service the T4 – Eastern Suburbs and Illawarra Line, providing access between Cronulla and Bondi Junction via the Sydney CBD (Central Station and Town Hall Station). Train services are provided 10 – 15 minutes within commuter peak hour periods and 30 minutes outside commuter peak periods.

The location of the site subject to the surrounding public transport network is shown in **Figure 3** below.

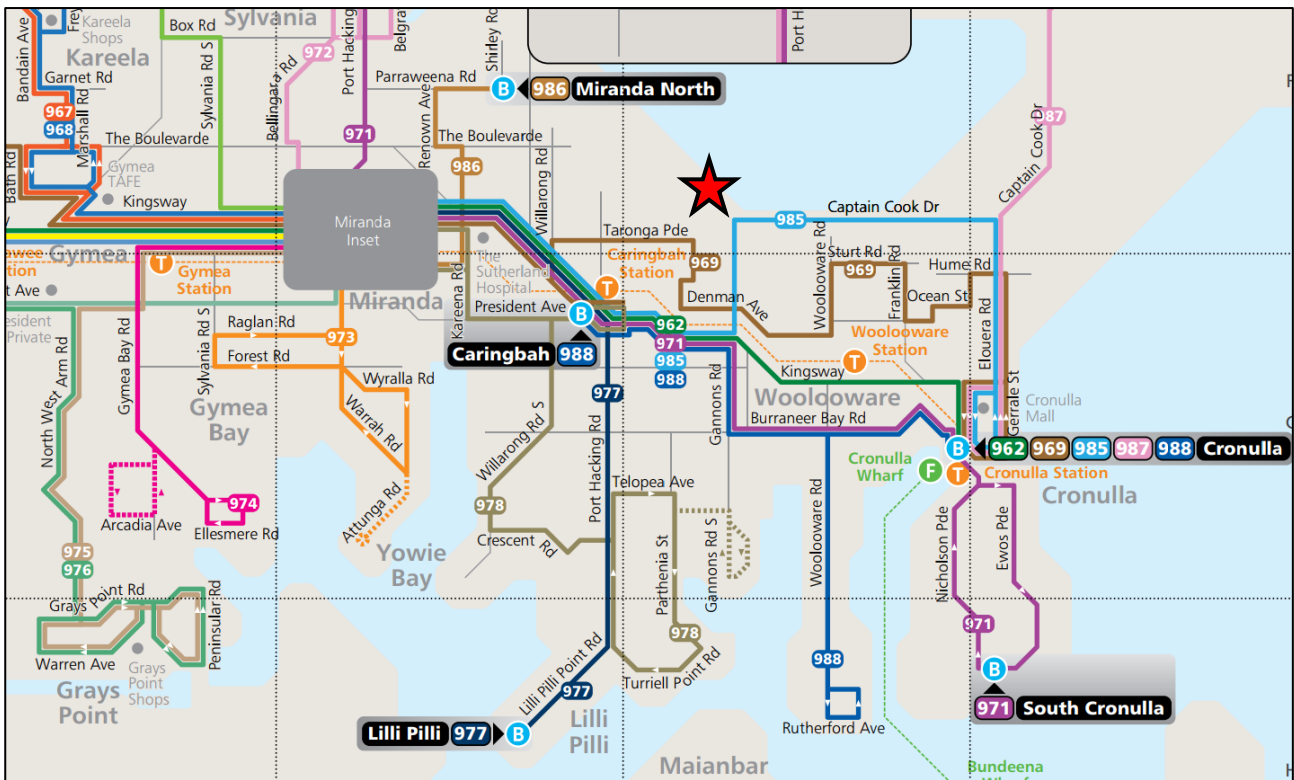


FIGURE 3: PUBLIC TRANSPORT NETWORK MAP

2.4.1 Pedestrian & Cycling Facilities

As detailed in **Section 2.1** there are a number of existing bicycle and pedestrian facilities within close proximity to the site along Captain Cook Drive which connect to nearby cycling routes within the Sutherland Shire. **Figure 4** below shows existing constructed bicycle routes. Bicycle routes have already been constructed within close proximity to the site, with the most recent construction completed along the eastern side of Gannons Road to the south of the site which provided shared pedestrian and bicycle facilities. As part of the masterplan development it is recommended that the site provide connectivity to existing pedestrian and bicycle routes to promote sustainable transport.

Draft Sutherland Shire Development Control Plan 2015 under the Environmental Planning & Assessment Act 1979

Sutherland Shire Bicycle Network Map

Reference to Chapter 35 of the
Draft Sutherland Shire Development Control Plan 2015

Ratio 1 : 95000



Legend

- Existing Bicycle Network
- Proposed Bicycle Network
- Existing Railway Corridor - All Railway Corridors
- Are Potential Off-Road Regional Routes
- DM Deferred Matter

NOTE: Not all routes have been constructed at this point in time. Some cycleways may be removed or added from the Proposed Bicycle Network over time.

Relationship with other Plans:
These maps are to be read in conjunction with
Draft Sutherland Shire Development Control Plan 2015.

Sutherland Shire Council
Environmental Planning Unit

Council File Number: 2015/210250

This map is part of the set of maps included with the DCP.
It was prepared on 23/03/15.
It was in effect on TBA.

Action	Date of Original	Amendment No.	1	2	3
Endorse draft					
Public Notice (Draft)					
Exhibition Start					
Exhibition Finish					
Adopt Final					
Public Notice (Final)					
In Effect					

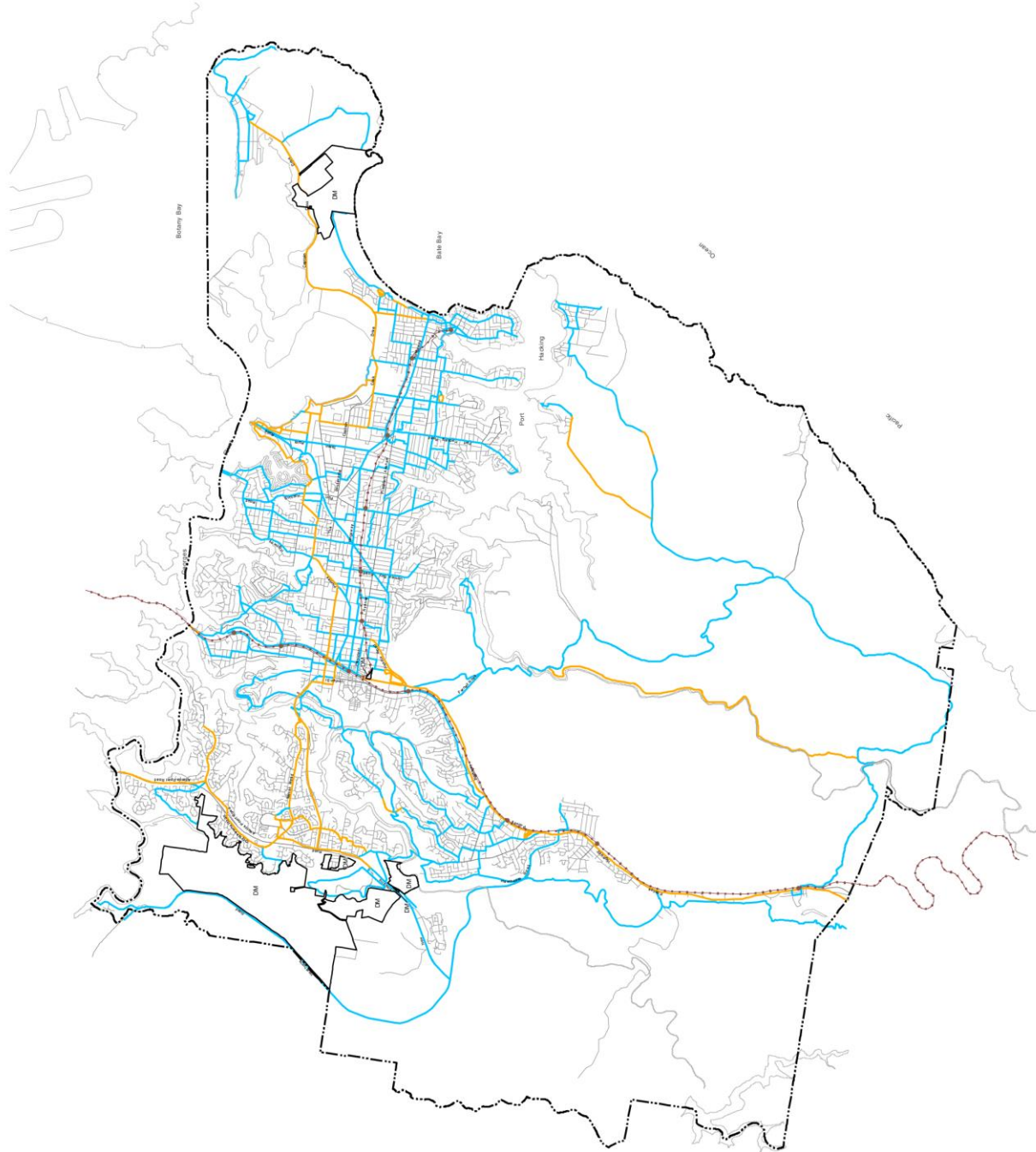


FIGURE 4: SUTHERLAND SHIRE COUNCIL BICYCLE NETWORK MAP

2.5 Future Road and Infrastructure Upgrades

Cronulla Sharks Leagues Club has undergone a four stage redevelopment consisting of residential apartments and retail land uses. Currently Stage 1 and 2 are completed and would have been captured within the existing 2020 intersection traffic surveys, whilst Stage 3 and Stage 4 are incomplete and under construction. Any future development on the subject site should consider additional traffic loads under the approved Sharks development.

Stage 3 and Stage 4 of the sharks redevelopment consist of the following based upon the *Traffic & Parking Impact Assessment Report* dated 10th February 2020 by *McLaren Traffic Engineering (18574.01FF)* and the *Traffic & Parking Impact Assessment Report* dated 11th August 2016 by *McLaren Traffic Engineering (15084.05FC)* :

- Stage 3:
 - 238 high density residential developments.
- Stage 4:
 - 255 high density residential developments;
 - 38 hotel rooms;
 - 18,343m² Shopping Centre;
 - Revitalised Sharks Leagues Club (4,352m² GFA).

The traffic generation as a result of the approved Stage 3 and Stage 4 development is summarised below in **Table 6**.

TABLE 6: TRAFFIC GENERATION TRIPS PER LAND USE (2013 GUIDELINES)

Land Use	Rate ⁽¹⁾ PM Peak Hour	Scale ⁽¹⁾	Traffic Generation AM Peak Hour (Trips per hour) ⁽²⁾	Traffic Generation PM Peak Hour (Trips per hour)
High-Density Residential	0.19 trips / unit	493	94	94
Shopping Centre	6.7 trips / 100m ² GLFA	18,343m ²	615	1229
Club	168 trips / 8,500m ²	4,352m ²	43	86
Hotel	0.5 trips / room	38	19	19
Total	-	-	771	1417

Note: 1- Rates above and scale have been adopted from *MCLaren Traffic Engineering (18574.01FF)* and the *Traffic & Parking Impact Assessment Report dated 11th August 2016 by MCLaren Traffic Engineering (15084.05FC)*

2 – Retail AM peak hour trip rate is assumed to be half of the PM peak hour period

The above traffic generation has been added to the existing traffic volumes and existing traffic volumes plus existing approved scale based upon the trip distribution as outlined within the *Traffic & Parking Impact Assessment Report* dated 10th February 2020 by *MCLaren Traffic Engineering (18574.01FF)*. The results of the SIDRA assessment are reproduced in **Table 7** below, with detailed SIDRA outputs reproduced in **Annexure C** for reference.

TABLE 7: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8.0)

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾⁽⁵⁾ (sec/vehicle)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement
EXISTING PERFORMANCE						
Captain Cook Drive / Gannons Road	AM	0.649	7.8 (Worst: 17.4)	A (Worst: B)	Roundabout	UT from Captain Cook Drive (E)
	PM	0.65	7.9 (Worst: 17.5)	A (Worst: B)		UT from Captain Cook Drive (E)
Captain Cook Drive / Endeavour Road ⁽⁵⁾	AM	0.865	10 (Worst: 36.5)	N/A (Worst: C)	Give Way (Seagull)	RT from Endeavour Road (E)
	PM	0.856	10.1 (Worst: 75.1)	N/A (Worst: F)		RT from Endeavour Road (E)
EXISTING PERFORMANCE + SHARKS STAGE 3 & 4						
Gannons Road / Captain Cook Drive	AM	0.74	8.8 (Worst: 18.7)	A (Worst: B)	Roundabout	U-Turn from Captain Cook Drive (E)
	PM	0.75	9.4 (Worst: 19.2)	A (Worst: B)		
Captain Cook Drive / Endeavour Road	AM	0.95	15.8 (Worst: 47.3)	N/A (Worst: D)	Give Way (Seagull)	RT from Captain Cook Drive (S)
	PM	1.01	19.2 (Worst: >70)	N/A (Worst: F)		RT from Endeavour Road (E)
EXISTING PERFORMANCE + SHARKS STAGE 3 & 4 + Existing Approved Scale						
Gannons Road / Captain Cook Drive	AM	0.82	11 (Worst: 22.8)	A (Worst: B)	Roundabout	U-Turn from Captain Cook Drive (E)
	PM	0.95	23.2 (Worst: 86)	B (Worst: F)		RT from Site Access (N)
Captain Cook Drive / Endeavour Road	AM	1.15	79.5 (Worst: >70)	N/A (Worst: F)	Give Way (Seagull)	RT from Captain Cook Drive (S)
	PM	1.11	28.9 (Worst: >70)	N/A (Worst: F)		RT from Endeavour Road (E)

NOTES:

- (1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- (3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
- (4) Intersection LOS and Major Road Approach LoS are not applicable (N/A) for two-way sign control since the average delays is not a good LOS measure due to zero delays associated with major road movements
- (5) Average delay of seagull intersection (Captain Cook Drive / Endeavour Road) is based upon Stage 1 only.

As shown above, the roundabout intersection of Gannons Road / Captain Cook Drive is expected to operate at LoS “A” during the future conditions once the Sharks development has been completed and occupied in both the AM and PM peak hour periods. Under the existing approved development scale and the sharks development the roundabout is expected to operate at LoS “B”, most noticeable is the degree of saturation during the PM peak hour period, which is approaching 1, indicating that the intersection is almost at full operating capacity.

The intersection of Captain Cook Drive / Endeavour Road is expected to operate with worst turning movement of LoS “D” during the AM peak hour period and LoS “F” during the PM peak hour period indicating that under the Sharks development the intersection is exceeding its capacity during the PM peak hour period and has reached capacity during the AM peak hour period. Under the existing approved development scale and the Sharks development the intersection is expected to operate with worse turning movement of LoS “F” in both the AM and PM peak hour periods. This indicates that the intersection of Endeavour Road / Captain Cook Drive requires an infrastructure upgrade. The failing turn movements relate to both right turns into Endeavour Road from Captain Cook Drive during the AM peak hour period and right turns out of Endeavour Road onto Captain Cook Drive during the PM peak hour period.

Of relevance to note is the degree of saturation for the intersection of Endeavour Road / Captain Cook Drive, which is equal to / exceeding 1, indicating that the right turn movement into Endeavour Road from Captain Cook Drive during the AM peak hour period and the right turn out of Endeavour Road during the PM peak hour period onto Captain Cook Drive is exceeding its operating capacity under the Sharks development scenario and Sharks development plus existing approved scale scenario. Considering this, the intersection of Endeavour Road / Captain Cook Drive will require an infrastructure upgrade.

3 PARKING ASSESSMENT

3.1 *Car Parking Provision*

Reference is made to *Sutherland Shire Council's Development Control Plan 2015 - Chapter 27 – B7 Business Park & Chapter 36 – Vehicular Access, Traffic, Parking and Bicycles* which outlines the applicable car parking rates for the proposed mixed-use development.

Chapter 27 – Section 9 – Parking

Industrial Premises

1 space per 100m², with a minimum of 2 spaces for each industrial unit.

Any ancillary office component to an industrial development shall provide 1 space per 30m² of gross floor area.

Office and Business Premises

1 space per 45m² GFA

Retail Premises

1 space per 45m² GFA

Warehouse or distributions centres

1 space per 300m²

Chapter 36 – Table 1 – Car Parking Numbers

Hotel or Motel accommodation

1 space per 4 rooms; plus,

1 space per 2 employees

It should be noted that to provide a conservative assessment, the ancillary office component for warehouse land uses will be assessed as industrial ancillary office space (i.e. 1 space per 30m² GFA). The parking requirements for the site are summarised in **Table 8** below.

The car parking rates outlined within Council's DCP are deemed appropriate for the subject site, considering the lack of available alternative transport modes, specifically rail facilities. Typically, office car parking rates within close proximity to train facilities attempt to reduce vehicular traffic on the road network and as such allow for a reduced car parking rate between 1 space per 60m² to 1 space per 80m². The subject site does not benefit from close proximity to heavy or light rail high occupancy transport mode facilities and is largely isolated, as such the Council car parking rates are deemed an acceptable representation of actual car parking demand of the site.

TABLE 8: DCP CAR PARKING REQUIREMENTS - MASTERPLAN

Land Use	Scale	Rate	Parking Required
Industrial	1,825m ² GFA	1 per 100m ² GFA	18.25
Industrial Ancillary Office	3,943m ² GFA	1 per 30m ² GFA	131.4
Warehouse	24,033m ² GFA	1 per 300m ² GFA	80.1
Warehouse Ancillary Office	7,285m ² GFA	1 per 30m ² GFA	242.8
Commercial Office	97,173m ² GFA	1 per 45m ² GFA	2,159.4
Food and Beverage	3,708m ² GFA	1 per 45m ² GFA	82.4
Hotel	125 rooms	1 per 4 rooms	31.3
	20 staff ⁽¹⁾	1 per 2 staff	10
Total	-	-	2,756

Note: 1 – Staff numbers are estimated / assumed and will be required to be determined in detail during the DA stage

As shown above the site is expected to provide **2,756** car parking spaces to comply with Council's car parking requirements for the Masterplan Scale. A reduction in car parking provision may be supported with consideration to shared parking arrangements and an assessment of the temporal variations in peak parking demand of the various uses of the site.

The proposed masterplan development indicates the provision of **1,448** car parking spaces, a shortfall of **1,308** car parking spaces. Considering the proposed land uses, there are no land uses with different peak parking demand periods, such that a lower number of car parking spaces could be justified. The only discount that could be supported is the reduction in food and beverage car parking spaces, adopting the assumption that the provision of food and beverage facilities serves the office component of the site and could be considered ancillary, with the exception to staff car parking demand for the food and beverage land uses.

Adopting a 50% reduction in the car parking requirements for the food and beverage land use results in a reduction of 41 spaces, reducing to a car parking requirement of **2,715**, which is a shortfall of **1,267** car parking spaces. This is still a significant shortfall in provision of car parking and as such the development should provide additional car parking or investigate alternative solutions / modes of transport to and from the site. The site should investigate the following:

- Expanded bus services along Captain Cook Drive and provision of a new bus stop & deviated service within the site;
- Connect to existing bicycle and pedestrian facilities, including links to existing train stations;
- Restriction to staff density within the site, such as a percentage of all workers working from home:
 - Enforcement and monitoring of this would not be possible.
- Investigate light rail facilities:
 - This recommendation is not feasible and would be required to be part of a much larger scheme and require consultation with State and relevant road authorities.

3.2 Disabled Car Parking

Reference is made to the *National Construction Code 2019 (NCC) – Volume 1 - Building Code of Australia's (BCA's) Table D3.5* which designates the following building classes and disabled parking rates to the proposed development uses. The appropriate disabled car parking rates is presented in **Table 9**.

TABLE 9: DISABLED PARKING REQUIREMENTS - MASTERPLAN

Land Use	Building Class (NCC / BCA)	Rate (Table D3.5)	Car Spaces Required ⁽¹⁾	Disabled Parking Required ⁽²⁾
Industrial	Class 8	1 per 100 spaces	18.25	1
Industrial Ancillary Office	Class 5	1 per 100 spaces	131.4	2
Warehouse	Class 7b	1 per 100 spaces	80.1	1
Warehouse Ancillary Office	Class 5	1 per 100 spaces	242.8	3
Commercial Office	Class 5	1 per 100 spaces	2,159.4	22
Food and Beverage	Class 6	1 per 50 spaces	82.4	2
Hotel	Class 3	1 per 100 spaces ⁽³⁾	31.3	1
Total	-	-	-	32

Notes: (1) Refer to **Table 8**.

(2) Requirement rounded up to nearest whole number for each individual use.

(3) Rate applied as proposed number of disabled hotels rooms is not available.

It is expected that each building of the masterplan will be assessed at development application stage and will provide the appropriate provision of disabled car parking spaces for each development stage.

3.3 Motorcycle Parking Requirements

Reference is made to *Sutherland Shire Council's Development Control Plan 2015 - Chapter 36 – Vehicular Access, Traffic, Parking and Bicycles* which states “Motor cycle parking shall be provided for all non residential development at a rate of 1 motorcycle space per 25 car spaces or part thereof”.

Application of this rate results in a requirement of **111** (2,756/25) motorcycle spaces for the proposed masterplan. It is noted that *Chapter 27 – B7 Business Park* of the DCP does not outline motorcycle parking requirements, which is the relevant DCP chapter for the subject site, as such the site does not require the provision of motorcycle facilities but considering the shortfall of car parking spaces, motorcycle parking should be provided.

3.4 Bicycle Parking Requirements

Reference is made to *Sutherland Shire Council's Development Control Plan 2015 – Chapter 36 – Vehicular Access, Traffic, Parking and Bicycles & Chapter 27 – B7 Business Park* which state “Bicycle parking spaces must be provided at the rate of 1 space per 10 car parking spaces for the first 200 car spaces, then 1 space per 20 parking spaces thereafter”.

Application of this rate results in a requirement of **148** bicycle spaces for the proposed Masterplan scale. It is expected that the site will provide compliant bicycle facilities at the development application stage.

3.5 Servicing & Loading

Reference is made to Council's DCP which does not designate specific vehicle sizes required for servicing and loading, although Council's DCP does reference the *RMS Guide to Traffic Generating Developments* for design vehicles. Furthermore, Council requires all servicing and loading be undertaken on-site, with vehicles to achieve forward entry and forward exit from the site.

Reference is made to the *RMS Guide to Traffic Generating Developments 2002*, as adopted by Transport for New South Wales (TfNSW), which states the following regarding servicing and loading vehicle provision applicable to the proposal:

Table 5.1 – Provision of areas for delivery and service vehicles

Commercial premises (50% of spaces adequate for trucks)

< 20,000m ² GFA	1 space per 4,000m ² GFA
> 20,000m ² GFA	5+ 1 space per 8,000m ² over 20,000m ²

Supermarkets, shops and restaurants (all spaces adequate for trucks)

< 2,000m ² GFA	1 space per 400m ² GFA
> 2,000m ² GFA	5 + 1 space per 1,000m ² over 2,000m ²

Wholesale, Industrial (all spaces adequate for trucks)

< 8,000m ² GFA	1 space per 800m ²
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> 8,000m² GFA 10 + 1 space per 1,000m² over 8,000m²

Hotels and Motels (50% of spaces adequate for trucks)

< 200 bedrooms or bedroom suites 1 space per 50 bedrooms

Plus

1 space per 1,000m² of public area set aside for bar, tavern, lounge and restaurant,

Other uses (50% of spaces adequate for trucks)

1 space per 2,000m²

The servicing and loading provision requirements for the Masterplan is detailed in **Table 10** below. It is noted that only the truck provision has been shown in the following tables, whereby servicing vehicles sized up to an Australian Standard B99 vehicle can temporarily use standard car parking spaces.

Further, the ancillary industrial office and ancillary warehouse office components are not included in the below table, as loading facilities for these components can be shared with the Warehouse and Industrial requirements.

TABLE 10: SERVICING AND LOADING PROVISION - MASTERPLAN

Land Use	Scale	Rate	Servicing and Loading Provision
Industrial	1,825m ² GFA	1 space per 800m ²	2
Warehouse	24,033m ² GFA	10 + 1 space per 1,000m ² over 8,000m ²	26
Commercial Office	97,173m ² GFA	50% of: 5 + 1 space per 8,000m ² over 20,000m ²	8
Food and Beverage	3,708m ² GFA	5 + 1 space per 1,000m ² over 2,000m ²	7
Hotel	125 rooms	50% of: 1 per 50 rooms	2
Total	-	-	45

It is noted that the servicing and loading provisions outlined above are recommended numbers only. The exact servicing and loading requirements, including vehicle sizes can be determined upon further detail of the proposed developments and users of the proposal. It is recommended that loading facilities are provided based upon the operational requirements for each building, with the potential for buildings to share on-site loading facilities under management plans.

Further, it is expected that waste collection will be conducted by private waste contractors who are to conduct waste collection operations on site within the allocated servicing and loading areas.

The largest vehicle expected to travel to and from the site will be a 12.5m length Heavy Rigid Vehicle for deliveries and waste collection for office and retail components. Industrial and Warehouse components of the site are likely to require the provision of 19m length Articulated Vehicles and is subject to each lots tenancy size and fitout. Access for service vehicles can be facilitated from any of the road frontages or access points subject to vehicle design swept paths tests and any imposed truck limits. In this regards heavy vehicle access will be from either Captain Cook Drive / Gannons Road or Endeavour Road. It should be noted that Endeavour Road is an existing approved B-double route

It is expected that due to the internal road layout, the site will be limited to access to and from the intersection of Gannons Road / Captain Cook Drive by vehicles up to a 12.5m length Heavy Rigid Vehicle, whilst 19m length Articulated Vehicles if required for the development will be restricted to Endeavour Road.

3.6 Vehicle Access & Parking / Loading

The car parking layout as depicted in **Annexure A**, will be assessed at the development application stage to ensure compliance with the relevant Australian Standards, namely AS2890.1:2004, AS2890.2:2018, AS2890.3:2015, AS2890.5:2020 and AS2890.6:2009.

If the masterplan proposal were to be approved, the driveway access, circulation areas and on-site parking areas of any development on the site would be required to comply. It would be a requirement at the Development Application and Construction Certificate stage that each Lot be checked for compliance with parking provision and driveway location requirements.

4 **TRAFFIC ASSESSMENT**

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

4.1 **Traffic Generation**

Traffic generation rates for the relevant land uses are provided in the *RTA Guide to Traffic Generating Developments (2002)* and recent supplements and are as follows:

RTA Guide

3.4.3 Hotels - tourist.

NSW based data is not available.

3.4.1 Motels.

Evening peak hour vehicle trips = 0.4 per unit.

3.5 Office and commercial.

Evening peak hour vehicle trips = 2 per 100m² gross floor area

3.6.1 Shopping centres.

$V(P) = 56 A(SS)$ vehicle trips per 1000m² GLFA

Where: A(SS): Specialty shops, secondary retail GLFA

3.7.2 Restaurants.

Evening peak hour vehicle trips = 5 per 100m² gross floor area.

3.10.1 Factories

Evening peak hour vehicle trips = 1 per 100m² gross floor area

3.10.2 Warehouses

Morning peak hour vehicle trips = 0.5 per 100m² gross floor area

TDI 2013/04a

Office blocks

Morning peak hour vehicle trips = 1.6 per 100m² gross floor area.

Evening peak hour vehicle trips = 1.2 per 100m² gross floor area.

In addition to the application of the above rates, the following assumptions have been incorporated in the calculations in order to conservatively estimate the traffic generation of the proposal:

- As no tourist hotel rate is provided in the RTA Guide, the motel rate has been applied as a worst case. A tourist hotel is likely to generate less traffic and is to be designed for tourist coaches and taxi areas within any porte cochere.

- The AM and PM rate for hotel uses is assumed to be equivalent;
- The RTA office rate has been applied as the proposed site has limited access to public transport services;
- The RTA office rate has been applied to the factory and warehouse ancillary office areas;
- Half of the office rate has been adopted for the food and beverage component of the site to consider traffic generated by staff to the food and beverage component which would occur at a lower density compared to offices:
 - No traffic generation for visitors to and from the food and beverage component has been adopted, as it is assumed that all visitors to the food and beverage component are wholly contained on-site and no external visitors come to the site specifically for the food and beverage component.
- The AM and PM rate for factory uses is assumed to be equivalent;
- The AM and PM rate for warehouse uses is assumed to be equivalent;

It is further noted that the research and surveys behind the RTA traffic generation rates for business parks are predominantly warehouse and factory use with ancillary office areas and not primarily office space as per the proposed masterplan scale. As such, the business park rates have not been applied to the proposed development, as they are deemed to not be applicable.

These assumptions in addition to the applicable RTA Guide traffic generation rates have been applied to the Masterplan scale, with expected traffic generation shown in **Table 11** below.

TABLE 11: ESTIMATED TRAFFIC GENERATION – MASTERPLAN

Use	Scale	Peak Period	Generation Rate	Trips	Split
Industrial	1,825m ² GFA	AM	1 per 100m ²	19 ⁽¹⁾	15 in, 4 out
		PM			4 in, 15 out
Industrial Ancillary Office	3,943m ² GFA	AM	2 per 100m ²	79 ⁽¹⁾	63 in, 16 out
		PM			16 in, 63 out
Warehouse	24,033m ² GFA	AM	0.5 per 100m ²	121 ⁽¹⁾	97 in, 24 out
		PM			24 in, 97 out
Warehouse Ancillary Office	7,285m ² GFA	AM	2 per 100m ²	146 ⁽¹⁾	117 in, 29 out
		PM			29 in, 117 out
Commercial Office	97,173m ² GFA	AM	2 per 100m ²	1,943 ⁽¹⁾	1,555 in, 388 out
		PM			388 in, 1,555 out
Food and Beverage	3,708m ² GFA	AM	1 per 100m ²	37 ⁽¹⁾	30 in, 7 out
		PM	1 per 100m ²		7 in, 30 out
Hotel	125 rooms	AM	0.4 per room	50 ⁽²⁾	25 in, 25 out
		PM			25 in, 25 out
TOTAL	-	AM	-	2,395	1,902 in, 493 out
		PM		2,395	493 in, 1,902 out

Note: (1) Assumes 80% inbound, 20% outbound during AM peak: Vice versa for PM peak.

(2) Assumes 50% inbound, 50% outbound during AM peak and PM peak hour period

As shown, the traffic generation associated with the proposal is in the order of **2,395** vehicle trips in the AM peak hour period (1,902 inbound, 493 outbound) and **2,395** vehicles trips in the PM peak hour period (493 inbound, 1,902 outbound).

The previously assessed masterplan report had a traffic generation of **2,602** vehicle trips in the AM peak hour period (2,067 inbound, 535 outbound) and **2,602** vehicles trips in the PM peak hour period (535 inbound, 2,067 outbound). As such, the amended proposal has a net decrease of 207 vehicle trips.

Considering this, the proposed masterplan development is not expected to have a greater traffic impact than what has already been assessed within the original Masterplan Traffic Report (MTE Report) prepared by *McLaren Traffic Engineering* dated 17th September (document reference: 200318.01FA). An assessment of the subject amended masterplan scale on the ultimate access arrangements is further assessed below. For the full detailed assessment for deriving proposed infrastructure upgrades along Captain Cook Drive refer to the original MTE Report.

4.2 Trip Assignment

The road network and the locations of residential areas surrounding the site have been assessed, in conjunction of an assessment against Journey to Work data and the following traffic assignment has been adopted for all traffic to and from the site:

- 10% to / from Gannons Road;
- 10% to / from Captain Cook Drive (east);
- 40% to / from Captain Cook Bridge:
 - 20% via Toorak Avenue;
 - 20% via Taren Point Road.
- 40% to / from The Boulevard.

As the proposed development is predominantly office space, no alternative trip distribution has been adopted for the food and beverage catchment of the development. It is expected that the food and beverage component of the site is ancillary to the office component such that it will predominantly be used by internal users.

4.3 Access Scenario

As part of this amended masterplan report, only the ultimate access scenario will be assessed which is outlined below:

Endeavour Road / Captain Cook Drive:

- Signalised Intersection
 - Right turn movement out of Endeavour Road banned and relocated to the new proposed signalised intersection with Captain Cook Drive / Endeavour Road.

Captain Cook Drive / Gannons Road:

- Signalised Intersection:
 - No turn restrictions.

New Endeavour Road / Captain Cook Drive Signalised Intersection:

- Right turn movement into Endeavour Road banned.

The trip distribution for the ultimate scenario is reproduced in **Annexure D** for reference.

4.4 Traffic Impact

The traffic generation outlined in **Section 4.1**, **4.2** and **4.3** above has been added to the existing traffic volumes recorded and traffic from the approved Stage 3 & 4 Sharks Development. SIDRA INTERSECTION 8.0 was used to assess the intersections performance under the above scenarios. The purpose of this assessment is to compare the existing intersection operations to the future scenario under the increased traffic load.

The ultimate access scenario road geometry is shown in **Figure 5**, **Figure 6** and **Figure 7**. A high level concept drawing for the potential new signalised intersection at Endeavour Road / Captain Cook Drive and Gannons Road / Captain Cook Drive is reproduced in **Annexure E** and **Annexure F**, respectively for reference.

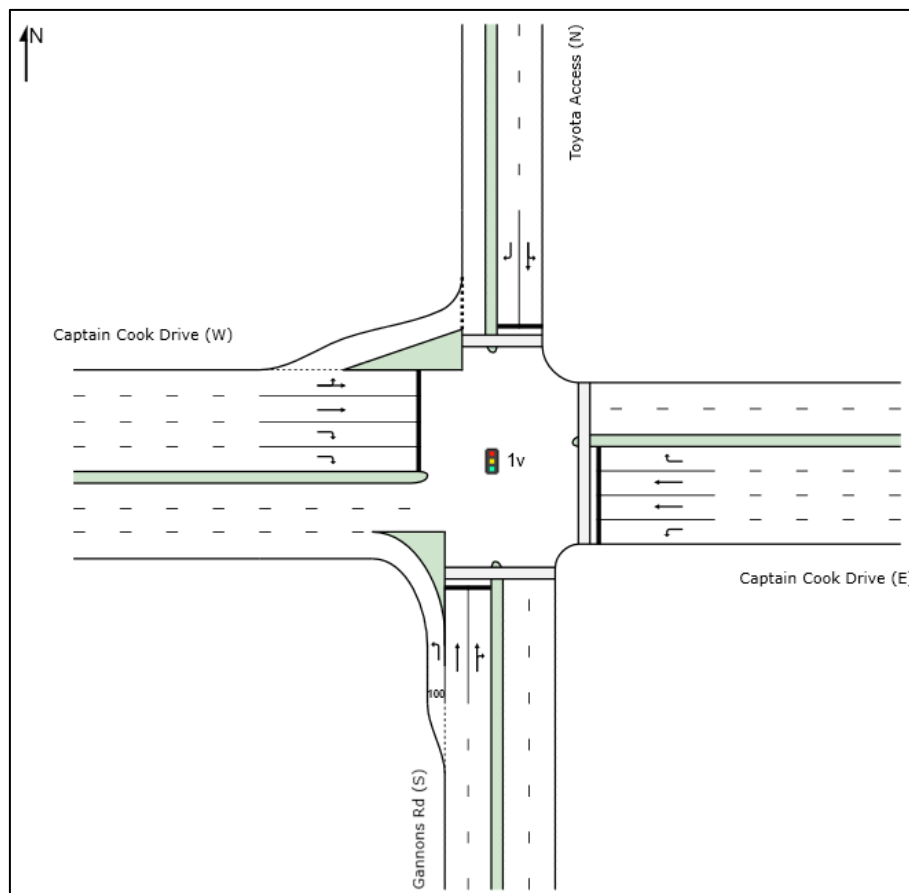


FIGURE 5: CAPTAIN COOK DRIVE / GANNONS ROAD

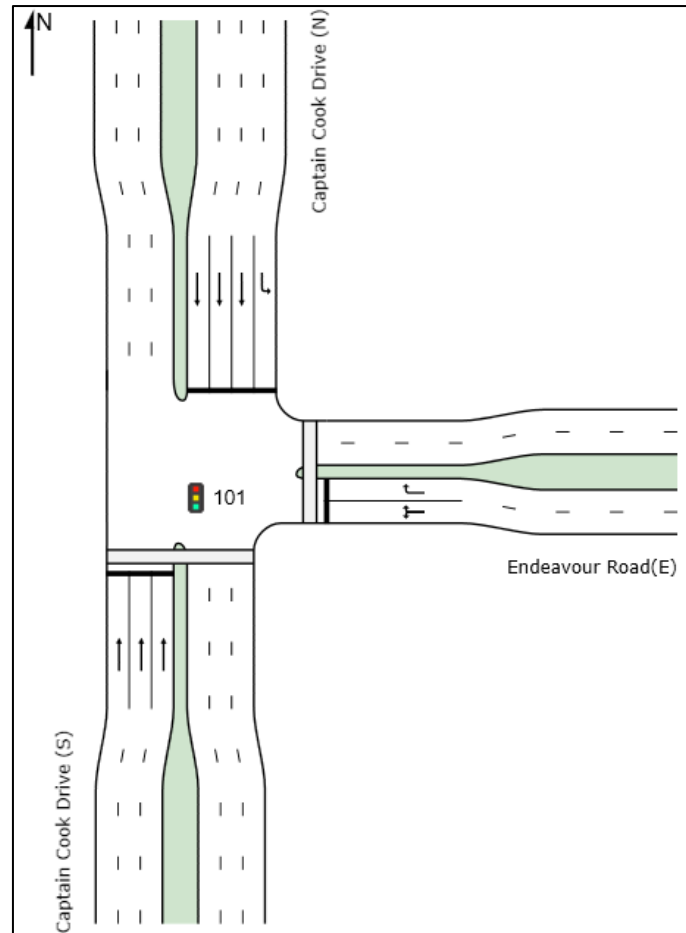


FIGURE 6: NEW ENDEAVOUR ROAD / CAPTAIN COOK DRIVE

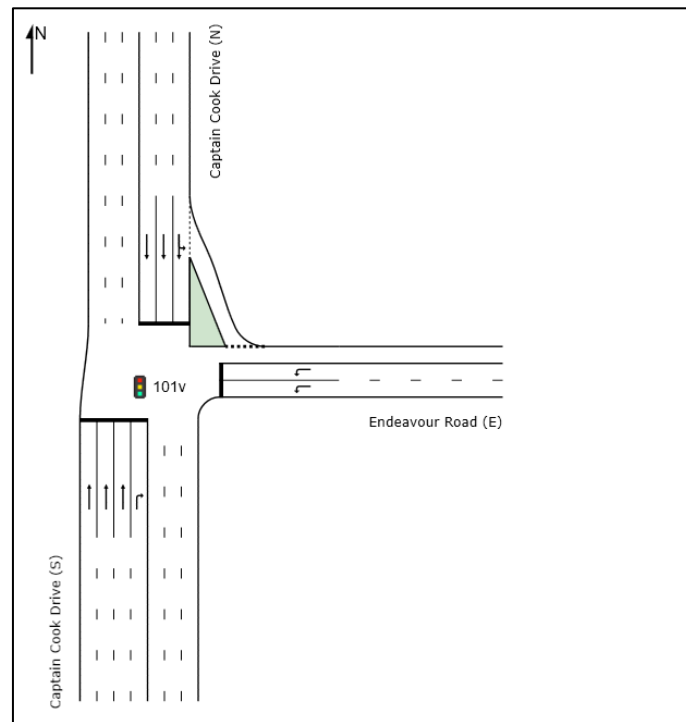


FIGURE 7: ENDEAVOUR ROAD / CAPTAIN COOK DRIVE

The detailed SIDRA results based upon the above are reproduced in **Annexure C** for reference, with a summary of the results shown in **Table 12** below.

**TABLE 12: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 8.0) –
ULTIMATE ACCESS SCENARIO WITH NO WAREHOUSE REDEVELOPMENT**

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement
EXISTING PERFORMANCE + SHARKS STAGE 3 & 4						
Gannons Road / Captain Cook Drive	AM	0.74	8.8 (Worst: 18.7)	A (Worst: B)	Roundabout	U-Turn from Captain Cook Drive (E)
	PM	0.75	9.4 (Worst: 19.2)	A (Worst: B)		
Captain Cook Drive / Endeavour Road ⁽⁵⁾	AM	0.95	15.8 (Worst: 47.3)	N/A (Worst: D)	Give Way (Seagull)	RT from Captain Cook Drive (S)
	PM	1.01	19.2 (Worst: >70)	N/A (Worst: F)		RT from Endeavour Road (E)
FUTURE PERFORMANCE – ULTIMATE ACCESS SCENARIO (NO WAREHOUSE REDEVELOPMENT)						
Gannons Road / Captain Cook Drive	AM	0.83	32.4	C	Signal	N/A
	PM	0.88	35.9	C		N/A
Captain Cook Drive / Endeavour Road	AM	0.76	17.7	B	Signal	N/A
	PM	0.53	13.3	A		N/A
Captain Cook Drive / NEW Endeavour Road	AM	0.61	13.7	A	Signals	RT from Endeavour Road (E)
	PM	0.78	28	B		RT from Endeavour Road (E)

Notes: Refer to Table 3 Notes

As shown above, all three (3) assessed intersections are forecast to operate at a level of service between LoS “A” to LoS “C” during the AM and PM peak hour period respectively. This indicates acceptable delays and spare capacity.

As part of the provision of signalised intersections, it is expected that the corridor of Captain Cook Drive, including all other signalised intersections along the corridor will be required to be linked, to ensure traffic flow efficiency is maintained and optimised for through vehicle movements travelling along Captain Cook Drive. It may be necessary to undertake further traffic modelling along the corridor of Captain Cook Drive in consultation with the relevant road authorities (Transport for New South Wales and Sutherland Shire Council) for areas that are not covered within this report.

4.4.1 Impacts of Road Infrastructure

As a result of the proposed road infrastructure a number of considerations will need to be discussed with the relevant road authorities (Sutherland Shire Council and TfNSW) and local businesses and the community. Midblock traffic flows under the proposed development scale result in the following to the west of the intersection of Endeavour Road / Captain Cook Drive:

- 1,848 peak hour vehicle trips westbound along Captain Cook Drive during the AM peak;
- 2,226 peak hour vehicle trips eastbound along Captain Cook Drive during the AM peak;
- 2,303 peak hour vehicle trips westbound along Captain Cook Drive during the PM peak;
- 1,755 peak hour vehicle trips eastbound along Captain Cook Drive during the PM peak;

The above traffic volumes result in a Level of Service “D” for two (2) traffic flow lanes in one direction. Although based upon traffic modelling will require three (3) traffic flow lanes in each direction at signalised intersections to ensure an acceptable level of service. Considering this, kerbside parking will be required to be removed during peak operating periods along Captain Cook Drive on the approach and departures to signalised intersections to ensure traffic flow efficiency is maintained along the corridor. To allow for this, clearway restrictions during the AM peak hour periods will be necessary for eastbound traffic flow. During the PM peak hour period, clearway conditions will be required for vehicles travelling westbound.

The provision of a new short road connection with Captain Cook Drive from the bend in Endeavour Road will require modifications to the existing traffic flow along Endeavour Road. Traffic flow along Endeavour Road which currently runs parallel with Captain Cook Drive will be required to be restricted to one-way southbound to ensure traffic flow efficiency and road safety considerations are maintained. The sketch in **Annexure E** shows this arrangement. In addition to this, kerbside parking will be required to be removed along Endeavour Road to facilitate two (2) approach lanes to the new signalised intersections and to allow sufficient queue length.

The road infrastructure at the intersection of Gannons Road / Captain Cook Drive will require land acquisition along the eastern side of the road, requiring removal of on-street and off-site car parking (sports field). Replacement of off-site car parking can be provided on the subject site, with the provision of a signalised intersection providing safe pedestrian access from the subject site to the Sports Field. As part of any road widening within Gannons Road, existing pedestrian and cycling facilities will need to be reinstated.

The removal of the roundabout intersection at Gannons Road / Captain Cook Drive will remove the ability for vehicles to undertake a safe U-turn movement. It should be noted that the right turn movements into Foreshore Boulevard is not permitted at the existing

signalised intersection of Captain Cook Drive / Foreshore Boulevard. Consideration should be made as part of the development to provide a U-turn facility on-site to facilitate an alternative safe traffic route for this movement. The “U” turn movement (from & to the east along Captain Cook Drive) at the Gannons Road / Captain Cook Drive roundabout is also used by buses associated with the peak event traffic management plan for the transport of spectators attending sporting events at Shark Park.

A high-level concept has been provided for the design of a potential signalised intersection at Gannons Road / Captain Cook Drive and is reproduced in **Annexure F** for reference. The concept has been provided to demonstrate the extent of widening required for the approach and departure lanes for a potential signalised intersection. The high-level concept is not based upon any TfNSW requirements or Austroads requirement for signalised intersection and is purely conceptual. Further detailed design of any signalised intersection will be development through the development application stage in consultation with relevant road authorities for all three (3) proposed / required signalised intersections.

5 REDEVELOPMENT OF WAREHOUSE SITE – TRAFFIC IMPACT

As part of the potential of the site, the redevelopment of the on-site warehouse may occur for a mix of industrial, office and supporting floor space. The scale of the masterplan which includes the redevelopment of the existing warehouse is anticipated to achieve the scale as shown in **Table 13**.

TABLE 13: PROPOSED MASTERPLAN SCALE

Land Use	Masterplan Scale
Industrial	30,685m ² GFA
Ancillary Industrial Office	24,662m ² GFA
Warehouse	0m ² GFA
Ancillary Warehouse Office	0m ² GFA
Commercial Office & Business Premises	120,067m ² GFA
Food and Beverage	3,706m ² GFA
Recreation	860m ²
Hotel	5,188m ² GFA 125 rooms & 20 staff

The traffic generation potential of the proposed development based upon the above scale is outlined in **Table 14** below.

TABLE 14: ESTIMATED TRAFFIC GENERATION – MASTERPLAN

Use	Scale	Peak Period	Generation Rate	Trips	Split
Industrial	30,685m ² GFA	AM	1 per 100m ²	307 ⁽¹⁾	246 in, 61 out
		PM			61 in, 246 out
Industrial Ancillary Office	24,662m ² GFA	AM	2 per 100m ²	493 ⁽¹⁾	395 in, 98 out
		PM			98 in, 395 out
Commercial Office	120,067m ² GFA	AM	2 per 100m ²	2,401 ⁽¹⁾	1,921 in, 480 out
		PM			480 in, 1,921 out
Food and Beverage	3,706m ² GFA	AM	1 per 100m ²	37 ⁽¹⁾	30 in, 7 out
		PM	1 per 100m ²		7 in, 30 out
Hotel	125 rooms	AM	0.4 per room	50 ⁽²⁾	25 in, 25 out
		PM			25 in, 25 out
TOTAL	-	AM	-	3,288	2,617 in, 671 out
		PM		3,288	671 in, 2,617 out

Note: (1) Assumes 80% inbound, 20% outbound during AM peak: Vice versa for PM peak.

(2) Assumes 50% inbound, 50% outbound during AM peak and PM peak hour period

As shown, the traffic generation associated with the proposal, under the scheme where the warehouse is redeveloped is in the order of **3,288** vehicle trips in the AM peak hour period (2,617 inbound, 671 outbound) and **3,288** vehicles trips in the PM peak hour period (671 inbound, 2,617 outbound).

The previously assessed masterplan report had a traffic generation of **2,602** vehicle trips in the AM peak hour period (2,067 inbound, 535 outbound) and **2,602** vehicles trips in the PM peak hour period (535 inbound, 2,067 outbound). As such, the amended scheme, including the redevelopment of the warehouse has a net increase of 686 vehicle trips.

Consistent with the recommended access infrastructure as shown in **Figure 5**, **Figure 6** and **Figure 7**, SIDRA Intersection modelling has been undertaken to determine if the recommended road infrastructure, being three (3) signalised intersections is sufficient to accommodate the traffic impact of the redevelopment of the warehouse. The detailed SIDRA results are reproduced in **Annexure C** for reference, with a summary provided in **Table 15** below.

**TABLE 15: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 8.0) –
ULTIMATE ACCESS SCENARIO WITH WAREHOUSE REDEVELOPMENT**

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement
EXISTING PERFORMANCE + SHARKS STAGE 3 & 4						
Gannons Road / Captain Cook Drive	AM	0.74	8.8 (Worst: 18.7)	A (Worst: B)	Roundabout	U-Turn from Captain Cook Drive (E)
	PM	0.75	9.4 (Worst: 19.2)	A (Worst: B)		
Captain Cook Drive / Endeavour Road ⁽⁵⁾	AM	0.95	15.8 (Worst: 47.3)	N/A (Worst: D)	Give Way (Seagull)	RT from Captain Cook Drive (S)
	PM	1.01	19.2 (Worst: >70)	N/A (Worst: F)		RT from Endeavour Road (E)
FUTURE PERFORMANCE – ULTIMATE ACCESS SCENARIO (WAREHOUSE REDEVELOPMENT)						
Gannons Road / Captain Cook Drive	AM	0.89	40.3	C	Signal	N/A
	PM	1	54.2	D		N/A
Captain Cook Drive / Endeavour Road	AM	0.84	19.6	B	Signal	N/A
	PM	0.55	12.4	A		N/A
Captain Cook Drive / NEW Endeavour Road	AM	0.83	23.8	B	Signals	N/A
	PM	0.9	38.8	C		N/A

Notes: Refer to Table 3 Notes

As shown above, the intersection of Gannons Road / Captain Cook Drive is expected to operate at LoS C and D during the AM and PM peak hour period respectively. The degree of saturation in both the AM and PM peak is approaching or is equal to 1. This indicates that the intersection is at capacity with large delays and no spare capacity. Considering this, an infrastructure upgrade will be required at the intersection of Gannons Road / Captain Cook Drive under the development scale.

The intersection of Captain Cook Drive / Endeavour Road is operating at LoS B and A during the AM and PM peak hour period respectively. This indicates acceptable delays and spare capacity.

The intersection of Captain Cook Drive / New Endeavour Road is operating at LoS B and C during the AM and PM peak hour period accordingly. Notably, the minor road (new Endeavour Road approach) is operating with vehicle queues of up to 345m during the PM peak hour period. This is considered unsatisfactory and will cause delays to existing road users. Considering this an infrastructure upgrade will be required for this section to reduce queue lengths.

To accommodate the proposed development traffic impact under the redeveloped warehouse scheme, the following additional upgrades will be required:

- The intersection of Gannons Road / Captain Cook Drive will be required to be upgraded to provide a left turn low angle slip lane from the site access as shown in **Figure 8**.
- The intersection of Captain Cook Drive / New Endeavour Road will be required to be upgraded to provide three (3) right turn lanes onto Captain Cook Drive as shown in **Figure 9**.

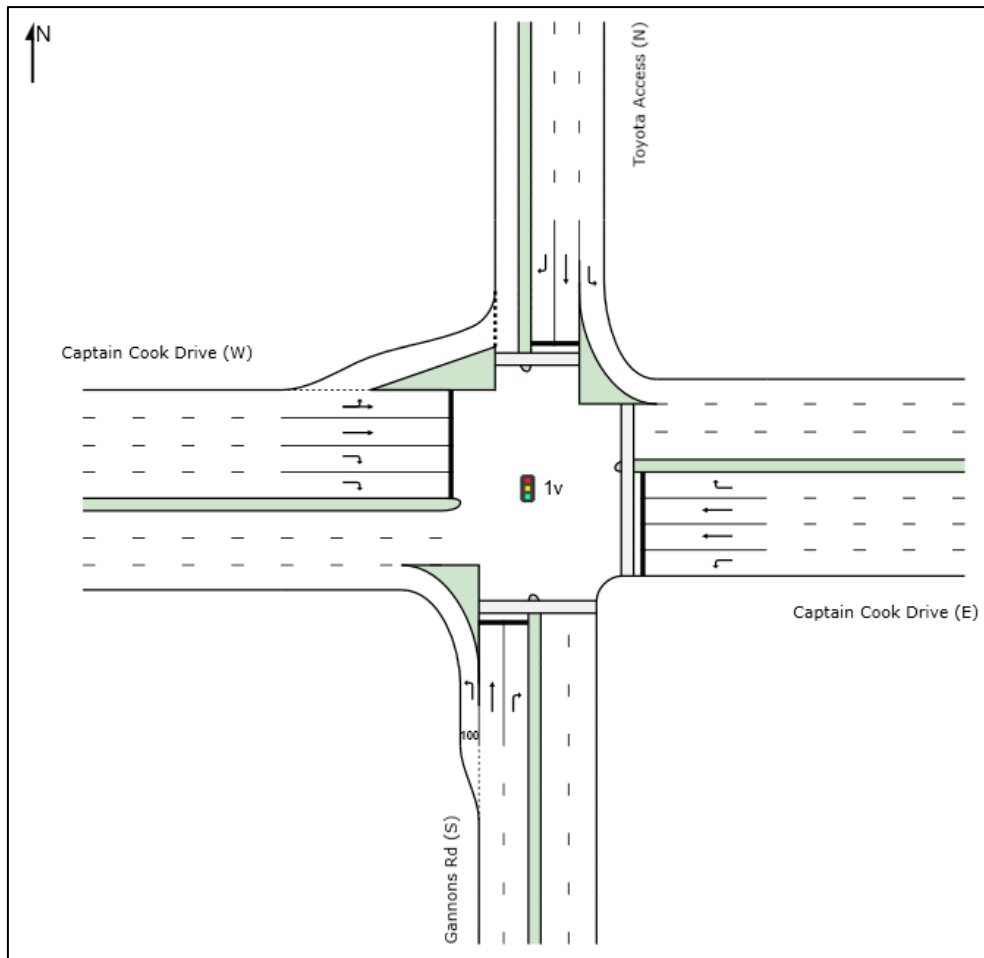
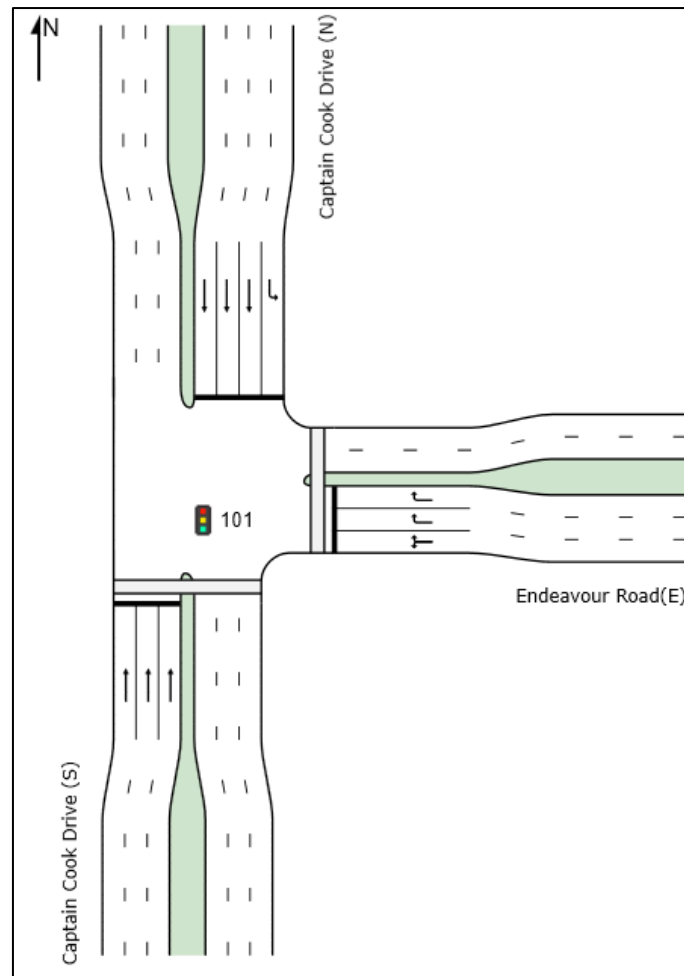


FIGURE 8: GANNONS ROAD / CAPTAIN COOK DRIVE / SITE ACCESS UPGRADE REQUIRED UNDER WAREHOUSE REDEVELOPMENT



**FIGURE 9: NEW ENDEAVOUR ROAD / CAPTAIN COOK DRIVE ACCESS UPGRADE
REQUIRED UNDER WAREHOUSE REDEVELOPMENT**

The detailed SIDRA results based upon the above infrastructure upgrades are reproduced **Annexure C** for reference, with a summary of the results presented in **Table 16** below.

TABLE 16: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 8.0) –ACCESS SCENARIO WITH WAREHOUSE REDEVELOPMENT + INFRASTRUCTURE UPGRADE

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement
EXISTING PERFORMANCE + SHARKS STAGE 3 & 4						
Gannons Road / Captain Cook Drive	AM	0.74	8.8 (Worst: 18.7)	A (Worst: B)	Roundabout	U-Turn from Captain Cook Drive (E)
	PM	0.75	9.4 (Worst: 19.2)	A (Worst: B)		
Captain Cook Drive / Endeavour Road ⁽⁵⁾	AM	0.95	15.8 (Worst: 47.3)	N/A (Worst: D)	Give Way (Seagull)	RT from Captain Cook Drive (S)
	PM	1.01	19.2 (Worst: >70)	N/A (Worst: F)		RT from Endeavour Road (E)
FUTURE PERFORMANCE – ULTIMATE ACCESS SCENARIO (WAREHOUSE REDEVELOPMENT + INFRASTRUCTURE UPGRADE)						
Gannons Road / Captain Cook Drive	AM	0.86	37.4	C	Signal	N/A
	PM	0.79	30.8	C		N/A
Captain Cook Drive / Endeavour Road	AM	0.84	19.6	B	Signal	N/A
	PM	0.55	12.4	A		N/A
Captain Cook Drive / NEW Endeavour Road	AM	0.83	23.7	B	Signals	N/A
	PM	0.74	26.5	B		N/A

Notes: Refer to Table 3 Notes

As shown above, under the additional infrastructure upgrade as shown in **Figure 8** and **Figure 9** the intersection of Gannons Road / Captain Cook Drive is forecast to operate at LoS “C” in both the AM and PM peak hour period, indicating acceptable delays and some spare capacity.

The intersection of Captain Cook Drive / Endeavour Road is operating at LoS B and A during the AM and PM peak hour period respectively. This indicates acceptable delays and spare capacity.

The intersection of Captain Cook Drive / New Endeavour Road is operating at LoS B during the AM and PM peak hour periods. Notably, the minor road (new Endeavour Road approach) is operating with vehicle queues of up to 187m during the PM peak hour period, which is largely reduced under the proposed additional infrastructure upgrade. The overall operation of LoS B indicates acceptable delays and spare capacity.

5.1.1 Impacts of Road Infrastructure – Warehouse Redevelopment

As a result of the additional road infrastructure a number of considerations will need to be discussed with the relevant road authorities (Sutherland Shire Council and TfNSW) and local businesses and the community. Midblock traffic flows under the warehouse redevelopment scale result in the following traffic flows to the west of the intersection of Endeavour Road / Captain Cook Drive:

- 1,955 peak hour vehicle trips westbound along Captain Cook Drive during the AM peak;
- 2,655 peak hour vehicle trips eastbound along Captain Cook Drive during the AM peak;
- 2,732 peak hour vehicle trips westbound along Captain Cook Drive during the PM peak;
- 1,862 peak hour vehicle trips eastbound along Captain Cook Drive during the PM peak;

The above traffic volumes result in a Level of Service “E” for two (2) traffic flow lanes in one direction. Although based upon traffic modelling will require three (3) traffic flow lanes in each direction at signalised intersections to ensure an acceptable level of service. Considering this, kerbside parking will be required to be removed during peak operating periods along Captain Cook Drive on the approach and departures to signalised intersections to ensure traffic flow efficiency is maintained along the corridor. To allow for the required number of approach lanes, the AM peak period will require clearways for eastbound traffic flow along Captain Cook Drive. During the PM peak period clearway conditions will be required for vehicles travelling westbound.

In addition to the raised infrastructure impacts as outlined in **Section 4.4.1**, the provision of an additional right turn lane for the new signalised intersection of Captain Cook Drive / Endeavour Road will require land acquisition of the subject site, along its north-western boundary to accommodate a verge along the southern side of the Endeavour Road. A preliminary sketch is shown in **Annexure E**.

The additional low angle left turn slip lane from the site access at the intersection of Gannons Road / Captain Cook Drive / Site Access has the potential to be located wholly on the subject development land, such that no land acquisition is required. A sketch of the intersection layout is shown in **Annexure F** for reference.

It should be noted that the high level sketches are not based upon any TfNSW requirements or Austroads requirement for signalised intersection and is purely conceptual. Further detailed design of any signalised intersection will be development through the development application stage in consultation with relevant road authorities for all three (3) proposed / required signalised intersections.

6 RECOMMENDED TIMING OF ROAD INFRASTRUCTURE

As part of the indicative redevelopment of the site towards the proposed scale of the masterplan, there will be 10 stages, referred to as Stages A to J. The development will generally be constructed in accordance with this staging plan, which is shown in **Annexure A** for reference.

Based upon the indicative timing of the development, an assessment has been undertaken in relation to at what point the recommended road infrastructure works are required. The assessment does not include the redevelopment of the warehouse (Stage J), as this assessment has been undertaken in **Section 5** of this report.

6.1 *Scale of Stages*

The detailed breakdown of Stages A to I is reproduced in **Annexure G** for reference. With the traffic flow potential for each stage summarised in **Table 17** below.

TABLE 17: TRAFFIC FLOW BREAKDOWN FOR EACH INDICATIVE CONSTRUCTION STAGE

Stage	Peak Period	Vehicle Trips	Split	Cumulative Traffic Generation
Existing Warehouse	AM	266 ⁽¹⁾	213 in, 53 out	266
	PM		53 in 213 out	
A	AM	260 ⁽¹⁾	208 in, 52 out	526
	PM		52 in, 208 out	
B	AM	304 ⁽¹⁾	243 in, 61 out	830
	PM		61 in, 243 out	
C	AM	66 ⁽¹⁾	53 in, 13 out	896
	PM		13 in, 53 out	
D	AM	130 ^(1,2)	89 in, 41 out	1,026
	PM		41 in, 89 out	
E	AM	211 ⁽¹⁾	169 in, 42 out	1,237
	PM		42 in, 169 out	
F	AM	209 ⁽¹⁾	167 in, 42 out	1,446
	PM		42 in, 167 out	
G	AM	429 ⁽¹⁾	344 in, 85 out	1,875
	PM		85 in, 344 out	
H	AM	209 ⁽¹⁾	167 in, 42 out	2,084
	PM		42 in, 167 out	
I	AM	311 ⁽¹⁾	249 in, 62 out	2,395
	PM		62 in, 249 out	
	PM		53 in, 213 out	
TOTAL	AM	2,395	1,902 in, 493 out	2,395
	PM	2,395	493 in, 1,902 out	2,395

Note: (1) Assumes 80% inbound, 20% outbound during AM peak: Vice versa for PM peak.

(2) Assumes 50% inbound, 50% outbound during AM peak and PM peak hour period

6.2 Assessment of Infrastructure Works

6.2.1 Existing Plus Sharks Development

In accordance with the modelling results from **Table 7**, the existing intersection of Endeavour Road / Captain Cook Drive is required to be upgraded regardless of the masterplan development. That is, the intersection fails under the Sharks Stage 3 & 4 redevelopment. Considering this, it is assumed that the intersection of Endeavour Road / Captain Cook Drive is to be upgraded to a signalised intersection prior to the proposed development occupying a similar development yield to the existing conditions when Toyota was operating at the site.

The upgraded signalised intersection (referred to as Interim Intersection) of Captain Cook Drive / Endeavour Road will be assumed to retain all turning movements and be generally designed as shown in **Figure 10**.

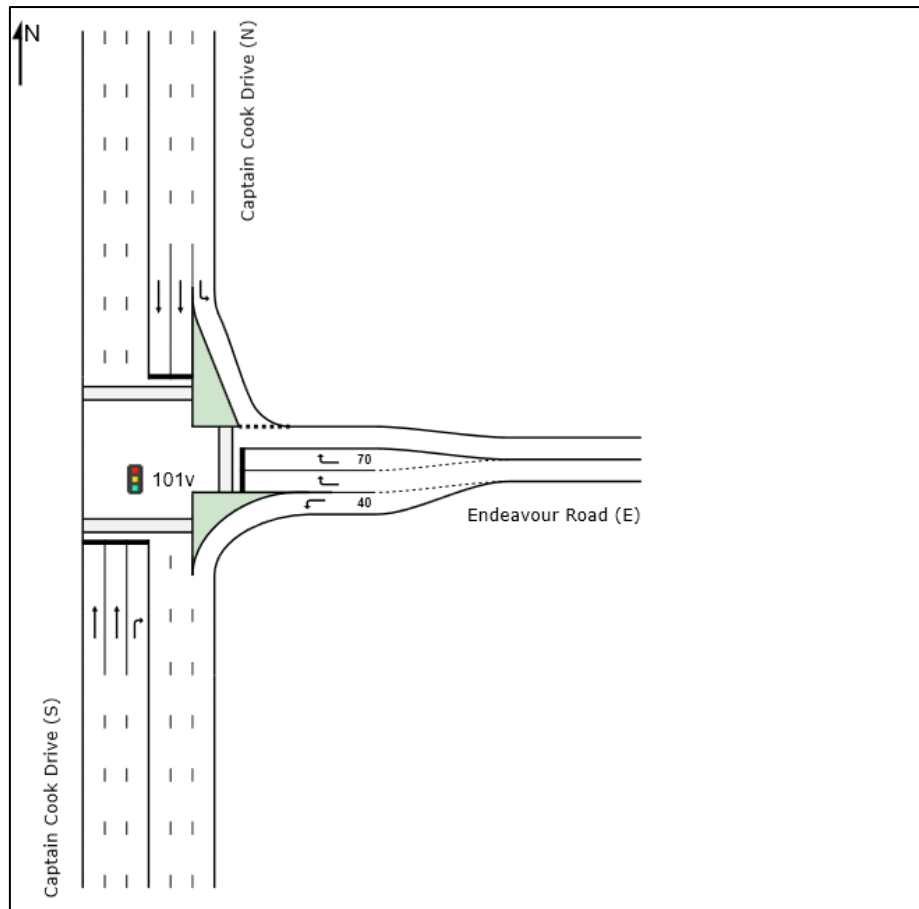


FIGURE 10: CAPTAIN COOK DRIVE / ENDEAVOUR ROAD INTERIM SIGNALISED INTERSECTION PRIOR TO MASTERPLAN OCCUPATION LEVELS SIMILAR TO EXISTING APPROVED SITE AS OPERATED UNDER TOYOTA

Based upon the above, modelling has been undertaken for the existing traffic flows plus the Sharks Stage 3 & 4 development. The modelling results are reproduced in **Annexure H** for reference, with a summary provided in **Table 18**.

**TABLE 18: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8.0)
+ SHARKS STAGE 3 & 4**

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾⁽⁵⁾ (sec/vehicle)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement
EXISTING PERFORMANCE + SHARKS STAGE 3 & 4						
Captain Cook Drive / Endeavour Road	AM	0.95	15.8 (Worst: 47.3)	N/A (Worst: D)	Give Way (Seagull)	RT from Captain Cook Drive (S)
	PM	1.01	19.2 (Worst: >70)	N/A (Worst: F)		RT from Endeavour Road (E)
EXISTING PERFORMANCE + SHARKS STAGE 3 & 4						
Captain Cook Drive / Endeavour Road	AM	0.75	20	B	Signals	N/A
	PM	0.66	16.1	B		N/A

NOTES:

- (1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- (3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
- (4) Intersection LOS and Major Road Approach LoS are not applicable (N/A) for two-way sign control since the average delays is not a good LOS measure due to zero delays associated with major road movements
- (5) Average delay of seagull intersection (Captain Cook Drive / Endeavour Road) is based upon Stage 1 only.

As shown above, the intersection of Captain Cook Drive / Endeavour Road under a signalised intersection would operate at Level of Service B. This indicates a satisfactory operation with additional spare capacity.

It is expected that under the above scenario, the upgrade of the intersection of Captain Cook Drive / Endeavour Road would have the capacity to handle the scale of subject site, as operated under Toyota.

6.2.2 Existing + Sharks + Warehouse & Stage A - C

The existing site as operated under Toyota, had an existing estimated traffic generation of 588 two-way vehicle trips as shown in **Table 4**. As part of the timing of the upgrades, it will be assumed that the warehouse component on the development as shown in **Table 17** will be occupied prior to any of the other stages. Considering this, the scale as operated under Toyota is similar to the development scale for the existing warehouse and Stage A, which would have a combined peak hour traffic generation of 526 two-way vehicle trips.

In view of the above, it is considered that the proposed development would be capable of occupying the warehouse and constructing Stage A to C without requirements to provide infrastructure upgrades along Captain Cook Drive. The SIDRA Intersection modelling results based upon the above are reproduced in **Annexure H**, with a summary provided in **Table 19** below.

It should be noted that the trip distribution has been modified for outbound vehicle trips shown in **Annexure H** to account for the more attractive route via Endeavour Road / Captain Cook Drive.

TABLE 19: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8.0)

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/vehicle)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement
EXISTING PERFORMANCE + SHARKS STAGE 3 & 4						
Gannons Road / Captain Cook Drive	AM	0.74	8.8 (Worst: 18.7)	A (Worst: B)	Roundabout	U-Turn from Captain Cook Drive (E)
	PM	0.75	9.4 (Worst: 19.2)	A (Worst: B)		
Captain Cook Drive / Endeavour Road	AM	0.75	20	B	Signalised	N/A
	PM	0.66	16.1	B		N/A
EXISTING PERFORMANCE + SHARKS STAGE 3 & 4 + WAREHOUSE & STAGE A, B & C						
Gannons Road / Captain Cook Drive	AM	0.84	11.9 (Worst: 23.7)	A (Worst: B)	Roundabout	U-Turn from Captain Cook Drive (E)
	PM	0.91	20.9 (Worst: 69.4)	B (Worst: E)		U-Turn from Site Access
Captain Cook Drive / Endeavour Road	AM	0.81	22.4	B	Signalised	N/A
	PM	0.83	25.2	B		N/A

NOTES:

- (1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- (3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
- (4) Intersection LOS and Major Road Approach LoS are not applicable (N/A) for two-way sign control since the average delays is not a good LOS measure due to zero delays associated with major road movements

As shown above, the intersection of Gannons Road / Captain Cook Drive is expected to operate at LoS “A” in the AM and LoS “B” during the PM peak hour period. Whilst the interim signalised intersection of Captain Cook Drive / Endeavour Road is expected to operate at LoS “B”. This indicates acceptable delays and spare capacity for the intersection of Captain Cook Drive / Endeavour Road. Whilst the intersection of Gannons Road / Captain Cook Drive is approaching capacity. As such, it is recommended that the intersection of Gannons Road / Captain Cook Drive be upgraded to that of **Figure 5** prior to the occupation of any additional development.

6.2.3 Existing + Sharks + Warehouse & Stage A - F

Stages A – F, including the occupation of the warehouse is anticipated to generate 1,446 two-way traffic volumes. The SIDRA results of the interim upgraded intersection of Endeavour Road / Captain Cook Drive, in addition to the upgrade of Gannons Road / Captain Cook Drive in accordance with **Figure 5** is reproduced in **Annexure H** for reference, with a summary provided in **Table 20** below.

TABLE 20: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8.0)

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay (sec/vehicle)	Level of Service ⁽²⁾	Control Type	Worst Movement
EXISTING PERFORMANCE + SHARKS STAGE 3 & 4 + WAREHOUSE, STAGE A - F						
Gannons Road / Captain Cook Drive	AM	0.79	30.1	C	Signalised	N/A
	PM	0.86	35.3	C		N/A
Captain Cook Drive / Endeavour Road	AM	0.86	24.6	B	Signalised	N/A
	PM	0.92	34.9	C		N/A

NOTES:

- (1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.

As shown above the intersection of Gannons Road / Captain Cook Drive is expected to operate at LoS “C” in both the AM and PM peak hour period. This indicates acceptable delays with some spare capacity. The intersection of Captain Cook Drive / Endeavour Road is forecast to operate at a LoS “B” and LoS “C” condition during the AM and PM peak hour period accordingly. This indicates acceptable delays with some spare capacity.

Notwithstanding the above, the operation of Captain Cook Drive / Endeavour Road is operating with a degree of saturation of 0.92, indicating that the intersection is approaching capacity. Hence, based upon the above, it is recommended that the intersection of Captain Cook Drive / Endeavour Road be upgraded in line with **Figure 7** and the new signalised intersection of Captain Cook Drive / New Endeavour Road be constructed in accordance with **Figure 6** prior to any additional development (prior to stage G).

6.2.4 Summary of Staging

An assessment has been undertaken for the staging of road infrastructure against the indicative construction timeframe of the proposed masterplan development. In summary the following will be required:

- Prior to Any Stage:
 - The intersection of Endeavour Road / Captain Cook Drive is required to be temporarily upgraded prior to any occupation due to the existing failing intersection under the existing traffic conditions plus the Sharks Stage 3 & 4 development.
- Prior to Stage D:
 - The intersection of Captain Cook Drive / Gannons Road is to be upgraded to **Figure 5** prior to occupation of Stage D.
- Prior to Stage G:
 - The intersection of Endeavour Road / Captain Cook Drive, plus the newly proposed intersection at Endeavour Road / Captain Cook Drive are to be constructed prior to occupation of Stage G as per **Figure 6** and **Figure 7**.
- Prior to Stage J (Warehouse Redevelopment):
 - The intersection of Captain Cook Drive / Gannons Road is to be upgraded to **Figure 8** prior to occupation of Stage J.
 - The intersection of Captain Cook Drive / Endeavour Road is to be upgraded to **Figure 9** prior to occupation of Stage J.

7 **CONCLUSION**

The subject Masterplan Mixed Use Development at 13 Endeavour Road, Caringbah (as depicted in **Annexure A**) has been assessed in regards to its traffic and parking impacts. The following outcomes of this masterplan traffic impact assessment are relevant to note:

- The proposal requires the provision of **2,756** car parking spaces based upon Council's DCP requirements. The plans indicate the provision of **1,448** car parking spaces, a shortfall of **1,308** spaces from Council's DCP. The only consideration to a reduction in car parking is based upon the food and beverage component of the site being ancillary to the office component of the development. Adopting a 50% reduction in car parking results in the car parking requirements of **2,715** spaces, which is a shortfall of **1,267** car parking spaces from Council's DCP requirement. This is still a significant shortfall in provision of car parking and as such the development should provide additional car parking or investigate alternative solutions / modes of transport to and from the site.
- The car parking layout as depicted in **Annexure A**, will be assessed at the development application stage to ensure compliance with the relevant Australian Standards, namely *AS2890.1:2004*, *AS2890.2:2018*, *AS2890.6:2009* and *AS2890.5:2020*. If the masterplan proposal were to be approved, the driveway access, circulation areas and on-site parking areas of any development on the site would be required to comply. It would be a requirement at the Development Application and Construction Certificate stage that each Lot be checked for compliance with parking provision and driveway location requirements.
- The largest vehicle expected to travel to and from the site will be a 12.5m length Heavy Rigid Vehicle for deliveries and waste collection for office and food and beverage components. Industrial and Warehouse components of the site may require the provision of 19m length Articulated Vehicles and is subject to each lots tenancy size and fitout. Access for service vehicles can be facilitated from either Captain Cook Drive / Gannons Road or Endeavour Road from existing approved B-double routes.
- It is expected that due to the internal road layout, the site will be limited to access to and from the intersection of Gannons Road / Captain Cook Drive by vehicles up to a 12.5m length Heavy Rigid Vehicle, whilst 19m length Articulated Vehicles for the development will be restricted to Endeavour Road.
- The traffic generation associated with the proposal is in the order of **2,395** vehicle trips in the AM peak hour period (1,902 inbound, 493 outbound) and **2,395** vehicles trips in the PM peak hour period (493 inbound, 1,902 outbound). This assumes that the food and beverage component of the site does not generate traffic from outside the site and is based upon the food and beverage portion of the site servicing the proposed office space of the development.

- The previously assessed masterplan report had a traffic generation of **2,602** vehicle trips in the AM peak hour period (2,067 inbound, 535 outbound) and **2,602** vehicles trips in the PM peak hour period (535 inbound, 2,067 outbound). As such, the amended proposal has a net reduction of 207 vehicle trips.
- Multiple access strategies have been assessed as part of the previously submitted Masterplan Traffic Report (MTE Report) prepared by McLaren Traffic Engineering dated 17th September (Document Reference: 200318.01FA). The amended Masterplan Report, the subject of this report has assessed the ultimate development scenario which requires the provision of three (3) signalised intersections at the following locations:
 - Signalised intersection at Captain Cook Drive / Gannons Road;
 - Signalised Intersection of Endeavour Road / Captain Cook Drive;
 - Signalised Intersection of new Endeavour Road / Captain Cook Drive.
- A preliminary mark-up / sketch has been provided in **Annexure E** and **Annexure F** for a potential signalised intersection of new Endeavour Road / Captain Cook Drive and Captain Cook Drive / Gannons Road under the scenario where the warehouse portion of the development is not developed and where it is developed. Further detailed design of required road infrastructure will be part of the development application stage in consultation with road authorities (Sutherland Shire Council and Transport for New South Wales).
- As part of the provision of signalised intersections, it is expected that the corridor of Captain Cook Drive, including all other signalised intersections along the corridor will be required to be linked, to ensure traffic flow efficiency is maintained and optimised for through vehicle movements travelling along Captain Cook Drive. It may be necessary to undertake further traffic modelling along the corridor of Captain Cook Drive in consultation with the relevant road authorities (Transport for New South Wales and Sutherland Shire Council) for areas that are not covered within this report.
- The relevant impacts of the proposed development and required road infrastructure to facilitate the proposed development is summarised below:
 - Removal of kerbside parking on the approach and departure to signalised intersections along both sides of Captain Cook Drive to ensure traffic flow efficiency is maintained along the corridor. Clearway restrictions during the AM peak hour periods will be necessary in the eastbound, whilst during the PM peak hour period clearway conditions will be required for vehicles travelling westbound.
 - The provision of a new signalised intersection with Captain Cook Drive that includes a new short road link from the bend in Endeavour Road will require modifications to the existing traffic flow along Endeavour Road. Traffic flow

along Endeavour Road which currently runs parallel with Captain Cook Drive will be required to be restricted to one-way southbound to ensure traffic flow efficiency and road safety considerations are maintained.

- The road infrastructure at the intersection of Gannons Road / Captain Cook Drive will require land acquisition along the eastern side of the road, requiring removal of on-street and off-site car parking (sports field). Replacement of off-site car parking can be provided on the subject site, with the provision of a signalised intersection providing safe pedestrian access from the subject site to the Sports Field. As part of any road widening within Gannons Road, existing pedestrian and cycling facilities will need to be reinstated.
- The removal of the roundabout intersection at Gannons Road / Captain Cook Drive will remove the ability for vehicles to undertake a safe U-turn movement. Consideration should be made as part of the development to provide a U-turn facility on-site to facilitate an alternative safe traffic route for this movement.
- Three (3) approach lanes to the proposed new signalised intersection at Captain Cook Drive / Endeavour Road will be required under the masterplan scenario where the on-site warehouse is redeveloped. To facilitate this, part of the subject development land will need to be dedicated as public road for most of the frontage to Endeavour Road.
- An assessment has been undertaken for the staging of road infrastructure against the indicative construction timeframe of the proposed masterplan development. In summary the following will be required:
 - Prior to Any Stage:
 - The intersection of Endeavour Road / Captain Cook Drive is required to be temporarily upgraded prior to any occupation due to the existing failing intersection under the existing traffic conditions plus the Sharks Stage 3 & 4 development.
 - Prior to Stage D:
 - The intersection of Captain Cook Drive / Gannons Road is to be upgraded to **Figure 5** prior to occupation of Stage D.
 - Prior to Stage G:
 - The intersection of Endeavour Road / Captain Cook Drive, plus the newly proposed intersection at Endeavour Road / Captain Cook Drive are to be constructed prior to occupation of Stage G.
 - Prior to Stage J (Warehouse Redevelopment):
 - The intersection of Captain Cook Drive / Gannons Road is to be upgraded to **Figure 8** prior to occupation of Stage J.
 - The intersection of Captain Cook Drive / Endeavour Road is to be upgraded to **Figure 9** prior to occupation of Stage J.



ANNEXURE A: PROPOSED PLANS
(3 SHEETS)

Indicative Site Evolution

7.1 Existing Site Conditions

Building	GFA
Links House	2,174 sqm
Toyota House	4,872 sqm
Main Warehouse	*25,706 sqm
The Hub	3,228 sqm
Thiess House	3,148 sqm
Toyota Institute	2,705 sqm
Sub Total	*41,833 sqm
Additional within storage garages / demountable / gatehouses	263 sqm
Total	*42,096 sqm

Notes:
- Areas based upon Real Serve's "Summary of Areas Rev A" dated 26/09/2019
- Areas shown to nearest whole square metre
- *Area of Warehouse excludes mezzanine, fire tunnels and garages



1:2,000 @ A3

Indicative Site Evolution

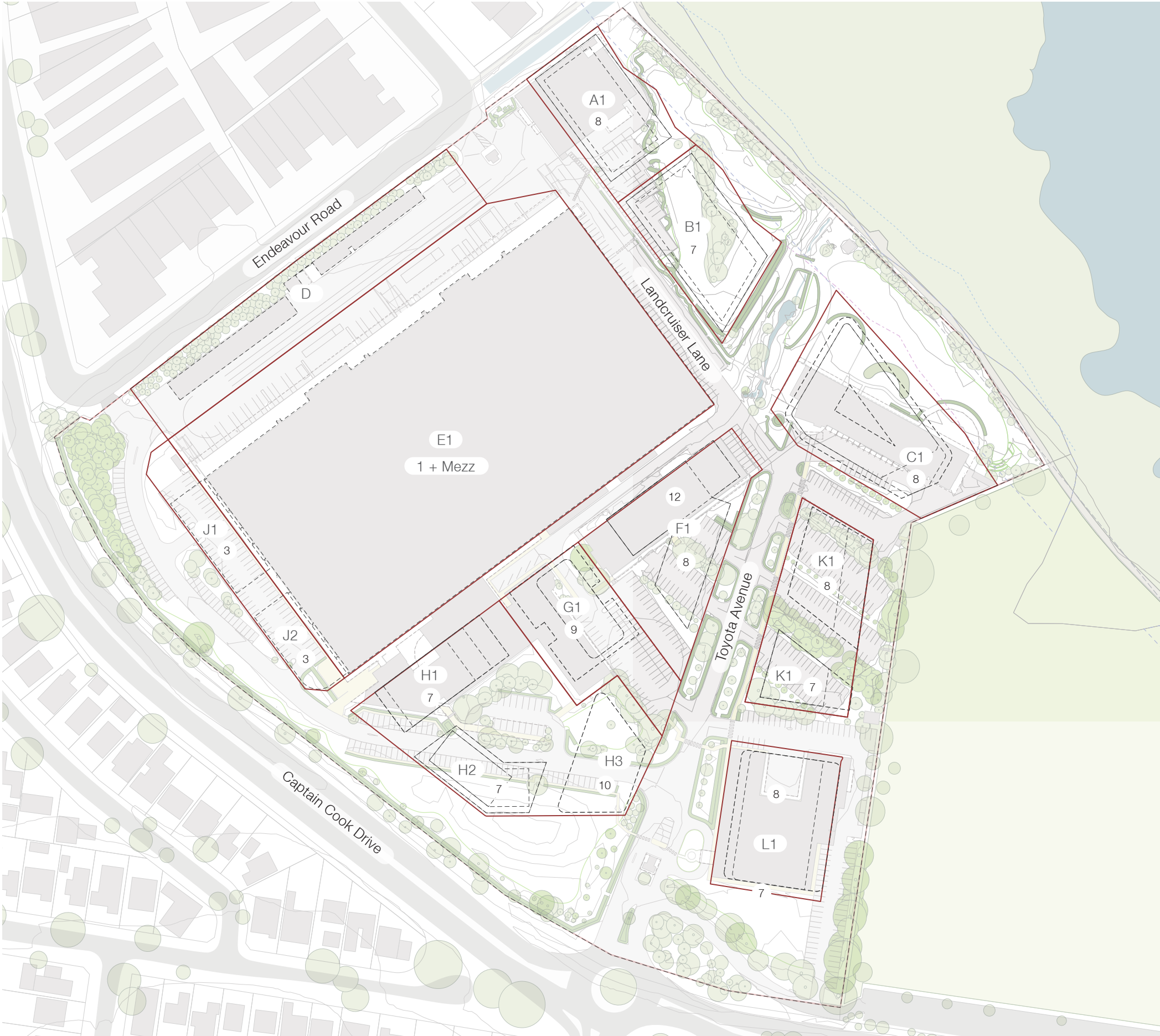
7.14 Indicative Structure Plan

Use	GFA
Industrial	1,824 sqm
Ancillary Industrial Office	3,941 sqm
Warehouse	24,032 sqm
Ancillary Warehouse Office	7,284 sqm
Office and Business Premises	97,172 sqm
Food & Beverage	3,706 sqm
Recreation	860 sqm
Hotel	5,188 sqm
Total	144,007 sqm
FSR	1.16:1
Car Parking	937 Spaces
Surface Car Parking	511 Spaces
Total Car Parking	1,448 Spaces

KEY

- (X)

Storey Height
- Industrial / Warehouse
- Ancillary Industrial / Warehouse Office
- Office and Business Premises
- Food & Beverage
- Recreation
- Hotel
- Car Parking / Storage



1:2,000 @ A3

Indicative Site Evolution

7.15 Indicative Stage K

A potential future stage may see the warehouse site (Pad E) redevelop into a mix of industrial, office and supporting floorspace. The below is the indicative area schedule after this potential stage.

Use	GFA
Industrial	30,685 sqm
Ancillary Industrial Office	24,662 sqm
Warehouse	0 sqm
Ancillary Warehouse Office	0 sqm
Office and Business Premises	120,067 sqm
Food & Beverage	3,706 sqm
Recreation	860 sqm
Hotel	5,188 sqm
Total	185,168 sqm
FSR	1.49:1
Car Parking	1,252 Spaces
Surface Car Parking	511 Spaces
Total Car Parking	1,763 Spaces

KEY

Industrial / Warehouse

Ancillary Industrial / Warehouse Office

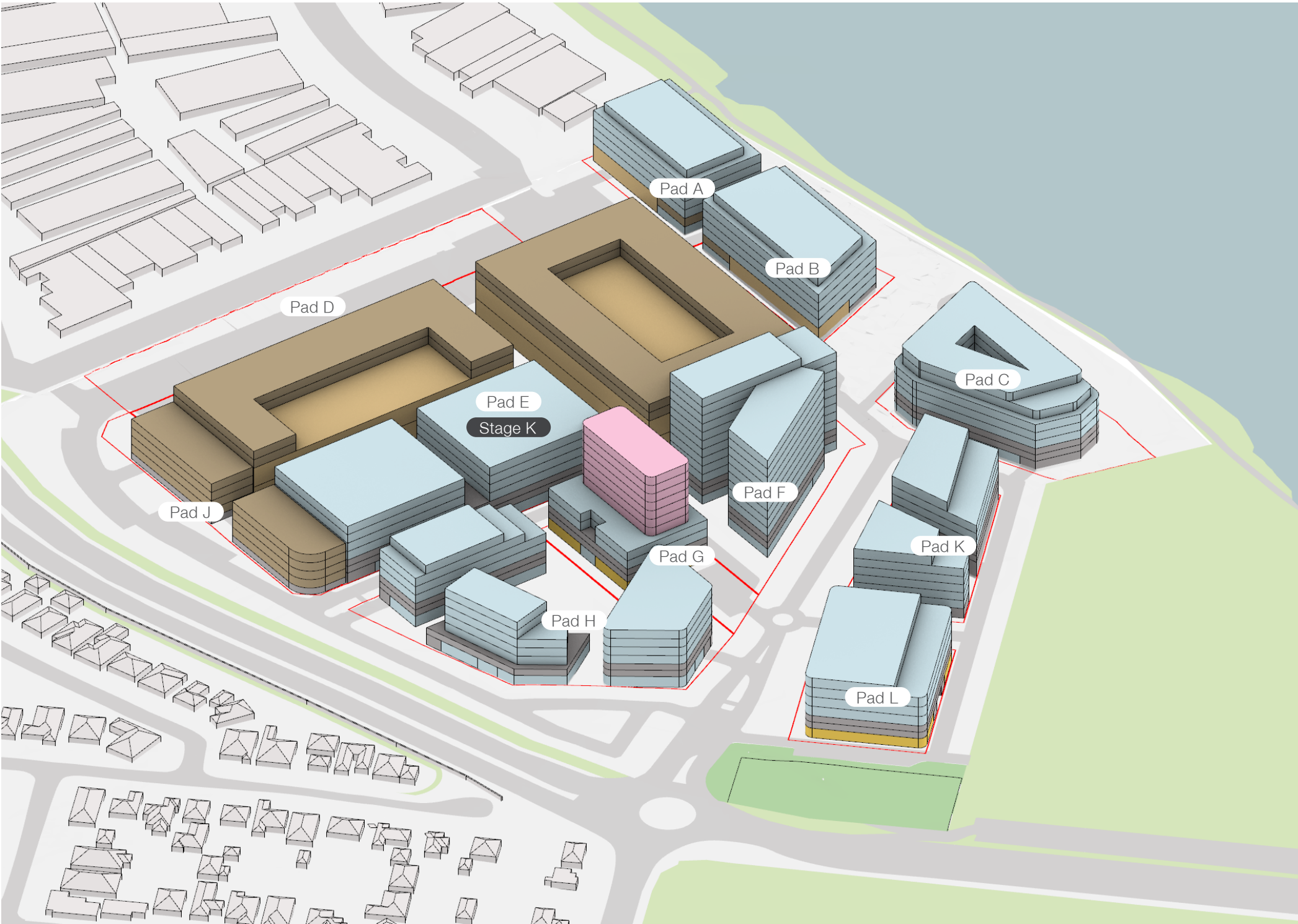
Office and Business Premises

Food & Beverage

Recreation

Hotel

Car Parking



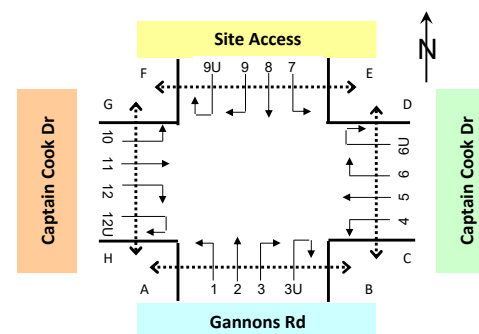


ANNEXURE B: TRAFFIC COUNTS
(5 SHEETS)

Job No. : N5571
Client : McLaren Traffic Engineering
Suburb : Wooloware
Location : 1. Captain Cook Dr/ Gannons Rd/ Site Access

Day/Date : Tue, 4th Feb 2020
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data

	Class 1	Class 2
Classifications	Lights	Heavies



Approach	Gannons Rd												Captain Cook Dr											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	165	0	165	0	0	0	23	1	24	0	0	0	26	1	27	306	12	318	0	0	0	1	0	1
7:15 to 7:30	168	3	171	0	0	0	33	4	37	0	0	0	25	1	26	285	21	306	1	0	1	4	6	10
7:30 to 7:45	212	2	214	0	0	0	30	4	34	0	0	0	32	1	33	263	18	281	0	0	0	3	1	4
7:45 to 8:00	222	4	226	0	0	0	36	0	36	0	0	0	22	1	23	240	15	255	0	0	0	7	0	7
8:00 to 8:15	177	2	179	0	0	0	28	2	30	0	0	0	21	1	22	222	25	247	1	0	1	7	0	7
8:15 to 8:30	202	2	204	0	0	0	36	2	38	0	0	0	34	2	36	246	26	272	0	0	0	4	1	5
8:30 to 8:45	172	2	174	0	0	0	49	7	56	0	0	0	23	1	24	247	33	280	0	0	0	2	0	2
8:45 to 9:00	221	5	226	0	0	0	45	2	47	0	0	0	25	2	27	237	40	277	0	0	0	4	2	6
AM Totals	1,539	20	1,559	0	0	0	280	22	302	0	0	0	208	10	218	2,046	190	2,236	2	0	2	32	10	42
16:00 to 16:15	126	1	127	0	0	0	22	1	23	0	0	0	19	1	20	197	13	210	0	0	0	4	0	4
16:15 to 16:30	96	2	98	0	0	0	36	0	36	0	0	0	16	0	16	161	10	171	0	0	0	3	0	3
16:30 to 16:45	100	1	101	2	0	2	32	1	33	0	0	0	16	2	18	176	6	182	0	0	0	4	0	4
16:45 to 17:00	105	4	109	0	0	0	33	0	33	0	0	0	14	0	14	171	5	176	0	0	0	5	0	5
17:00 to 17:15	131	0	131	0	0	0	34	1	35	0	0	0	8	1	9	199	4	203	0	0	0	8	0	8
17:15 to 17:30	114	1	115	0	0	0	22	0	22	0	0	0	5	0	5	206	2	208	0	0	0	4	0	4
17:30 to 17:45	100	3	103	0	0	0	36	1	37	0	0	0	11	0	11	184	0	184	0	0	0	5	0	5
17:45 to 18:00	104	0	104	0	0	0	35	0	35	0	0	0	14	0	14	159	3	162	0	0	0	6	0	6
PM Totals	876	12	888	2	0	2	250	4	254	0	0	0	103	4	107	1,453	43	1,496	0	0	0	39	0	39

Approach	Site Access												Captain Cook Dr												Crossing Pedestrians									
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)												
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	B to A	A to B	D to C	C to D	F to E	E to F	H to G	G to H	Total	
7:00 to 7:15	1	0	1	3	0	3	8	0	8	0	0	0	0	0	0	109	32	141	103	7	110	1	0	1	0	0	0	0	0	0	0	0	0	
7:15 to 7:30	0	0	0	3	0	3	5	0	5	0	0	0	0	0	0	110	21	131	57	8	65	1	1	2	0	0	0	0	0	0	0	0	0	
7:30 to 7:45	0	0	0	2	0	2	4	0	4	0	0	0	0	0	0	146	19	165	64	7	71	4	1	5	0	0	0	0	0	0	0	0	0	
7:45 to 8:00	2	0	2	3	0	3	5	0	5	0	0	0	3	0	3	138	30	168	67	5	72	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 to 8:15	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	110	27	137	88	11	99	1	0	1	0	0	0	0	0	0	0	0	0	
8:15 to 8:30	0	0	0	4	0	4	3	0	3	0	0	0	1	0	1	150	28	178	84	1	85	0	0	0	0	1	0	0	0	0	0	0	2	
8:30 to 8:45	3	0	3	2	0	2	3	0	3	0	0	0	1	0	1	129	14	143	129	23	152	1	1	2	0	0	1	0	0	1	0	0	2	
8:45 to 9:00	1	0	1	3	0	3	2	1	3	0	0	0	4	0	4	132	21	153	74	3	77	1	3	4	0	0	0	0	0	0	0	0	0	
AM Totals	7	0	7	24	0	24	30	1	31	0	0	0	9	0	9	1,024	192	1,216	666	65	731	9	6	15	0	1	1	0	1	1	0	0	4	
16:00 to 16:15	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	240	9	249	167	1	168	2	0	2	0	0	0	0	0	0	0	0	0	
16:15 to 16:30	1	0	1	1	0	1	2	0	2	0	0	0	0	0	0	282	8	290	170	0	170	3	0	3	0	0	0	0	0	0	0	0	0	
16:30 to 16:45	0	0	0	4	0	4	9	0	9	0	0	0	0	0	0	285	3	288	174	3	177	3	0	3	0	0	0	0	0	0	0	0	0	
16:45 to 17:00	1	0	1	2	0	2	2	0	2	0	0	0	0	0	0	282	6	288	169	1	170	3	0	3	0	0	0	0	0	0	0	0	0	
17:00 to 17:15	0	0	0	2	0	2	3	0	3	0	0	0	0	0	0	343	3	346	141	2	143	8	0	8	0	0	0	0	0	0	0	0	0	
17:15 to 17:30	0	0	0	0	0	0	5	0	5	0	0	0	1	0	1	310	3	313	139	1	140	3	0	3	0	0	0	0	0	0	0	0	0	
17:30 to 17:45	0	0	0	2	0	2	6	0	6	0	0	0	0	0	0	305	1	306	131	0	131	6	0	6	0	0	0	0	0	0	0	0	0	
17:45 to 18:00	0	0	0	1	0	1	3	0	3	0	0	0	0	0	0	254	3	257	129	0	129	3	0	3	0	0	0	0	0	0	0	0	0	
PM Totals	2	0	2	12	0	12	33	0	33	0	0	0	1	0	1	2,301	36	2,337	1,220	8	1,228	31	0	31	0	0	0	0	0	0	0	0	0	

Job No.

: N5571

Client

: McLaren Traffic Engineering

Suburb

: Wooloware

Location

: 2. Captain Cook Dr/ Endeavour Rd

Day/Date

: Tue, 4th Feb 2020

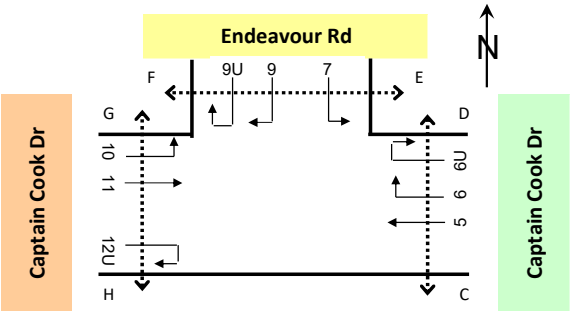
Weather

: Fine

Description

: Classified Intersection Count

: 15 mins Data



	Class 1	Class 2
Classifications	Lights	Heavies

Approach		Captain Cook Dr									
Direction											
Time Period		Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)			
7:00 to 7:15		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	
7:15 to 7:30		329	7	336	140	1	141	0	0	0	
7:30 to 7:45		327	19	346	156	7	163	0	0	0	
7:45 to 8:00		342	17	359	151	4	155	0	0	0	
8:00 to 8:15		325	13	338	155	2	157	0	0	0	
8:15 to 8:30		324	25	349	88	4	92	0	0	0	
8:30 to 8:45		361	20	381	107	7	114	0	0	0	
8:45 to 9:00		313	28	341	91	7	98	1	0	1	
AM Totals		312	35	347	123	6	129	0	0	0	
16:00 to 16:15		2,633	164	2,797	1,011	38	1,049	1	0	1	
16:15 to 16:30		285	5	290	60	4	64	0	0	0	
16:30 to 16:45		215	5	220	45	4	49	0	0	0	
16:45 to 17:00		246	4	250	46	3	49	0	0	0	
17:00 to 17:15		237	8	245	43	0	43	0	0	0	
17:15 to 17:30		304	3	307	59	0	59	0	0	0	
17:30 to 17:45		261	3	264	57	0	57	0	0	0	
17:45 to 18:00		279	2	281	45	0	45	0	0	0	
PM Totals	208	3	211	42	0	42	0	0	0		
	2,035	33	2,068	397	11	408	0	0	0		

Approach	Endeavour Rd									Captain Cook Dr									Crossing Pedestrians							
Direction	Direction 7 (Left Turn)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12U (U Turn)										
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total		D to C	C to D	F to E	E to F	H to G	G to H	Total
7:00 to 7:15	46	6	52	6	1	7	0	0	0	26	4	30	166	29	195	0	0	0		0	0	0	0	0	0	0
7:15 to 7:30	26	7	33	3	1	4	0	0	0	44	2	46	138	16	154	0	0	0		0	0	0	0	0	0	0
7:30 to 7:45	51	7	58	3	1	4	0	0	0	38	4	42	168	26	194	0	0	0		0	0	0	0	0	0	0
7:45 to 8:00	32	4	36	7	1	8	0	0	0	53	2	55	164	24	188	0	0	0		0	0	0	0	0	0	0
8:00 to 8:15	38	10	48	7	3	10	0	0	0	41	1	42	179	33	212	0	0	0		0	0	0	0	0	0	0
8:15 to 8:30	45	4	49	9	2	11	0	0	0	47	3	50	188	22	210	0	0	0		0	0	0	0	0	0	0
8:30 to 8:45	64	5	69	7	1	8	0	0	0	37	1	38	205	30	235	0	0	0		0	0	0	0	1	0	1
8:45 to 9:00	34	5	39	10	1	11	0	0	0	36	6	42	162	22	184	0	0	0		0	0	0	0	0	0	0
AM Totals	336	48	384	52	11	63	0	0	0	322	23	345	1,370	202	1,572	0	0	0		0	0	0	0	1	0	1
16:00 to 16:15	156	2	158	52	3	55	0	0	0	28	1	29	270	5	275	0	0	0		0	0	0	0	0	1	1
16:15 to 16:30	130	1	131	39	2	41	0	0	0	24	3	27	300	10	310	0	0	0		0	0	0	1	0	0	1
16:30 to 16:45	138	1	139	51	2	53	0	0	0	25	1	26	310	3	313	0	0	0		0	0	0	1	0	0	1
16:45 to 17:00	164	2	166	42	1	43	0	0	0	23	3	26	315	4	319	0	0	0		0	0	0	0	0	0	0
17:00 to 17:15	185	2	187	72	2	74	0	0	0	15	3	18	311	4	315	0	0	0		0	0	0	0	0	0	0
17:15 to 17:30	143	2	145	33	1	34	0	0	0	21	0	21	308	3	311	0	0	0		0	0	0	0	0	0	0
17:30 to 17:45	112	0	112	26	1	27	0	0	0	9	3	12	310	1	311	0	0	0		0	0	1	0	0	0	1
17:45 to 18:00	82	1	83	29	0	29	0	0	0	24	0	24	298	3	301	0	0	0		0	0	0	0	0	0	0
PM Totals	1,110	11	1,121	344	12	356	0	0	0	169	14	183	2,422	33	2,455	0	0	0		0	0	1	2	0	1	4

TURNING MOVEMENT SURVEY

Captain Cook Dr and Gannons Rd, Woollooware

Friday, 4 November 2016

Weather:	Fine
Suburban:	Woollooware
Customer:	McLaren

Survey Start	
AM:	
PM:	16:00

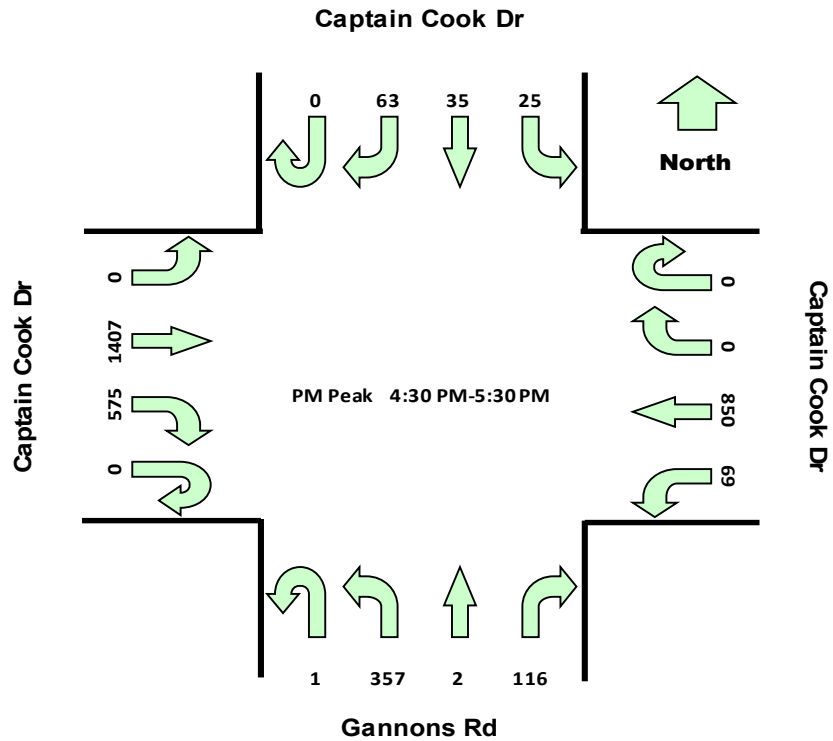
Peakhour	
AM:	
PM:	4:30 PM-5:30 PM

All Vehicles

Time		North Approach Captain Cook Dr				East Approach Captain Cook Dr				South Approach Gannons Rd				West Approach Captain Cook Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
16:00	16:15	0	7	7	0	0	0	218	23	0	39	1	96	0	146	295	0	3327	
16:15	16:30	0	2	5	4	0	0	185	16	0	42	0	94	0	153	316	0	3402	
16:30	16:45	0	5	5	0	0	0	200	20	0	29	1	110	0	163	342	0	3500	Peak
16:45	17:00	0	8	7	2	0	0	185	12	0	32	0	86	0	143	328	0	3376	
17:00	17:15	0	33	13	16	0	0	225	23	1	27	1	89	0	149	330	0	3361	
17:15	17:30	0	17	10	7	0	0	240	14	0	28	0	72	0	120	407	0	3205	
17:30	17:45	0	14	6	6	0	0	191	14	0	36	0	62	0	110	312	0	2978	
17:45	18:00	0	13	2	1	0	0	211	15	1	31	0	69	0	152	293	0	2948	
18:00	18:15	0	13	5	3	0	0	174	18	0	32	1	64	0	136	305	0	2661	
18:15	18:30	0	9	5	3	0	0	165	12	1	31	1	66	0	111	284	0		
18:30	18:45	0	6	2	1	0	0	175	12	1	29	0	61	0	148	284	2		
18:45	19:00	0	2	1	0	0	0	117	12	0	35	0	60	0	81	192	1		

Peak Time		North Approach Captain Cook Dr				East Approach Captain Cook Dr				South Approach Gannons Rd				West Approach Captain Cook Dr				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
16:30	17:30	0	63	35	25	0	0	850	69	1	116	2	357	0	575	1407	0	3500	

Graphic



Light Vehicles

Time		North Approach Captain Cook Dr				East Approach Captain Cook Dr				South Approach Gannons Rd				West Approach Captain Cook Dr			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
16:00	16:15	0	6	7	0	0	0	200	23	0	38	1	93	0	144	286	0
16:15	16:30	0	2	5	4	0	0	170	16	0	42	0	89	0	152	308	0
16:30	16:45	0	5	5	0	0	0	192	20	0	28	1	109	0	162	333	0
16:45	17:00	0	8	7	2	0	0	177	12	0	31	0	85	0	143	323	0
17:00	17:15	0	33	13	16	0	0	223	23	1	27	1	88	0	148	322	0
17:15	17:30	0	17	10	7	0	0	239	14	0	28	0	72	0	119	401	0
17:30	17:45	0	14	6	6	0	0	189	14	0	36	0	60	0	108	307	0
17:45	18:00	0	13	2	1	0	0	210	15	1	29	0	68	0	151	288	0
18:00	18:15	0	13	5	3	0	0	173	18	0	32	1	64	0	135	301	0
18:15	18:30	0	9	5	3	0	0	161	12	1	31	1	65	0	110	279	0
18:30	18:45	0	6	2	1	0	0	174	12	1	29	0	61	0	147	278	0
18:45	19:00	0	2	1	0	0	0	116	12	0	35	0	59	0	81	192	0

Heavy Vehicles

Time		North Approach Captain Cook Dr				East Approach Captain Cook Dr				South Approach Gannons Rd				West Approach Captain Cook Dr			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
16:00	16:15	0	1	0	0	0	0	18	0	0	1	0	3	0	2	9	0
16:15	16:30	0	0	0	0	0	0	15	0	0	0	0	5	0	1	8	0
16:30	16:45	0	0	0	0	0	0	8	0	0	1	0	1	0	1	9	0
16:45	17:00	0	0	0	0	0	0	8	0	0	1	0	1	0	0	5	0
17:00	17:15	0	0	0	0	0	0	2	0	0	0	0	1	0	1	8	0
17:15	17:30	0	0	0	0	0	0	1	0	0	0	0	0	0	1	6	0
17:30	17:45	0	0	0	0	0	0	2	0	0	0	0	2	0	2	5	0
17:45	18:00	0	0	0	0	0	0	1	0	0	2	0	1	0	1	5	0
18:00	18:15	0	0	0	0	0	0	1	0	0	0	0	0	0	1	4	0
18:15	18:30	0	0	0	0	0	0	4	0	0	0	0	1	0	1	5	0
18:30	18:45	0	0	0	0	0	0	1	0	0	0	0	0	0	1	6	2
18:45	19:00	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1

Cyclists

Time		North Approach Captain Cook Dr				East Approach Captain Cook Dr				South Approach Gannons Rd				West Approach Captain Cook Dr			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
16:00	16:15	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
16:15	16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:30	16:45	0	1	0	1	0	0	0	1	0	0	0	0	0	1	1	0
16:45	17:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0
17:00	17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
17:15	17:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4	0
17:30	17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0
17:45	18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
18:45	19:00	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0



**ANNEXURE C: SIDRA RESULTS
(32 SHEETS)**

EXISTING

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Existing AM]

Captain Cook Drive / Gannons Road
Existing Volumes (4/2/20)
Peak 8:00AM - 9:00AM
Site Category: (None)
Roundabout

Movement Performance - Vehicles													
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h	
South: Gannons Rd (S)													
1	L2	783	1.4	0.433	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8	
2	T1	1	0.0	0.269	7.3	LOS A	1.5	10.9	0.79	0.92	0.79	34.2	
3	R2	171	7.6	0.269	11.2	LOS A	1.5	10.9	0.79	0.92	0.79	48.1	
3u	U	1	0.0	0.269	12.8	LOS A	1.5	10.9	0.79	0.92	0.79	45.9	
Approach		956	2.5	0.433	3.9	LOS A	1.5	10.9	0.14	0.44	0.14	48.6	
East: Captain Cook Drive (E)													
4	L2	109	5.5	0.649	10.1	LOS A	5.9	45.0	0.77	0.88	0.94	50.2	
5	T1	1076	11.5	0.649	10.2	LOS A	6.0	46.3	0.77	0.87	0.93	56.0	
6	R2	1	0.0	0.649	14.4	LOS A	6.0	46.3	0.77	0.86	0.92	40.9	
6u	U	20	15.0	0.649	17.4	LOS B	6.0	46.3	0.77	0.86	0.92	55.8	
Approach		1206	11.0	0.649	10.4	LOS A	6.0	46.3	0.77	0.87	0.93	55.4	
North: Toyota Access (N)													
7	L2	4	0.0	0.008	5.2	LOS A	0.0	0.2	0.68	0.55	0.68	38.8	
8	T1	13	0.0	0.031	3.1	LOS A	0.1	1.0	0.68	0.62	0.68	36.0	
9	R2	9	11.1	0.031	6.1	LOS A	0.1	1.0	0.68	0.62	0.68	37.9	
9u	U	1	0.0	0.031	6.6	LOS A	0.1	1.0	0.68	0.62	0.68	31.2	
Approach		27	3.7	0.031	4.5	LOS A	0.1	1.0	0.68	0.61	0.68	36.8	
West: Captain Cook Drive (W)													
10	L2	6	0.0	0.415	5.9	LOS A	2.9	23.1	0.51	0.56	0.51	39.6	
11	T1	611	14.7	0.415	6.4	LOS A	3.1	23.5	0.50	0.58	0.50	59.4	
12	R2	413	9.2	0.415	11.1	LOS A	3.1	23.5	0.48	0.64	0.48	51.8	
12u	U	7	57.1	0.415	14.6	LOS B	3.1	23.5	0.48	0.64	0.48	46.7	
Approach		1037	12.7	0.415	8.3	LOS A	3.1	23.5	0.50	0.60	0.50	55.9	
All Vehicles		3226	9.0	0.649	7.8	LOS A	6.0	46.3	0.50	0.66	0.56	53.2	

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Existing PM]

Captain Cook Drive / Gannons Road
Existing Volumes (4/2/20)
Peak 4:30PM - 5:30PM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	456	1.3	0.252	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8
2	T1	2	50.0	0.155	7.8	LOS A	0.8	5.7	0.67	0.81	0.67	34.4
3	R2	123	1.6	0.155	9.8	LOS A	0.8	5.7	0.67	0.81	0.67	49.6
3u	U	1	100.0	0.155	15.0	LOS B	0.8	5.7	0.67	0.81	0.67	45.7
Approach		582	1.7	0.252	4.0	LOS A	0.8	5.7	0.15	0.44	0.15	48.9
East: Captain Cook Drive (E)												
4	L2	46	6.5	0.527	11.0	LOS A	4.1	29.1	0.81	0.93	0.95	49.8
5	T1	769	2.2	0.527	10.7	LOS A	4.2	30.0	0.81	0.91	0.94	57.6
6	R2	1	0.0	0.527	15.1	LOS B	4.2	30.0	0.81	0.90	0.94	40.7
6u	U	21	0.0	0.527	17.5	LOS B	4.2	30.0	0.81	0.90	0.94	59.2
Approach		837	2.4	0.527	10.9	LOS A	4.2	30.0	0.81	0.92	0.94	57.1
North: Toyota Access (N)												
7	L2	1	0.0	0.003	8.3	LOS A	0.0	0.1	0.81	0.60	0.81	37.5
8	T1	8	0.0	0.055	6.5	LOS A	0.3	2.1	0.85	0.82	0.85	34.8
9	R2	19	0.0	0.055	9.2	LOS A	0.3	2.1	0.85	0.82	0.85	37.7
9u	U	1	0.0	0.055	10.0	LOS A	0.3	2.1	0.85	0.82	0.85	30.2
Approach		29	0.0	0.055	8.4	LOS A	0.3	2.1	0.84	0.81	0.84	36.5
West: Captain Cook Drive (W)												
10	L2	1	0.0	0.654	6.0	LOS A	6.5	46.0	0.58	0.55	0.58	39.5
11	T1	1235	1.2	0.654	6.2	LOS A	6.6	47.0	0.57	0.56	0.57	59.8
12	R2	630	1.1	0.654	11.0	LOS A	6.6	47.0	0.54	0.61	0.54	52.1
12u	U	17	0.0	0.654	13.4	LOS A	6.6	47.0	0.54	0.61	0.54	59.4
Approach		1883	1.2	0.654	7.9	LOS A	6.6	47.0	0.56	0.58	0.56	56.9
All Vehicles		3331	1.6	0.654	7.9	LOS A	6.6	47.0	0.55	0.64	0.58	55.2

MOVEMENT SUMMARY

Site: 101 [Captain Cook Drive / Endeavour Road - Existing AM, Stage 1]

Captain Cook Drive / Endeavour Road
Existing Volumes (4/2/20)
Peak 7:30AM - 8:30AM
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
3	R2	518	3.3	0.865	26.0	LOS B	12.3	88.4	0.91	1.68	3.17	41.3
Approach		518	3.3	0.865	26.0	NA	12.3	88.4	0.91	1.68	3.17	41.3
East: Endeavour Road (E)												
4	L2	191	13.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	54.5
6	R2	33	21.2	0.250	36.5	LOS C	0.8	6.8	0.91	0.98	0.99	36.6
Approach		224	14.3	0.250	10.3	LOS A	0.8	6.8	0.13	0.59	0.15	50.9
North: Captain Cook Drive (N)												
7	L2	189	5.3	0.204	8.2	LOS A	0.7	5.3	0.48	0.72	0.48	52.1
8	T1	804	13.1	0.224	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		993	11.6	0.224	1.6	LOS A	0.7	5.3	0.09	0.14	0.09	58.3
All Vehicles		1735	9.5	0.865	10.0	NA	12.3	88.4	0.34	0.66	1.02	51.1

MOVEMENT SUMMARY

Site: 101 [Captain Cook Drive / Endeavour Road - Existing AM, Stage 2]

Captain Cook Drive / Endeavour Road
Existing Volumes (4/2/20)
Peak 7:30AM - 8:30AM
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1427	5.3	0.378	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1427	5.3	0.378	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: Endeavour Road (E)												
6	R2	33	21.2	0.021	7.5	LOS A	0.1	0.7	0.59	0.74	0.59	45.6
Approach		33	21.2	0.021	7.5	LOS A	0.1	0.7	0.59	0.74	0.59	45.6
All Vehicles		1460	5.6	0.378	0.2	NA	0.1	0.7	0.01	0.02	0.01	59.6

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Existing PM, Stage 1]

Captain Cook Drive / Endeavour Road
Existing Volumes (4/2/20)
Peak 4:30PM - 5:30PM
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
3	R2	208	1.4	0.594	22.9	LOS B	3.2	22.5	0.88	1.11	1.48	42.9
Approach		208	1.4	0.594	22.9	NA	3.2	22.5	0.88	1.11	1.48	42.9
East: Endeavour Road (E)												
4	L2	637	1.1	0.346	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
6	R2	204	2.9	0.856	75.1	LOS F	8.3	59.7	0.98	1.54	2.94	26.5
Approach		841	1.5	0.856	22.5	LOS B	8.3	59.7	0.24	0.77	0.71	43.7
North: Captain Cook Drive (N)												
7	L2	91	7.7	0.070	6.4	LOS A	0.2	1.8	0.26	0.55	0.26	53.1
8	T1	1258	1.1	0.325	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1349	1.6	0.325	0.5	LOS A	0.2	1.8	0.02	0.04	0.02	59.4
All Vehicles		2398	1.5	0.856	10.1	NA	8.3	59.7	0.17	0.39	0.39	51.2

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Existing PM, Stage 2]

Captain Cook Drive / Endeavour Road
Existing Volumes (4/2/20)
Peak 4:30PM - 5:30PM
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1066	1.7	0.276	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1066	1.7	0.276	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: Endeavour Road (E)												
6	R2	204	2.9	0.099	6.9	LOS A	0.4	2.9	0.52	0.74	0.52	46.9
Approach		204	2.9	0.099	6.9	LOS A	0.4	2.9	0.52	0.74	0.52	46.9
All Vehicles		1270	1.9	0.276	1.1	NA	0.4	2.9	0.08	0.12	0.08	58.3

EXISTING PLUS EXISTING APPROVED SCALE

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Existing AM + Existing Approved Scale]

Captain Cook Drive / Gannons Road
Existing Volumes (4/2/20) + Existing Approved Scale
Peak 8:00AM - 9:00AM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	783	1.4	0.433	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8
2	T1	44	0.0	0.371	8.4	LOS A	2.2	16.4	0.85	0.96	0.91	34.1
3	R2	171	7.6	0.371	12.3	LOS A	2.2	16.4	0.85	0.96	0.91	47.9
3u	U	1	0.0	0.371	13.8	LOS A	2.2	16.4	0.85	0.96	0.91	45.7
Approach		999	2.4	0.433	4.3	LOS A	2.2	16.4	0.18	0.47	0.20	47.7
East: Captain Cook Drive (E)												
4	L2	109	5.5	0.724	12.7	LOS A	7.8	59.4	0.87	1.02	1.18	48.5
5	T1	1076	11.5	0.724	12.7	LOS A	8.0	61.5	0.87	1.01	1.17	53.9
6	R2	44	0.0	0.724	16.8	LOS B	8.0	61.5	0.87	1.00	1.16	39.8
6u	U	20	15.0	0.724	19.8	LOS B	8.0	61.5	0.87	1.00	1.16	53.6
Approach		1249	10.6	0.724	13.0	LOS A	8.0	61.5	0.87	1.01	1.17	52.7
North: Toyota Access (N)												
7	L2	15	0.0	0.034	5.7	LOS A	0.1	1.0	0.71	0.66	0.71	38.5
8	T1	24	0.0	0.142	3.7	LOS A	0.7	5.2	0.75	0.77	0.75	35.6
9	R2	75	1.3	0.142	6.5	LOS A	0.7	5.2	0.75	0.77	0.75	38.5
9u	U	1	0.0	0.142	7.2	LOS A	0.7	5.2	0.75	0.77	0.75	30.8
Approach		115	0.9	0.142	5.8	LOS A	0.7	5.2	0.74	0.76	0.74	37.8
West: Captain Cook Drive (W)												
10	L2	139	0.0	0.501	6.6	LOS A	3.8	28.8	0.63	0.63	0.63	39.4
11	T1	611	14.7	0.501	7.0	LOS A	3.9	30.3	0.62	0.65	0.62	58.8
12	R2	413	9.2	0.501	11.7	LOS A	3.9	30.3	0.61	0.68	0.61	51.7
12u	U	7	57.1	0.501	15.4	LOS B	3.9	30.3	0.61	0.68	0.61	46.6
Approach		1170	11.3	0.501	8.7	LOS A	3.9	30.3	0.62	0.66	0.62	53.1
All Vehicles		3533	8.2	0.724	8.9	LOS A	8.0	61.5	0.59	0.73	0.70	50.7

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Existing PM + Existing Approved Scale]

Captain Cook Drive / Gannons Road
Existing Volumes (4/2/20) + Existing Approved Scale
Peak 4:30PM - 5:30PM
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	456	1.3	0.252	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8
2	T1	13	7.7	0.208	7.7	LOS A	1.2	8.4	0.79	0.89	0.79	34.3
3	R2	123	1.6	0.208	11.1	LOS A	1.2	8.4	0.79	0.89	0.79	49.3
3u	U	1	100.0	0.208	17.1	LOS B	1.2	8.4	0.79	0.89	0.79	45.4
Approach		593	1.7	0.252	4.3	LOS A	1.2	8.4	0.18	0.47	0.18	48.5
East: Captain Cook Drive (E)												
4	L2	46	6.5	0.716	23.5	LOS B	7.9	56.4	0.98	1.20	1.63	42.7
5	T1	769	2.2	0.716	22.6	LOS B	8.6	61.3	0.99	1.21	1.64	48.7
6	R2	11	0.0	0.716	26.6	LOS B	8.6	61.3	1.00	1.22	1.64	36.1
6u	U	21	0.0	0.716	29.0	LOS C	8.6	61.3	1.00	1.22	1.64	50.1
Approach		847	2.4	0.716	22.8	LOS B	8.6	61.3	0.99	1.21	1.64	48.1
North: Toyota Access (N)												
7	L2	44	0.0	0.131	9.3	LOS A	0.6	4.5	0.84	0.85	0.84	37.1
8	T1	44	0.0	0.686	17.2	LOS B	5.8	40.3	0.97	1.33	1.57	31.6
9	R2	286	0.0	0.686	19.9	LOS B	5.8	40.3	0.97	1.33	1.57	33.9
9u	U	1	0.0	0.686	20.7	LOS B	5.8	40.3	0.97	1.33	1.57	27.8
Approach		375	0.0	0.686	18.3	LOS B	5.8	40.3	0.96	1.27	1.49	33.9
West: Captain Cook Drive (W)												
10	L2	33	0.0	0.681	6.2	LOS A	7.0	49.8	0.64	0.58	0.64	39.3
11	T1	1235	1.2	0.681	6.4	LOS A	7.2	51.1	0.63	0.59	0.63	59.4
12	R2	630	1.1	0.681	11.2	LOS A	7.2	51.1	0.60	0.62	0.60	52.0
12u	U	17	0.0	0.681	13.5	LOS A	7.2	51.1	0.60	0.62	0.60	59.2
Approach		1915	1.1	0.681	8.0	LOS A	7.2	51.1	0.62	0.60	0.62	56.3
All Vehicles		3730	1.4	0.716	11.8	LOS A	8.6	61.3	0.67	0.79	0.87	49.8

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Existing AM, Stage 1 +Existing Approved Scale]

Captain Cook Drive / Endeavour Road
Existing Volumes (4/2/20) + Existing Approved Scale
Peak 7:30AM - 8:30AM
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
3	R2	518	3.3	1.039	126.5	LOS F	47.7	343.3	1.00	4.04	11.12	19.3
Approach		518	3.3	1.039	126.5	NA	47.7	343.3	1.00	4.04	11.12	19.3
East: Endeavour Road (E)												
4	L2	191	13.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	54.5
6	R2	33	21.2	0.233	40.5	LOS C	0.9	7.6	0.93	0.99	1.00	35.2
Approach		224	14.3	0.233	10.9	LOS A	0.9	7.6	0.14	0.59	0.15	50.4
North: Captain Cook Drive (N)												
7	L2	323	3.1	0.343	8.7	LOS A	1.5	10.8	0.52	0.80	0.60	51.8
8	T1	948	11.1	0.261	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1271	9.0	0.343	2.2	LOS A	1.5	10.8	0.13	0.20	0.15	57.6
All Vehicles		2013	8.1	1.039	35.2	NA	47.7	343.3	0.36	1.23	2.97	37.8

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Existing AM, Stage 2 + Existing Approved Scale]

Captain Cook Drive / Endeavour Road
Existing Volumes (4/2/20) + Existing Approved Scale
Peak 7:30AM - 8:30AM
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1494	5.0	0.396	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1494	5.0	0.396	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: Endeavour Road (E)												
6	R2	33	21.2	0.022	7.7	LOS A	0.1	0.7	0.60	0.75	0.60	45.5
Approach		33	21.2	0.022	7.7	LOS A	0.1	0.7	0.60	0.75	0.60	45.5
All Vehicles		1527	5.4	0.396	0.2	NA	0.1	0.7	0.01	0.02	0.01	59.6

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Existing PM, Stage 1 + Existing Approved Scale]

Captain Cook Drive / Endeavour Road
Existing Volumes (4/2/20) + Existing Approved Scale
Peak 4:30PM - 5:30PM
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
3	R2	208	1.4	0.624	24.7	LOS B	3.4	24.0	0.90	1.14	1.57	42.0
Approach		208	1.4	0.624	24.7	NA	3.4	24.0	0.90	1.14	1.57	42.0
East: Endeavour Road (E)												
4	L2	637	1.1	0.346	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
6	R2	204	2.9	0.932	113.1	LOS F	12.0	86.2	0.99	1.85	4.09	20.8
Approach		841	1.5	0.932	31.7	LOS C	12.0	86.2	0.24	0.85	0.99	39.4
North: Captain Cook Drive (N)												
7	L2	124	5.6	0.094	6.4	LOS A	0.3	2.5	0.26	0.56	0.26	53.1
8	T1	1291	1.1	0.333	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1415	1.5	0.333	0.6	LOS A	0.3	2.5	0.02	0.05	0.02	59.3
All Vehicles		2464	1.5	0.932	13.3	NA	12.0	86.2	0.17	0.41	0.48	49.0

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Existing PM, Stage 2 + Existing Approved Scale]

Captain Cook Drive / Endeavour Road
Existing Volumes (4/2/20) + Existing Approved Scale
Peak 4:30PM - 5:30PM
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1333	1.4	0.345	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1333	1.4	0.345	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: Endeavour Road (E)												
6	R2	204	2.9	0.119	7.3	LOS A	0.5	3.4	0.58	0.81	0.58	46.7
Approach		204	2.9	0.119	7.3	LOS A	0.5	3.4	0.58	0.81	0.58	46.7
All Vehicles		1537	1.6	0.345	1.0	NA	0.5	3.4	0.08	0.11	0.08	58.5

EXISTING PLUS SHARKS STAGE 3 & 4

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Future AM + Sharks]

Captain Cook Drive / Gannons Road
 Future Volumes (4/2/20) + Sharks 3 & 4
 Peak 8:00AM - 9:00AM
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles													
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h	
South: Gannons Rd (S)													
1	L2	783	1.4	0.433	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8	
2	T1	1	0.0	0.441	9.0	LOS A	2.8	20.6	0.88	1.00	0.99	33.7	
3	R2	253	5.1	0.441	12.9	LOS A	2.8	20.6	0.88	1.00	0.99	47.5	
3u	U	1	0.0	0.441	14.5	LOS B	2.8	20.6	0.88	1.00	0.99	44.9	
Approach		1038	2.3	0.441	4.9	LOS A	2.8	20.6	0.22	0.50	0.24	48.4	
East: Captain Cook Drive (E)													
4	L2	157	3.8	0.738	11.6	LOS A	8.3	62.6	0.86	0.97	1.13	49.2	
5	T1	1186	10.5	0.738	11.7	LOS A	8.5	64.9	0.86	0.96	1.12	55.0	
6	R2	1	0.0	0.738	15.9	LOS B	8.5	64.9	0.86	0.95	1.11	40.3	
6u	U	25	12.0	0.738	18.7	LOS B	8.5	64.9	0.86	0.95	1.11	55.3	
Approach		1369	9.7	0.738	11.8	LOS A	8.5	64.9	0.86	0.96	1.12	54.3	
North: Toyota Access (N)													
7	L2	4	0.0	0.010	6.0	LOS A	0.0	0.3	0.73	0.60	0.73	38.4	
8	T1	13	0.0	0.036	3.9	LOS A	0.2	1.3	0.75	0.68	0.75	35.9	
9	R2	9	11.1	0.036	6.9	LOS A	0.2	1.3	0.75	0.68	0.75	37.7	
9u	U	1	0.0	0.036	7.4	LOS A	0.2	1.3	0.75	0.68	0.75	31.0	
Approach		27	3.7	0.036	5.3	LOS A	0.2	1.3	0.74	0.67	0.74	36.6	
West: Captain Cook Drive (W)													
10	L2	6	0.0	0.485	6.5	LOS A	3.6	28.4	0.64	0.62	0.64	39.3	
11	T1	688	13.1	0.485	7.0	LOS A	3.9	29.5	0.63	0.64	0.63	58.8	
12	R2	413	9.2	0.485	11.6	LOS A	3.9	29.5	0.62	0.68	0.62	51.6	
12u	U	7	57.1	0.485	15.3	LOS B	3.9	29.5	0.62	0.68	0.62	46.5	
Approach		1114	11.8	0.485	8.8	LOS A	3.9	29.5	0.63	0.65	0.63	55.6	
All Vehicles		3548	8.2	0.738	8.8	LOS A	8.5	64.9	0.60	0.73	0.71	52.6	

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Future PM + Sharks]

Captain Cook Drive / Gannons Road
 Future Volumes (4/2/20) + Sharks Stage 3 & 4
 Peak 4:30PM - 5:30PM
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	456	1.3	0.252	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8
2	T1	2	50.0	0.268	8.4	LOS A	1.5	10.6	0.75	0.86	0.75	34.3
3	R2	199	1.0	0.268	10.3	LOS A	1.5	10.6	0.75	0.86	0.75	49.5
3u	U	1	100.0	0.268	15.9	LOS B	1.5	10.6	0.75	0.86	0.75	45.5
Approach		658	1.5	0.268	4.8	LOS A	1.5	10.6	0.23	0.50	0.23	49.0
East: Captain Cook Drive (E)												
4	L2	84	3.6	0.636	12.7	LOS A	6.0	42.5	0.89	1.03	1.15	48.7
5	T1	850	2.0	0.636	12.4	LOS A	6.2	44.4	0.90	1.01	1.14	56.2
6	R2	1	0.0	0.636	16.8	LOS B	6.2	44.4	0.90	1.00	1.14	39.9
6u	U	29	0.0	0.636	19.2	LOS B	6.2	44.4	0.90	1.00	1.14	57.6
Approach		964	2.1	0.636	12.6	LOS A	6.2	44.4	0.90	1.01	1.14	55.4
North: Toyota Access (N)												
7	L2	1	0.0	0.004	10.6	LOS A	0.0	0.1	0.88	0.65	0.88	36.7
8	T1	8	0.0	0.073	8.8	LOS A	0.4	3.0	0.92	0.89	0.92	34.0
9	R2	19	0.0	0.073	11.5	LOS A	0.4	3.0	0.92	0.89	0.92	36.8
9u	U	1	0.0	0.073	12.3	LOS A	0.4	3.0	0.92	0.89	0.92	29.7
Approach		29	0.0	0.073	10.8	LOS A	0.4	3.0	0.92	0.88	0.92	35.7
West: Captain Cook Drive (W)												
10	L2	1	0.0	0.748	8.0	LOS A	9.5	67.3	0.79	0.70	0.86	38.9
11	T1	1330	1.1	0.748	7.9	LOS A	9.5	67.3	0.77	0.70	0.83	58.7
12	R2	630	1.1	0.748	12.2	LOS A	9.2	65.1	0.74	0.69	0.78	51.6
12u	U	17	0.0	0.748	14.6	LOS B	9.2	65.1	0.74	0.69	0.78	58.7
Approach		1978	1.1	0.748	9.4	LOS A	9.5	67.3	0.76	0.69	0.81	56.2
All Vehicles		3629	1.4	0.748	9.4	LOS A	9.5	67.3	0.70	0.74	0.80	54.3

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future AM, Stage 1 + Sharks]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks)
 Peak 7:30AM - 8:30AM
 Site Category: (None)
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
3	R2	518	3.3	0.953	47.3	LOS D	21.4	154.1	0.97	2.42	5.60	33.3
Approach		518	3.3	0.953	47.3	NA	21.4	154.1	0.97	2.42	5.60	33.3
East: Endeavour Road (E)												
4	L2	191	13.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	54.5
6	R2	33	21.2	0.281	41.4	LOS C	0.9	7.7	0.92	0.99	1.03	34.9
Approach		224	14.3	0.281	11.0	LOS A	0.9	7.7	0.14	0.59	0.15	50.3
North: Captain Cook Drive (N)												
7	L2	189	5.3	0.204	8.2	LOS A	0.7	5.3	0.48	0.72	0.48	52.1
8	T1	881	11.9	0.243	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1070	10.7	0.243	1.5	LOS A	0.7	5.3	0.08	0.13	0.08	58.4
All Vehicles		1812	9.1	0.953	15.8	NA	21.4	154.1	0.34	0.84	1.67	47.3

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future AM, Stage 2 + Sharks]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks)
 Peak 7:30AM - 8:30AM
 Site Category: (None)
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1537	4.9	0.407	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1537	4.9	0.407	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: Endeavour Road (E)												
6	R2	33	21.2	0.023	7.8	LOS A	0.1	0.7	0.61	0.76	0.61	45.5
Approach		33	21.2	0.023	7.8	LOS A	0.1	0.7	0.61	0.76	0.61	45.5
All Vehicles		1570	5.2	0.407	0.2	NA	0.1	0.7	0.01	0.02	0.01	59.6

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future PM, Stage 1 + Sharks]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks)
 Peak 4:30PM - 5:30PM
 Site Category: (None)
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
3	R2	208	1.4	0.688	29.2	LOS C	3.9	27.6	0.92	1.19	1.77	40.0
Approach		208	1.4	0.688	29.2	NA	3.9	27.6	0.92	1.19	1.77	40.0
East: Endeavour Road (E)												
4	L2	637	1.1	0.346	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
6	R2	204	2.9	1.012	183.9	LOS F	20.3	145.5	1.00	2.42	6.21	14.8
Approach		841	1.5	1.012	48.9	LOS D	20.3	145.5	0.24	0.99	1.51	33.3
North: Captain Cook Drive (N)												
7	L2	91	7.7	0.070	6.4	LOS A	0.2	1.8	0.26	0.55	0.26	53.1
8	T1	1353	1.0	0.349	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1444	1.5	0.349	0.4	LOS A	0.2	1.8	0.02	0.03	0.02	59.4
All Vehicles		2493	1.5	1.012	19.2	NA	20.3	145.5	0.17	0.45	0.66	45.4

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future PM, Stage 2 + Sharks]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks)
 Peak 4:30PM - 5:30PM
 Site Category: (None)
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1147	1.6	0.297	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1147	1.6	0.297	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: Endeavour Road (E)												
6	R2	204	2.9	0.104	7.0	LOS A	0.4	3.1	0.54	0.76	0.54	46.8
Approach		204	2.9	0.104	7.0	LOS A	0.4	3.1	0.54	0.76	0.54	46.8
All Vehicles		1351	1.8	0.297	1.1	NA	0.4	3.1	0.08	0.11	0.08	58.3

EXISTING PLUS SHARKS STAGE 3 & 4 PLUS EXISTING APPROVED SCALE

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Future AM + Sharks + Existing Approved Scale]

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks 3 & 4 + Existing Approved Scale

Peak 8:00AM - 9:00AM

Site Category: (None)

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	783	1.4	0.433	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8
2	T1	44	0.0	0.586	12.4	LOS A	4.3	31.3	0.94	1.08	1.20	32.9
3	R2	253	5.1	0.586	16.2	LOS B	4.3	31.3	0.94	1.08	1.20	45.9
3u	U	1	0.0	0.586	17.8	LOS B	4.3	31.3	0.94	1.08	1.20	43.5
Approach		1081	2.2	0.586	6.0	LOS A	4.3	31.3	0.26	0.54	0.33	47.1
East: Captain Cook Drive (E)												
4	L2	157	3.8	0.823	16.0	LOS B	11.7	88.0	0.97	1.16	1.50	46.5
5	T1	1186	10.5	0.823	15.9	LOS B	12.1	91.8	0.97	1.15	1.49	51.7
6	R2	44	0.0	0.823	19.9	LOS B	12.1	91.8	0.97	1.13	1.48	38.5
6u	U	25	12.0	0.823	22.8	LOS B	12.1	91.8	0.97	1.13	1.48	52.0
Approach		1412	9.4	0.823	16.2	LOS B	12.1	91.8	0.97	1.15	1.49	50.6
North: Toyota Access (N)												
7	L2	15	0.0	0.039	6.7	LOS A	0.2	1.2	0.77	0.72	0.77	38.1
8	T1	24	0.0	0.166	4.7	LOS A	0.9	6.5	0.81	0.86	0.81	35.3
9	R2	75	1.3	0.166	7.4	LOS A	0.9	6.5	0.81	0.86	0.81	38.2
9u	U	1	0.0	0.166	8.2	LOS A	0.9	6.5	0.81	0.86	0.81	30.6
Approach		115	0.9	0.166	6.7	LOS A	0.9	6.5	0.81	0.84	0.81	37.4
West: Captain Cook Drive (W)												
10	L2	139	0.0	0.583	8.0	LOS A	5.2	39.6	0.76	0.77	0.83	39.1
11	T1	688	13.1	0.583	8.3	LOS A	5.3	40.9	0.76	0.77	0.81	58.2
12	R2	413	9.2	0.583	12.7	LOS A	5.3	40.9	0.75	0.75	0.78	51.4
12u	U	7	57.1	0.583	16.6	LOS B	5.3	40.9	0.75	0.75	0.78	46.3
Approach		1247	10.6	0.583	9.8	LOS A	5.3	40.9	0.75	0.76	0.80	52.9
All Vehicles		3855	7.5	0.823	11.0	LOS A	12.1	91.8	0.70	0.84	0.92	49.7

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Future PM + Sharks + Existing Approved Scale]

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks Stage 3 & 4 + Existing Approved Scale

Peak 4:30PM - 5:30PM

Site Category: (None)

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	456	1.3	0.252	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8
2	T1	13	7.7	0.347	8.6	LOS A	2.1	15.0	0.85	0.95	0.87	34.0
3	R2	199	1.0	0.347	11.9	LOS A	2.1	15.0	0.85	0.95	0.87	48.9
3u	U	1	100.0	0.347	18.5	LOS B	2.1	15.0	0.85	0.95	0.87	44.9
Approach		669	1.5	0.347	5.3	LOS A	2.1	15.0	0.27	0.53	0.28	48.4
East: Captain Cook Drive (E)												
4	L2	84	3.6	0.883	42.2	LOS C	15.5	110.4	1.00	1.51	2.57	35.1
5	T1	850	2.0	0.883	41.0	LOS C	17.3	122.7	1.00	1.52	2.57	39.3
6	R2	12	0.0	0.883	44.7	LOS D	17.3	122.7	1.00	1.53	2.58	30.7
6u	U	29	0.0	0.883	47.1	LOS D	17.3	122.7	1.00	1.53	2.58	40.3
Approach		975	2.1	0.883	41.3	LOS C	17.3	122.7	1.00	1.52	2.57	38.8
North: Toyota Access (N)												
7	L2	44	0.0	0.169	12.0	LOS A	0.9	6.3	0.91	0.91	0.91	36.2
8	T1	52	0.0	0.948	82.5	LOS F	16.8	117.4	1.00	2.59	3.73	20.5
9	R2	286	0.0	0.948	85.2	LOS F	16.8	117.4	1.00	2.59	3.73	21.4
9u	U	1	0.0	0.948	86.0	LOS F	16.8	117.4	1.00	2.59	3.73	18.8
Approach		383	0.0	0.948	76.4	LOS F	16.8	117.4	0.99	2.39	3.41	22.3
West: Captain Cook Drive (W)												
10	L2	33	0.0	0.779	9.0	LOS A	11.1	78.2	0.86	0.76	0.97	38.8
11	T1	1330	1.1	0.779	8.8	LOS A	11.1	78.2	0.84	0.75	0.94	58.3
12	R2	630	1.1	0.779	13.1	LOS A	10.9	76.8	0.81	0.73	0.88	51.3
12u	U	17	0.0	0.779	15.4	LOS B	10.9	76.8	0.81	0.73	0.88	58.3
Approach		2010	1.1	0.779	10.2	LOS A	11.1	78.2	0.83	0.74	0.92	55.4
All Vehicles		4037	1.3	0.948	23.2	LOS B	17.3	122.7	0.79	1.05	1.45	43.7

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future AM, Stage 1 + Sharks + Existing Approved Scale]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks) + Existing Approved Scale
 Peak 7:30AM - 8:30AM
 Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
3	R2	518	3.3	1.153	309.1	LOS F	98.9	711.9	1.00	6.74	20.63	9.8
Approach		518	3.3	1.153	309.1	NA	98.9	711.9	1.00	6.74	20.63	9.8
East: Endeavour Road (E)												
4	L2	191	13.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	54.5
6	R2	33	21.2	0.401	63.2	LOS E	1.3	10.8	0.95	1.02	1.13	28.9
Approach		224	14.3	0.401	14.2	LOS A	1.3	10.8	0.14	0.60	0.17	48.2
North: Captain Cook Drive (N)												
7	L2	323	3.1	0.343	8.7	LOS A	1.5	10.8	0.52	0.80	0.60	51.8
8	T1	1025	10.2	0.280	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1348	8.5	0.343	2.1	LOS A	1.5	10.8	0.12	0.19	0.14	57.8
All Vehicles		2090	7.8	1.153	79.5	NA	98.9	711.9	0.34	1.86	5.23	25.9

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future AM, Stage 2 + Sharks + Existing Approved Scale]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks) + Existing Approved Scale
 Peak 7:30AM - 8:30AM
 Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1604	4.7	0.424	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1604	4.7	0.424	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: Endeavour Road (E)												
6	R2	33	21.2	0.024	7.9	LOS A	0.1	0.8	0.63	0.78	0.63	45.4
Approach		33	21.2	0.024	7.9	LOS A	0.1	0.8	0.63	0.78	0.63	45.4
All Vehicles		1637	5.0	0.424	0.2	NA	0.1	0.8	0.01	0.02	0.01	59.6

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future PM, Stage 1 + Sharks + Existing Approved Scale]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks) + Existing Approved Scale
 Peak 4:30PM - 5:30PM
 Site Category: (None)
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
3	R2	208	1.4	0.725	32.5	LOS C	4.2	30.1	0.94	1.23	1.91	38.6
Approach		208	1.4	0.725	32.5	NA	4.2	30.1	0.94	1.23	1.91	38.6
East: Endeavour Road (E)												
4	L2	637	1.1	0.346	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
6	R2	204	2.9	1.107	307.6	LOS F	35.5	255.1	1.00	3.29	9.50	9.8
Approach		841	1.5	1.107	78.9	LOS F	35.5	255.1	0.24	1.20	2.30	26.1
North: Captain Cook Drive (N)												
7	L2	124	5.6	0.094	6.4	LOS A	0.3	2.5	0.26	0.56	0.26	53.1
8	T1	1386	1.0	0.358	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1510	1.4	0.358	0.6	LOS A	0.3	2.5	0.02	0.05	0.02	59.3
All Vehicles		2559	1.4	1.107	28.9	NA	35.5	255.1	0.17	0.52	0.93	40.5

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future PM, Stage 2 + Sharks + Existing Approved Scale]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks) + Existing Approved Scale
 Peak 4:30PM - 5:30PM
 Site Category: (None)
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1414	1.3	0.366	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1414	1.3	0.366	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: Endeavour Road (E)												
6	R2	204	2.9	0.127	7.5	LOS A	0.5	3.6	0.60	0.83	0.60	46.6
Approach		204	2.9	0.127	7.5	LOS A	0.5	3.6	0.60	0.83	0.60	46.6
All Vehicles		1618	1.5	0.366	1.0	NA	0.5	3.6	0.08	0.10	0.08	58.6

FUTURE SCENARIO – NO WAREHOUSE REDEVELOPMENT

MOVEMENT SUMMARY

 **Site: 1v [Captain Cook Drive / Gannons Road - Future AM + Sharks + SC 4]**

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks 3 & 4 + SC4

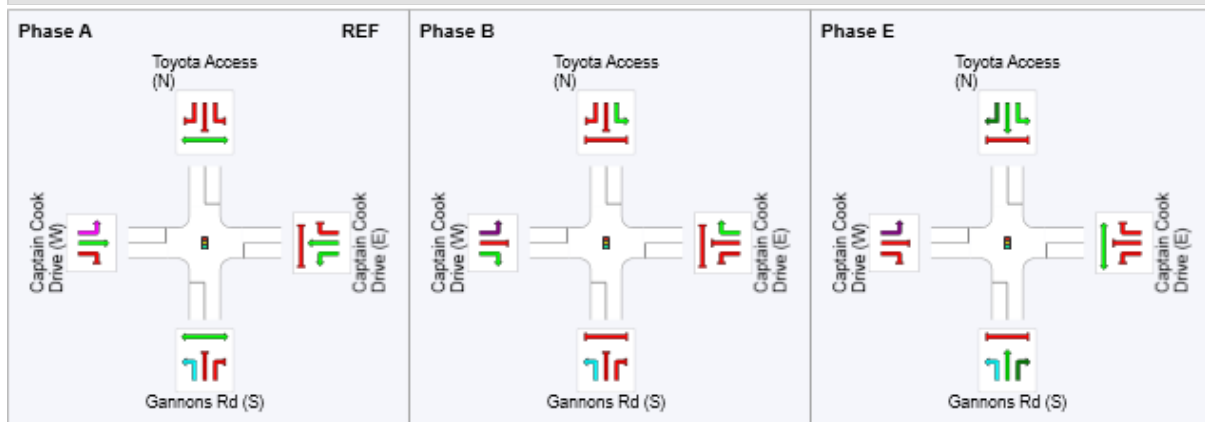
Peak 8:00AM - 9:00AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	783	1.4	0.433	4.5	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
2	T1	193	0.0	0.804	42.2	LOS C	20.0	144.9	0.86	0.81	0.91	26.4
3	R2	253	5.1	0.804	52.0	LOS D	20.0	144.9	0.99	0.94	1.11	31.3
Approach		1229	2.0	0.804	20.2	LOS B	20.0	144.9	0.34	0.62	0.37	38.6
East: Captain Cook Drive (E)												
4	L2	157	3.8	0.212	32.1	LOS C	6.0	43.5	0.70	0.76	0.70	38.3
5	T1	1186	10.5	0.792	35.8	LOS C	31.2	238.1	0.95	0.87	0.97	41.6
6	R2	193	0.0	0.701	61.7	LOS E	11.2	78.6	1.00	0.84	1.06	25.1
Approach		1536	8.5	0.792	38.7	LOS C	31.2	238.1	0.93	0.85	0.96	38.2
North: Toyota Access (N)												
7	L2	56	0.0	0.186	32.2	LOS C	5.0	34.9	0.75	0.64	0.75	30.1
8	T1	65	0.0	0.186	30.3	LOS C	5.0	34.9	0.75	0.64	0.75	28.7
9	R2	61	1.6	0.182	38.2	LOS C	2.8	19.8	0.81	0.68	0.81	28.6
Approach		182	0.5	0.186	33.5	LOS C	5.0	34.9	0.77	0.66	0.77	29.1
West: Captain Cook Drive (W)												
10	L2	199	0.0	0.580	34.8	LOS C	19.2	142.5	0.83	0.81	1.01	31.9
11	T1	688	13.1	0.580	29.8	LOS C	19.8	154.5	0.84	0.77	0.90	44.1
12	R2	413	9.2	0.797	65.8	LOS E	12.7	95.8	1.00	0.90	1.18	28.8
Approach		1300	9.8	0.797	42.0	LOS C	19.8	154.5	0.89	0.81	1.01	35.9
All Vehicles		4247	6.7	0.804	34.1	LOS C	31.2	238.1	0.74	0.77	0.79	37.1



MOVEMENT SUMMARY



Site: 1v [Captain Cook Drive / Gannons Road - Future PM + Sharks + SC 4]

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks 3 & 4 + SC4

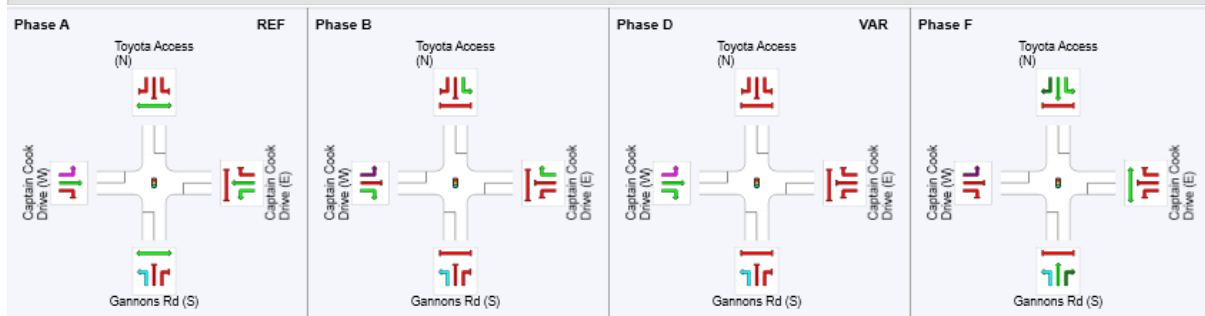
Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand	Flows	Deg.	Average	Level of	95% Back of Queue	Prop.	Effective	Aver. No.	Average	
		Total	HV	Satn	Delay	Service	Vehicles	Queued	Stop Rate	Cycles	Speed	
		veh/h	%	v/c	sec		veh	m			km/h	
South: Gannons Rd (S)												
1	L2	456	1.3	0.252	4.4	LOS A	0.0	0.0	0.00	0.00	47.8	
2	T1	54	1.9	0.075	30.4	LOS C	2.0	14.6	0.69	0.69	28.9	
3	R2	199	1.0	0.834	64.3	LOS E	13.0	91.6	1.00	1.28	28.5	
Approach		709	1.3	0.834	23.2	LOS B	13.0	91.6	0.33	0.41	38.6	
East: Captain Cook Drive (E)												
4	L2	84	3.6	0.148	39.2	LOS C	3.6	25.8	0.77	0.77	35.7	
5	T1	850	2.0	0.703	40.1	LOS C	22.1	157.2	0.95	0.95	39.7	
6	R2	52	0.0	0.535	70.8	LOS F	3.2	22.3	1.00	1.02	23.6	
Approach		986	2.0	0.703	41.6	LOS C	22.1	157.2	0.94	0.94	38.0	
North: Toyota Access (N)												
7	L2	193	0.0	0.537	34.7	LOS C	16.4	115.1	0.84	1.19	29.5	
8	T1	201	0.0	0.537	32.7	LOS C	16.4	115.1	0.84	1.19	28.1	
9	R2	212	0.0	0.440	34.5	LOS C	9.7	67.7	0.82	0.82	29.6	
Approach		606	0.0	0.537	34.0	LOS C	16.4	115.1	0.83	1.06	29.1	
West: Captain Cook Drive (W)												
10	L2	52	0.0	0.858	34.7	LOS C	31.1	219.4	0.98	1.07	32.6	
11	T1	1330	1.1	0.858	28.4	LOS B	31.4	222.2	0.98	1.07	45.4	
12	R2	630	1.1	0.850	64.9	LOS E	19.8	140.1	1.00	1.21	28.9	
Approach		2012	1.1	0.858	40.0	LOS C	31.4	222.2	0.99	1.11	38.2	
All Vehicles		4313	1.2	0.858	36.8	LOS C	31.4	222.2	0.85	0.95	36.6	



MOVEMENT SUMMARY

 **Site: 101v [Captain Cook Drive / Endeavour Road - Future AM, Stage 1 + Sharks + SC4]**

Captain Cook Drive / Endeavour Road

Future Volumes (4/2/20) (Sharks) + SC4

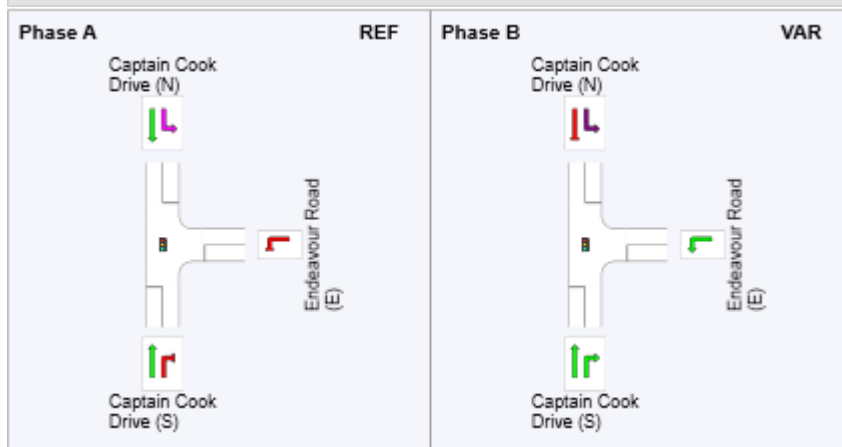
Peak 7:30AM - 8:30AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1848	4.1	0.360	0.5	LOS A	2.7	19.3	0.16	0.10	0.16	59.3
3	R2	518	3.3	0.761	41.4	LOS C	26.7	192.4	0.94	0.87	0.95	35.3
Approach		2366	3.9	0.761	9.4	LOS A	26.7	192.4	0.33	0.27	0.33	51.6
East: Endeavour Road (E)												
4	L2	191	13.1	0.150	32.1	LOS C	3.7	28.5	0.70	0.74	0.70	38.3
Approach		191	13.1	0.150	32.1	LOS C	3.7	28.5	0.70	0.74	0.70	38.3
North: Captain Cook Drive (N)												
7	L2	189	5.3	0.750	32.2	LOS C	32.8	239.9	0.84	0.84	1.14	40.6
8	T1	2037	5.2	0.750	24.5	LOS B	33.7	246.1	0.85	0.79	0.93	42.6
Approach		2226	5.2	0.750	25.2	LOS B	33.7	246.1	0.85	0.79	0.94	42.4
All Vehicles		4783	4.9	0.761	17.7	LOS B	33.7	246.1	0.59	0.53	0.63	46.3



MOVEMENT SUMMARY

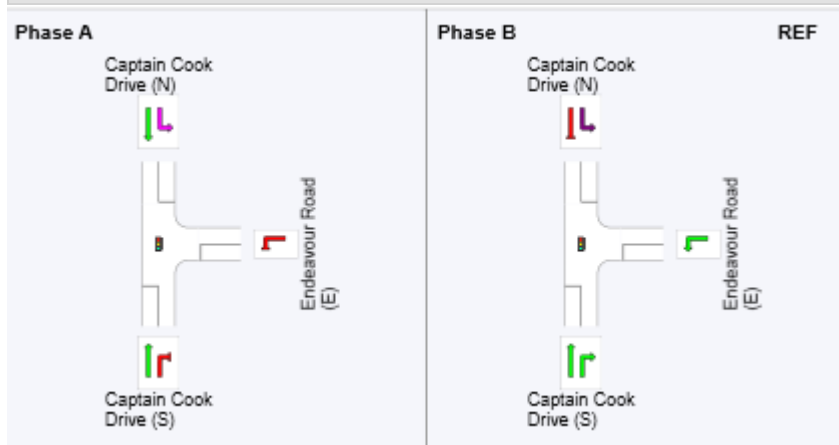
 **Site: 101v [Captain Cook Drive / Endeavour Road - Future PM, Stage 1 + Sharks + SC4]**

Captain Cook Drive / Endeavour Road
Future Volumes (4/2/20) (Sharks) + SC4
Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	Deg. Satn HV %	Average Delay sec	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h	
South: Captain Cook Drive (S)												
2	T1	2303	0.8 0.440	0.5	LOS A	3.7	26.3	0.18	0.11	0.18	59.2	
3	R2	208	1.4 0.348	38.6	LOS C	9.2	65.4	0.81	0.79	0.81	36.2	
Approach		2511	0.8 0.440	3.7	LOS A	9.2	65.4	0.23	0.17	0.23	56.2	
East: Endeavour Road (E)												
4	L2	637	1.1 0.532	41.1	LOS C	15.2	107.4	0.87	0.82	0.87	35.2	
Approach		637	1.1 0.532	41.1	LOS C	15.2	107.4	0.87	0.82	0.87	35.2	
North: Captain Cook Drive (N)												
7	L2	91	7.7 0.526	22.6	LOS B	20.0	142.1	0.65	0.63	0.79	45.8	
8	T1	1664	0.8 0.526	16.6	LOS B	20.6	145.2	0.66	0.60	0.70	47.0	
Approach		1755	1.2 0.526	16.9	LOS B	20.6	145.2	0.66	0.61	0.70	46.9	
All Vehicles		4903	1.0 0.532	13.3	LOS A	20.6	145.2	0.47	0.41	0.48	49.0	



MOVEMENT SUMMARY



Site: 101 [Proposed NEW INTERSECTION WITH END ROAD AM PEAK (SHARK VOLUME) - SC4]

END ROAD / Captain Cook Drive (New Intersection)

FUTURE (Sharks) + SC4

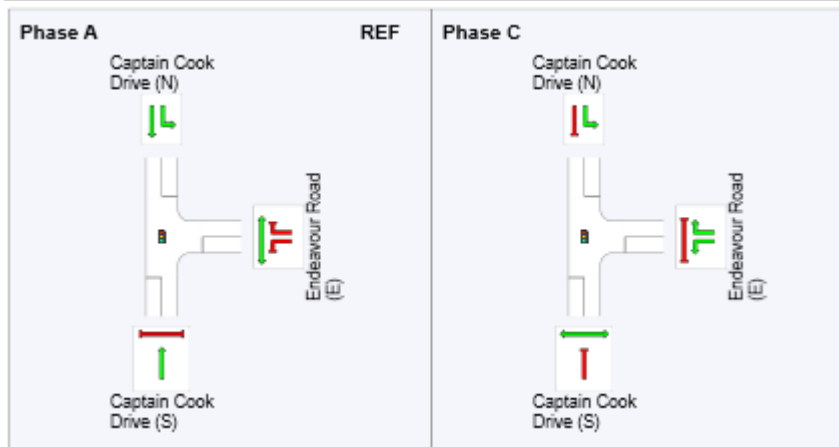
Peak 7:30AM - 8:30AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Deg. Satn HV % v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)											
2	T1	2218	0.0 0.607	14.4	LOS A	25.7	179.7	0.65	0.60	0.65	48.5
Approach		2218	0.0 0.607	14.4	LOS A	25.7	179.7	0.65	0.60	0.65	48.5
East: Endeavour Road(E)											
4	L2	1	0.0 0.302	42.5	LOS D	7.1	49.9	0.84	0.78	0.84	34.8
6	R2	307	0.0 0.302	42.6	LOS D	7.1	49.9	0.84	0.78	0.84	35.0
Approach		308	0.0 0.302	42.6	LOS D	7.1	49.9	0.84	0.78	0.84	35.0
North: Captain Cook Drive (N)											
7	L2	1015	0.0 0.607	6.3	LOS A	6.6	46.5	0.24	0.65	0.24	52.9
8	T1	1332	0.0 0.364	11.5	LOS A	12.4	86.5	0.52	0.46	0.52	50.4
Approach		2346	0.0 0.607	9.2	LOS A	12.4	86.5	0.40	0.54	0.40	51.5
All Vehicles		4873	0.0 0.607	13.7	LOS A	25.7	179.7	0.54	0.58	0.54	48.7



MOVEMENT SUMMARY

 **Site: 101 [Proposed NEW INTERSECTION WITH END ROAD PM PEAK (SHARK VOLUME) + SC4]**

END ROAD / Captain Cook Drive (New Intersection)

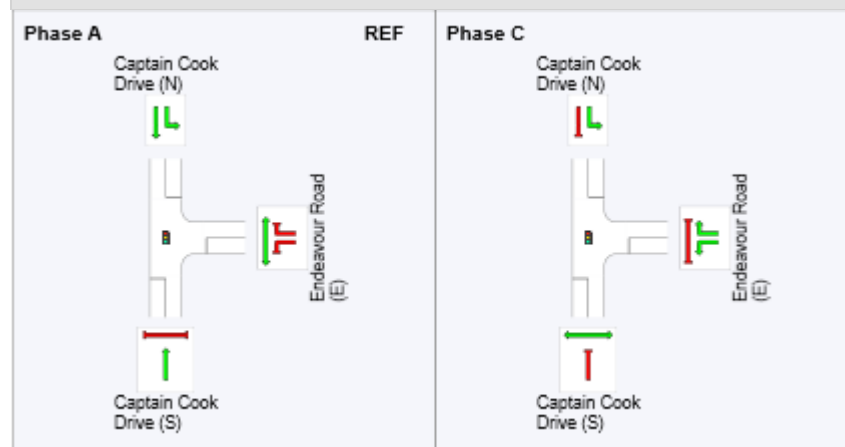
FUTURE (Sharks) + SC4 (END volumes added)

Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1629	0.0	0.586	24.4	LOS B	22.9	160.0	0.78	0.70	0.78	42.9
Approach		1629	0.0	0.586	24.4	LOS B	22.9	160.0	0.78	0.70	0.78	42.9
East: Endeavour Road(E)												
4	L2	1	0.0	0.780	37.7	LOS C	31.1	217.4	0.93	0.88	0.93	36.5
6	R2	1229	0.0	0.780	37.8	LOS C	31.1	217.4	0.93	0.88	0.93	36.7
Approach		1231	0.0	0.780	37.8	LOS C	31.1	217.4	0.93	0.88	0.93	36.7
North: Captain Cook Drive (N)												
7	L2	273	0.0	0.163	5.9	LOS A	0.9	6.5	0.13	0.61	0.13	53.2
8	T1	2149	0.0	0.774	27.8	LOS B	34.5	241.2	0.90	0.81	0.90	41.2
Approach		2422	0.0	0.774	25.4	LOS B	34.5	241.2	0.81	0.79	0.81	42.3
All Vehicles		5282	0.0	0.780	28.0	LOS B	34.5	241.2	0.83	0.78	0.83	41.0



FUTURE SCENARIO – WAREHOUSE REDEVELOPMENT

MOVEMENT SUMMARY

 **Site: 1v [Captain Cook Drive / Gannons Road - Future AM + Sharks + Warehouse Redevelopment]**

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks 3 & 4 + Warehouse Redevelopment

Peak 8:00AM - 9:00AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	783	1.4	0.433	4.5	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
2	T1	265	0.0	0.871	46.3	LOS D	25.7	185.2	0.88	0.87	1.00	25.6
3	R2	253	5.1	0.871	59.1	LOS E	25.7	185.2	1.00	1.02	1.23	29.5
Approach		1301	1.8	0.871	23.6	LOS B	25.7	185.2	0.37	0.66	0.44	36.9
East: Captain Cook Drive (E)												
4	L2	157	3.8	0.237	35.9	LOS C	6.5	46.7	0.75	0.77	0.75	36.9
5	T1	1186	10.5	0.886	50.7	LOS D	37.9	289.4	1.00	1.03	1.18	35.7
6	R2	265	0.0	0.861	68.6	LOS E	17.0	119.1	1.00	0.94	1.27	24.0
Approach		1608	8.1	0.886	52.2	LOS D	37.9	289.4	0.98	0.99	1.15	33.1
North: Toyota Access (N)												
7	L2	74	0.0	0.224	30.5	LOS C	6.3	44.4	0.74	0.65	0.74	30.5
8	T1	83	0.0	0.224	28.6	LOS C	6.3	44.4	0.74	0.65	0.74	29.1
9	R2	79	1.3	0.256	40.0	LOS C	3.7	26.5	0.84	0.70	0.84	28.2
Approach		236	0.4	0.256	33.0	LOS C	6.3	44.4	0.77	0.67	0.77	29.2
West: Captain Cook Drive (W)												
10	L2	270	0.0	0.692	39.1	LOS C	22.4	165.0	0.91	0.88	1.14	30.6
11	T1	688	13.1	0.692	34.8	LOS C	23.2	180.3	0.92	0.83	0.99	41.5
12	R2	413	9.2	0.713	60.8	LOS E	12.0	90.5	1.00	0.85	1.06	29.9
Approach		1371	9.3	0.713	43.5	LOS D	23.2	180.3	0.94	0.85	1.04	35.0
All Vehicles		4516	6.3	0.886	40.3	LOS C	37.9	289.4	0.78	0.83	0.89	34.4

MOVEMENT SUMMARY

 **Site: 1v [Captain Cook Drive / Gannons Road - Future PM + Sharks + Warehouse Redevelopment]**

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks 3 & 4 + Warehouse Redevelopment

Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 135 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles													
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h	
South: Gannons Rd (S)													
1	L2	456	1.3	0.252	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8	
2	T1	72	1.4	0.087	28.8	LOS C	2.8	19.9	0.64	0.65	0.64	29.2	
3	R2	199	1.0	0.992	139.0	LOS F	21.7	153.3	1.00	1.40	1.97	18.1	
Approach		727	1.2	0.992	43.7	LOS D	21.7	153.3	0.34	0.74	0.60	31.6	
East: Captain Cook Drive (E)													
4	L2	84	3.6	0.157	45.3	LOS D	4.1	29.7	0.79	0.75	0.79	33.7	
5	T1	850	2.0	0.749	47.8	LOS D	25.6	182.2	0.97	0.85	0.98	36.7	
6	R2	70	0.0	0.810	83.8	LOS F	5.1	35.5	1.00	0.87	1.34	21.8	
Approach		1004	2.0	0.810	50.1	LOS D	25.6	182.2	0.96	0.85	0.99	34.8	
North: Toyota Access (N)													
7	L2	265	0.0	0.639	36.2	LOS C	26.0	182.1	0.85	0.91	1.19	29.2	
8	T1	273	0.0	0.639	34.2	LOS C	26.0	182.1	0.85	0.91	1.19	27.8	
9	R2	284	0.0	0.527	34.5	LOS C	14.2	99.5	0.81	0.75	0.81	29.6	
Approach		822	0.0	0.639	35.0	LOS C	26.0	182.1	0.84	0.85	1.06	28.8	
West: Captain Cook Drive (W)													
10	L2	70	0.0	0.939	60.4	LOS E	47.2	333.5	1.00	1.08	1.27	26.6	
11	T1	1330	1.1	0.939	53.8	LOS D	47.4	335.1	1.00	1.08	1.27	34.5	
12	R2	630	1.1	0.956	98.5	LOS F	27.1	191.6	1.00	1.08	1.56	22.9	
Approach		2030	1.1	0.956	67.9	LOS E	47.4	335.1	1.00	1.08	1.36	29.6	
All Vehicles		4583	1.1	0.992	54.2	LOS D	47.4	335.1	0.86	0.93	1.11	30.7	

MOVEMENT SUMMARY

 **Site: 101v [Captain Cook Drive / Endeavour Road - Future AM + Sharks + Warehouse Redevelopment]**

Captain Cook Drive / Endeavour Road

Future Volumes (4/2/20) (Sharks) + Warehouse Redevelopment

Peak 7:30AM - 8:30AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles													
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h	
South: Captain Cook Drive (S)													
2	T1	1955	3.8	0.381	0.5	LOS A	2.9	21.0	0.16	0.11	0.16	59.3	
3	R2	518	3.3	0.835	50.2	LOS D	30.3	218.4	0.99	0.93	1.09	32.5	
Approach		2473	3.7	0.835	10.9	LOS A	30.3	218.4	0.34	0.28	0.36	50.5	
East: Endeavour Road (E)													
4	L2	191	13.1	0.165	35.1	LOS C	3.9	30.1	0.73	0.74	0.73	37.2	
Approach		191	13.1	0.165	35.1	LOS C	3.9	30.1	0.73	0.74	0.73	37.2	
North: Captain Cook Drive (N)													
7	L2	189	5.3	0.837	34.5	LOS C	43.1	312.9	0.90	0.89	1.22	39.7	
8	T1	2466	4.3	0.837	26.0	LOS B	43.8	317.7	0.90	0.86	1.00	41.9	
Approach		2655	4.3	0.837	26.6	LOS B	43.8	317.7	0.90	0.86	1.02	41.7	
All Vehicles		5319	4.4	0.837	19.6	LOS B	43.8	317.7	0.63	0.59	0.70	45.2	

MOVEMENT SUMMARY

 **Site: 101v [Captain Cook Drive / Endeavour Road - Future PM, + Sharks +Warehouse Redevelopment]**

Captain Cook Drive / Endeavour Road

Future Volumes (4/2/20) (Sharks) + Warehouse Redevelopment

Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	2732	0.7	0.521	0.6	LOS A	5.0	35.5	0.20	0.13	0.20	59.1
3	R2	208	1.4	0.357	39.5	LOS C	9.4	66.3	0.82	0.79	0.82	35.9
Approach		2940	0.7	0.521	3.4	LOS A	9.4	66.3	0.25	0.18	0.25	56.5
East: Endeavour Road (E)												
4	L2	637	1.1	0.546	42.0	LOS C	15.4	108.8	0.88	0.83	0.88	34.9
Approach		637	1.1	0.546	42.0	LOS C	15.4	108.8	0.88	0.83	0.88	34.9
North: Captain Cook Drive (N)												
7	L2	91	7.7	0.550	22.5	LOS B	21.4	152.1	0.66	0.64	0.79	45.9
8	T1	1771	0.8	0.550	16.4	LOS B	22.0	155.0	0.66	0.61	0.70	47.1
Approach		1862	1.1	0.550	16.7	LOS B	22.0	155.0	0.66	0.61	0.71	47.1
All Vehicles		5439	0.9	0.550	12.4	LOS A	22.0	155.0	0.46	0.40	0.48	49.5

MOVEMENT SUMMARY

 **Site: 101 [Proposed NEW INTERSECTION WITH END ROAD AM PEAK (SHARK VOLUME) - Warehouse Redevelopment]**

END ROAD / Captain Cook Drive (New Intersection)

FUTURE (Sharks) + Warehouse Redevelopment

Peak 7:30AM - 8:30AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 125 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	2237	0.0	0.824	32.6	LOS C	40.2	281.4	0.94	0.87	0.96	39.0
Approach		2237	0.0	0.824	32.6	LOS C	40.2	281.4	0.94	0.87	0.96	39.0
East: Endeavour Road(E)												
4	L2	1	0.0	0.246	28.8	LOS C	7.6	53.1	0.67	0.75	0.67	40.0
6	R2	401	0.0	0.246	28.9	LOS C	7.6	53.1	0.67	0.75	0.67	40.2
Approach		402	0.0	0.246	28.9	LOS C	7.6	53.1	0.67	0.75	0.67	40.2
North: Captain Cook Drive (N)												
7	L2	1391	0.0	0.828	6.8	LOS A	16.2	113.1	0.42	0.70	0.42	52.3
8	T1	1406	0.0	0.518	25.1	LOS B	19.9	139.3	0.76	0.67	0.76	42.5
Approach		2797	0.0	0.828	16.0	LOS B	19.9	139.3	0.59	0.69	0.59	46.9
All Vehicles		5436	0.0	0.828	23.8	LOS B	40.2	281.4	0.74	0.77	0.75	42.8

MOVEMENT SUMMARY

 **Site: 101 [Proposed NEW INTERSECTION WITH END ROAD PM PEAK (SHARK VOLUME) + Warehouse Redevelopment]**

END ROAD / Captain Cook Drive (New Intersection)

FUTURE (Sharks) + Warehouse Redevelopment (END volumes added)

Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	Deg. HV %	Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1704	0.0	0.699	30.8	LOS C	27.2	190.2	0.89	0.79	0.89	39.9
Approach		1704	0.0	0.699	30.8	LOS C	27.2	190.2	0.89	0.79	0.89	39.9
East: Endeavour Road(E)												
4	L2	1	0.0	0.895	46.6	LOS D	49.5	346.2	0.99	0.97	1.11	33.5
6	R2	1605	0.0	0.895	46.7	LOS D	49.5	346.2	0.99	0.97	1.11	33.7
Approach		1606	0.0	0.895	46.7	LOS D	49.5	346.2	0.99	0.97	1.11	33.7
North: Captain Cook Drive (N)												
7	L2	366	0.0	0.219	5.9	LOS A	1.3	9.3	0.13	0.62	0.13	53.2
8	T1	2168	0.0	0.890	44.9	LOS D	44.8	313.9	1.00	1.01	1.14	34.6
Approach		2535	0.0	0.890	39.3	LOS C	44.8	313.9	0.87	0.96	0.99	36.4
All Vehicles		5845	0.0	0.895	38.8	LOS C	49.5	346.2	0.91	0.91	0.99	36.5

FUTURE SCENARIO – WAREHOUSE REDEVELOPMENT + ROAD UPGRADES

MOVEMENT SUMMARY

 **Site: 1v [Captain Cook Drive / Gannons Road - Future AM + Sharks + Warehouse Redevelopment - Upgrade]**

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks 3 & 4 + Warehouse Redevelopment Upgrade

Peak 8:00AM - 9:00AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	783	1.4	0.433	4.5	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
2	T1	265	0.0	0.863	46.9	LOS D	25.6	184.4	0.89	0.87	1.01	25.5
3	R2	253	5.1	0.863	57.7	LOS E	25.6	184.4	1.00	1.00	1.21	29.9
Approach		1301	1.8	0.863	23.4	LOS B	25.6	184.4	0.38	0.65	0.44	36.9
East: Captain Cook Drive (E)												
4	L2	157	3.8	0.226	34.4	LOS C	6.3	45.4	0.73	0.77	0.73	37.4
5	T1	1186	10.5	0.846	43.1	LOS D	34.6	264.2	0.99	0.96	1.08	38.5
6	R2	265	0.0	0.861	68.7	LOS E	17.0	119.1	1.00	0.95	1.27	24.2
Approach		1608	8.1	0.861	46.5	LOS D	34.6	264.2	0.96	0.94	1.08	35.0
North: Toyota Access (N)												
7	L2	74	0.0	0.038	0.9	LOS A	0.0	0.0	0.00	0.16	0.00	30.7
8	T1	83	0.0	0.126	30.3	LOS C	3.4	23.6	0.74	0.58	0.74	28.9
9	R2	79	1.3	0.267	41.7	LOS C	3.8	27.0	0.85	0.71	0.85	27.9
Approach		236	0.4	0.267	24.9	LOS B	3.8	27.0	0.55	0.49	0.55	29.1
West: Captain Cook Drive (W)												
10	L2	270	0.0	0.661	37.4	LOS C	21.7	159.7	0.88	0.87	1.11	31.0
11	T1	688	13.1	0.661	33.0	LOS C	22.6	175.7	0.89	0.82	0.97	42.4
12	R2	413	9.2	0.713	60.8	LOS E	12.0	90.5	1.00	0.85	1.06	29.9
Approach		1371	9.3	0.713	42.2	LOS C	22.6	175.7	0.92	0.84	1.02	35.4
All Vehicles		4516	6.3	0.863	37.4	LOS C	34.6	264.2	0.76	0.80	0.85	35.3

MOVEMENT SUMMARY

 **Site: 1v [Captain Cook Drive / Gannons Road - Future PM + Sharks + Warehouse Redevelopment - Upgrade]**

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks 3 & 4 + Warehouse Redevelopment Upgrade

Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles													
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h	
South: Gannons Rd (S)													
1	L2	456	1.3	0.252	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8	
2	T1	72	1.4	0.114	34.5	LOS C	2.9	20.9	0.74	0.68	0.74	28.0	
3	R2	199	1.0	0.766	57.7	LOS E	12.0	84.6	1.00	0.92	1.14	30.0	
Approach		727	1.2	0.766	22.0	LOS B	12.0	84.6	0.35	0.61	0.39	38.8	
East: Captain Cook Drive (E)													
4	L2	84	3.6	0.140	37.6	LOS C	3.5	25.1	0.75	0.75	0.75	36.2	
5	T1	850	2.0	0.666	38.1	LOS C	21.5	153.1	0.93	0.81	0.93	40.6	
6	R2	70	0.0	0.720	73.1	LOS F	4.4	31.0	1.00	0.82	1.20	23.5	
Approach		1004	2.0	0.720	40.5	LOS C	21.5	153.1	0.92	0.80	0.93	38.3	
North: Toyota Access (N)													
7	L2	265	0.0	0.138	0.9	LOS A	0.0	0.0	0.00	0.16	0.00	30.7	
8	T1	273	0.0	0.427	34.7	LOS C	12.6	88.0	0.84	0.71	0.84	27.9	
9	R2	284	0.0	0.691	42.9	LOS D	15.1	105.5	0.95	0.84	0.96	27.7	
Approach		822	0.0	0.691	26.6	LOS B	15.1	105.5	0.61	0.58	0.61	28.7	
West: Captain Cook Drive (W)													
10	L2	70	0.0	0.786	25.1	LOS B	25.4	179.3	0.92	0.82	0.92	35.6	
11	T1	1330	1.1	0.786	19.0	LOS B	26.0	183.5	0.92	0.82	0.92	51.2	
12	R2	630	1.1	0.752	56.2	LOS D	17.9	126.7	1.00	0.87	1.05	31.1	
Approach		2030	1.1	0.786	30.7	LOS C	26.0	183.5	0.94	0.84	0.96	42.1	
All Vehicles		4583	1.1	0.786	30.8	LOS C	26.0	183.5	0.78	0.75	0.80	37.6	

MOVEMENT SUMMARY



Site: 101 [Proposed NEW INTERSECTION WITH END ROAD AM PEAK (SHARK VOLUME) - Warehouse Redevelopment Upgraded]

END ROAD / Captain Cook Drive (New Intersection)

FUTURE (Sharks) + Warehouse Redevelopment

Peak 7:30AM - 8:30AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 125 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	2237	0.0	0.824	32.6	LOS C	40.2	281.4	0.94	0.87	0.96	39.1
Approach		2237	0.0	0.824	32.6	LOS C	40.2	281.4	0.94	0.87	0.96	39.1
East: Endeavour Road(E)												
4	L2	1	0.0	0.164	27.9	LOS B	4.8	33.9	0.64	0.73	0.64	40.4
6	R2	401	0.0	0.164	27.9	LOS B	4.8	33.9	0.64	0.73	0.64	40.6
Approach		402	0.0	0.164	27.9	LOS B	4.8	33.9	0.64	0.73	0.64	40.6
North: Captain Cook Drive (N)												
7	L2	1391	0.0	0.828	6.8	LOS A	16.2	113.1	0.42	0.70	0.42	52.3
8	T1	1406	0.0	0.518	25.1	LOS B	19.9	139.3	0.76	0.67	0.76	42.5
Approach		2797	0.0	0.828	16.0	LOS B	19.9	139.3	0.59	0.69	0.59	46.9
All Vehicles		5436	0.0	0.828	23.7	LOS B	40.2	281.4	0.74	0.77	0.75	42.9

MOVEMENT SUMMARY

 **Site: 101 [Proposed NEW INTERSECTION WITH END ROAD PM PEAK (SHARK VOLUME) + Warehouse Redevelopment + Upgraded]**

END ROAD / Captain Cook Drive (New Intersection)

FUTURE (Sharks) + Warehouse Redevelopment (END volumes added)

Peak 4:30PM - 5:30PM

Site Category: (None)

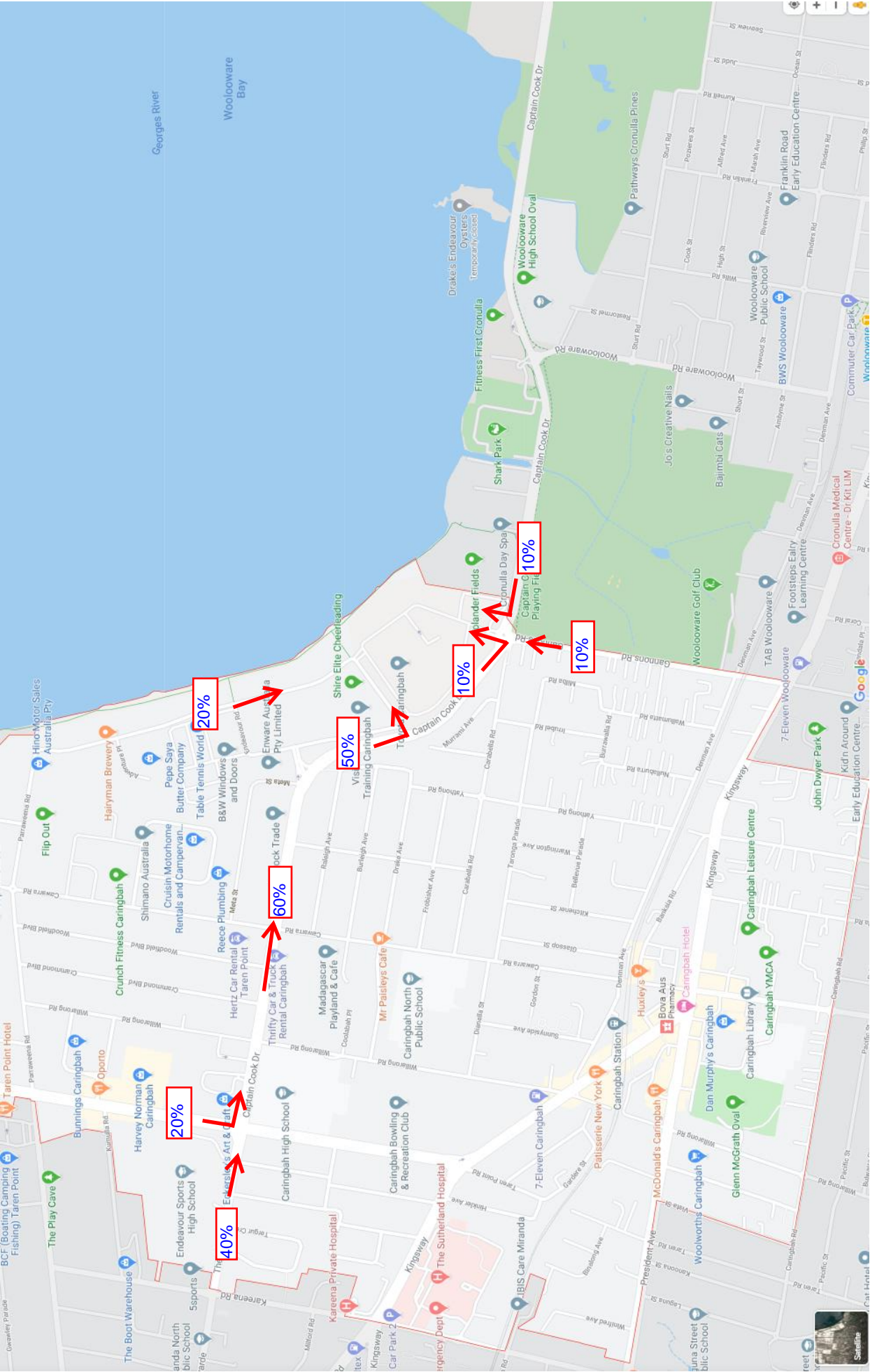
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand	Flows	Deg.	Average	Level of	95% Back of Queue	Prop.	Effective	Aver. No.	Average	
		Total	HV	Satn	Delay	Service	Vehicles	Queued	Stop Rate	Cycles	Speed	
		veh/h	%	v/c	sec		veh	m			km/h	
South: Captain Cook Drive (S)												
2	T1	1704	0.0	0.573	21.7	LOS B	22.8	159.3	0.75	0.67	0.75	44.3
Approach		1704	0.0	0.573	21.7	LOS B	22.8	159.3	0.75	0.67	0.75	44.3
East: Endeavour Road(E)												
4	L2	1	0.0	0.736	39.0	LOS C	26.7	186.8	0.92	0.86	0.92	36.0
6	R2	1605	0.0	0.736	39.0	LOS C	26.7	186.8	0.92	0.86	0.92	36.3
Approach		1606	0.0	0.736	39.0	LOS C	26.7	186.8	0.92	0.86	0.92	36.3
North: Captain Cook Drive (N)												
7	L2	366	0.0	0.219	5.9	LOS A	1.3	9.3	0.13	0.62	0.13	53.2
8	T1	2168	0.0	0.729	24.5	LOS B	32.7	228.6	0.84	0.77	0.84	42.8
Approach		2535	0.0	0.729	21.8	LOS B	32.7	228.6	0.74	0.75	0.74	44.1
All Vehicles		5845	0.0	0.736	26.5	LOS B	32.7	228.6	0.79	0.76	0.79	41.7

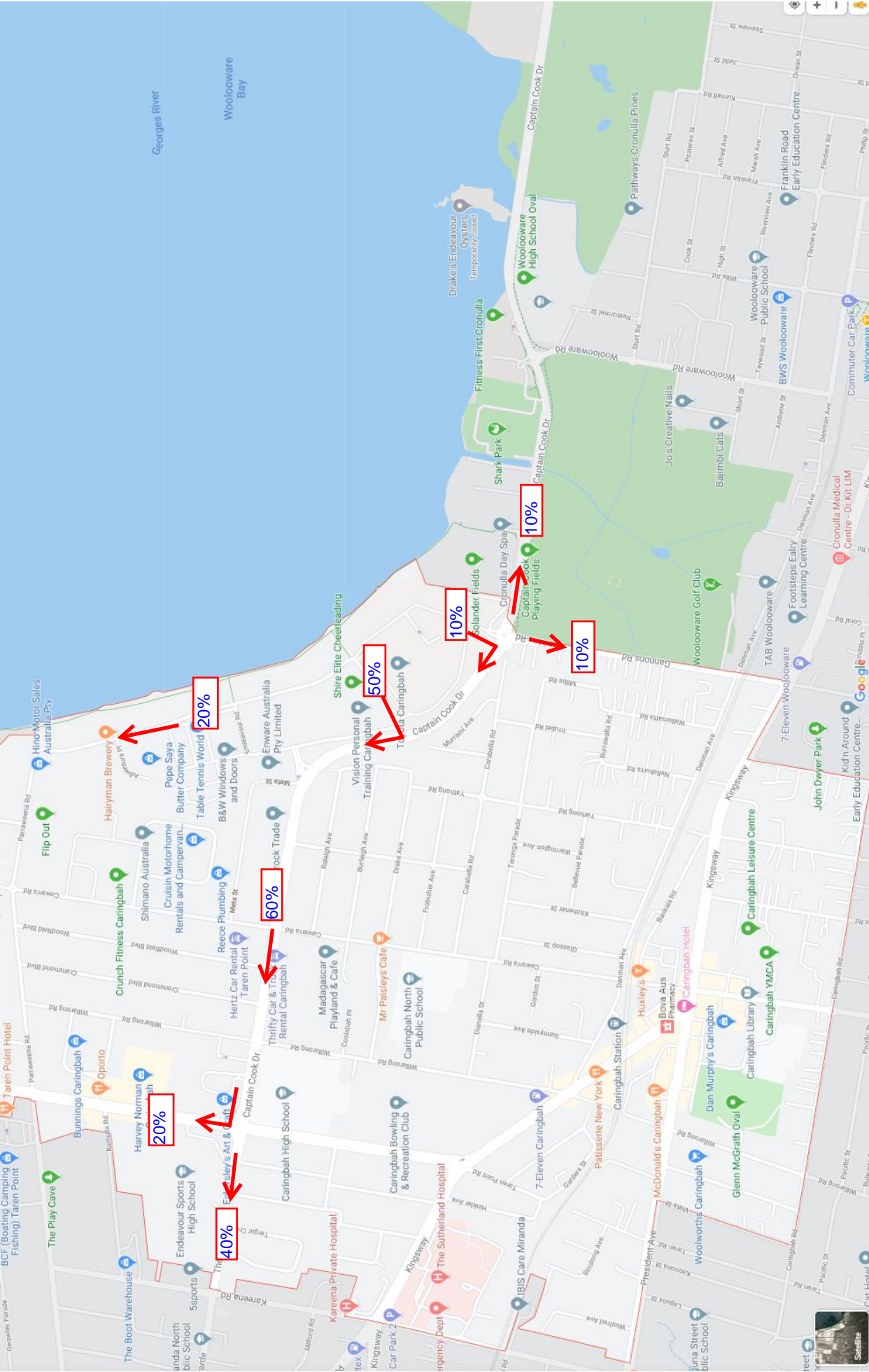


ANNEXURE D: ADOPTED TRIP DISTRIBUTIONS
(2 SHEETS)

Scenario 3 & 4 - Inbound Distribution

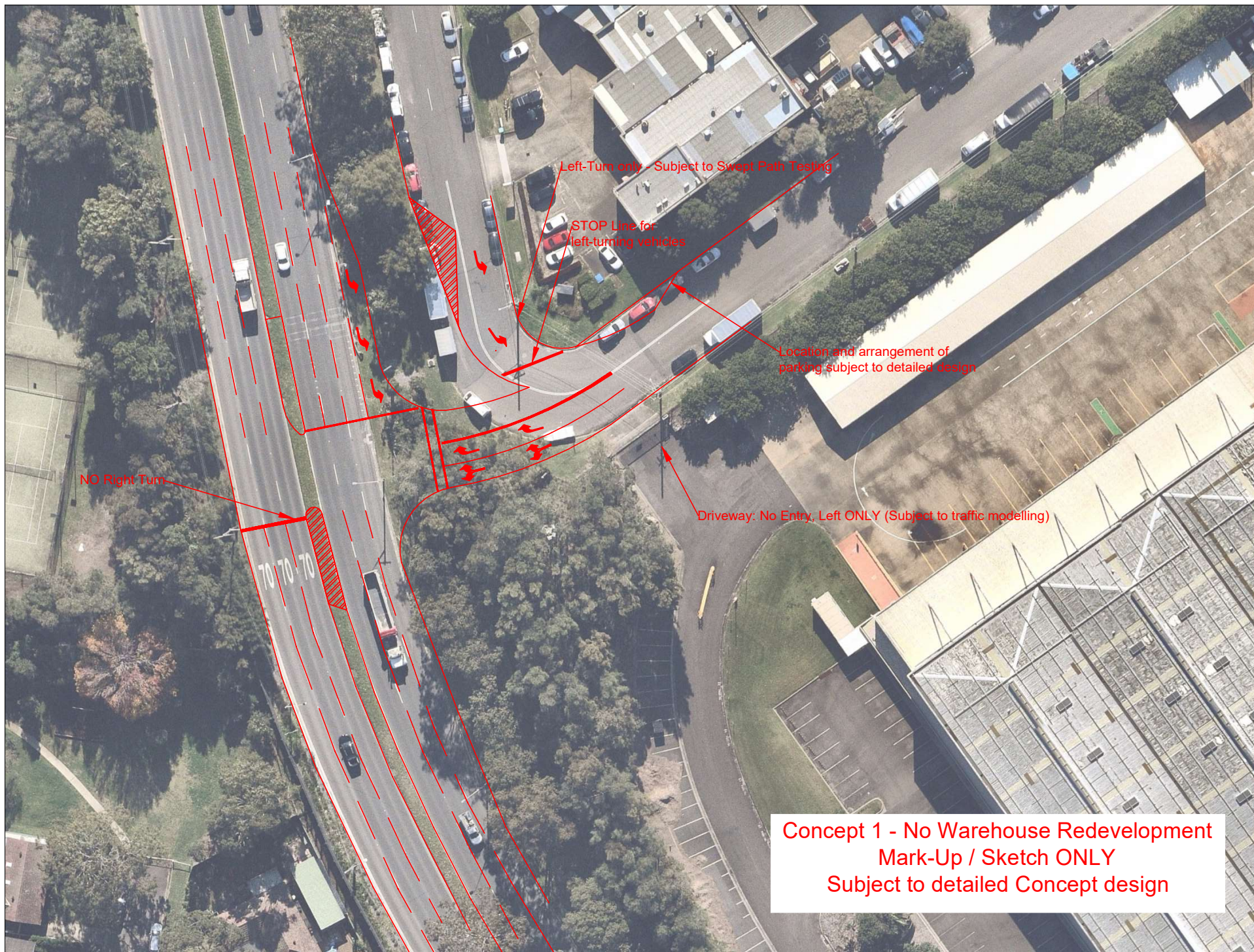


Scenario 3 & 4 - Outbound Distribution

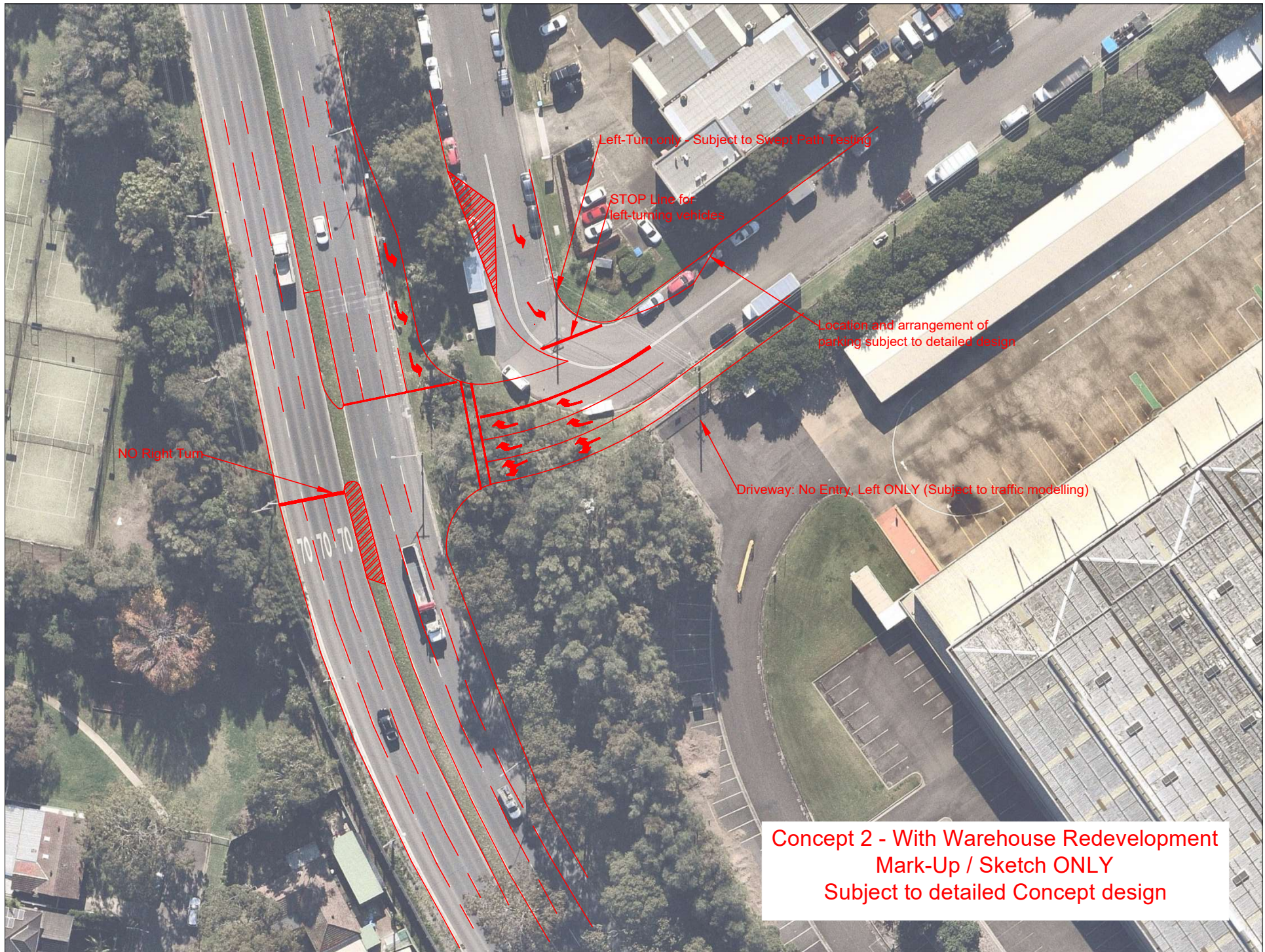




**ANNEXURE E: SKETCH OF POTENTIAL NEW
INTERSECTION AT ENDEAVOUR ROAD / CAPTAIN
COOK DRIVE
(2 SHEETS)**



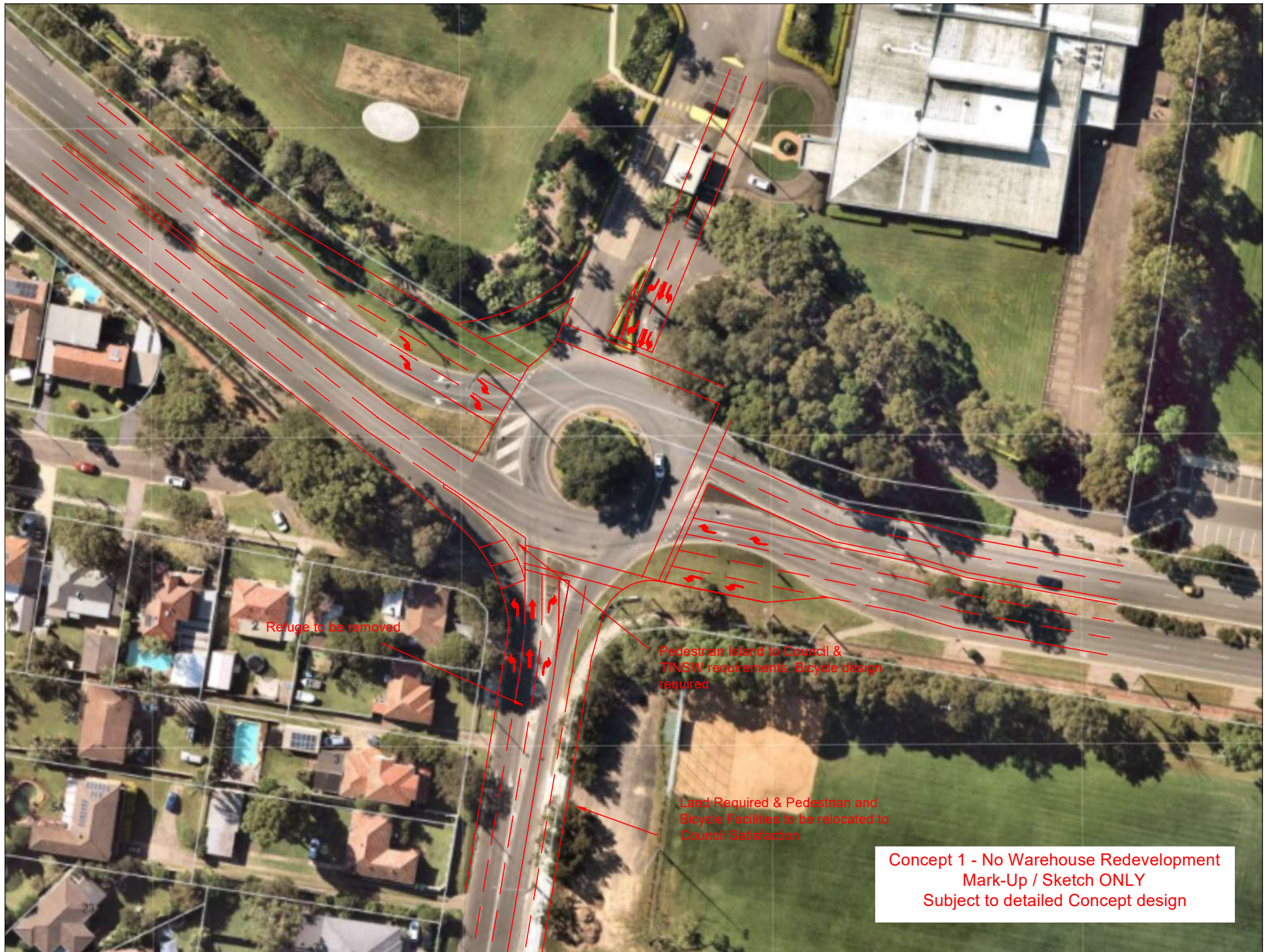
Concept 1 - No Warehouse Redevelopment
Mark-Up / Sketch ONLY
Subject to detailed Concept design



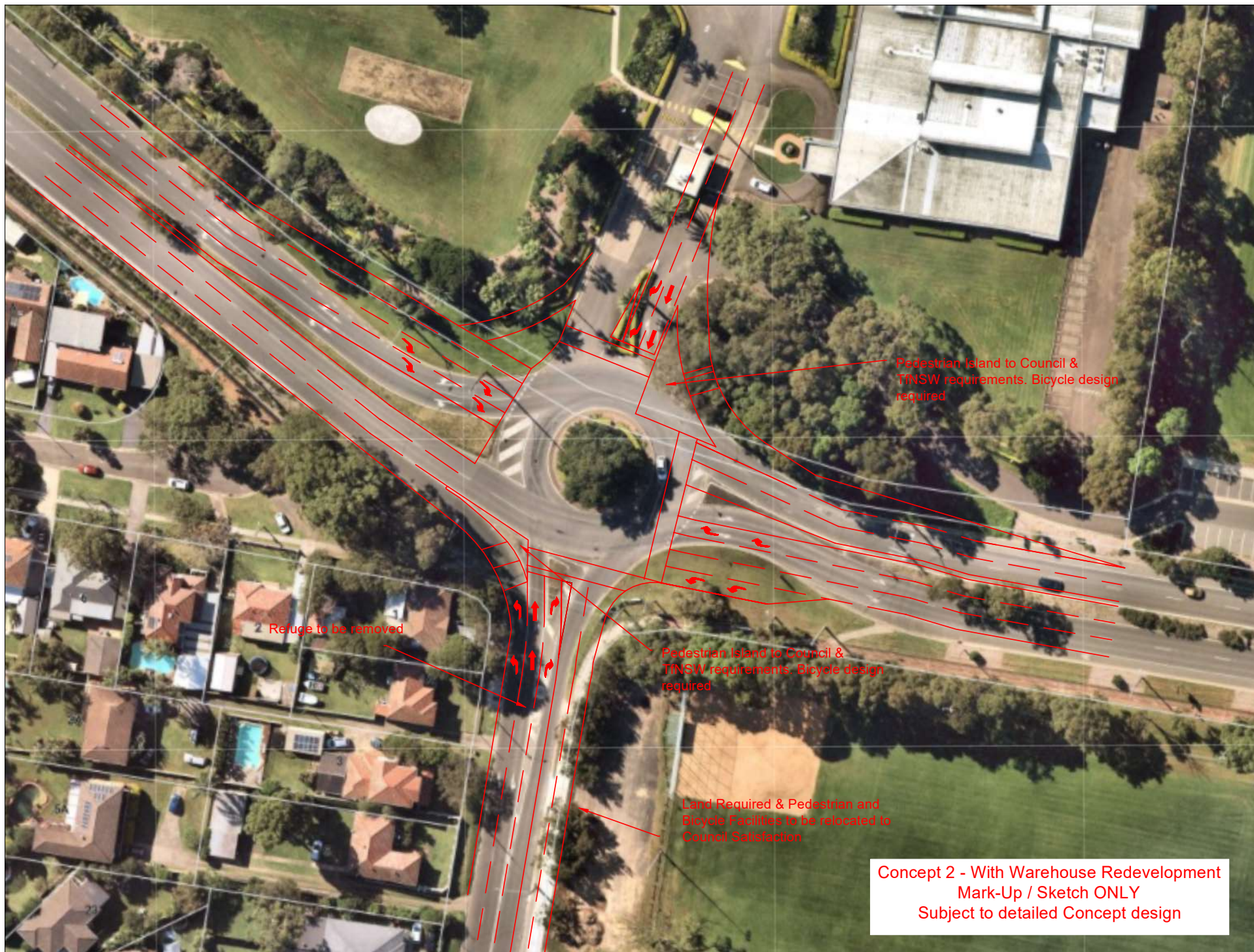
Concept 2 - With Warehouse Redevelopment
Mark-Up / Sketch ONLY
Subject to detailed Concept design



**ANNEXURE F: SKETCH OF POTENTIAL NEW
INTERSECTION AT GANNONS ROAD / CAPTAIN COOK
DRIVE
(2 SHEETS)**



Concept 1 - No Warehouse Redevelopment
Mark-Up / Sketch ONLY
Subject to detailed Concept design



Concept 2 - With Warehouse Redevelopment
Mark-Up / Sketch ONLY
Subject to detailed Concept design



ANNEXURE G: STAGING SCALE

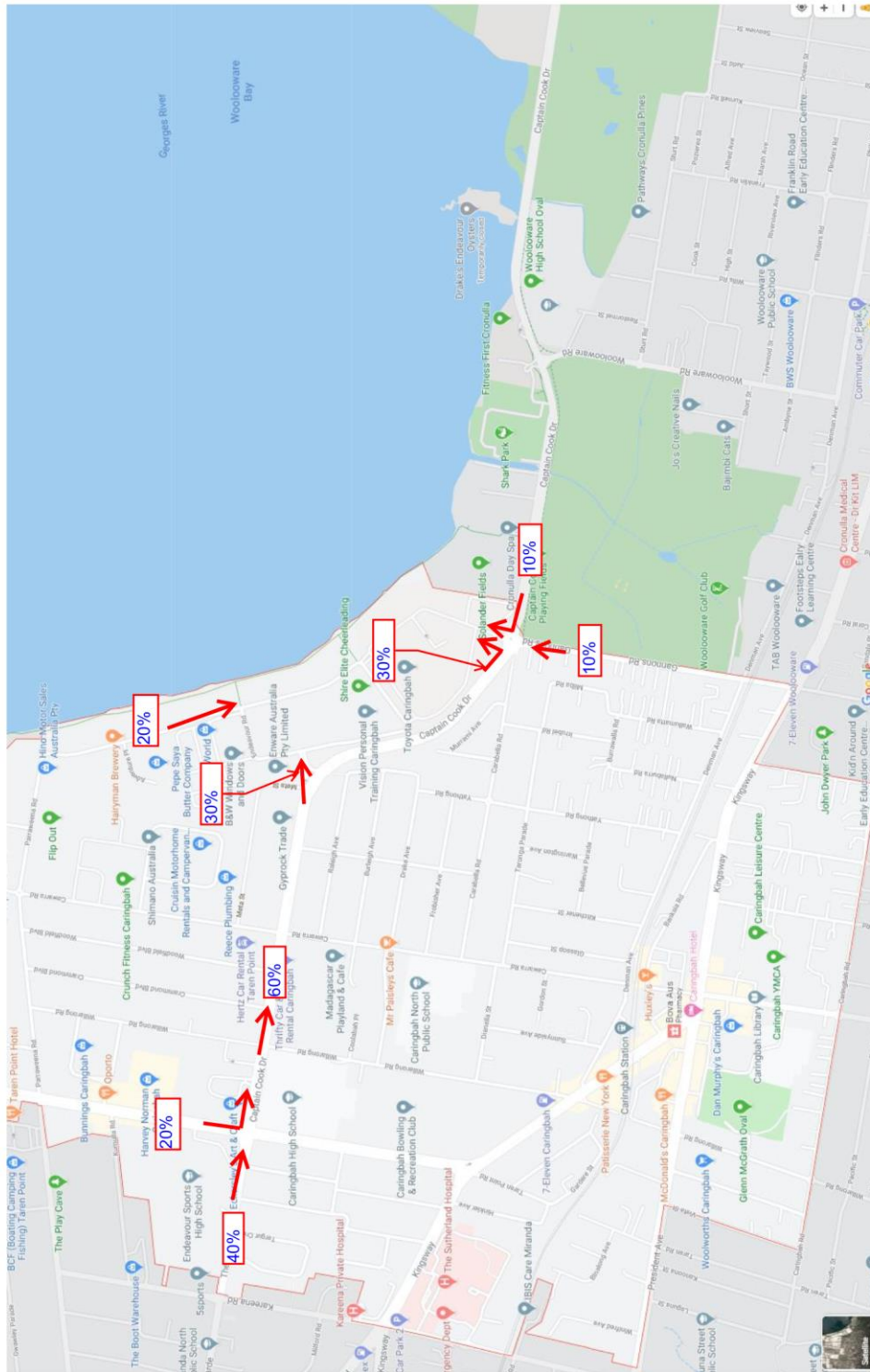
(1 SHEET)

STAGE	SITE AREA	GBA	OFFICE & BUS	F & B	RECREATION	INDUSTRIAL	INDUSTRIAL OFFICE HOTEL	WAREHOUSE	WAREHOUSE OFFIC	TOTAL GFA
A		3,562	15,772	12,103	-	-	1,094	324	-	13,521
B		8,636	18,062	15,030	323	-	-	-	-	15,353
C		2,521	3,930	-	-	-	3,341	-	-	3,341
D		3,568	11,823	3,473	1,067	-	-	5,186	-	9,726
E		3,196	12,763	9,917	-	-	731	278	-	10,926
F		4,055	13,651	10,127	562	861	-	-	-	11,550
G		4,702	25,189	21,411	-	-	-	-	-	21,411
H		3,713	13,333	9,577	1,756	-	-	-	-	11,333
J		5,676	18,276	15,535	-	-	-	-	-	15,535
Existing Warehouse (Lot E)		30,917	33,868	-	-	-	-	24,033	7,285	31,318
Totals		166,667	97,173	3,708	861	1,825	3,943	5,186	24,033	144,014

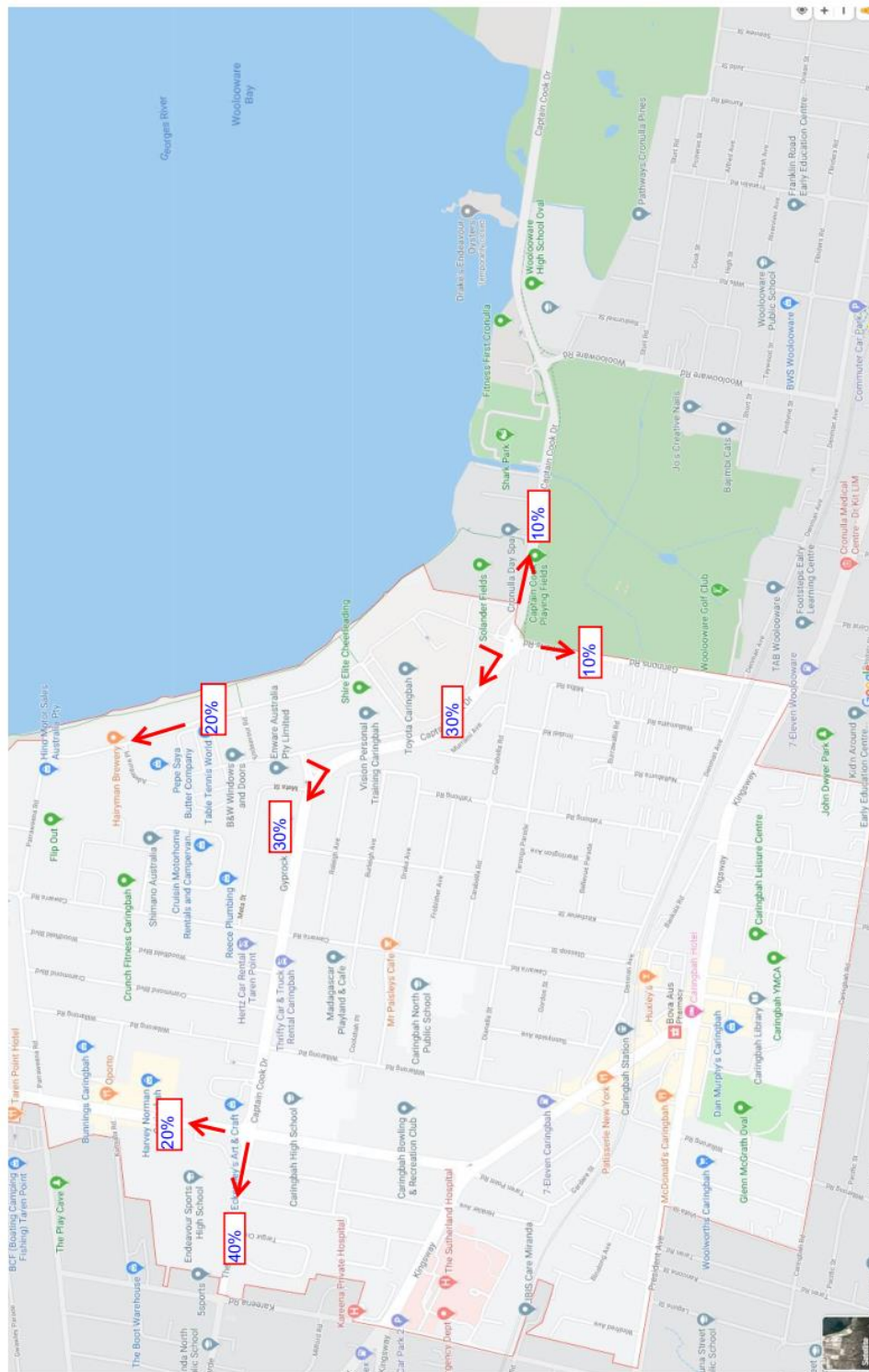


**ANNEXURE H: STAGING SIDRA RESULTS &
DISTRIBUTION
(16 SHEETS)**

Inbound Distribution



Outbound Distribution



MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future AM, Stage 1 + Sharks]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks)
 Peak 7:30AM - 8:30AM
 Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
3	R2	518	3.3	0.953	47.3	LOS D	21.4	154.1	0.97	2.42	5.60	33.3
Approach		518	3.3	0.953	47.3	NA	21.4	154.1	0.97	2.42	5.60	33.3
East: Endeavour Road (E)												
4	L2	191	13.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	54.5
6	R2	33	21.2	0.281	41.4	LOS C	0.9	7.7	0.92	0.99	1.03	34.9
Approach		224	14.3	0.281	11.0	LOS A	0.9	7.7	0.14	0.59	0.15	50.3
North: Captain Cook Drive (N)												
7	L2	189	5.3	0.204	8.2	LOS A	0.7	5.3	0.48	0.72	0.48	52.1
8	T1	881	11.9	0.243	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1070	10.7	0.243	1.5	LOS A	0.7	5.3	0.08	0.13	0.08	58.4
All Vehicles		1812	9.1	0.953	15.8	NA	21.4	154.1	0.34	0.84	1.67	47.3

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future AM, Stage 2 + Sharks]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks)
 Peak 7:30AM - 8:30AM
 Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1537	4.9	0.407	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1537	4.9	0.407	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: Endeavour Road (E)												
6	R2	33	21.2	0.023	7.8	LOS A	0.1	0.7	0.61	0.76	0.61	45.5
Approach		33	21.2	0.023	7.8	LOS A	0.1	0.7	0.61	0.76	0.61	45.5
All Vehicles		1570	5.2	0.407	0.2	NA	0.1	0.7	0.01	0.02	0.01	59.6

MOVEMENT SUMMARY



Site: 101v [Captain Cook Drive / Endeavour Road - Future AM, Sharks]

Captain Cook Drive / Endeavour Road

Future Volumes (4/2/20) (Sharks)

Peak 7:30AM - 8:30AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1537	4.9	0.536	6.2	LOS A	17.9	130.7	0.44	0.41	0.44	54.4
3	R2	518	3.3	0.644	33.7	LOS C	19.1	137.5	0.84	0.98	1.19	38.2
Approach		2055	4.5	0.644	13.2	LOS A	19.1	137.5	0.54	0.55	0.63	49.2
East: Endeavour Road (E)												
4	L2	191	13.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	54.5
6	R2	33	21.2	0.072	54.5	LOS D	0.8	7.0	0.90	0.70	0.90	31.0
Approach		224	14.3	0.112	12.9	LOS A	0.8	7.0	0.13	0.55	0.13	49.1
North: Captain Cook Drive (N)												
7	L2	189	5.3	0.202	10.8	LOS A	2.7	20.0	0.45	0.68	0.45	50.3
8	T1	881	11.9	0.749	39.7	LOS C	23.4	180.2	0.96	0.85	0.97	36.3
Approach		1070	10.7	0.749	34.6	LOS C	23.4	180.2	0.87	0.82	0.88	38.2
All Vehicles		3349	7.1	0.749	20.0	LOS B	23.4	180.2	0.62	0.64	0.68	45.0

MOVEMENT SUMMARY



Site: 101v [Captain Cook Drive / Endeavour Road - Future AM + Sharks + Stage A,B & C + Warehouse]

Captain Cook Drive / Endeavour Road

Future Volumes (4/2/20) (Sharks) + Stage A,B + C & Warehouse

Peak 7:30AM - 8:30AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 125 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1591	4.7	0.547	6.1	LOS A	19.0	138.2	0.44	0.40	0.44	54.5
3	R2	518	3.3	0.709	40.3	LOS C	21.3	153.6	0.90	1.02	1.32	35.7
Approach		2109	4.4	0.709	14.5	LOS A	21.3	153.6	0.55	0.55	0.65	48.3
East: Endeavour Road (E)												
4	L2	191	13.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	54.5
6	R2	86	8.1	0.180	58.1	LOS E	2.4	17.7	0.92	0.74	0.92	30.2
Approach		277	11.6	0.180	22.0	LOS B	2.4	17.7	0.29	0.59	0.29	43.7
North: Captain Cook Drive (N)												
7	L2	404	2.5	0.416	12.9	LOS A	8.4	59.8	0.57	0.74	0.57	49.0
8	T1	1096	9.6	0.811	41.1	LOS C	31.4	238.2	0.97	0.90	1.02	35.8
Approach		1500	7.7	0.811	33.5	LOS C	31.4	238.2	0.86	0.86	0.90	38.6
All Vehicles		3886	6.2	0.811	22.4	LOS B	31.4	238.2	0.65	0.67	0.72	43.7

MOVEMENT SUMMARY



Site: 101v [Captain Cook Drive / Endeavour Road - Future AM + Sharks + Stage A-F + Warehouse]

Captain Cook Drive / Endeavour Road

Future Volumes (4/2/20) (Sharks) + Stage A-F & Warehouse

Peak 7:30AM - 8:30AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1629	4.6	0.567	6.5	LOS A	19.8	144.0	0.46	0.43	0.46	54.2
3	R2	518	3.3	0.770	44.5	LOS D	22.5	161.7	0.94	1.04	1.43	34.3
Approach		2147	4.3	0.770	15.7	LOS B	22.5	161.7	0.58	0.57	0.69	47.6
East: Endeavour Road (E)												
4	L2	191	13.1	0.112	5.8	LOS A	0.0	0.0	0.00	0.52	0.00	54.5
6	R2	124	5.6	0.245	55.9	LOS D	3.3	24.2	0.93	0.75	0.93	30.8
Approach		315	10.2	0.245	25.5	LOS B	3.3	24.2	0.37	0.61	0.37	41.9
North: Captain Cook Drive (N)												
7	L2	532	1.9	0.526	13.9	LOS A	13.0	92.3	0.64	0.77	0.64	48.3
8	T1	1224	8.6	0.864	44.6	LOS D	37.0	277.9	0.99	0.99	1.12	34.7
Approach		1756	6.5	0.864	35.3	LOS C	37.0	277.9	0.89	0.92	0.97	37.9
All Vehicles		4218	5.7	0.864	24.6	LOS B	37.0	277.9	0.69	0.72	0.79	42.6

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future PM, Stage 1 + Sharks]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks)
 Peak 4:30PM - 5:30PM
 Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
3	R2	208	1.4	0.688	29.2	LOS C	3.9	27.6	0.92	1.19	1.77	40.0
Approach		208	1.4	0.688	29.2	NA	3.9	27.6	0.92	1.19	1.77	40.0
East: Endeavour Road (E)												
4	L2	637	1.1	0.346	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
6	R2	204	2.9	1.012	183.9	LOS F	20.3	145.5	1.00	2.42	6.21	14.8
Approach		841	1.5	1.012	48.9	LOS D	20.3	145.5	0.24	0.99	1.51	33.3
North: Captain Cook Drive (N)												
7	L2	91	7.7	0.070	6.4	LOS A	0.2	1.8	0.26	0.55	0.26	53.1
8	T1	1353	1.0	0.349	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1444	1.5	0.349	0.4	LOS A	0.2	1.8	0.02	0.03	0.02	59.4
All Vehicles		2493	1.5	1.012	19.2	NA	20.3	145.5	0.17	0.45	0.66	45.4

MOVEMENT SUMMARY

▽ Site: 101 [Captain Cook Drive / Endeavour Road - Future PM, Stage 2 + Sharks]

Captain Cook Drive / Endeavour Road
 Future Volumes (4/2/20) (Sharks)
 Peak 4:30PM - 5:30PM
 Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1147	1.6	0.297	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1147	1.6	0.297	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: Endeavour Road (E)												
6	R2	204	2.9	0.104	7.0	LOS A	0.4	3.1	0.54	0.76	0.54	46.8
Approach		204	2.9	0.104	7.0	LOS A	0.4	3.1	0.54	0.76	0.54	46.8
All Vehicles		1351	1.8	0.297	1.1	NA	0.4	3.1	0.08	0.11	0.08	58.3

MOVEMENT SUMMARY



Site: 101v [Captain Cook Drive / Endeavour Road - Future PM, + Sharks]

Captain Cook Drive / Endeavour Road

Future Volumes (4/2/20) (Sharks)

Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flows Total veh/h	Deg. Satn HV % v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)											
2	T1	1147	1.6 0.392	5.2	LOS A	11.3	80.0	0.37	0.34	0.37	55.3
3	R2	208	1.4 0.449	35.1	LOS C	10.2	72.6	0.90	0.88	0.99	37.7
Approach		1355	1.5 0.449	9.8	LOS A	11.3	80.0	0.45	0.42	0.47	51.5
East: Endeavour Road (E)											
4	L2	637	1.1 0.346	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
6	R2	204	2.9 0.396	57.2	LOS E	5.6	39.9	0.95	0.78	0.95	30.5
Approach		841	1.5 0.396	18.2	LOS B	5.6	39.9	0.23	0.59	0.23	46.0
North: Captain Cook Drive (N)											
7	L2	91	7.7 0.093	13.5	LOS A	1.9	13.9	0.44	0.66	0.44	48.4
8	T1	1353	1.0 0.655	21.3	LOS B	28.0	197.8	0.78	0.70	0.78	44.5
Approach		1444	1.5 0.655	20.8	LOS B	28.0	197.8	0.75	0.70	0.75	44.7
All Vehicles		3640	1.5 0.655	16.1	LOS B	28.0	197.8	0.52	0.57	0.53	47.4

MOVEMENT SUMMARY



Site: 101v [Captain Cook Drive / Endeavour Road - Future PM,+ Sharks + Stage A, B C & Warehouse]

Captain Cook Drive / Endeavour Road

Future Volumes (4/2/20) (Sharks) + A, B, C & Warehouse

Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Captain Cook Drive (S)												
2	T1	1362	1.3	0.564	13.8	LOS A	22.7	160.4	0.63	0.57	0.63	48.9
3	R2	208	1.4	0.616	53.8	LOS D	11.1	78.6	0.97	0.97	1.35	31.5
Approach		1570	1.3	0.616	19.1	LOS B	22.7	160.4	0.67	0.62	0.72	45.6
East: Endeavour Road (E)												
4	L2	637	1.1	0.346	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
6	R2	419	1.4	0.829	55.2	LOS D	25.1	177.5	1.00	0.92	1.12	31.0
Approach		1056	1.2	0.829	25.3	LOS B	25.1	177.5	0.40	0.68	0.45	42.1
North: Captain Cook Drive (N)												
7	L2	144	4.9	0.119	8.5	LOS A	1.6	11.6	0.32	0.63	0.32	51.9
8	T1	1406	1.0	0.822	33.6	LOS C	37.2	262.9	0.95	0.88	0.98	38.6
Approach		1550	1.4	0.822	31.3	LOS C	37.2	262.9	0.89	0.86	0.92	39.6
All Vehicles		4176	1.3	0.829	25.2	LOS B	37.2	262.9	0.68	0.73	0.73	42.3

MOVEMENT SUMMARY



Site: 101v [Captain Cook Drive / Endeavour Road - Future PM,+ Sharks + Stage A -F & Warehouse]

Captain Cook Drive / Endeavour Road

Future Volumes (4/2/20) (Sharks) + A-F & Warehouse

Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles													
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h	
South: Captain Cook Drive (S)													
2	T1	1490	1.2	0.659	19.3	LOS B	31.3	221.7	0.73	0.67	0.73	45.6	
3	R2	208	1.4	0.697	64.9	LOS E	12.5	88.7	1.00	1.01	1.52	28.8	
Approach		1698	1.2	0.697	24.9	LOS B	31.3	221.7	0.76	0.71	0.83	42.5	
East: Endeavour Road (E)													
4	L2	637	1.1	0.346	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	54.8	
6	R2	547	1.1	0.919	70.5	LOS E	41.2	291.1	1.00	1.00	1.27	27.5	
Approach		1184	1.1	0.919	35.6	LOS C	41.2	291.1	0.46	0.75	0.59	37.7	
North: Captain Cook Drive (N)													
7	L2	182	3.8	0.140	7.6	LOS A	1.5	10.5	0.27	0.63	0.27	52.6	
8	T1	1444	1.0	0.897	49.5	LOS D	49.2	347.1	1.00	1.02	1.14	33.1	
Approach		1626	1.3	0.897	44.8	LOS D	49.2	347.1	0.92	0.98	1.04	34.5	
All Vehicles		4508	1.2	0.919	34.9	LOS C	49.2	347.1	0.74	0.82	0.84	38.0	

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Future AM + Sharks]

Captain Cook Drive / Gannons Road
 Future Volumes (4/2/20) + Sharks 3 & 4
 Peak 8:00AM - 9:00AM
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	783	1.4	0.433	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8
2	T1	1	0.0	0.441	9.0	LOS A	2.8	20.6	0.88	1.00	0.99	33.7
3	R2	253	5.1	0.441	12.9	LOS A	2.8	20.6	0.88	1.00	0.99	47.5
3u	U	1	0.0	0.441	14.5	LOS B	2.8	20.6	0.88	1.00	0.99	44.9
Approach		1038	2.3	0.441	4.9	LOS A	2.8	20.6	0.22	0.50	0.24	48.4
East: Captain Cook Drive (E)												
4	L2	157	3.8	0.738	11.6	LOS A	8.3	62.6	0.86	0.97	1.13	49.2
5	T1	1186	10.5	0.738	11.7	LOS A	8.5	64.9	0.86	0.96	1.12	55.0
6	R2	1	0.0	0.738	15.9	LOS B	8.5	64.9	0.86	0.95	1.11	40.3
6u	U	25	12.0	0.738	18.7	LOS B	8.5	64.9	0.86	0.95	1.11	55.3
Approach		1369	9.7	0.738	11.8	LOS A	8.5	64.9	0.86	0.96	1.12	54.3
North: Toyota Access (N)												
7	L2	4	0.0	0.010	6.0	LOS A	0.0	0.3	0.73	0.60	0.73	38.4
8	T1	13	0.0	0.036	3.9	LOS A	0.2	1.3	0.75	0.68	0.75	35.9
9	R2	9	11.1	0.036	6.9	LOS A	0.2	1.3	0.75	0.68	0.75	37.7
9u	U	1	0.0	0.036	7.4	LOS A	0.2	1.3	0.75	0.68	0.75	31.0
Approach		27	3.7	0.036	5.3	LOS A	0.2	1.3	0.74	0.67	0.74	36.6
West: Captain Cook Drive (W)												
10	L2	6	0.0	0.485	6.5	LOS A	3.6	28.4	0.64	0.62	0.64	39.3
11	T1	688	13.1	0.485	7.0	LOS A	3.9	29.5	0.63	0.64	0.63	58.8
12	R2	413	9.2	0.485	11.6	LOS A	3.9	29.5	0.62	0.68	0.62	51.6
12u	U	7	57.1	0.485	15.3	LOS B	3.9	29.5	0.62	0.68	0.62	46.5
Approach		1114	11.8	0.485	8.8	LOS A	3.9	29.5	0.63	0.65	0.63	55.6
All Vehicles		3548	8.2	0.738	8.8	LOS A	8.5	64.9	0.60	0.73	0.71	52.6

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Future AM + Sharks + Stage A, B & C + Warehouse]

Captain Cook Drive / Gannons Road
 Future Volumes (4/2/20) + Sharks + Stage A, B & C + Warehouse
 Peak 8:00AM - 9:00AM
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	783	1.4	0.433	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8
2	T1	71	0.0	0.656	14.2	LOS A	5.1	37.2	0.97	1.12	1.30	32.4
3	R2	253	5.1	0.656	18.1	LOS B	5.1	37.2	0.97	1.12	1.30	45.0
3u	U	1	0.0	0.656	19.7	LOS B	5.1	37.2	0.97	1.12	1.30	42.7
Approach		1108	2.2	0.656	6.7	LOS A	5.1	37.2	0.28	0.57	0.38	46.3
East: Captain Cook Drive (E)												
4	L2	157	3.8	0.843	16.9	LOS B	12.8	96.5	1.00	1.20	1.59	46.0
5	T1	1186	10.5	0.843	16.8	LOS B	13.3	100.7	1.00	1.18	1.58	51.0
6	R2	71	0.0	0.843	20.8	LOS B	13.3	100.7	1.00	1.17	1.56	38.1
6u	U	25	12.0	0.843	23.7	LOS B	13.3	100.7	1.00	1.17	1.56	51.3
Approach		1439	9.2	0.843	17.2	LOS B	13.3	100.7	1.00	1.18	1.58	49.6
North: Toyota Access (N)												
7	L2	22	0.0	0.061	7.2	LOS A	0.3	2.0	0.79	0.77	0.79	38.0
8	T1	31	0.0	0.167	5.0	LOS A	1.0	6.8	0.84	0.86	0.84	35.3
9	R2	63	1.6	0.167	7.7	LOS A	1.0	6.8	0.84	0.86	0.84	38.1
9u	U	1	0.0	0.167	8.5	LOS A	1.0	6.8	0.84	0.86	0.84	30.6
Approach		117	0.9	0.167	6.9	LOS A	1.0	6.8	0.83	0.85	0.83	37.2
West: Captain Cook Drive (W)												
10	L2	221	0.0	0.649	9.5	LOS A	6.7	50.4	0.84	0.87	0.99	38.7
11	T1	688	13.1	0.649	9.8	LOS A	7.0	53.5	0.83	0.86	0.97	57.4
12	R2	413	9.2	0.649	14.1	LOS A	7.0	53.5	0.83	0.84	0.94	50.8
12u	U	7	57.1	0.649	18.1	LOS B	7.0	53.5	0.83	0.84	0.94	45.8
Approach		1329	9.9	0.649	11.1	LOS A	7.0	53.5	0.83	0.86	0.96	51.2
All Vehicles		3993	7.3	0.843	11.9	LOS A	13.3	100.7	0.74	0.89	1.02	48.7

MOVEMENT SUMMARY



Site: 1v [Captain Cook Drive / Gannons Road - Future AM + Sharks + Stage A-F + Warehouse]

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks 3 & 4 + Stage A-F + Warehouse

Peak 8:00AM - 9:00AM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	783	1.4	0.433	4.5	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
2	T1	114	0.0	0.226	42.0	LOS C	5.3	37.0	0.84	0.74	0.84	26.5
3	R2	253	5.1	0.770	54.8	LOS D	14.9	108.9	0.99	0.91	1.10	30.5
Approach		1150	2.1	0.770	19.2	LOS B	14.9	108.9	0.30	0.59	0.33	39.7
East: Captain Cook Drive (E)												
4	L2	157	3.8	0.188	28.0	LOS B	5.5	39.8	0.64	0.75	0.64	40.1
5	T1	1186	10.5	0.789	30.3	LOS C	30.4	231.6	0.87	0.80	0.89	44.4
6	R2	114	0.0	0.370	55.9	LOS D	6.1	42.5	0.94	0.78	0.94	26.1
Approach		1457	8.9	0.789	32.0	LOS C	30.4	231.6	0.85	0.79	0.87	41.7
North: Toyota Access (N)												
7	L2	35	0.0	0.152	37.9	LOS C	3.5	24.6	0.80	0.66	0.80	28.8
8	T1	44	0.0	0.152	36.0	LOS C	3.5	24.6	0.80	0.66	0.80	27.5
9	R2	71	1.4	0.246	44.7	LOS D	3.5	25.0	0.87	0.72	0.87	27.2
Approach		150	0.7	0.246	40.6	LOS C	3.5	25.0	0.84	0.69	0.84	27.7
West: Captain Cook Drive (W)												
10	L2	349	0.0	0.589	26.8	LOS B	19.8	143.9	0.79	0.80	0.87	33.8
11	T1	688	13.1	0.589	25.1	LOS B	21.8	169.4	0.80	0.74	0.83	46.7
12	R2	413	9.2	0.764	61.2	LOS E	13.2	99.7	1.00	0.86	1.07	29.8
Approach		1450	8.8	0.764	35.8	LOS C	21.8	169.4	0.86	0.79	0.91	37.3
All Vehicles		4207	6.7	0.789	30.1	LOS C	30.4	231.6	0.70	0.73	0.73	38.8

MOVEMENT SUMMARY



Site: 1 [Captain Cook Drive / Gannons Road - Future PM + Sharks]

Captain Cook Drive / Gannons Road
 Future Volumes (4/2/20) + Sharks Stage 3 & 4
 Peak 4:30PM - 5:30PM
 Site Category: (None)
 Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	456	1.3	0.252	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8
2	T1	2	50.0	0.268	8.4	LOS A	1.5	10.6	0.75	0.86	0.75	34.3
3	R2	199	1.0	0.268	10.3	LOS A	1.5	10.6	0.75	0.86	0.75	49.5
3u	U	1	100.0	0.268	15.9	LOS B	1.5	10.6	0.75	0.86	0.75	45.5
Approach		658	1.5	0.268	4.8	LOS A	1.5	10.6	0.23	0.50	0.23	49.0
East: Captain Cook Drive (E)												
4	L2	84	3.6	0.636	12.7	LOS A	6.0	42.5	0.89	1.03	1.15	48.7
5	T1	850	2.0	0.636	12.4	LOS A	6.2	44.4	0.90	1.01	1.14	56.2
6	R2	1	0.0	0.636	16.8	LOS B	6.2	44.4	0.90	1.00	1.14	39.9
6u	U	29	0.0	0.636	19.2	LOS B	6.2	44.4	0.90	1.00	1.14	57.6
Approach		964	2.1	0.636	12.6	LOS A	6.2	44.4	0.90	1.01	1.14	55.4
North: Toyota Access (N)												
7	L2	1	0.0	0.004	10.6	LOS A	0.0	0.1	0.88	0.65	0.88	36.7
8	T1	8	0.0	0.073	8.8	LOS A	0.4	3.0	0.92	0.89	0.92	34.0
9	R2	19	0.0	0.073	11.5	LOS A	0.4	3.0	0.92	0.89	0.92	36.8
9u	U	1	0.0	0.073	12.3	LOS A	0.4	3.0	0.92	0.89	0.92	29.7
Approach		29	0.0	0.073	10.8	LOS A	0.4	3.0	0.92	0.88	0.92	35.7
West: Captain Cook Drive (W)												
10	L2	1	0.0	0.748	8.0	LOS A	9.5	67.3	0.79	0.70	0.86	38.9
11	T1	1330	1.1	0.748	7.9	LOS A	9.5	67.3	0.77	0.70	0.83	58.7
12	R2	630	1.1	0.748	12.2	LOS A	9.2	65.1	0.74	0.69	0.78	51.6
12u	U	17	0.0	0.748	14.6	LOS B	9.2	65.1	0.74	0.69	0.78	58.7
Approach		1978	1.1	0.748	9.4	LOS A	9.5	67.3	0.76	0.69	0.81	56.2
All Vehicles		3629	1.4	0.748	9.4	LOS A	9.5	67.3	0.70	0.74	0.80	54.3

MOVEMENT SUMMARY

Site: 1 [Captain Cook Drive / Gannons Road - Future PM + Sharks + Stage A, B & C + Warehouse]

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks Stage + Stage A, B & C + Warehouse

Peak 4:30PM - 5:30PM

Site Category: (None)

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	456	1.3	0.252	2.3	LOS A	0.0	0.0	0.00	0.34	0.00	48.8
2	T1	20	5.0	0.348	8.1	LOS A	2.1	15.0	0.84	0.94	0.86	34.1
3	R2	199	1.0	0.348	11.6	LOS A	2.1	15.0	0.84	0.94	0.86	49.1
3u	U	1	100.0	0.348	18.0	LOS B	2.1	15.0	0.84	0.94	0.86	45.1
Approach		676	1.5	0.348	5.2	LOS A	2.1	15.0	0.27	0.53	0.28	48.3
East: Captain Cook Drive (E)												
4	L2	84	3.6	0.873	38.4	LOS C	14.6	104.3	1.00	1.46	2.41	36.4
5	T1	850	2.0	0.873	37.3	LOS C	16.2	115.2	1.00	1.47	2.41	40.8
6	R2	18	0.0	0.873	41.1	LOS C	16.2	115.2	1.00	1.48	2.42	31.7
6u	U	29	0.0	0.873	43.5	LOS D	16.2	115.2	1.00	1.48	2.42	41.9
Approach		981	2.0	0.873	37.7	LOS C	16.2	115.2	1.00	1.47	2.41	40.2
North: Toyota Access (N)												
7	L2	72	0.0	0.286	12.9	LOS A	1.6	11.0	0.92	0.93	0.94	35.8
8	T1	80	0.0	0.913	66.7	LOS E	13.1	91.4	1.00	2.18	3.03	22.4
9	R2	234	0.0	0.913	69.4	LOS E	13.1	91.4	1.00	2.18	3.03	23.6
9u	U	1	0.0	0.913	70.2	LOS E	13.1	91.4	1.00	2.18	3.03	20.4
Approach		387	0.0	0.913	58.3	LOS E	13.1	91.4	0.99	1.95	2.64	24.8
West: Captain Cook Drive (W)												
10	L2	54	0.0	0.795	9.6	LOS A	11.9	84.3	0.88	0.80	1.04	38.7
11	T1	1330	1.1	0.795	9.4	LOS A	11.9	84.3	0.87	0.78	1.00	58.1
12	R2	630	1.1	0.795	13.6	LOS A	11.8	83.1	0.84	0.75	0.94	51.0
12u	U	17	0.0	0.795	16.0	LOS B	11.8	83.1	0.84	0.75	0.94	58.0
Approach		2031	1.1	0.795	10.8	LOS A	11.9	84.3	0.86	0.78	0.98	55.0
All Vehicles		4075	1.3	0.913	20.9	LOS B	16.2	115.2	0.81	1.01	1.37	44.8

MOVEMENT SUMMARY

 **Site: 1v [Captain Cook Drive / Gannons Road - Future PM + Sharks + Stage A-F + Warehouse]**

Captain Cook Drive / Gannons Road

Future Volumes (4/2/20) + Sharks 3 & 4 + Stage A-F + Warehouse

Peak 4:30PM - 5:30PM

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Gannons Rd (S)												
1	L2	456	1.3	0.252	4.4	LOS A	0.0	0.0	0.00	0.47	0.00	47.8
2	T1	33	3.0	0.056	35.3	LOS C	1.4	9.7	0.74	0.66	0.74	27.8
3	R2	199	1.0	0.715	54.0	LOS D	11.4	80.7	0.98	0.88	1.05	31.0
Approach		688	1.3	0.715	20.2	LOS B	11.4	80.7	0.32	0.59	0.34	40.1
East: Captain Cook Drive (E)												
4	L2	84	3.6	0.161	41.7	LOS C	3.7	26.8	0.80	0.75	0.80	34.8
5	T1	850	2.0	0.807	46.8	LOS D	25.7	183.3	0.98	0.91	1.07	37.1
6	R2	31	0.0	0.174	62.2	LOS E	1.7	12.1	0.96	0.72	0.96	25.0
Approach		965	2.1	0.807	46.8	LOS D	25.7	183.3	0.97	0.89	1.04	36.3
North: Toyota Access (N)												
7	L2	115	0.0	0.384	34.2	LOS C	9.2	64.5	0.83	0.82	1.10	29.6
8	T1	123	0.0	0.384	32.2	LOS C	9.2	64.5	0.83	0.82	1.10	28.2
9	R2	362	0.0	0.863	56.4	LOS D	23.4	164.1	1.00	1.06	1.23	25.1
Approach		600	0.0	0.863	47.2	LOS D	23.4	164.1	0.93	0.97	1.18	26.5
West: Captain Cook Drive (W)												
10	L2	92	0.0	0.848	30.2	LOS C	28.0	197.5	0.97	0.91	1.03	33.9
11	T1	1330	1.1	0.848	23.9	LOS B	28.4	201.0	0.97	0.91	1.04	47.9
12	R2	630	1.1	0.655	47.4	LOS D	18.1	127.9	0.92	0.83	0.92	33.6
Approach		2052	1.1	0.848	31.4	LOS C	28.4	201.0	0.96	0.89	1.00	41.7
All Vehicles		4305	1.2	0.863	35.3	LOS C	28.4	201.0	0.85	0.85	0.93	37.2