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


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**200318.01FA - 17th September 2020**

**Development Type:** **Mixed Use Development**

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

**Prepared for:** **Aliro Group**

**Document reference:** **200318.01FA**

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# 1 INTRODUCTION

*M^CLaren Traffic Engineering* was commissioned by *Aliro Group* to provide a 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.

## *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 | 25,272m$^2$ GFA |
| Ancillary Industrial Office | 7,382m$^2$ GFA |
| Warehouse | 1,824m$^2$ GFA |
| Ancillary Warehouse Office | 3,846m$^2$ GFA |
| Commercial Office & Business Premises | 99,286m$^2$ GFA |
| Retail | 4,307m$^2$ GFA |
| Food and Beverage | 3,561m$^2$ GFA |
| Recreation | 860m$^2$ |
| Hotel | 3,624m$^2$ GFA<br>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 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 development to the south-west, recreational facilities to the south-east (Woolooware Golf Club and playing fields) and east (Solander Grounds) and Shark Park and Leagues Club to the east, with Woolooware Bay newly and under construction Town Centre. Caringbah Train Station is located approximately 1.1km to the south-west and Woolooware 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.


Site Location

**FIGURE 1: SITE CONTEXT – AERIAL PHOTO**


Site Location

**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 eastbound at the roundabout of Captain Cook Drive / Gannons Road and two (2) spaces on the approach to the roundabout 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;
- Un-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 The Kingsway / Denman Avenue;
- 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 / Woolooware Road;
- Give-way controlled intersection of Captain Cook Drive / Endeavour Road designed as a seagull intersection;
- Priority 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, but chose to turn left along 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 95$^{th}$ 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 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 95$^{th}$ 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 – EXISITNG 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

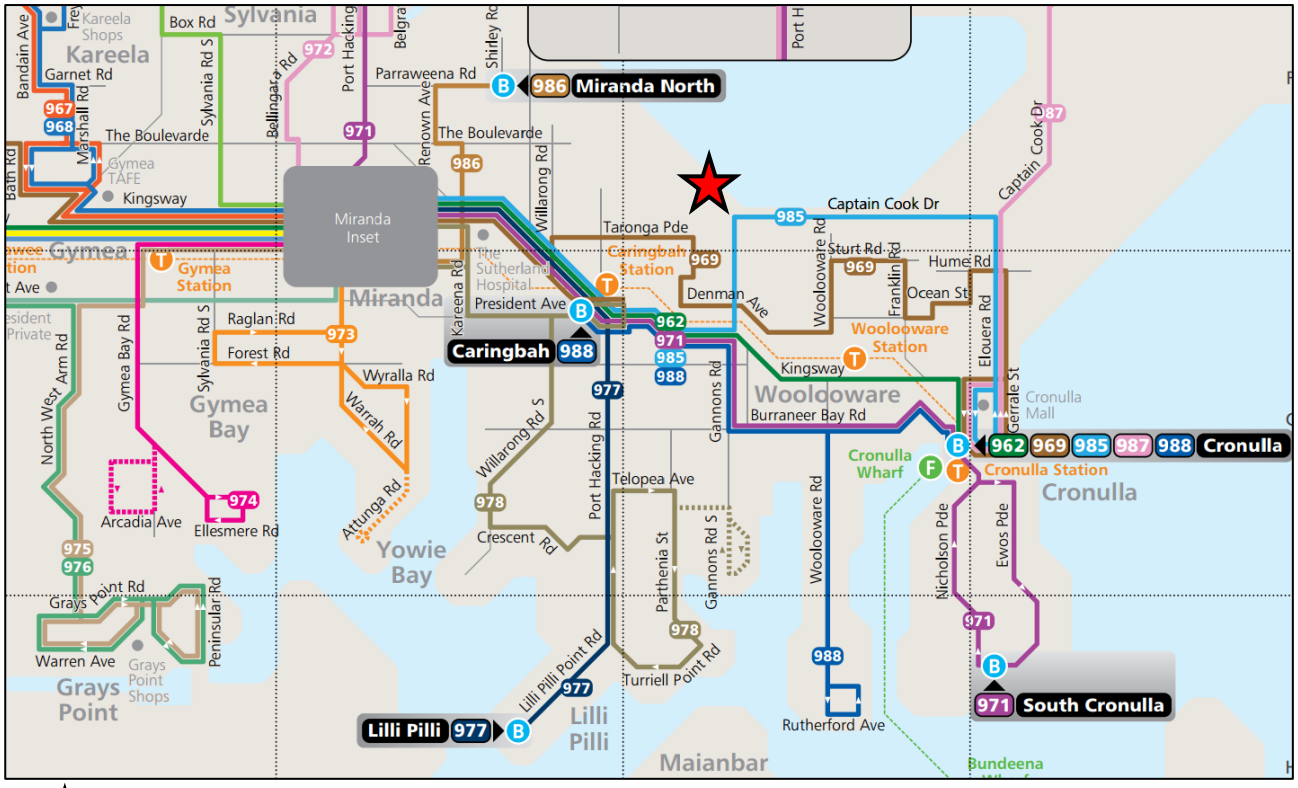
operating with worst turning movement of LoS “F”. This indicates that the intersection of Endeavour Road / Captain Cook Drive requires an infrastructure upgrade. The failing turn movements relate to both right turns into Endeavour Road from Captain Cook Drive during the AM peak hour period and right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

### *2.4 Public Transport*

The subject site has access to existing bus stop (ID: 222938) located approximately 200m from the south and 330m to the east of the roundabout intersection of Gannons Road / Captain Cook Drive. The bus stop services existing bus route 985 (Cronulla to Miranda via Woolooware 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) located approximately 330m to the south-west of the site located 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 Woolooware 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.




**Site Location**

**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.

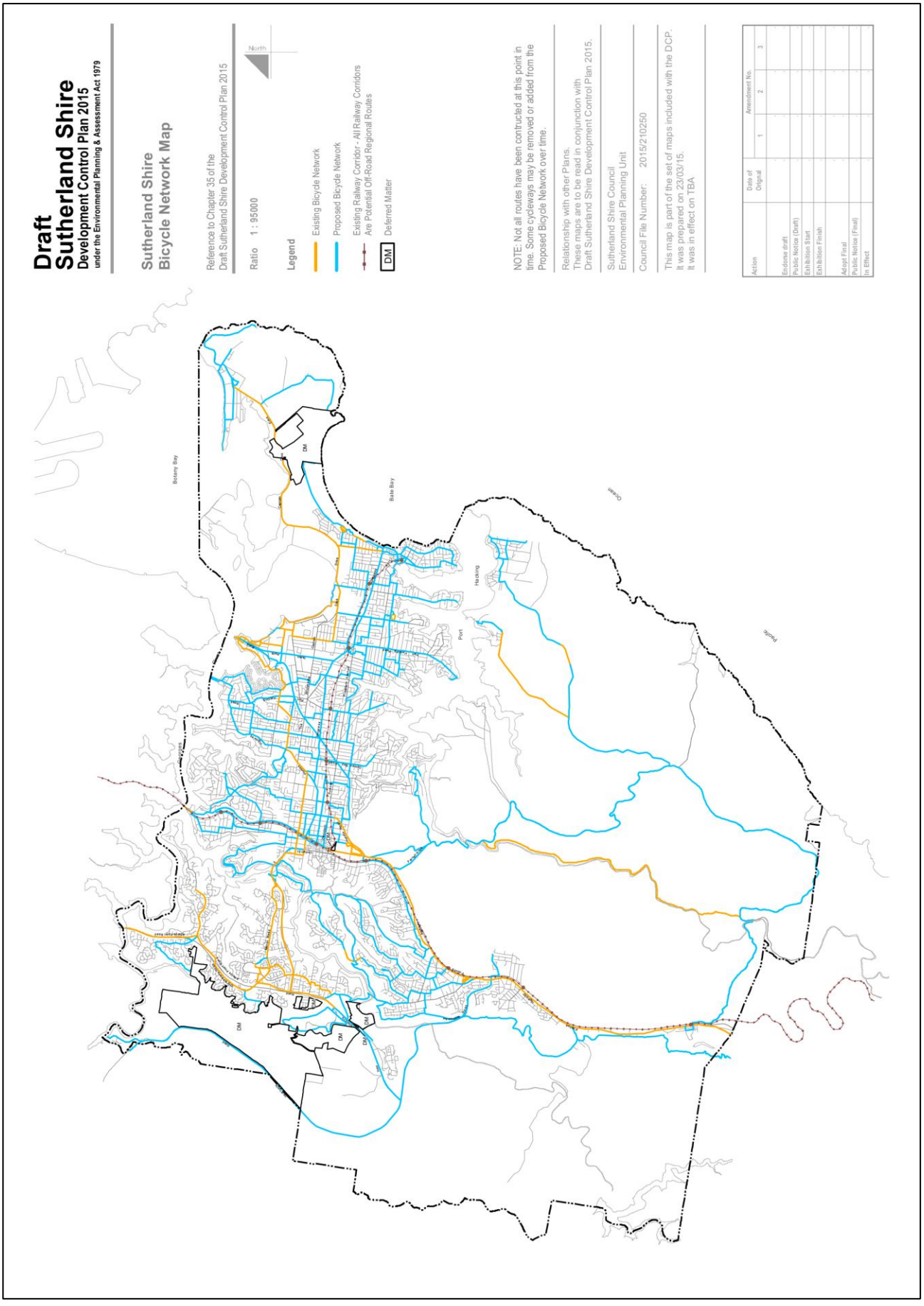



**FIGURE 4: SUTHERLAND SHIRE COUNCIL BICYCLE NETWORK MAP**

## *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;
    - 18,343m$^2$ Shopping Centre;
    - Revitalised Sharks Leagues Club (4,352m$^2$ 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 30m$^2$ 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 60m$^2$ to 1 space per 80m$^2$. 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 | 25,272m$^2$ GFA | 1 per 100m$^2$ GFA | 252.7 |
| Industrial Ancillary Office | 7,382m$^2$ GFA | 1 per 30m$^2$ GFA | 246 |
| Warehouse | 1,824m$^2$ GFA | 1 per 300m$^2$ GFA | 6 |
| Warehouse Ancillary Office | 3,846m$^2$ GFA | 1 per 30m$^2$ GFA | 128.2 |
| Commercial Office | 99,286m$^2$ GFA | 1 per 45m$^2$ GFA | 2206.4 |
| Retail | 4,307m$^2$ GFA | 1 per 45m$^2$ GFA | 95.7 |
| Food and Beverage | 3,561m$^2$ GFA | 1 per 45m$^2$ GFA | 79.2 |
| Hotel | 125 rooms | 1 per 4 rooms | 31.3 |
| | 20 staff(1) | 1 per 2 staff | 10 |
| **Total** | **-** | **-** | **3056** |

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 **3,056** 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 **1,484** car parking spaces, a shortfall of **1,572** 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 retail and food and beverage car parking spaces, adopting the assumption that the provision of retail and 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 retail and food and beverage land uses.

Adopting a 50% reduction in the car parking requirements for the retail, food and beverage land uses results in a reduction of 88 spaces, reducing to a car parking requirement of **2,968**, which is a shortfall of **1,484** 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;
- 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 | 252.7 | 2.5 |
| Industrial Ancillary Office | Class 5 | 1 per 100 spaces | 246 | 2.5 |
| Warehouse | Class 7b | 1 per 100 spaces | 6 | 0.1 |
| Warehouse Ancillary Office | Class 5 | 1 per 100 spaces | 128.2 | 1.3 |
| Commercial Office | Class 5 | 1 per 100 spaces | 2206.4 | 22 |
| Retail | Class 6 | 1 per 50 spaces | 95.7 | 2 |
| Food and Beverage | Class 6 | 1 per 50 spaces | 79.2 | 2 |
| Hotel | Class 3 | 1 per 100 spaces (3) | 31.3 | 1 |
| **Total** | **-** | **-** | **-** | **33.4 (34)** |

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 **123** (3056/25)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 for the subject site, as such the site does not require the provision of motorcycle facilities, but considering the shortfall of car parking 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 **163** 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)*

*< 20,000m² GFA* *1 space per 4,000m² GFA*

*> 20,000m² GFA* *5+ 1 space per 8,000m² over 20,000m²*

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

*< 2,000m² GFA* *1 space per 400m² GFA*

*> 2,000m² GFA* *5 + 1 space per 1,000m² over 2,000m²*

***Wholesale, Industrial*** *(all spaces adequate for trucks)*

*< 8,000m² GFA* *1 space per 800m²*

*> 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 shared with the Warehouse and Industrial requirements.

**TABLE 10: SERVICING AND LOADING PROVISION - MASTERPLAN**

| Land Use | Scale | Rate | Servicing and Loading Provision |
|---|---|---|---|
| Industrial | 25,272m$^2$ GFA | 10 + 1 space per 1,000m$^2$ over 8,000 m$^2$ | 27 |
| Warehouse | 1,824m$^2$ GFA | 1 space per 800m$^2$ | 2 |
| Commercial Office | 99,286m$^2$ GFA | 50% of: 5 + 1 space per 8,000m$^2$ over 20,000m$^2$ | 8 |
| Retail | 4,307m$^2$ GFA | 5 + 1 space per 1,000m$^2$ over 2,000m$^2$ | 8 |
| Food and Beverage | 3,561m$^2$ GFA | 5 + 1 space per 1,000m$^2$ over 2,000m$^2$ | 7 |
| Hotel | 125 rooms | 50% of: 1 per 50 rooms | 2 |
| **Total** | **-** | **-** | **54** |

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 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 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, *AS2890.6:2009* 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.

# 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 *Roads and Maritime Services (RMS) Guide to Traffic Generating Developments (2002)* and recent supplements and are as follows:

***RMS 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 100m$^2$ gross floor area*

***3.6.1 Shopping centres.***

*V(P) = 56 A(SS) vehicle trips per 1000m$^2$ GLFA*

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

***3.7.2 Restaurants.***

*Evening peak hour vehicle trips = 5 per 100m$^2$ gross floor area.*

***3.10.1 Factories***

*Evening peak hour vehicle trips = 1 per 100m$^2$ gross floor area*

***3.10.2 Warehouses***

*Morning peak hour vehicle trips = 0.5 per 100m$^2$ gross floor area*

***TDT 2013/04a***

***Office blocks***

*Morning peak hour vehicle trips = 1.6 per 100m$^2$ gross floor area.*

*Evening peak hour vehicle trips = 1.2 per 100m$^2$ 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 RMS 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 RMS office rate has been applied as the proposed site has access to public transport services;
- The RMS office rate has been applied to the factory and warehouse ancillary office areas;
- Half of the office rate has been adopted for the retail portion of the site to consider a lower density of staff and ancillary use of the development;
- 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 RMS 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 RMS 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 | 25,272m$^2$ GFA | AM | 1 per 100m$^2$ | 253 (1) | 202 in, 51 out |
| | | PM | | | 51 in, 202 out |
| Industrial Ancillary Office | 7,382m$^2$ GFA | AM | 2 per 100m$^2$ | 148 (1) | 118 in, 30 out |
| | | PM | | | 30 in, 118 out |
| Warehouse | 1,824m$^2$ GFA | AM | 0.5 per 100m$^2$ | 9 (1) | 7 in, 2 out |
| | | PM | | | 2 in, 7 out |
| Warehouse Ancillary Office | 3,846m$^2$ GFA | AM | 2 per 100m$^2$ | 77 (1) | 62 in, 15 out |
| | | PM | | | 15 in, 62 out |
| Commercial Office | 99,286m$^2$ GFA | AM | 2 per 100m$^2$ | 1986 (1) | 1589 in, 397 out |
| | | PM | | | 397 in, 1589 out |
| Retail | 4,307m$^2$ GFA | AM | 1 per 100m$^2$ | 43 (1) | 35 in, 8 out |
| | | PM | 1 per 100m$^2$ | | 8 in, 35 out |
| Food and Beverage | 3,561m$^2$ GFA | AM | 1 per 100m$^2$ | 36 (1) | 29 in, 7 out |
| | | PM | 1 per 100m$^2$ | | 7 in, 29 out |
| Hotel | 125 rooms | AM | 0.4 per room | 50 (2) | 25 in, 25 out |
| | | PM | | | 25 in, 25 out |
| **TOTAL** | **-** | **AM** | **-** | **2,602** | **2067 in, 535 out** |
| | | **PM** | | **2,602** | **535 in, 2,067 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 **2,602** 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).

### *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 Boulevarde.

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

### *4.3 Access Scenarios*

As part of the assessment of the masterplan development, multiple access strategies will be assessed under the above trip distribution. The access strategies that will be assessed are summarised in **Table 12** below.

## TABLE 12: ACCESS SCENARIO ASSESSMENT

| Access Scenario | Comments / Assumptions | Endeavour Road / Captain Cook Drive | Captain Cook Drive / Gannons Road | New Road Infrastructure (Endeavour Road New) |
|---|---|---|---|---|
| **Scenario 1** | • Inbound vehicles are split between Endeavour Road and Gannons Road<br>• Outbound Vehicles use both Endeavour Road and Gannons Road | No Changes | No Changes | N/A |
| **Scenario 2** | • Inbound vehicles are split between Endeavour Road / Gannons<br>• Outbound Vehicles use both Endeavour Road and Gannons Road | No Changes | Signalised Intersection<br>(Retains all vehicle movements) | N/A |
| **Scenario 3** | • Inbound vehicles are split between Endeavour, New Endeavour Road Intersection and Gannons Road<br>• Outbound Vehicles use Endeavour Road, New Endeavour Road Intersection and Gannons Road (usage of New Endeavour Road / Gannons Road is based upon equilibrium) | Right turn out of Endeavour Road banned and added to turn movements for New Endeavour Road Intersection | Signalised Intersection<br>(Retains all vehicle movements) | Signalised Intersection (New Endeavour Road with Captain Cook Drive)<br>(Retains all vehicle movements) |
| **Scenario 4** | • Inbound vehicles are split between Endeavour, New Endeavour Road Intersection and Gannons Road<br>• Outbound Vehicles use Endeavour Road, New Endeavour Road Intersection and Gannons Road (usage of New Endeavour Road / Gannons Road is based upon equilibrium) | Signalised Intersection<br>Right turn out of Endeavour Road banned and added to right turn movement for New Endeavour Road | Signalised Intersection<br>(Retains all vehicle movements) | Signalised Intersection (New Endeavour Road with Captain Cook Drive)<br>(Right turn movement into Endeavour Road banned) |

Based upon the above assessed scenarios, traffic distributions, vehicles are expected to arrive and depart the site as shown in **Annexure D**.

## *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 detailed SIDRA results are reproduced in **Annexure C** for reference, with a summary of results provided in the following subsections:

### 4.4.1 Scenario 1

A summary of Scenario 1 is provided in **Table 13** below, which assesses the proposed development under existing road infrastructure.

**TABLE 13: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 8.0) – SCENARIO 1**

| 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 – SCENARIO 1*** | | | | | | |
| Gannons Road / Captain Cook Drive | AM | 1.2 | >70 (Worst: >70) | **F** (Worst: F) | Roundabout | U-Turn from Captain Cook Drive (E) |
| | PM | 5.2 | >70 (Worst: >70) | **F** (Worst: F) | | U-Turn from Site Access (N) |
| Captain Cook Drive / Endeavour Road[5] | AM | 2.43 | >70 (Worst: >70) | **N/A** (Worst: F) | Give Way (Seagull) | RT from Captain Cook Drive (S) |
| | PM | 1.59 | >70 (Worst: >70) | **N/A** (Worst: F) | | RT from Endeavour Road (E) |

Notes: Refer to Table 3 Notes

As shown, the intersection of Gannons Road / Captain Cook Drive and Captain Cook Drive / Endeavour Road is operating at LoS “F” indicating that existing access arrangements are unacceptable.

### 4.4.2 Scenario 2

Scenario 2 assesses the proposed development under a signalised intersection at Captain Cook Drive / Gannons Road / Site Access. The geometry assessed as part of Scenario 2 is shown in **Figure 5** below.

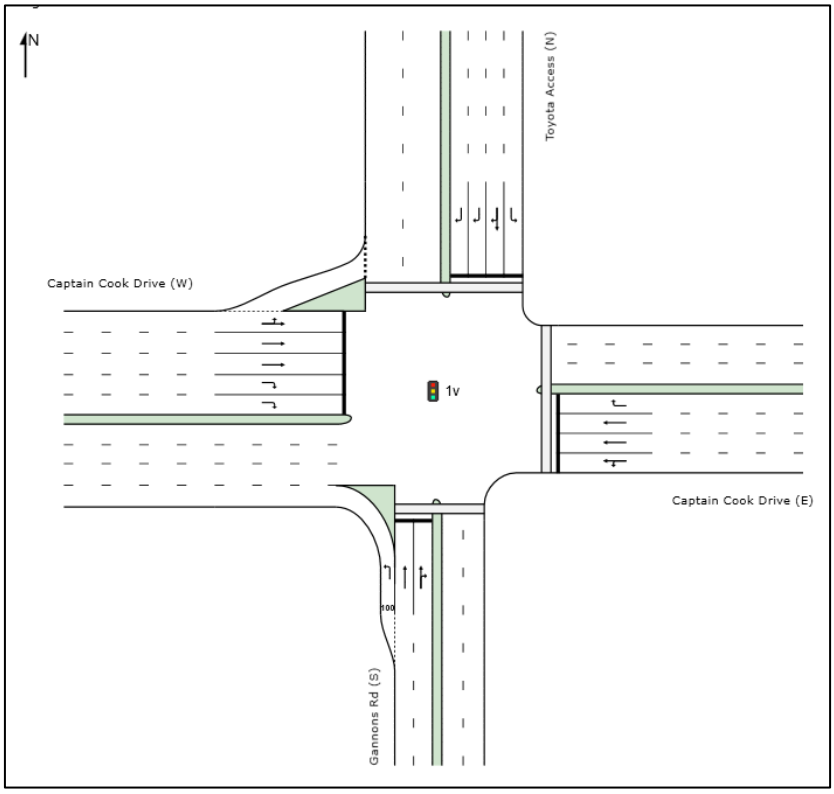



**FIGURE 5: SCENARIO 2 INTERSECTION GEOMETRY**

Based upon the above intersection geometry, the resultant intersection performance is shown in **Table 14** below.

**TABLE 14: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 8.0) – SCENARIO 2**

| 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 – SCENARIO 2*** | | | | | | |
| Gannons Road / Captain Cook Drive | AM | 0.90 | 37.1 | **C** | Signal | N/A |
| | PM | 0.92 | 48.7 | **D** | | N/A |
| Captain Cook Drive / Endeavour Road[5] | AM | 2.43 | >70 (Worst: >70) | **N/A** (Worst: F) | Give Way (Seagull) | RT from Captain Cook Drive (S) |
| | PM | 1.59 | >70 (Worst: >70) | **N/A** (Worst: F) | | RT from Endeavour Road (E) |

Notes: Refer to Table 3 Notes

As shown above, the intersection of Gannons Road / Captain Cook Drive is expected to operate at LoS “C” in the AM peak hour period and LoS “D” in the PM peak hour period. While this is an acceptable level of service, the intersection of Captain Cook Drive / Endeavour Road is operating at LoS “F”, which is unacceptable. In addition, the extent of road widening required to facilitate the above design is substantial, likely requiring acquisition of land along the eastern side of Gannons Road (i.e. sports fields) and land from the subject site to facilitate the design.

### 4.4.3 Scenario 3

Scenario 3 assesses the proposed development under a signalised intersection at Captain Cook Drive / Gannons Road / Site Access and a New Signalised Intersection at the bend in Captain Cook Drive at the south west corner of the Toyota Site within a short new road connection between Captain Cook Drive and Endeavour Road that then access the Toyota site along its frontage with Endeavour Road. A brief concept drawing of a potential new intersection is shown in **Annexure E** for reference. The geometry assessed as part of Scenario 3 is shown in **Figure 6** and **Figure 7** below.

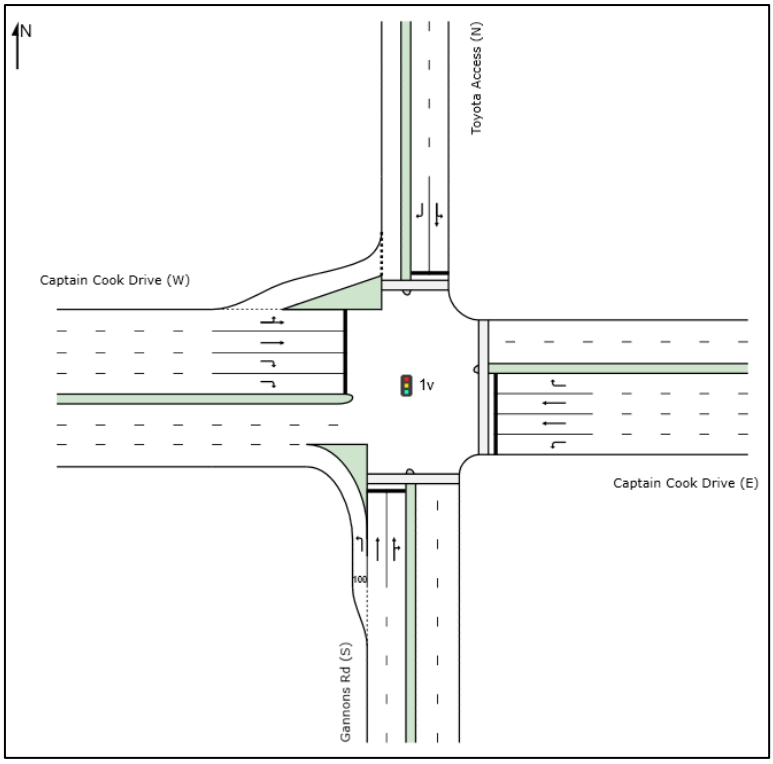



**FIGURE 6: SCENARIO 3 INTERSECTION GEOMETRY – GANNONS ROAD / CAPTAIN COOK DRIVE**

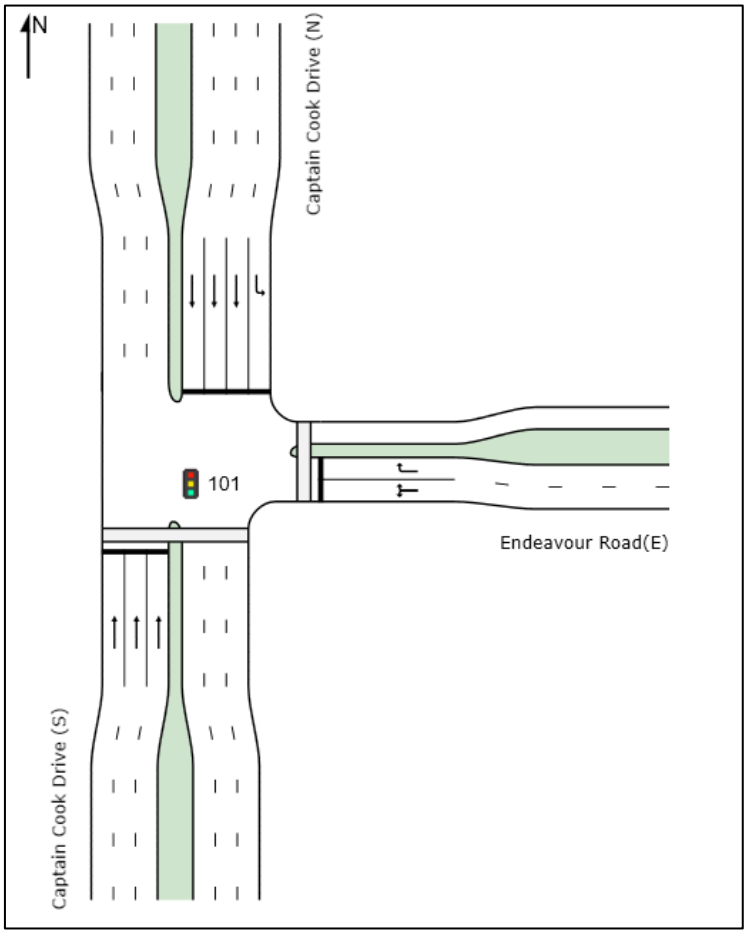



**FIGURE 7: SCENARIO 3 – INTERSECTION GEOMETRY – NEW ENDEAVOUR ROAD / CAPTAIN COOK DRIVE**

Based upon the above intersection geometry, the resultant intersection performance is shown in **Table 15** below.

**TABLE 15: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 8.0) – SCENARIO 3**

| 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 – SCENARIO 3*** | | | | | | |
| Gannons Road / Captain Cook Drive | AM | 0.83 | 36 | **C** | Signal | N/A |
| | PM | 0.91 | 41.4 | **C** | | N/A |
| Captain Cook Drive / Endeavour Road[5] | AM | 9.28 | >70 (Worst: >70) | **N/A** (Worst: F) | Give Way | RT from Captain Cook Drive (S) |
| | PM | 1.2 | >70 (Worst: >70) | **N/A** (Worst: F) | | RT from Captain Cook Drive (S) |
| Captain Cook Drive / NEW Endeavour Road | AM | 0.62 | 15.3 | **A** | Signals | RT from Endeavour Road (E) |
| | PM | 0.76 | 28.3 | B | | RT from Endeavour Road (E) |

Notes: Refer to Table 3 Notes

As shown above, the intersection of Gannons Road / Captain Cook Drive is expected to operate at LoS “C” in the AM and PM peak hour periods, whilst the newly created proposed signalised intersection of Endeavour Road / Captain Cook Drive as provided in **Annexure E** is expected to operate at LoS “A” and LoS “B” during the AM and PM peak hour periods respectively. This indicates that the intersection of Captain Cook Drive / Endeavour Road are forecast to operated at an acceptable level of service, with additional spare capacity.

Further, the intersection of Captain Cook Drive / Gannons Road has been reduced compared to Scenario 2, and it likely a much more viable option when considering available

road width. Although as Gannons Road requires two (2) approach and two (2) departure lanes, road widening will be required as part of this signalised intersection design.

The intersection of Captain Cook Drive / Endeavour Road (existing) is again expected to operate at LoS “F” even when right turn movements out of Endeavour Road were displaced indicating that the intersection will also require an infrastructure upgrade.

It should be noted that adding a right turn onto the new proposed intersection with Endeavour Road was considered as a sensitivity analysis but resulted in excessive intersection queuing at the new intersection.

### 4.4.4 Scenario 4

Scenario 4 assesses the same scenario as Scenario 3, except it includes a signalised intersection at the Endeavour Road / Captain Cook Drive intersection to allow right turn movements from Captain Cook Drive into Endeavour Road to be maintained. The geometry adopted for the signalised intersection of Endeavour Road / Captain Cook Drive is shown in **Figure 8** below.

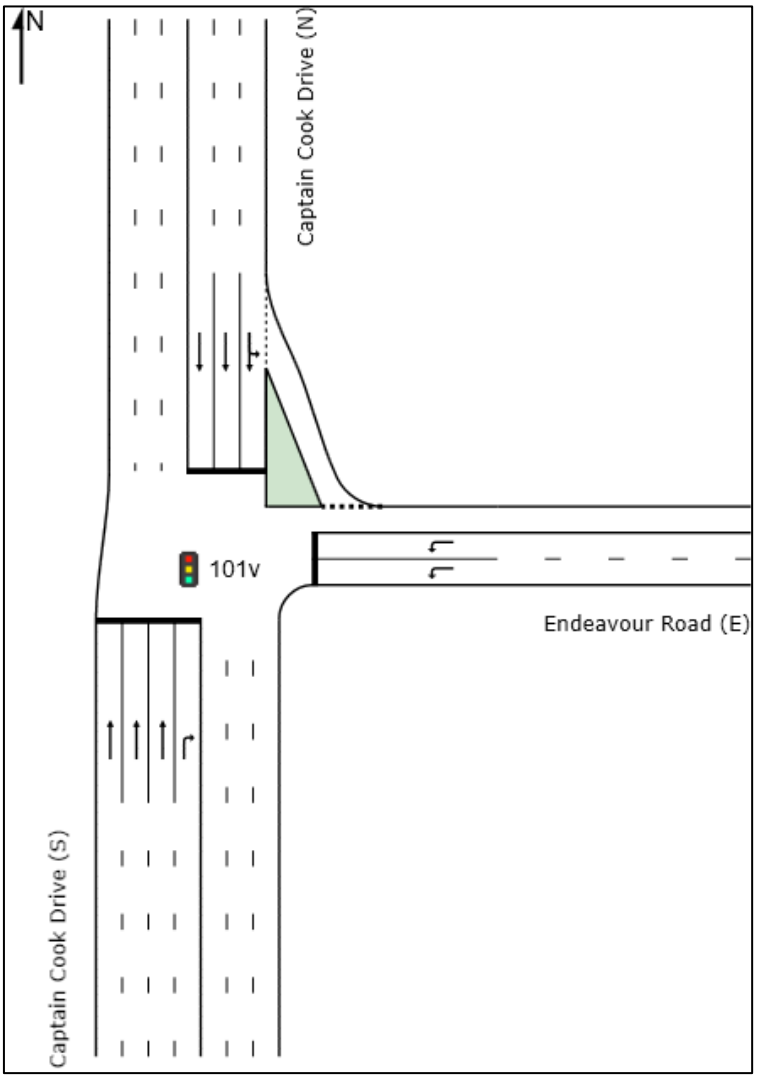



**FIGURE 8: SCENARIO 4 – INTERSECTION GEOMETRY –ENDEAVOUR ROAD / CAPTAIN COOK DRIVE**

Based upon the above intersection geometry, the resultant intersection performance is shown in **Table 16** below.

**TABLE 16: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 8.0) – SCENARIO 4**

| 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 – SCENARIO 4*** | | | | | | |
| Gannons Road / Captain Cook Drive | AM | 0.83 | 36 | **C** | Signal | N/A |
| | PM | 0.91 | 41.4 | **C** | | N/A |
| Captain Cook Drive / Endeavour Road[5] | AM | 0.78 | 16.7 | **B** | Signal | N/A |
| | PM | 0.53 | 13.1 | **C** | | N/A |
| Captain Cook Drive / NEW Endeavour Road | AM | 0.62 | 15.3 | **A** | Signals | RT from Endeavour Road (E) |
| | PM | 0.76 | 28.3 | B | | RT from Endeavour Road (E) |

Notes: Refer to Table 3 Notes

As shown above the proposed signalised intersection of Captain Cook Drive / Endeavour Road is forecast to operate at LoS “B” and LoS “C” during the AM and PM peak hour period respectively. This indicates acceptable delays and spare capacity

Refer to **Section 4.4.4** for comments regarding Gannons Road / Captain Cook Drive and Captain Cook Drive / New Endeavour Road signalised intersection.

### 4.4.5 Summary of Findings

Four (4) access strategies have been assessed as part of this proposed masterplan development and Scenarios 1 to 3 have unacceptable traffic impacts upon the surrounding road network. Scenario 4 was the only access strategy that resulted in acceptable traffic impacts as part of the proposed development which requires the provision of three (3) signalised intersections as detailed below:

- 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 further detailed review of the results has been undertaken, including refined modelling of turning lane lengths for the signalised intersection of Gannons Road / Captain Cook Drive and Endeavour Road (existing) / Captain Cook Drive to determine the required intersection geometry to facilitate the development via the provision of the three (3) aforementioned signalised intersections. The refined intersection geometry is shown in **Figure 9**, **Figure 10** and **Figure 11**

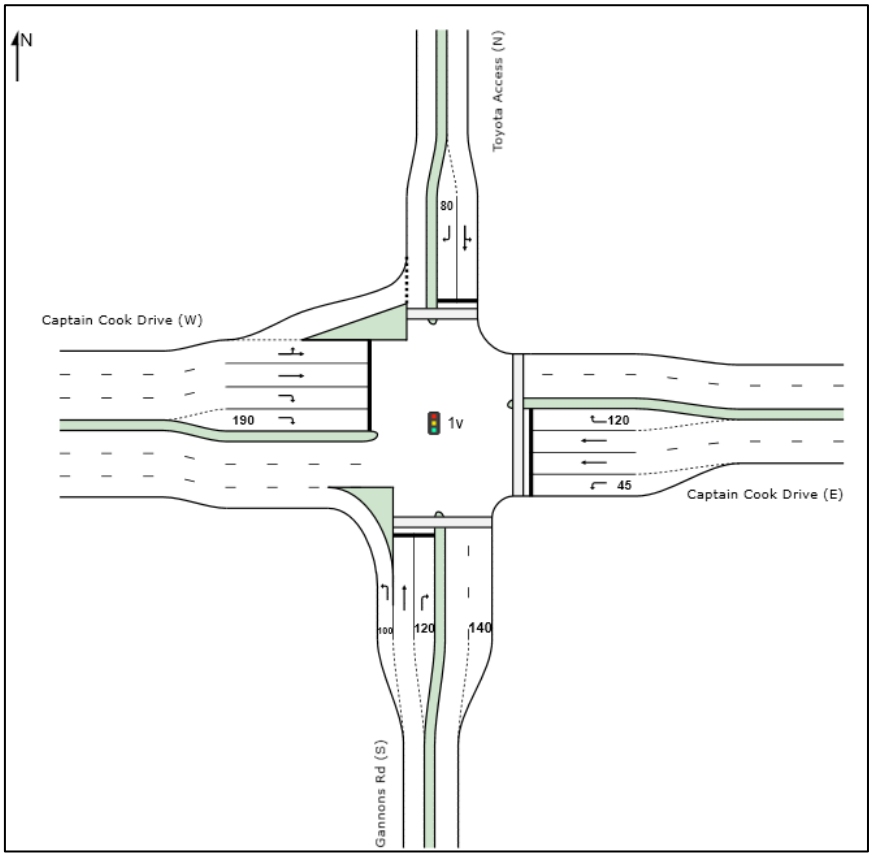



**FIGURE 9: CAPTAIN COOK DRIVE / GANNONS ROAD LANE LENGTHS**

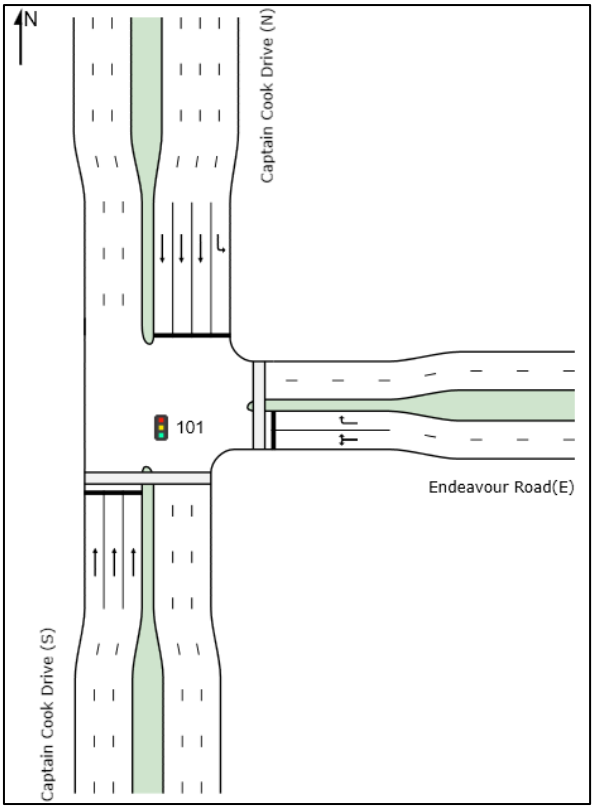



**FIGURE 10: NEW ENDEAVOUR ROAD / CAPTAIN COOK DRIVE**

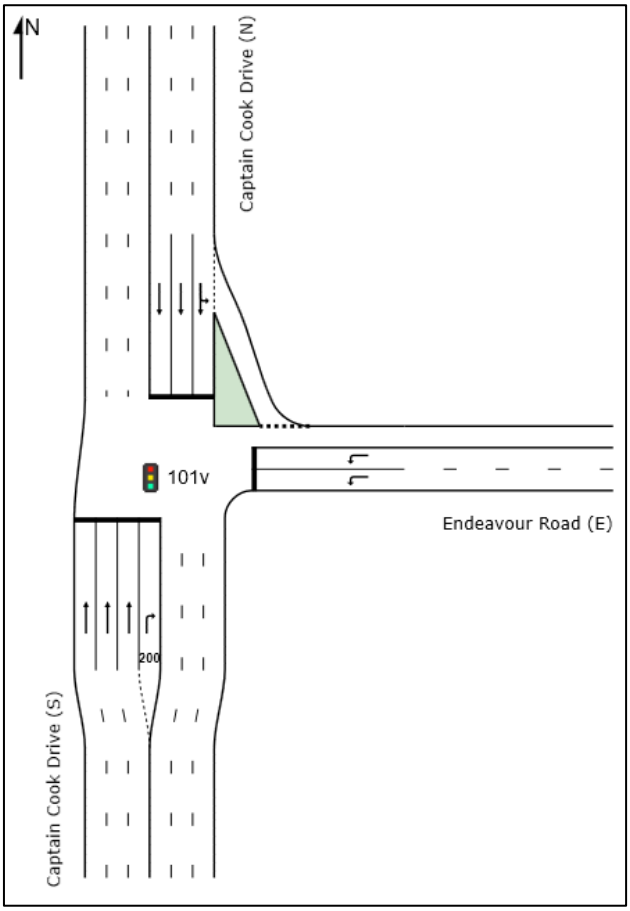



**FIGURE 11: ENDEAVOUR ROAD / CAPTAIN COOK DRIVE**

The detailed SIDRA results based upon the above are reproduced in **Annexure C** for reference, with a summary of the results shown in **Table 17** below.

**TABLE 17: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 8.0) – SCENARIO 4 REFINED**

| 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 – SCENARIO 4 (Refined)*** | | | | | | |
| Gannons Road / Captain Cook Drive | AM | 0.83 | 33.8 | **C** | Signal | N/A |
| | PM | 0.95 | 41.2 | **C** | | N/A |
| Captain Cook Drive / Endeavour Road[5] | AM | 0.78 | 16.7 | **B** | Signal | N/A |
| | PM | 0.53 | 13.1 | **C** | | N/A |
| Captain Cook Drive / NEW Endeavour Road | AM | 0.62 | 15.3 | **A** | Signals | RT from Endeavour Road (E) |
| | PM | 0.76 | 28.3 | **B** | | RT from Endeavour Road (E) |

Notes: Refer to Table 3 Notes

As shown above the results reflect the same or similar results to those detailed in **Table 14**. The provision of three (3) signalised intersection along Captain Cook Drive is required to facilitate the proposed development.

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.

### 4.4.6 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:

- 2,213 peak hour vehicle trips westbound along Captain Cook Drive during the AM peak;
- 2,310 peak hour vehicle trips eastbound along Captain Cook Drive during the AM peak;
- 2,386 peak hour vehicle trips westbound along Captain Cook Drive during the PM peak;
- 1,765 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 both sides of 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 on both sides of the road. During the PM peak hour period clearway conditions will only 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 Boulevarde is not permitted at the existing

signalised intersection of Captain Cook Drive / Foreshore Boulevarde. 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” tur 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 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 **3,056** car parking spaces based upon Council's DCP requirements. The plans indicate the provision of **1,484** car parking spaces, a shortfall of **1,572** spaces from Council's DCP. The only consideration to a reduction in car parking is based upon the retail components of the site being ancillary to the office component of the development. Adopting a 50% reduction in retail car parking results in the car parking requirements of **2,968** spaces, which is a shortfall of **1,484** 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 retail 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 if required for the development will be restricted to Endeavour Road.

- The traffic generation associated with the proposal is in the order 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). This assumes that the retail component of the site does not generate traffic from outside the site and is based upon the retail portion of the site servicing the proposed office space of the development.

- Multiple access strategies have been assessed as part of this masterplan assessment. The only viable option to ensure the development has acceptable traffic impacts upon the local road network is to provide 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. 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 on both sides of the road, whilst during the PM peak hour period clearway conditions will only 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.

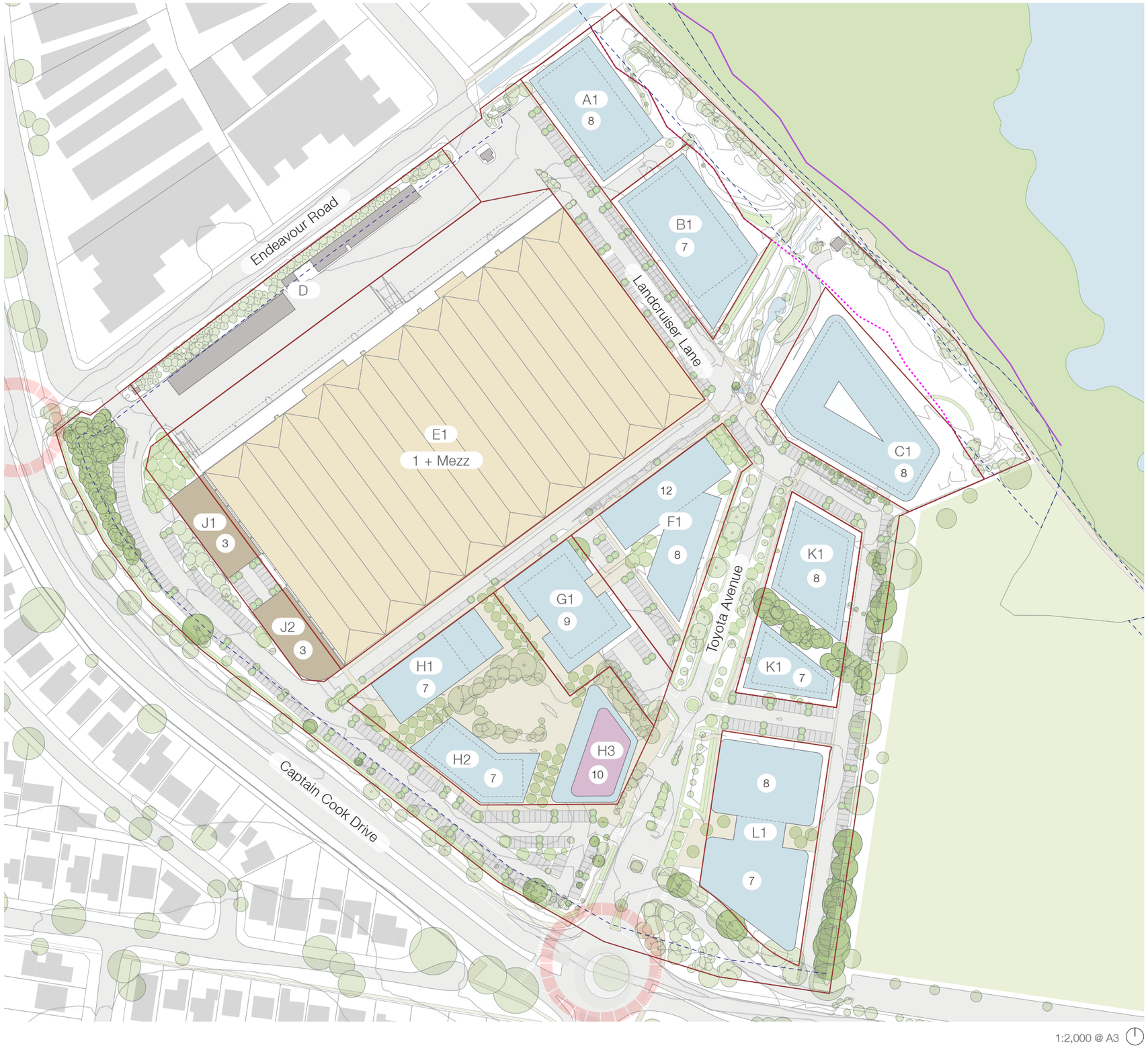

**ANNEXURE A: PROPOSED PLANS**

**(2 SHEETS)**

## Indicative Site Evolution

### 7.14 Indicative Structure Plan

| Use | GFA |
|---|---|
| Industrial | 25,272 sqm |
| Ancillary Industrial Office | 7,382 sqm |
| Warehouse | 1,824 sqm |
| Ancillary Warehouse Office | 3,846 sqm |
| Office and Business Premises | 99,286 sqm |
| Retail | 4,307 sqm |
| Food & Beverage | 3,561 sqm |
| Recreation | 860 sqm |
| Hotel | 3,624 sqm |
| | |
| Total | 149,962 sqm |
| FSR | 1.21:1 |
| | |
| Car Parking | 1,054 Spaces |
| Surface Car Parking | 430 Spaces |
| | |
| Total Car Parking | 1,484 Spaces |




1:2,000 @ A3

**KEY**

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

## Site Ground Floor Plan

**Scale**
1:2000 @ A3

0 10 20 30 40 50 100

**Drawing number**
6272_MPSK_0010

**Revision number**
[00]

**Project number**
6272

**Project name**
TBC

**Project address**
13 Endeavour Road, Caringbah

**Client**
Aliro Group

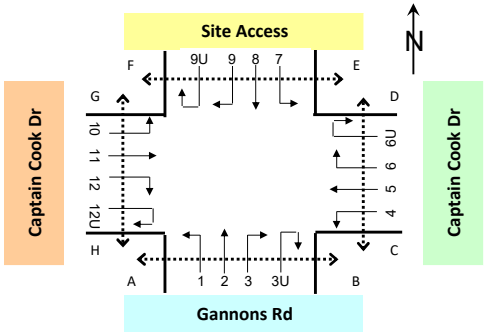
SJB Architects
Level 2, 490 Crown Street, Surry Hills NSW 2010
T. 61 2 9380 9911 sjb.com.au
SJB Architecture (NSW) Pty Ltd
ABN 20 310 373 425 ACN 081 094 724
Adam Haddow 7188 John Pradel 7004


**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 |



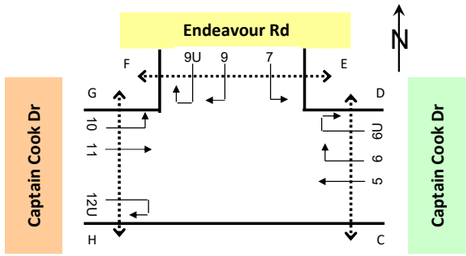

MATRIX Traffic and Transport Data

| 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 | 1 | 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 |

| **Classifications** | **Class 1** | **Class 2** |
|---|---|---|
| | Lights | Heavies |




MATRIX
Traffic and Transport Data

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

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Phone: 1300 883 936 * Fax: 1300 882 932



**TURNING MOVEMENT SURVEY**

Captain Cook Dr and Gannons Rd, Woolooware
Friday, 4 November 2016

| | |
|---|---|
| ***Weather:*** | Fine |
| ***Suburban:*** | Woolooware |
| ***Customer:*** | McLaren |

| Survey Start | |
|---|---|
| AM: | |
| PM: | 16:00 |

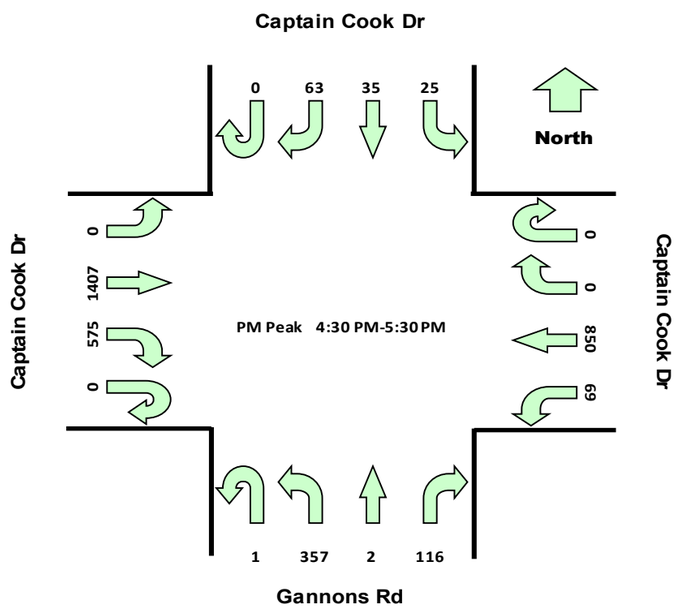
| Peakhour | |
|---|---|
| AM: | |
| PM: | 4:30 PM-5:30 PM |

***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**

**(36 SHEETS)**

# 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 Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | 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 Flows Total | HV | Deg. Satn | Average Delay | Level of Service | 95% Back of Queue Vehicles | Distance | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | veh/h | % | v/c | sec | | veh | m | | | | 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)
Giveway / Yield (Two-Way)

**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 | 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)
Giveway / Yield (Two-Way)

**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 | 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)
Giveway / Yield (Two-Way)

**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 | 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)
Giveway / Yield (Two-Way)

**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 | 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 |

# 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 Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | 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 Flows Total | HV | Deg. Satn | Average Delay | Level of Service | 95% Back of Queue Vehicles | Distance | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | veh/h | % | v/c | sec | | veh | m | | | | 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)
Giveway / Yield (Two-Way)

**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 | 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)
Giveway / Yield (Two-Way)

**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 | 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)
Giveway / Yield (Two-Way)

**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 | 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)
Giveway / Yield (Two-Way)

**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 | 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 |

# 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 Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | 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 Flows Total | HV | Deg. Satn | Average Delay | Level of Service | 95% Back of Queue Vehicles | Distance | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | veh/h | % | v/c | sec | | veh | m | | | | 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)
Giveway / Yield (Two-Way)

**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 | 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 Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | 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)
Giveway / Yield (Two-Way)

**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 | 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 Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | 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: 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 Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | 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 Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | 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 Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | 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 Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | 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)
Giveway / Yield (Two-Way)

**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 | 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)
Giveway / Yield (Two-Way)

**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 | 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 |

# MOVEMENT SUMMARY

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

Captain Cook Drive / Gannons Road
Future Volumes (4/2/20) + Sharks 3 & 4 + SC1
Peak 8:00AM - 9:00AM
Site Category: (None)
Roundabout

**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 | 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 | 208 | 0.0 | 1.008 | 102.2 | LOS F | 31.7 | 227.3 | 1.00 | 2.79 | 5.51 | 18.5 |
| 3 | R2 | 253 | 5.1 | 1.008 | 106.1 | LOS F | 31.7 | 227.3 | 1.00 | 2.79 | 5.51 | 22.1 |
| 3u | U | 1 | 0.0 | 1.008 | 107.7 | LOS F | 31.7 | 227.3 | 1.00 | 2.79 | 5.51 | 21.5 |
| Approach | | 1245 | 1.9 | 1.008 | 40.2 | LOS C | 31.7 | 227.3 | 0.37 | 1.25 | 2.05 | 31.9 |
| East: Captain Cook Drive (E) | | | | | | | | | | | | |
| 4 | L2 | 157 | 3.8 | 1.197 | 382.2 | LOS F | 170.0 | 1282.0 | 1.00 | 6.82 | 18.08 | 8.3 |
| 5 | T1 | 1186 | 10.5 | 1.197 | 381.9 | LOS F | 192.5 | 1438.7 | 1.00 | 7.06 | 18.48 | 8.5 |
| 6 | R2 | 208 | 0.0 | 1.197 | 385.4 | LOS F | 192.5 | 1438.7 | 1.00 | 7.28 | 18.86 | 8.1 |
| 6u | U | 25 | 12.0 | 1.197 | 388.4 | LOS F | 192.5 | 1438.7 | 1.00 | 7.28 | 18.86 | 8.5 |
| Approach | | 1576 | 8.4 | 1.197 | 382.5 | LOS F | 192.5 | 1438.7 | 1.00 | 7.07 | 18.49 | 8.4 |
| North: Toyota Access (N) | | | | | | | | | | | | |
| 7 | L2 | 57 | 0.0 | 0.187 | 9.7 | LOS A | 1.0 | 7.0 | 0.87 | 0.87 | 0.87 | 37.0 |
| 8 | T1 | 65 | 0.0 | 0.825 | 28.4 | LOS B | 10.6 | 74.2 | 1.00 | 1.66 | 2.05 | 28.9 |
| 9 | R2 | 329 | 0.3 | 0.825 | 31.2 | LOS C | 10.6 | 74.2 | 1.00 | 1.66 | 2.05 | 30.8 |
| 9u | U | 1 | 0.0 | 0.825 | 31.9 | LOS C | 10.6 | 74.2 | 1.00 | 1.66 | 2.05 | 25.7 |
| Approach | | 452 | 0.2 | 0.825 | 28.1 | LOS B | 10.6 | 74.2 | 0.98 | 1.56 | 1.90 | 31.1 |
| West: Captain Cook Drive (W) | | | | | | | | | | | | |
| 10 | L2 | 626 | 0.0 | 1.050 | 135.4 | LOS F | 80.7 | 578.7 | 1.00 | 3.48 | 7.82 | 16.6 |
| 11 | T1 | 688 | 13.1 | 1.050 | 133.2 | LOS F | 92.4 | 711.5 | 1.00 | 3.66 | 7.96 | 19.8 |
| 12 | R2 | 413 | 9.2 | 1.050 | 137.0 | LOS F | 92.4 | 711.5 | 1.00 | 3.72 | 8.01 | 19.2 |
| 12u | U | 7 | 57.1 | 1.050 | 141.8 | LOS F | 92.4 | 711.5 | 1.00 | 3.72 | 8.01 | 18.4 |
| Approach | | 1734 | 7.6 | 1.050 | 134.9 | LOS F | 92.4 | 711.5 | 1.00 | 3.61 | 7.92 | 18.4 |
| All Vehicles | | 5007 | 5.8 | 1.197 | 179.6 | LOS F | 192.5 | 1438.7 | 0.84 | 3.93 | 9.24 | 14.9 |

# MOVEMENT SUMMARY

## Site: 1 [Captain Cook Drive / Gannons Road - Future PM + Sharks + SC1]

Captain Cook Drive / Gannons Road
Future Volumes (4/2/20) + Sharks Stage 3 & 4 + SC1
Peak 4:30PM - 5:30PM
Site Category: (None)
Roundabout

**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 | 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 | 56 | 1.8 | 0.418 | 9.0 | LOS A | 2.7 | 19.3 | 0.87 | 0.98 | 0.96 | 34.0 |
| 3 | R2 | 199 | 1.0 | 0.418 | 12.5 | LOS A | 2.7 | 19.3 | 0.87 | 0.98 | 0.96 | 48.9 |
| 3u | U | 1 | 100.0 | 0.418 | 19.2 | LOS B | 2.7 | 19.3 | 0.87 | 0.98 | 0.96 | 44.9 |
| Approach | | 712 | 1.4 | 0.418 | 5.7 | LOS A | 2.7 | 19.3 | 0.31 | 0.57 | 0.35 | 47.2 |
| East: Captain Cook Drive (E) | | | | | | | | | | | | |
| 4 | L2 | 84 | 3.6 | 0.934 | 53.3 | LOS D | 20.4 | 145.4 | 1.00 | 1.69 | 3.11 | 31.8 |
| 5 | T1 | 850 | 2.0 | 0.934 | 52.0 | LOS D | 22.7 | 161.5 | 1.00 | 1.71 | 3.12 | 35.1 |
| 6 | R2 | 55 | 0.0 | 0.934 | 55.5 | LOS D | 22.7 | 161.5 | 1.00 | 1.72 | 3.13 | 28.2 |
| 6u | U | 29 | 0.0 | 0.934 | 57.9 | LOS E | 22.7 | 161.5 | 1.00 | 1.72 | 3.13 | 36.0 |
| Approach | | 1018 | 2.0 | 0.934 | 52.5 | LOS D | 22.7 | 161.5 | 1.00 | 1.71 | 3.12 | 34.4 |
| North: Toyota Access (N) | | | | | | | | | | | | |
| 7 | L2 | 208 | 0.0 | 1.003 | 153.3 | LOS F | 18.3 | 128.0 | 1.00 | 2.82 | 4.33 | 15.1 |
| 8 | T1 | 215 | 0.0 | 5.202 | 7572.1 | LOS F | 1518.6 | 10630.2 | 1.00 | 28.79 | 48.60 | 0.5 |
| 9 | R2 | 1259 | 0.0 | 5.202 | 7574.8 | LOS F | 1518.6 | 10630.2 | 1.00 | 28.79 | 48.60 | 0.5 |
| 9u | U | 1 | 0.0 | 5.202 | 7575.6 | LOS F | 1518.6 | 10630.2 | 1.00 | 28.79 | 48.60 | 0.5 |
| Approach | | 1683 | 0.0 | 5.202 | 6657.2 | LOS F | 1518.6 | 10630.2 | 1.00 | 25.58 | 43.13 | 0.6 |
| West: Captain Cook Drive (W) | | | | | | | | | | | | |
| 10 | L2 | 162 | 0.0 | 0.890 | 15.7 | LOS B | 19.6 | 138.6 | 1.00 | 1.05 | 1.51 | 36.6 |
| 11 | T1 | 1330 | 1.1 | 0.890 | 15.0 | LOS B | 20.0 | 141.2 | 1.00 | 1.02 | 1.47 | 53.9 |
| 12 | R2 | 630 | 1.1 | 0.890 | 18.5 | LOS B | 20.0 | 141.2 | 1.00 | 0.97 | 1.40 | 48.4 |
| 12u | U | 17 | 0.0 | 0.890 | 20.9 | LOS B | 20.0 | 141.2 | 1.00 | 0.97 | 1.40 | 54.6 |
| Approach | | 2139 | 1.0 | 0.890 | 16.1 | LOS B | 20.0 | 141.2 | 1.00 | 1.01 | 1.45 | 50.4 |
| All Vehicles | | 5552 | 0.9 | 5.202 | 2034.6 | LOS F | 1518.6 | 10630.2 | 0.91 | 8.53 | 14.25 | 1.8 |

# MOVEMENT SUMMARY

## Site: 101 [Captain Cook Drive / Endeavour Road - Future AM, Stage 1 + Sharks + SC1&2]

Captain Cook Drive / Endeavour Road
Future Volumes (4/2/20) (Sharks) + SC1&2
Peak 7:30AM - 8:30AM
Site Category: (None)
Giveway / Yield (Two-Way)

**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 | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 3 | R2 | 518 | 3.3 | 2.433 | 2601.8 | LOS F | 389.5 | 2803.5 | 1.00 | 13.77 | 51.26 | 1.4 |
| Approach | | 518 | 3.3 | 2.433 | 2601.8 | NA | 389.5 | 2803.5 | 1.00 | 13.77 | 51.26 | 1.4 |
| 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 | 1.325 | 996.8 | LOS F | 14.9 | 123.0 | 1.00 | 1.83 | 4.37 | 3.3 |
| Approach | | 224 | 14.3 | 1.325 | 151.8 | LOS F | 14.9 | 123.0 | 0.15 | 0.71 | 0.64 | 16.8 |
| North: Captain Cook Drive (N) | | | | | | | | | | | | |
| 7 | L2 | 809 | 1.2 | 0.846 | 15.1 | LOS B | 11.9 | 83.9 | 0.82 | 1.39 | 2.12 | 47.6 |
| 8 | T1 | 1501 | 7.0 | 0.402 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| Approach | | 2310 | 5.0 | 0.846 | 5.3 | LOS A | 11.9 | 83.9 | 0.29 | 0.49 | 0.74 | 54.9 |
| All Vehicles | | 3052 | 5.4 | 2.433 | 456.8 | NA | 389.5 | 2803.5 | 0.40 | 2.76 | 9.31 | 7.0 |

# MOVEMENT SUMMARY

## Site: 101 [Captain Cook Drive / Endeavour Road - Future AM, Stage 2 + Sharks + SC1&2]

Captain Cook Drive / Endeavour Road
Future Volumes (4/2/20) (Sharks) + SC1&2
Peak 7:30AM - 8:30AM
Site Category: (None)
Giveway / Yield (Two-Way)

**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 | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 2 | T1 | 1857 | 4.0 | 0.489 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | | 1857 | 4.0 | 0.489 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| East: Endeavour Road (E) | | | | | | | | | | | | |
| 6 | R2 | 33 | 21.2 | 0.031 | 8.8 | LOS A | 0.1 | 0.9 | 0.71 | 0.86 | 0.71 | 44.6 |
| Approach | | 33 | 21.2 | 0.031 | 8.8 | LOS A | 0.1 | 0.9 | 0.71 | 0.86 | 0.71 | 44.6 |
| All Vehicles | | 1890 | 4.3 | 0.489 | 0.2 | NA | 0.1 | 0.9 | 0.01 | 0.01 | 0.01 | 59.6 |

# MOVEMENT SUMMARY

## Site: 101 [Captain Cook Drive / Endeavour Road - Future PM, Stage 1 + Sharks + SC1&2]

Captain Cook Drive / Endeavour Road
Future Volumes (4/2/20) (Sharks) + SC1&2
Peak 4:30PM - 5:30PM
Site Category: (None)
Giveway / Yield (Two-Way)

**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 | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 3 | R2 | 208 | 1.4 | 0.898 | 65.4 | LOS E | 7.6 | 53.7 | 0.98 | 1.60 | 3.37 | 28.6 |
| Approach | | 208 | 1.4 | 0.898 | 65.4 | NA | 7.6 | 53.7 | 0.98 | 1.60 | 3.37 | 28.6 |
| 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 | 1.592 | 1135.2 | LOS F | 102.3 | 734.0 | 1.00 | 5.84 | 19.68 | 3.0 |
| Approach | | 841 | 1.5 | 1.592 | 279.7 | LOS F | 102.3 | 734.0 | 0.24 | 1.82 | 4.77 | 10.7 |
| North: Captain Cook Drive (N) | | | | | | | | | | | | |
| 7 | L2 | 252 | 2.8 | 0.188 | 6.4 | LOS A | 0.7 | 5.2 | 0.28 | 0.57 | 0.28 | 53.2 |
| 8 | T1 | 1514 | 0.9 | 0.391 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| Approach | | 1766 | 1.2 | 0.391 | 1.0 | LOS A | 0.7 | 5.2 | 0.04 | 0.08 | 0.04 | 58.8 |
| All Vehicles | | 2815 | 1.3 | 1.592 | 89.0 | NA | 102.3 | 734.0 | 0.17 | 0.71 | 1.70 | 24.2 |

# MOVEMENT SUMMARY

## Site: 101 [Captain Cook Drive / Endeavour Road - Future PM, Stage 2 + Sharks + SC1&2]

Captain Cook Drive / Endeavour Road
Future Volumes (4/2/20) (Sharks) + SC1&2
Peak 4:30PM - 5:30PM
Site Category: (None)
Giveway / Yield (Two-Way)

**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 | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 2 | T1 | 2387 | 0.8 | 0.615 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.7 |
| Approach | | 2387 | 0.8 | 0.615 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.7 |
| East: Endeavour Road (E) | | | | | | | | | | | | |
| 6 | R2 | 204 | 2.9 | 0.352 | 13.5 | LOS A | 1.3 | 9.4 | 0.89 | 1.01 | 1.08 | 41.5 |
| Approach | | 204 | 2.9 | 0.352 | 13.5 | LOS A | 1.3 | 9.4 | 0.89 | 1.01 | 1.08 | 41.5 |
| All Vehicles | | 2591 | 0.9 | 0.615 | 1.2 | NA | 1.3 | 9.4 | 0.07 | 0.08 | 0.08 | 58.5 |

# MOVEMENT SUMMARY

## Site: 1v [Captain Cook Drive / Gannons Road - Future AM + Sharks + SC 2]

Captain Cook Drive / Gannons Road
Future Volumes (4/2/20) + Sharks 3 & 4 + SC2
Peak 8:00AM - 9:00AM
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 105 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

**Movement Performance - Vehicles**

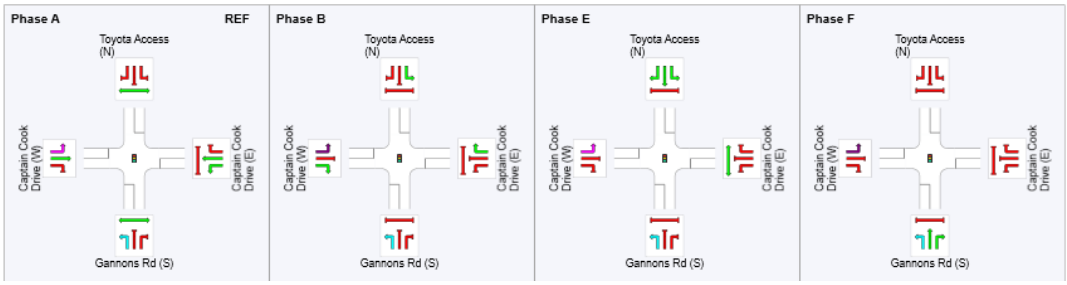
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gannons 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 | 208 | 0.0 | 0.675 | 51.1 | LOS D | 10.5 | 73.2 | 1.00 | 0.85 | 1.04 | 25.0 |
| 3 | R2 | 253 | 5.1 | 0.894 | 64.9 | LOS E | 15.2 | 111.0 | 1.00 | 1.08 | 1.43 | 28.1 |
| Approach | | 1244 | 1.9 | 0.894 | 24.5 | LOS B | 15.2 | 111.0 | 0.37 | 0.65 | 0.46 | 36.9 |
| East: Captain Cook Drive (E) | | | | | | | | | | | | |
| 4 | L2 | 157 | 3.8 | 0.849 | 52.5 | LOS D | 24.4 | 182.4 | 1.00 | 0.99 | 1.18 | 32.9 |
| 5 | T1 | 1186 | 10.5 | 0.849 | 46.1 | LOS D | 24.4 | 186.4 | 1.00 | 0.99 | 1.18 | 37.3 |
| 6 | R2 | 233 | 0.0 | 0.899 | 68.4 | LOS E | 14.0 | 98.1 | 1.00 | 1.04 | 1.46 | 24.4 |
| Approach | | 1576 | 8.2 | 0.899 | 50.0 | LOS D | 24.4 | 186.4 | 1.00 | 0.99 | 1.22 | 34.2 |
| North: Toyota Access (N) | | | | | | | | | | | | |
| 7 | L2 | 82 | 0.0 | 0.107 | 22.9 | LOS B | 2.6 | 18.2 | 0.66 | 0.63 | 0.66 | 32.3 |
| 8 | T1 | 65 | 0.0 | 0.333 | 38.4 | LOS C | 6.0 | 41.9 | 0.89 | 0.72 | 0.89 | 27.3 |
| 9 | R2 | 336 | 0.3 | 0.333 | 38.8 | LOS C | 6.0 | 41.9 | 0.89 | 0.73 | 0.89 | 28.9 |
| Approach | | 483 | 0.2 | 0.333 | 36.0 | LOS C | 6.0 | 41.9 | 0.85 | 0.71 | 0.85 | 29.2 |
| West: Captain Cook Drive (W) | | | | | | | | | | | | |
| 10 | L2 | 633 | 0.0 | 0.630 | 15.7 | LOS B | 14.1 | 98.8 | 0.73 | 0.81 | 0.73 | 36.9 |
| 11 | T1 | 688 | 13.1 | 0.630 | 35.2 | LOS C | 15.1 | 117.2 | 0.93 | 0.80 | 0.93 | 42.0 |
| 12 | R2 | 413 | 9.2 | 0.847 | 63.1 | LOS E | 11.7 | 88.5 | 1.00 | 0.96 | 1.32 | 29.6 |
| Approach | | 1734 | 7.4 | 0.847 | 34.7 | LOS C | 15.1 | 117.2 | 0.87 | 0.84 | 0.95 | 36.5 |
| All Vehicles | | 5037 | 5.6 | 0.899 | 37.1 | LOS C | 24.4 | 186.4 | 0.79 | 0.83 | 0.90 | 35.0 |

**Phase Timing Summary**

| Phase | A | B | E | F |
|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 35 | 55 | 83 |
| Green Time (sec) | 29 | 14 | 22 | 16 |
| Phase Time (sec) | 35 | 20 | 28 | 22 |
| Phase Split | 33% | 19% | 27% | 21% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



## MOVEMENT SUMMARY

### Site: 1v [Captain Cook Drive / Gannons Road - Future PM + Sharks + SC 2 ]

Captain Cook Drive / Gannons Road
Future Volumes (4/2/20) + Sharks 3 & 4 + SC2
Peak 4:30PM - 5:30PM
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 115 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

**Movement Performance - Vehicles**

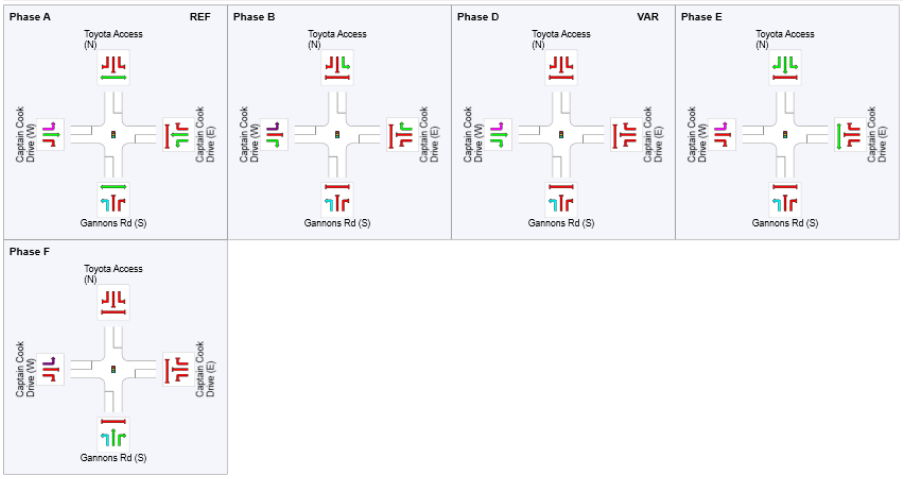
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gannons 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 | 56 | 1.8 | 0.248 | 55.4 | LOS D | 2.9 | 20.9 | 0.95 | 0.74 | 0.95 | 24.3 |
| 3 | R2 | 199 | 1.0 | 0.921 | 76.5 | LOS F | 13.5 | 95.2 | 1.00 | 1.14 | 1.57 | 26.1 |
| Approach | | 711 | 1.3 | 0.921 | 28.6 | LOS C | 13.5 | 95.2 | 0.35 | 0.68 | 0.51 | 36.5 |
| East: Captain Cook Drive (E) | | | | | | | | | | | | |
| 4 | L2 | 84 | 3.6 | 0.715 | 52.5 | LOS D | 16.4 | 117.2 | 0.98 | 0.85 | 1.01 | 33.1 |
| 5 | T1 | 850 | 2.0 | 0.715 | 46.1 | LOS D | 16.7 | 118.6 | 0.98 | 0.85 | 1.01 | 37.3 |
| 6 | R2 | 55 | 0.0 | 0.362 | 63.3 | LOS E | 3.1 | 21.5 | 0.99 | 0.75 | 0.99 | 25.3 |
| Approach | | 989 | 2.0 | 0.715 | 47.6 | LOS D | 16.7 | 118.6 | 0.98 | 0.85 | 1.01 | 36.0 |
| North: Toyota Access (N) | | | | | | | | | | | | |
| 7 | L2 | 208 | 0.0 | 0.303 | 21.2 | LOS B | 6.8 | 47.5 | 0.76 | 0.70 | 0.76 | 32.8 |
| 8 | T1 | 215 | 0.0 | 0.920 | 62.4 | LOS E | 34.0 | 238.1 | 1.00 | 1.18 | 1.34 | 23.2 |
| 9 | R2 | 1259 | 0.0 | 0.920 | 63.0 | LOS E | 34.0 | 238.1 | 1.00 | 1.20 | 1.34 | 24.3 |
| Approach | | 1682 | 0.0 | 0.920 | 57.8 | LOS E | 34.0 | 238.1 | 0.97 | 1.14 | 1.27 | 25.0 |
| West: Captain Cook Drive (W) | | | | | | | | | | | | |
| 10 | L2 | 162 | 0.0 | 0.887 | 44.8 | LOS D | 25.2 | 177.7 | 1.00 | 0.99 | 1.22 | 29.7 |
| 11 | T1 | 1330 | 1.1 | 0.887 | 39.6 | LOS C | 25.2 | 177.7 | 1.00 | 1.00 | 1.24 | 39.9 |
| 12 | R2 | 630 | 1.1 | 0.892 | 69.0 | LOS E | 20.3 | 143.5 | 1.00 | 1.00 | 1.34 | 28.2 |
| Approach | | 2122 | 1.0 | 0.892 | 48.8 | LOS D | 25.2 | 177.7 | 1.00 | 1.00 | 1.26 | 34.7 |
| All Vehicles | | 5504 | 0.9 | 0.921 | 48.7 | LOS D | 34.0 | 238.1 | 0.90 | 0.97 | 1.12 | 31.4 |

**Phase Timing Summary**

| Phase | A | B | D | E | F |
|---|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 31 | 46 | 58 | 96 |
| Green Time (sec) | 25 | 9 | 6 | 32 | 13 |
| Phase Time (sec) | 31 | 15 | 12 | 38 | 19 |
| Phase Split | 27% | 13% | 10% | 33% | 17% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# MOVEMENT SUMMARY

## Site: 1v [Captain Cook Drive / Gannons Road - Future AM + Sharks + SC 3]

Captain Cook Drive / Gannons Road
Future Volumes (4/2/20) + Sharks 3 & 4 + SC3
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**

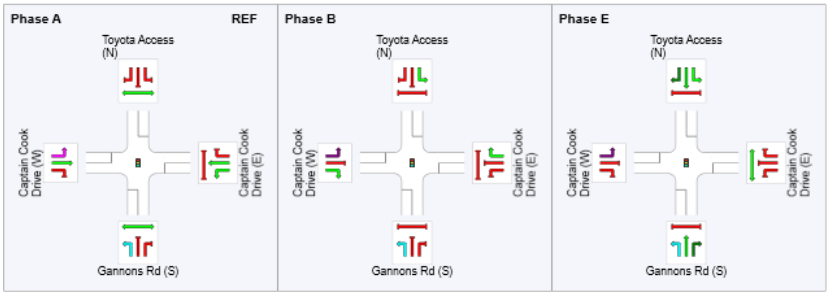
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gannons 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 | 208 | 0.0 | 0.820 | 42.6 | LOS D | 21.1 | 152.2 | 0.86 | 0.82 | 0.93 | 26.3 |
| 3 | R2 | 253 | 5.1 | 0.820 | 53.1 | LOS D | 21.1 | 152.2 | 0.99 | 0.96 | 1.13 | 31.0 |
| Approach | | 1244 | 1.9 | 0.820 | 20.7 | LOS B | 21.1 | 152.2 | 0.35 | 0.62 | 0.39 | 38.3 |
| East: Captain Cook Drive (E) | | | | | | | | | | | | |
| 4 | L2 | 157 | 3.8 | 0.221 | 33.6 | LOS C | 6.2 | 44.8 | 0.72 | 0.77 | 0.72 | 37.7 |
| 5 | T1 | 1186 | 10.5 | 0.827 | 40.3 | LOS C | 33.4 | 254.4 | 0.98 | 0.92 | 1.04 | 39.6 |
| 6 | R2 | 233 | 0.0 | 0.799 | 64.6 | LOS E | 14.2 | 99.4 | 1.00 | 0.89 | 1.16 | 24.6 |
| Approach | | 1576 | 8.2 | 0.827 | 43.2 | LOS D | 33.4 | 254.4 | 0.95 | 0.90 | 1.03 | 36.2 |
| North: Toyota Access (N) | | | | | | | | | | | | |
| 7 | L2 | 83 | 0.0 | 0.222 | 31.2 | LOS C | 6.1 | 42.9 | 0.75 | 0.66 | 0.75 | 30.3 |
| 8 | T1 | 67 | 0.0 | 0.222 | 29.3 | LOS C | 6.1 | 42.9 | 0.75 | 0.66 | 0.75 | 28.9 |
| 9 | R2 | 62 | 1.6 | 0.185 | 38.2 | LOS C | 2.8 | 20.1 | 0.81 | 0.68 | 0.81 | 28.6 |
| Approach | | 212 | 0.5 | 0.222 | 32.7 | LOS C | 6.1 | 42.9 | 0.76 | 0.66 | 0.76 | 29.3 |
| West: Captain Cook Drive (W) | | | | | | | | | | | | |
| 10 | L2 | 220 | 0.0 | 0.618 | 36.5 | LOS C | 20.2 | 150.1 | 0.86 | 0.83 | 1.05 | 31.4 |
| 11 | T1 | 688 | 13.1 | 0.618 | 31.7 | LOS C | 21.0 | 163.1 | 0.87 | 0.79 | 0.94 | 43.1 |
| 12 | R2 | 413 | 9.2 | 0.753 | 63.0 | LOS E | 12.3 | 92.9 | 1.00 | 0.87 | 1.11 | 29.4 |
| Approach | | 1321 | 9.7 | 0.753 | 42.3 | LOS C | 21.0 | 163.1 | 0.91 | 0.82 | 1.01 | 35.7 |
| All Vehicles | | 4353 | 6.5 | 0.827 | 36.0 | LOS C | 33.4 | 254.4 | 0.76 | 0.79 | 0.83 | 36.2 |

**Phase Timing Summary**

| Phase | A | B | E |
|---|---|---|---|
| Phase Change Time (sec) | 0 | 51 | 75 |
| Green Time (sec) | 45 | 18 | 39 |
| Phase Time (sec) | 51 | 24 | 45 |
| Phase Split | 43% | 20% | 38% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# MOVEMENT SUMMARY

## Site: 1v [Captain Cook Drive / Gannons Road - Future PM + Sharks + SC 3]

Captain Cook Drive / Gannons Road
Future Volumes (4/2/20) + Sharks 3 & 4 + SC3
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**

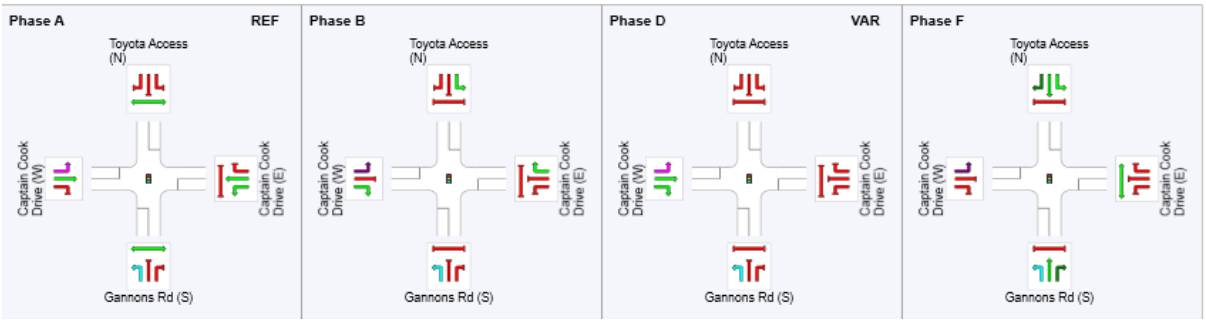
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gannons 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 | 56 | 1.8 | 0.075 | 29.1 | LOS C | 2.1 | 14.7 | 0.67 | 0.65 | 0.67 | 29.2 |
| 3 | R2 | 199 | 1.0 | 0.905 | 78.4 | LOS F | 14.7 | 103.9 | 1.00 | 1.14 | 1.52 | 25.7 |
| Approach | | 711 | 1.3 | 0.905 | 27.1 | LOS B | 14.7 | 103.9 | 0.33 | 0.67 | 0.48 | 37.1 |
| East: Captain Cook Drive (E) | | | | | | | | | | | | |
| 4 | L2 | 84 | 3.6 | 0.156 | 40.9 | LOS C | 3.7 | 26.4 | 0.79 | 0.75 | 0.79 | 35.1 |
| 5 | T1 | 850 | 2.0 | 0.744 | 42.7 | LOS D | 22.9 | 163.0 | 0.97 | 0.86 | 0.99 | 38.6 |
| 6 | R2 | 84 | 0.0 | 0.864 | 77.7 | LOS F | 5.6 | 38.9 | 1.00 | 0.93 | 1.50 | 22.6 |
| Approach | | 1018 | 2.0 | 0.864 | 45.5 | LOS D | 22.9 | 163.0 | 0.96 | 0.85 | 1.01 | 36.2 |
| North: Toyota Access (N) | | | | | | | | | | | | |
| 7 | L2 | 237 | 0.0 | 0.589 | 33.7 | LOS C | 19.1 | 133.9 | 0.85 | 0.90 | 1.18 | 29.7 |
| 8 | T1 | 216 | 0.0 | 0.589 | 31.7 | LOS C | 19.1 | 133.9 | 0.85 | 0.90 | 1.18 | 28.3 |
| 9 | R2 | 243 | 0.0 | 0.483 | 33.7 | LOS C | 11.1 | 77.7 | 0.83 | 0.75 | 0.83 | 29.8 |
| Approach | | 696 | 0.0 | 0.589 | 33.1 | LOS C | 19.1 | 133.9 | 0.84 | 0.85 | 1.06 | 29.3 |
| West: Captain Cook Drive (W) | | | | | | | | | | | | |
| 10 | L2 | 72 | 0.0 | 0.910 | 45.6 | LOS D | 37.5 | 264.7 | 1.00 | 1.02 | 1.21 | 29.7 |
| 11 | T1 | 1330 | 1.1 | 0.910 | 39.1 | LOS C | 37.7 | 266.4 | 1.00 | 1.02 | 1.20 | 40.0 |
| 12 | R2 | 630 | 1.1 | 0.850 | 64.9 | LOS E | 19.8 | 140.1 | 1.00 | 0.94 | 1.21 | 28.9 |
| Approach | | 2032 | 1.1 | 0.910 | 47.3 | LOS D | 37.7 | 266.4 | 1.00 | 1.00 | 1.21 | 35.4 |
| All Vehicles | | 4457 | 1.1 | 0.910 | 41.4 | LOS C | 37.7 | 266.4 | 0.86 | 0.89 | 1.02 | 34.7 |

**Phase Timing Summary**

| Phase | A | B | D | F |
|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 40 | 52 | 69 |
| Green Time (sec) | 34 | 6 | 11 | 45 |
| Phase Time (sec) | 40 | 12 | 17 | 51 |
| Phase Split | 33% | 10% | 14% | 43% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# MOVEMENT SUMMARY

## Site: 101 [Captain Cook Drive / Endeavour Road - Future AM, Stage 1 + Sharks + SC3]

Captain Cook Drive / Endeavour Road
Future Volumes (4/2/20) (Sharks) + SC3
Peak 7:30AM - 8:30AM
Site Category: (None)
Giveway / Yield (Two-Way)

**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 | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 3 | R2 | 518 | 3.3 | 9.286 | 14941.9 | LOS F | 601.3 | 4327.2 | 1.00 | 6.89 | 27.19 | 0.2 |
| Approach | | 518 | 3.3 | 9.286 | 14941.9 | NA | 601.3 | 4327.2 | 1.00 | 6.89 | 27.19 | 0.2 |
| 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 |
| Approach | | 191 | 13.1 | 0.112 | 5.8 | NA | 0.0 | 0.0 | 0.00 | 0.52 | 0.00 | 54.5 |
| 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 | 2121 | 5.0 | 0.561 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | | 2310 | 5.0 | 0.561 | 0.8 | LOS A | 0.7 | 5.3 | 0.04 | 0.06 | 0.04 | 59.1 |
| All Vehicles | | 3019 | 5.2 | 9.286 | 2564.7 | NA | 601.3 | 4327.2 | 0.20 | 1.26 | 4.70 | 1.4 |

# MOVEMENT SUMMARY

## Site: 101 [Captain Cook Drive / Endeavour Road - Future PM, Stage 1 + Sharks + SC3]

Captain Cook Drive / Endeavour Road
Future Volumes (4/2/20) (Sharks) + SC3
Peak 4:30PM - 5:30PM
Site Category: (None)
Giveway / Yield (Two-Way)

**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 | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 3 | R2 | 208 | 1.4 | 1.202 | 428.3 | LOS F | 50.4 | 357.4 | 1.00 | 4.37 | 14.71 | 7.4 |
| Approach | | 208 | 1.4 | 1.202 | 428.3 | NA | 50.4 | 357.4 | 1.00 | 4.37 | 14.71 | 7.4 |
| 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 |
| Approach | | 637 | 1.1 | 0.346 | 5.7 | NA | 0.0 | 0.0 | 0.00 | 0.53 | 0.00 | 54.8 |
| 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 | 1674 | 0.8 | 0.432 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| Approach | | 1765 | 1.2 | 0.432 | 0.4 | LOS A | 0.2 | 1.8 | 0.01 | 0.03 | 0.01 | 59.5 |
| All Vehicles | | 2610 | 1.2 | 1.202 | 35.8 | NA | 50.4 | 357.4 | 0.09 | 0.50 | 1.18 | 37.6 |

# MOVEMENT SUMMARY

## Site: 101 [Proposed NEW INTERSECTION WITH END ROAD AM PEAK (SHARK VOLUME) - SC3]

END ROAD / Captain Cook Drive (New Intersection)
FUTURE (Sharks) + SC3
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**

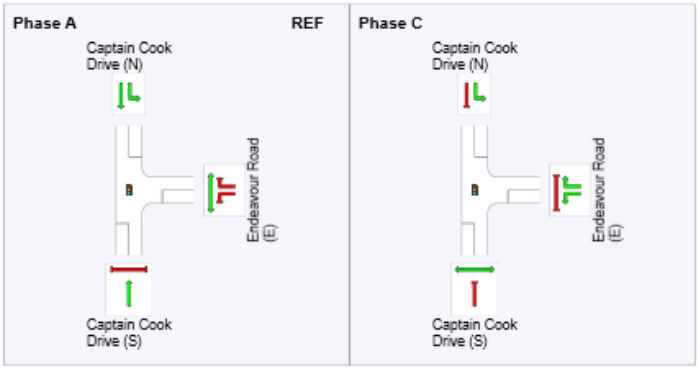
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 2 | T1 | 2109 | 0.0 | 0.618 | 17.2 | LOS B | 26.4 | 184.7 | 0.71 | 0.64 | 0.71 | 46.7 |
| Approach | | 2109 | 0.0 | 0.618 | 17.2 | LOS B | 26.4 | 184.7 | 0.71 | 0.64 | 0.71 | 46.7 |
| East: Endeavour Road(E) | | | | | | | | | | | | |
| 4 | L2 | 1 | 0.0 | 0.257 | 38.2 | LOS C | 6.5 | 45.8 | 0.79 | 0.77 | 0.79 | 36.3 |
| 6 | R2 | 301 | 0.0 | 0.257 | 38.2 | LOS C | 6.5 | 45.8 | 0.79 | 0.77 | 0.79 | 36.5 |
| Approach | | 302 | 0.0 | 0.257 | 38.2 | LOS C | 6.5 | 45.8 | 0.79 | 0.77 | 0.79 | 36.5 |
| North: Captain Cook Drive (N) | | | | | | | | | | | | |
| 7 | L2 | 1034 | 0.0 | 0.619 | 6.3 | LOS A | 6.9 | 48.2 | 0.25 | 0.65 | 0.25 | 52.9 |
| 8 | T1 | 1279 | 0.0 | 0.375 | 14.1 | LOS A | 13.1 | 91.4 | 0.57 | 0.51 | 0.57 | 48.7 |
| Approach | | 2313 | 0.0 | 0.619 | 10.6 | LOS A | 13.1 | 91.4 | 0.43 | 0.57 | 0.43 | 50.5 |
| All Vehicles | | 4724 | 0.0 | 0.619 | 15.3 | LOS B | 26.4 | 184.7 | 0.57 | 0.62 | 0.57 | 47.6 |

**Phase Timing Summary**

| Phase | A | C |
|---|---|---|
| Phase Change Time (sec) | 0 | 76 |
| Green Time (sec) | 70 | 38 |
| Phase Time (sec) | 76 | 44 |
| Phase Split | 63% | 37% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# MOVEMENT SUMMARY

## Site: 101 [Proposed NEW INTERSECTION WITH END ROAD PM PEAK (SHARK VOLUME) + SC3]

END ROAD / Captain Cook Drive (New Intersection)
FUTURE (Sharks) + SC3 (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**

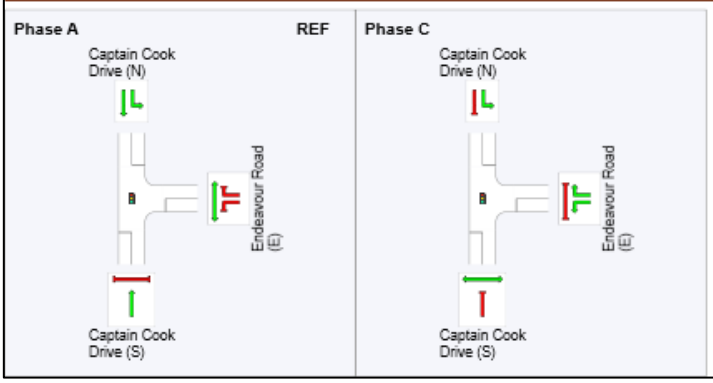
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 2 | T1 | 1562 | 0.0 | 0.583 | 25.6 | LOS B | 22.3 | 155.9 | 0.79 | 0.71 | 0.79 | 42.3 |
| Approach | | 1562 | 0.0 | 0.583 | 25.6 | LOS B | 22.3 | 155.9 | 0.79 | 0.71 | 0.79 | 42.3 |
| East: Endeavour Road(E) | | | | | | | | | | | | |
| 4 | L2 | 1 | 0.0 | 0.755 | 35.5 | LOS C | 30.2 | 211.2 | 0.90 | 0.87 | 0.90 | 37.3 |
| 6 | R2 | 1238 | 0.0 | 0.755 | 35.6 | LOS C | 30.2 | 211.2 | 0.90 | 0.87 | 0.90 | 37.5 |
| Approach | | 1239 | 0.0 | 0.755 | 35.6 | LOS C | 30.2 | 211.2 | 0.90 | 0.87 | 0.90 | 37.5 |
| North: Captain Cook Drive (N) | | | | | | | | | | | | |
| 7 | L2 | 268 | 0.0 | 0.160 | 5.9 | LOS A | 0.9 | 6.3 | 0.12 | 0.61 | 0.12 | 53.2 |
| 8 | T1 | 2044 | 0.0 | 0.762 | 28.8 | LOS C | 32.9 | 230.3 | 0.90 | 0.81 | 0.90 | 40.7 |
| Approach | | 2312 | 0.0 | 0.762 | 26.2 | LOS B | 32.9 | 230.3 | 0.81 | 0.79 | 0.81 | 41.9 |
| All Vehicles | | 5113 | 0.0 | 0.762 | 28.3 | LOS B | 32.9 | 230.3 | 0.83 | 0.78 | 0.83 | 40.8 |

**Phase Timing Summary**

| Phase | A | C |
|---|---|---|
| Phase Change Time (sec) | 0 | 61 |
| Green Time (sec) | 55 | 53 |
| Phase Time (sec) | 61 | 59 |
| Phase Split | 51% | 49% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# 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**

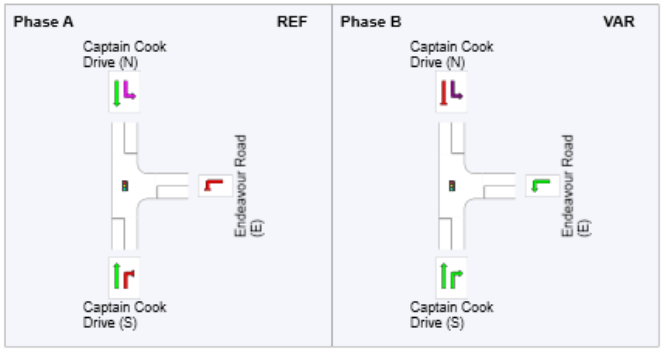
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 2 | T1 | 2213 | 3.4 | 0.430 | 0.5 | LOS A | 3.5 | 25.3 | 0.18 | 0.11 | 0.18 | 59.2 |
| 3 | R2 | 518 | 3.3 | 0.778 | 43.2 | LOS D | 27.5 | 197.9 | 0.95 | 0.88 | 0.98 | 34.6 |
| Approach | | 2731 | 3.4 | 0.778 | 8.6 | LOS A | 27.5 | 197.9 | 0.32 | 0.26 | 0.33 | 52.2 |
| East: Endeavour Road (E) | | | | | | | | | | | | |
| 4 | L2 | 191 | 13.1 | 0.153 | 32.9 | LOS C | 3.7 | 28.9 | 0.71 | 0.74 | 0.71 | 38.1 |
| Approach | | 191 | 13.1 | 0.153 | 32.9 | LOS C | 3.7 | 28.9 | 0.71 | 0.74 | 0.71 | 38.1 |
| North: Captain Cook Drive (N) | | | | | | | | | | | | |
| 7 | L2 | 189 | 5.3 | 0.765 | 32.3 | LOS C | 34.3 | 250.6 | 0.85 | 0.84 | 1.15 | 40.6 |
| 8 | T1 | 2121 | 5.0 | 0.765 | 24.3 | LOS B | 35.2 | 256.5 | 0.85 | 0.80 | 0.94 | 42.7 |
| Approach | | 2310 | 5.0 | 0.765 | 25.0 | LOS B | 35.2 | 256.5 | 0.85 | 0.80 | 0.95 | 42.5 |
| All Vehicles | | 5232 | 4.4 | 0.778 | 16.7 | LOS B | 35.2 | 256.5 | 0.57 | 0.52 | 0.62 | 46.8 |

**Phase Timing Summary**

| Phase | A | B |
|---|---|---|
| Phase Change Time (sec) | 0 | 70 |
| Green Time (sec) | 64 | 44 |
| Phase Time (sec) | 70 | 50 |
| Phase Split | 58% | 42% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# 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**

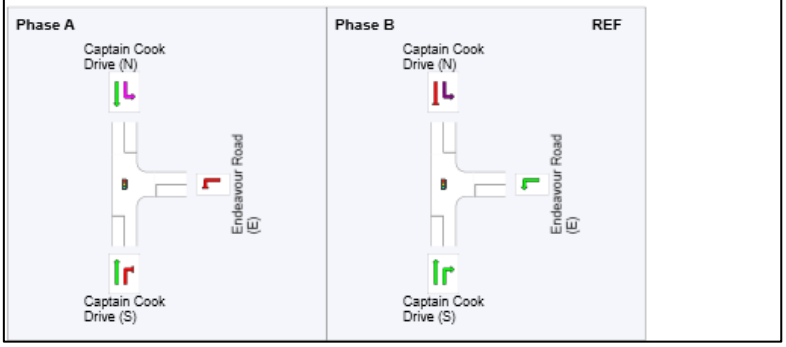
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 2 | T1 | 2386 | 0.8 | 0.455 | 0.5 | LOS A | 4.0 | 27.9 | 0.18 | 0.12 | 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 | | 2594 | 0.8 | 0.455 | 3.6 | LOS A | 9.2 | 65.4 | 0.23 | 0.17 | 0.23 | 56.3 |
| 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 | 0.529 | 22.6 | LOS B | 20.1 | 143.3 | 0.66 | 0.64 | 0.79 | 45.7 |
| 8 | T1 | 1674 | 0.8 | 0.529 | 16.6 | LOS B | 20.8 | 146.4 | 0.66 | 0.61 | 0.70 | 47.0 |
| Approach | | 1765 | 1.2 | 0.529 | 16.9 | LOS B | 20.8 | 146.4 | 0.66 | 0.61 | 0.70 | 46.9 |
| All Vehicles | | 4996 | 1.0 | 0.532 | 13.1 | LOS A | 20.8 | 146.4 | 0.46 | 0.41 | 0.48 | 49.1 |

**Phase Timing Summary**

| Phase | A | B |
|---|---|---|
| Phase Change Time (sec) | 45 | 0 |
| Green Time (sec) | 69 | 39 |
| Phase Time (sec) | 75 | 45 |
| Phase Split | 63% | 38% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# MOVEMENT SUMMARY

## Site: 1v [Captain Cook Drive / Gannons Road - Future AM + Sharks + SC 3 - Refinement of Lane Lengths]

Captain Cook Drive / Gannons Road
Future Volumes (4/2/20) + Sharks 3 & 4 + SC3
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**

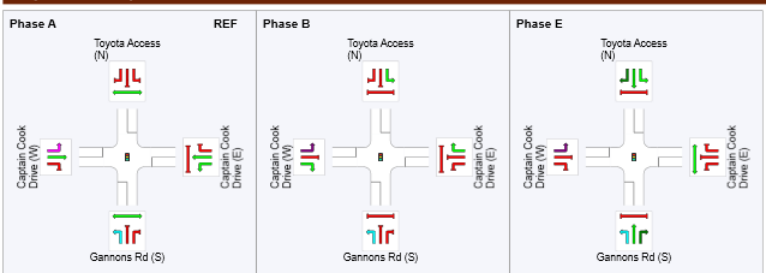
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gannons 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 | 208 | 0.0 | 0.386 | 42.3 | LOS C | 9.9 | 69.6 | 0.87 | 0.77 | 0.87 | 26.5 |
| 3 | R2 | 253 | 5.1 | 0.826 | 60.4 | LOS E | 15.9 | 116.5 | 1.00 | 0.97 | 1.21 | 29.1 |
| Approach | | 1244 | 1.9 | 0.826 | 22.1 | LOS B | 15.9 | 116.5 | 0.35 | 0.62 | 0.39 | 37.8 |
| East: Captain Cook Drive (E) | | | | | | | | | | | | |
| 4 | L2 | 157 | 3.8 | 0.191 | 28.7 | LOS C | 5.6 | 40.4 | 0.65 | 0.75 | 0.65 | 39.8 |
| 5 | T1 | 1186 | 10.5 | 0.828 | 34.3 | LOS C | 31.4 | 239.3 | 0.89 | 0.85 | 0.95 | 42.4 |
| 6 | R2 | 233 | 0.0 | 0.799 | 64.6 | LOS E | 14.2 | 99.4 | 1.00 | 0.89 | 1.16 | 24.6 |
| Approach | | 1576 | 8.2 | 0.828 | 38.2 | LOS C | 31.4 | 239.3 | 0.88 | 0.84 | 0.95 | 38.1 |
| North: Toyota Access (N) | | | | | | | | | | | | |
| 7 | L2 | 83 | 0.0 | 0.267 | 36.9 | LOS C | 6.7 | 47.0 | 0.81 | 0.70 | 0.81 | 29.0 |
| 8 | T1 | 67 | 0.0 | 0.267 | 35.0 | LOS C | 6.7 | 47.0 | 0.81 | 0.70 | 0.81 | 27.6 |
| 9 | R2 | 62 | 1.6 | 0.256 | 47.6 | LOS D | 3.2 | 22.6 | 0.90 | 0.72 | 0.90 | 26.7 |
| Approach | | 212 | 0.5 | 0.267 | 39.4 | LOS C | 6.7 | 47.0 | 0.84 | 0.71 | 0.84 | 27.8 |
| West: Captain Cook Drive (W) | | | | | | | | | | | | |
| 10 | L2 | 220 | 0.0 | 0.536 | 31.3 | LOS C | 18.0 | 133.6 | 0.78 | 0.79 | 0.99 | 32.8 |
| 11 | T1 | 688 | 13.1 | 0.536 | 26.0 | LOS B | 19.0 | 147.7 | 0.79 | 0.73 | 0.86 | 46.1 |
| 12 | R2 | 413 | 9.2 | 0.806 | 63.6 | LOS E | 13.6 | 102.9 | 1.00 | 0.88 | 1.12 | 29.3 |
| Approach | | 1321 | 9.7 | 0.806 | 38.7 | LOS C | 19.0 | 147.7 | 0.85 | 0.79 | 0.96 | 37.0 |
| All Vehicles | | 4353 | 6.5 | 0.828 | 33.8 | LOS C | 31.4 | 239.3 | 0.72 | 0.76 | 0.79 | 37.0 |

**Phase Timing Summary**

| Phase | A | B | E |
|---|---|---|---|
| Phase Change Time (sec) | 0 | 58 | 82 |
| Green Time (sec) | 52 | 18 | 32 |
| Phase Time (sec) | 58 | 24 | 38 |
| Phase Split | 48% | 20% | 32% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# MOVEMENT SUMMARY

## Site: 1v [Captain Cook Drive / Gannons Road - Future PM + Sharks + SC 3 - Refinement of Lane Lengths]

Captain Cook Drive / Gannons Road
Future Volumes (4/2/20) + Sharks 3 & 4 + SC3
Peak 4:30PM - 5:30PM
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 123 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

**Movement Performance - Vehicles**

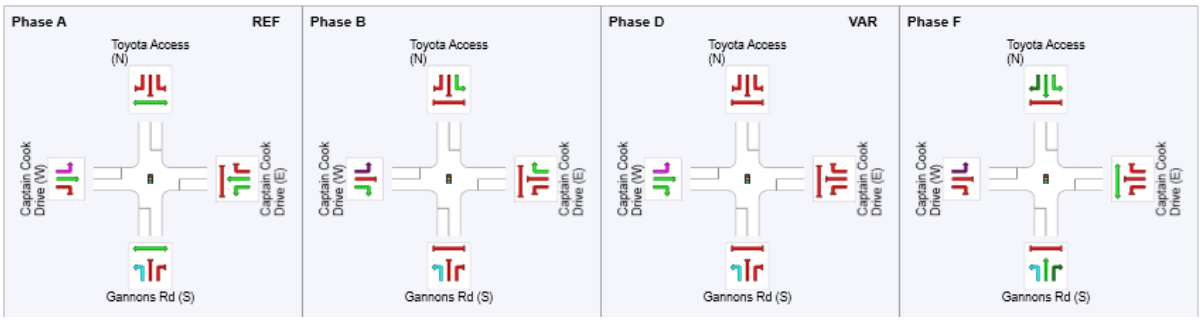
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Gannons 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 | 56 | 1.8 | 0.077 | 30.5 | LOS C | 2.2 | 15.3 | 0.68 | 0.65 | 0.68 | 28.9 |
| 3 | R2 | 199 | 1.0 | 0.955 | 101.4 | LOS F | 17.3 | 122.3 | 1.00 | 1.29 | 1.78 | 22.2 |
| Approach | | 711 | 1.3 | 0.955 | 33.6 | LOS C | 17.3 | 122.3 | 0.33 | 0.71 | 0.55 | 34.8 |
| East: Captain Cook Drive (E) | | | | | | | | | | | | |
| 4 | L2 | 84 | 3.6 | 0.151 | 40.8 | LOS C | 3.7 | 26.7 | 0.78 | 0.75 | 0.78 | 35.1 |
| 5 | T1 | 850 | 2.0 | 0.758 | 43.1 | LOS D | 24.7 | 176.2 | 0.96 | 0.85 | 0.99 | 38.5 |
| 6 | R2 | 84 | 0.0 | 0.886 | 81.1 | LOS F | 5.8 | 40.4 | 1.00 | 0.96 | 1.58 | 22.1 |
| Approach | | 1018 | 2.0 | 0.886 | 46.0 | LOS D | 24.7 | 176.2 | 0.95 | 0.85 | 1.02 | 36.0 |
| North: Toyota Access (N) | | | | | | | | | | | | |
| 7 | L2 | 237 | 0.0 | 0.604 | 35.6 | LOS C | 20.0 | 139.9 | 0.86 | 0.91 | 1.20 | 29.3 |
| 8 | T1 | 216 | 0.0 | 0.604 | 33.6 | LOS C | 20.0 | 139.9 | 0.86 | 0.91 | 1.20 | 27.9 |
| 9 | R2 | 243 | 0.0 | 0.496 | 35.4 | LOS C | 11.5 | 80.8 | 0.84 | 0.75 | 0.84 | 29.3 |
| Approach | | 696 | 0.0 | 0.604 | 34.9 | LOS C | 20.0 | 139.9 | 0.85 | 0.86 | 1.08 | 28.9 |
| West: Captain Cook Drive (W) | | | | | | | | | | | | |
| 10 | L2 | 72 | 0.0 | 0.874 | 37.7 | LOS C | 33.8 | 238.9 | 0.99 | 0.96 | 1.10 | 31.7 |
| 11 | T1 | 1330 | 1.1 | 0.874 | 31.4 | LOS C | 34.2 | 241.6 | 0.99 | 0.96 | 1.10 | 43.7 |
| 12 | R2 | 630 | 1.1 | 0.923 | 69.9 | LOS E | 25.4 | 179.3 | 1.00 | 0.96 | 1.26 | 27.9 |
| Approach | | 2032 | 1.1 | 0.923 | 43.5 | LOS D | 34.2 | 241.6 | 0.99 | 0.96 | 1.15 | 36.7 |
| All Vehicles | | 4457 | 1.1 | 0.955 | 41.2 | LOS C | 34.2 | 241.6 | 0.86 | 0.88 | 1.01 | 34.8 |

**Phase Timing Summary**

| Phase | A | B | D | F |
|---|---|---|---|---|
| Phase Change Time (sec) | 0 | 42 | 54 | 72 |
| Green Time (sec) | 36 | 6 | 12 | 45 |
| Phase Time (sec) | 42 | 12 | 18 | 51 |
| Phase Split | 34% | 10% | 15% | 41% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# MOVEMENT SUMMARY

## Site: 101v [Captain Cook Drive / Endeavour Road - Future AM, Stage 1 + Sharks + SC4 - Refinement of Lane Lengths]

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**

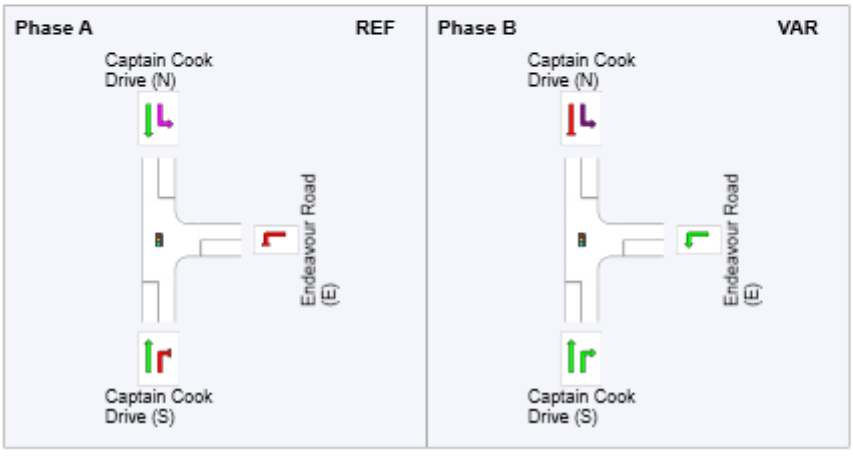
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 2 | T1 | 2213 | 3.4 | 0.430 | 0.5 | LOS A | 3.5 | 25.3 | 0.18 | 0.11 | 0.18 | 59.2 |
| 3 | R2 | 518 | 3.3 | 0.778 | 43.2 | LOS D | 27.5 | 197.9 | 0.95 | 0.88 | 0.98 | 34.6 |
| Approach | | 2731 | 3.4 | 0.778 | 8.6 | LOS A | 27.5 | 197.9 | 0.32 | 0.26 | 0.33 | 52.2 |
| East: Endeavour Road (E) | | | | | | | | | | | | |
| 4 | L2 | 191 | 13.1 | 0.153 | 32.9 | LOS C | 3.7 | 28.9 | 0.71 | 0.74 | 0.71 | 38.1 |
| Approach | | 191 | 13.1 | 0.153 | 32.9 | LOS C | 3.7 | 28.9 | 0.71 | 0.74 | 0.71 | 38.1 |
| North: Captain Cook Drive (N) | | | | | | | | | | | | |
| 7 | L2 | 189 | 5.3 | 0.765 | 32.3 | LOS C | 34.3 | 250.6 | 0.85 | 0.84 | 1.15 | 40.6 |
| 8 | T1 | 2121 | 5.0 | 0.765 | 24.3 | LOS B | 35.2 | 256.5 | 0.85 | 0.80 | 0.94 | 42.7 |
| Approach | | 2310 | 5.0 | 0.765 | 25.0 | LOS B | 35.2 | 256.5 | 0.85 | 0.80 | 0.95 | 42.5 |
| All Vehicles | | 5232 | 4.4 | 0.778 | 16.7 | LOS B | 35.2 | 256.5 | 0.57 | 0.52 | 0.62 | 46.8 |

**Phase Timing Summary**

| Phase | A | B |
|---|---|---|
| Phase Change Time (sec) | 0 | 70 |
| Green Time (sec) | 64 | 44 |
| Phase Time (sec) | 70 | 50 |
| Phase Split | 58% | 42% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# MOVEMENT SUMMARY

## Site: 101v [Captain Cook Drive / Endeavour Road - Future PM, Stage 1 + Sharks + SC4 - Refinement of Lane Lengths]

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**

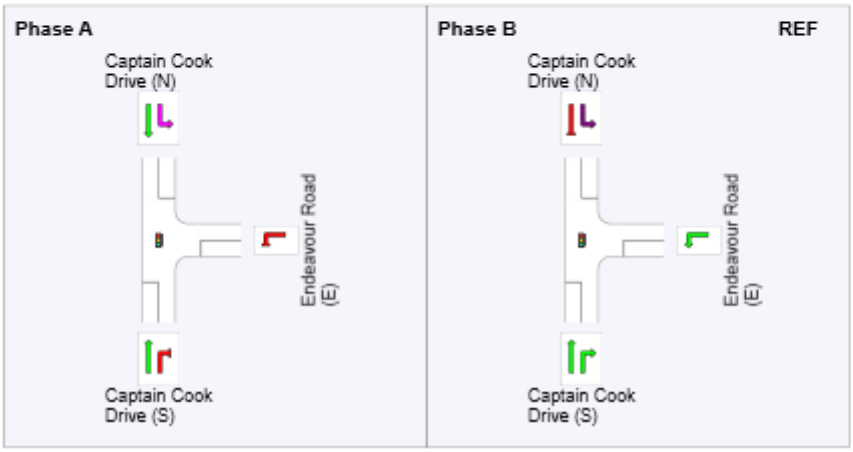
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 2 | T1 | 2386 | 0.8 | 0.455 | 0.5 | LOS A | 4.0 | 27.9 | 0.18 | 0.12 | 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 | | 2594 | 0.8 | 0.455 | 3.6 | LOS A | 9.2 | 65.4 | 0.23 | 0.17 | 0.23 | 56.3 |
| 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 | 0.529 | 22.6 | LOS B | 20.1 | 143.3 | 0.66 | 0.64 | 0.79 | 45.7 |
| 8 | T1 | 1674 | 0.8 | 0.529 | 16.6 | LOS B | 20.8 | 146.4 | 0.66 | 0.61 | 0.70 | 47.0 |
| Approach | | 1765 | 1.2 | 0.529 | 16.9 | LOS B | 20.8 | 146.4 | 0.66 | 0.61 | 0.70 | 46.9 |
| All Vehicles | | 4996 | 1.0 | 0.532 | 13.1 | LOS A | 20.8 | 146.4 | 0.46 | 0.41 | 0.48 | 49.1 |

**Phase Timing Summary**

| Phase | A | B |
|---|---|---|
| Phase Change Time (sec) | 45 | 0 |
| Green Time (sec) | 69 | 39 |
| Phase Time (sec) | 75 | 45 |
| Phase Split | 63% | 38% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# MOVEMENT SUMMARY

## Site: 101 [Proposed NEW INTERSECTION WITH END ROAD AM PEAK (SHARK VOLUME) - SC3 - Refinement of Lane Lengths]

END ROAD / Captain Cook Drive (New Intersection)
FUTURE (Sharks) + SC3
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**

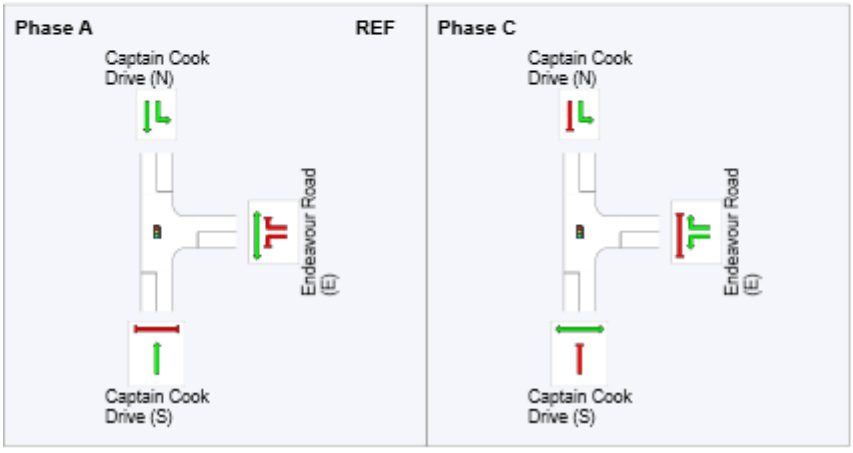
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 2 | T1 | 2109 | 0.0 | 0.618 | 17.2 | LOS B | 26.4 | 184.7 | 0.71 | 0.64 | 0.71 | 46.7 |
| Approach | | 2109 | 0.0 | 0.618 | 17.2 | LOS B | 26.4 | 184.7 | 0.71 | 0.64 | 0.71 | 46.7 |
| East: Endeavour Road(E) | | | | | | | | | | | | |
| 4 | L2 | 1 | 0.0 | 0.257 | 38.2 | LOS C | 6.5 | 45.8 | 0.79 | 0.77 | 0.79 | 36.3 |
| 6 | R2 | 301 | 0.0 | 0.257 | 38.2 | LOS C | 6.5 | 45.8 | 0.79 | 0.77 | 0.79 | 36.5 |
| Approach | | 302 | 0.0 | 0.257 | 38.2 | LOS C | 6.5 | 45.8 | 0.79 | 0.77 | 0.79 | 36.5 |
| North: Captain Cook Drive (N) | | | | | | | | | | | | |
| 7 | L2 | 1034 | 0.0 | 0.619 | 6.3 | LOS A | 6.9 | 48.2 | 0.25 | 0.65 | 0.25 | 52.9 |
| 8 | T1 | 1279 | 0.0 | 0.375 | 14.1 | LOS A | 13.1 | 91.4 | 0.57 | 0.51 | 0.57 | 48.7 |
| Approach | | 2313 | 0.0 | 0.619 | 10.6 | LOS A | 13.1 | 91.4 | 0.43 | 0.57 | 0.43 | 50.5 |
| All Vehicles | | 4724 | 0.0 | 0.619 | 15.3 | LOS B | 26.4 | 184.7 | 0.57 | 0.62 | 0.57 | 47.6 |

**Phase Timing Summary**

| Phase | A | C |
|---|---|---|
| Phase Change Time (sec) | 0 | 76 |
| Green Time (sec) | 70 | 38 |
| Phase Time (sec) | 76 | 44 |
| Phase Split | 63% | 37% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

**Output Phase Sequence**



# MOVEMENT SUMMARY

## Site: 101 [Proposed NEW INTERSECTION WITH END ROAD PM PEAK (SHARK VOLUME) + SC3 Refinement of Lane Lengths]

END ROAD / Captain Cook Drive (New Intersection)
FUTURE (Sharks) + SC3 (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**

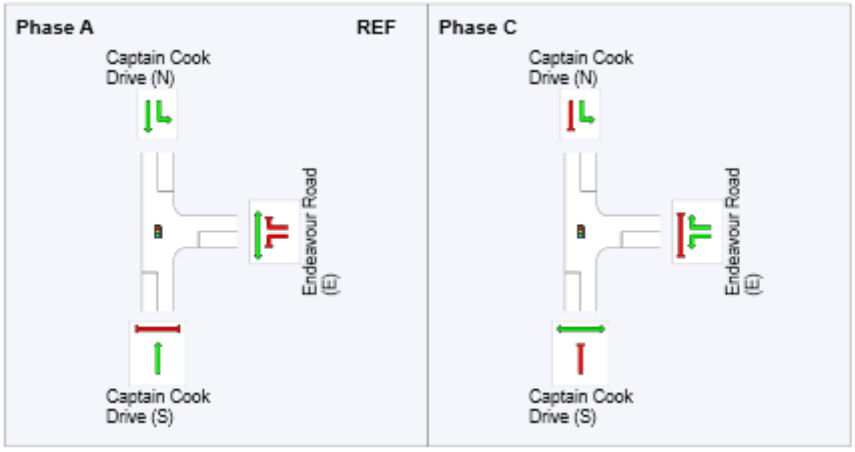
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Captain Cook Drive (S) | | | | | | | | | | | | |
| 2 | T1 | 1562 | 0.0 | 0.583 | 25.6 | LOS B | 22.3 | 155.9 | 0.79 | 0.71 | 0.79 | 42.3 |
| Approach | | 1562 | 0.0 | 0.583 | 25.6 | LOS B | 22.3 | 155.9 | 0.79 | 0.71 | 0.79 | 42.3 |
| East: Endeavour Road(E) | | | | | | | | | | | | |
| 4 | L2 | 1 | 0.0 | 0.755 | 35.5 | LOS C | 30.2 | 211.2 | 0.90 | 0.87 | 0.90 | 37.3 |
| 6 | R2 | 1238 | 0.0 | 0.755 | 35.6 | LOS C | 30.2 | 211.2 | 0.90 | 0.87 | 0.90 | 37.5 |
| Approach | | 1239 | 0.0 | 0.755 | 35.6 | LOS C | 30.2 | 211.2 | 0.90 | 0.87 | 0.90 | 37.5 |
| North: Captain Cook Drive (N) | | | | | | | | | | | | |
| 7 | L2 | 268 | 0.0 | 0.160 | 5.9 | LOS A | 0.9 | 6.3 | 0.12 | 0.61 | 0.12 | 53.2 |
| 8 | T1 | 2044 | 0.0 | 0.762 | 28.8 | LOS C | 32.9 | 230.3 | 0.90 | 0.81 | 0.90 | 40.7 |
| Approach | | 2312 | 0.0 | 0.762 | 26.2 | LOS B | 32.9 | 230.3 | 0.81 | 0.79 | 0.81 | 41.9 |
| All Vehicles | | 5113 | 0.0 | 0.762 | 28.3 | LOS B | 32.9 | 230.3 | 0.83 | 0.78 | 0.83 | 40.8 |

**Phase Timing Summary**

| Phase | A | C |
|---|---|---|
| Phase Change Time (sec) | 0 | 61 |
| Green Time (sec) | 55 | 53 |
| Phase Time (sec) | 61 | 59 |
| Phase Split | 51% | 49% |

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

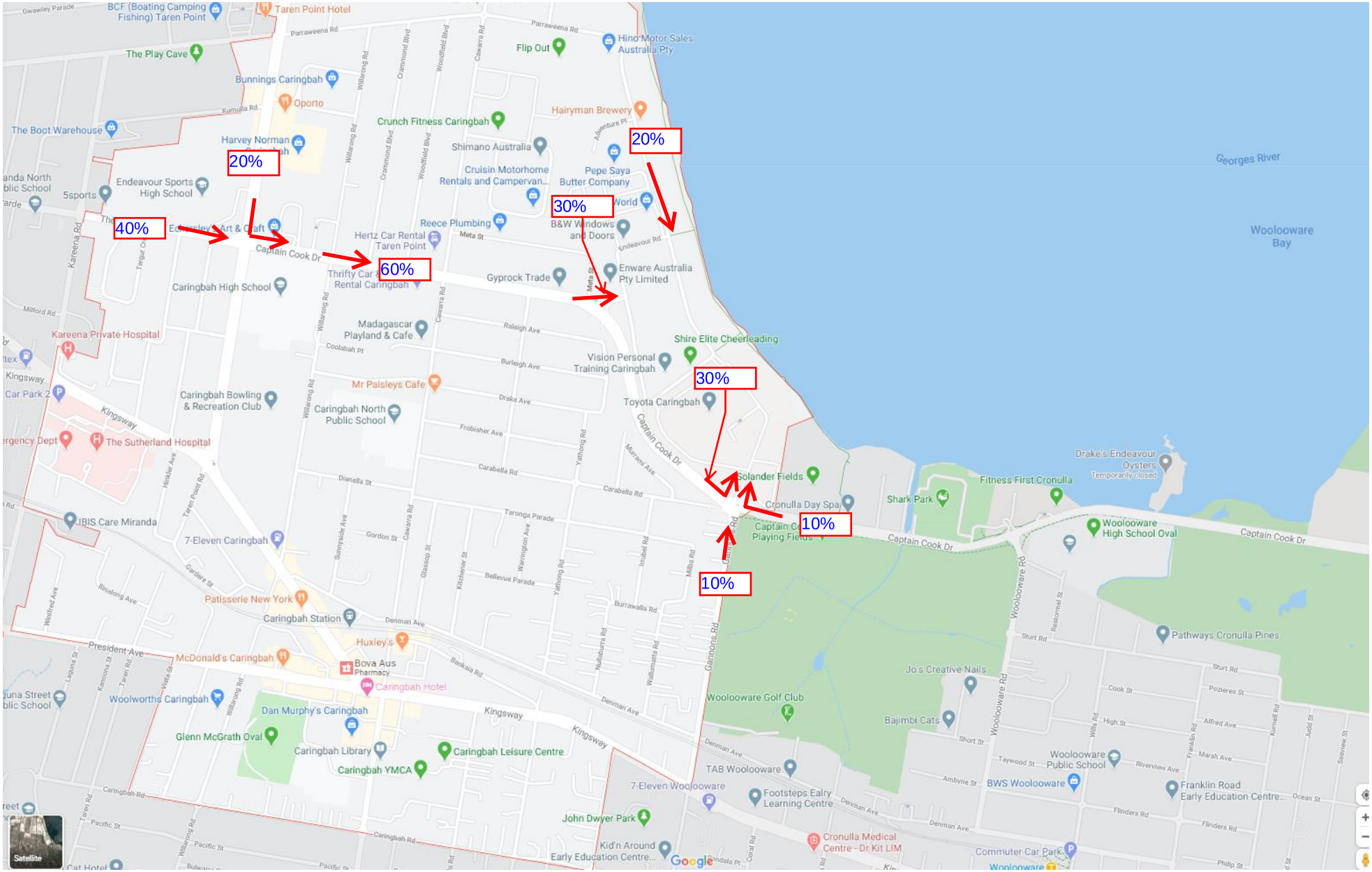
**Output Phase Sequence**



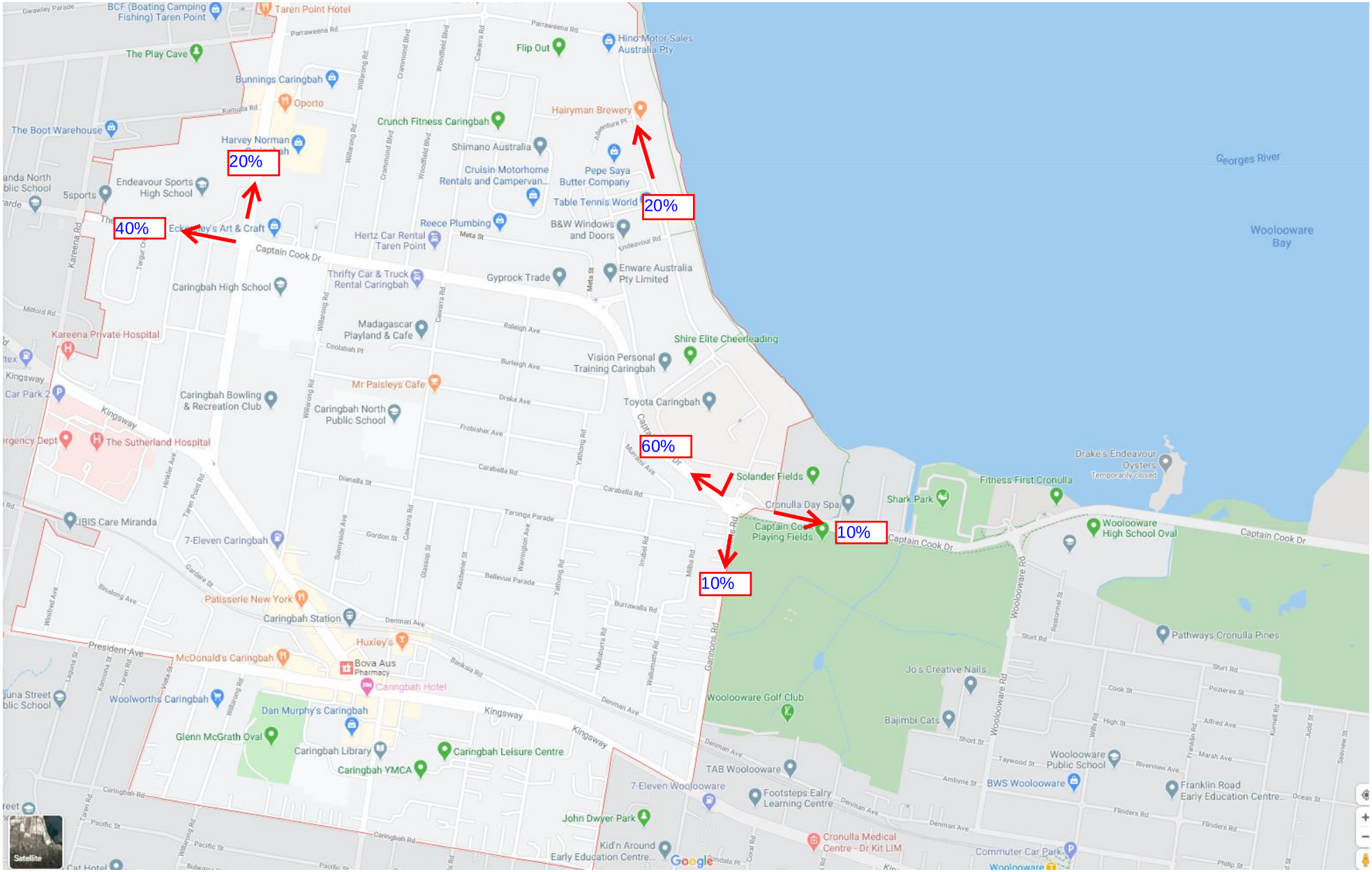

**ANNEXURE D: ADOPTED TRIP DISTRIBUTIONS**

**(4 SHEETS)**

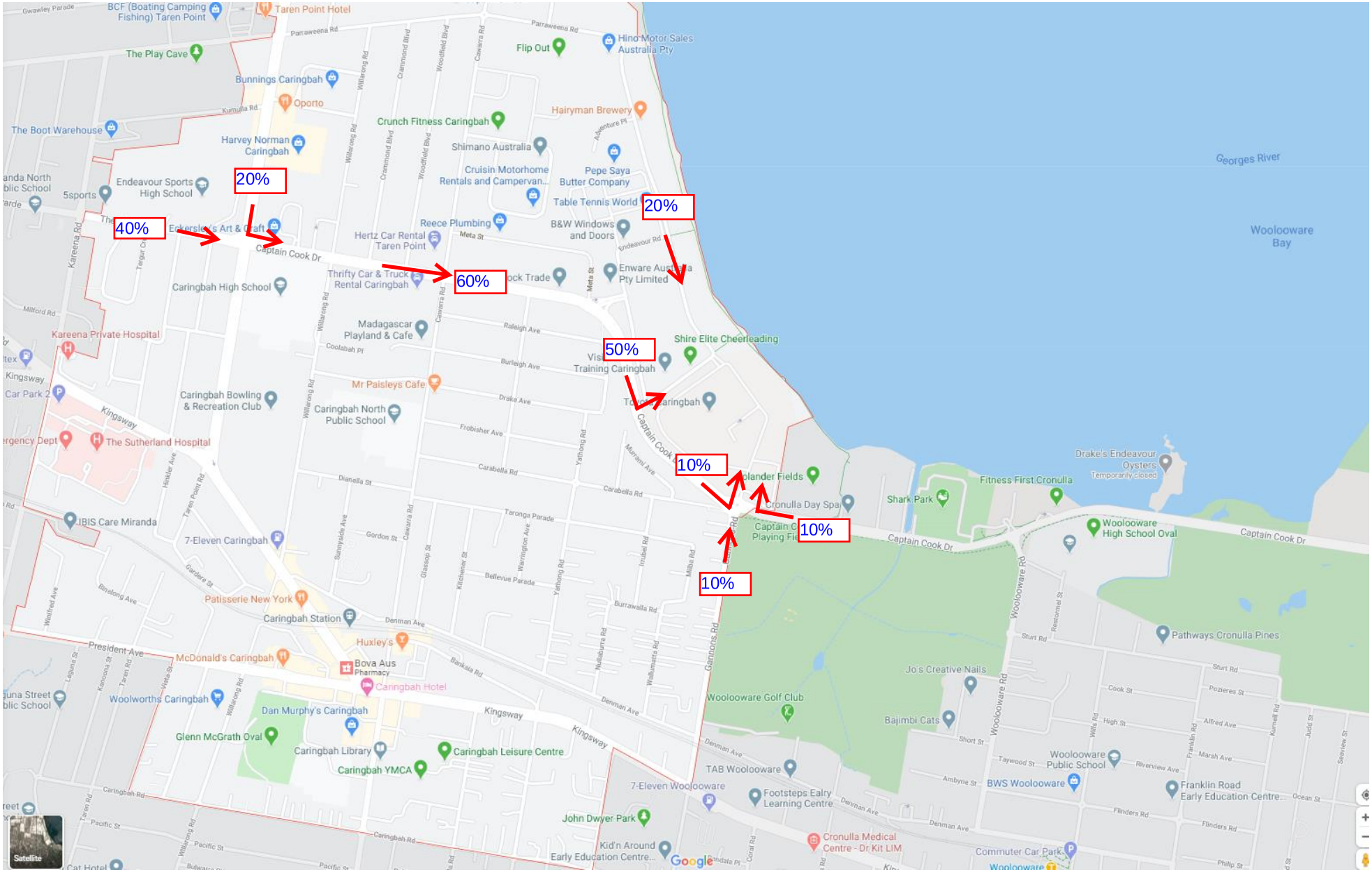
Scenario 1 & 2 - Inbound Distribution



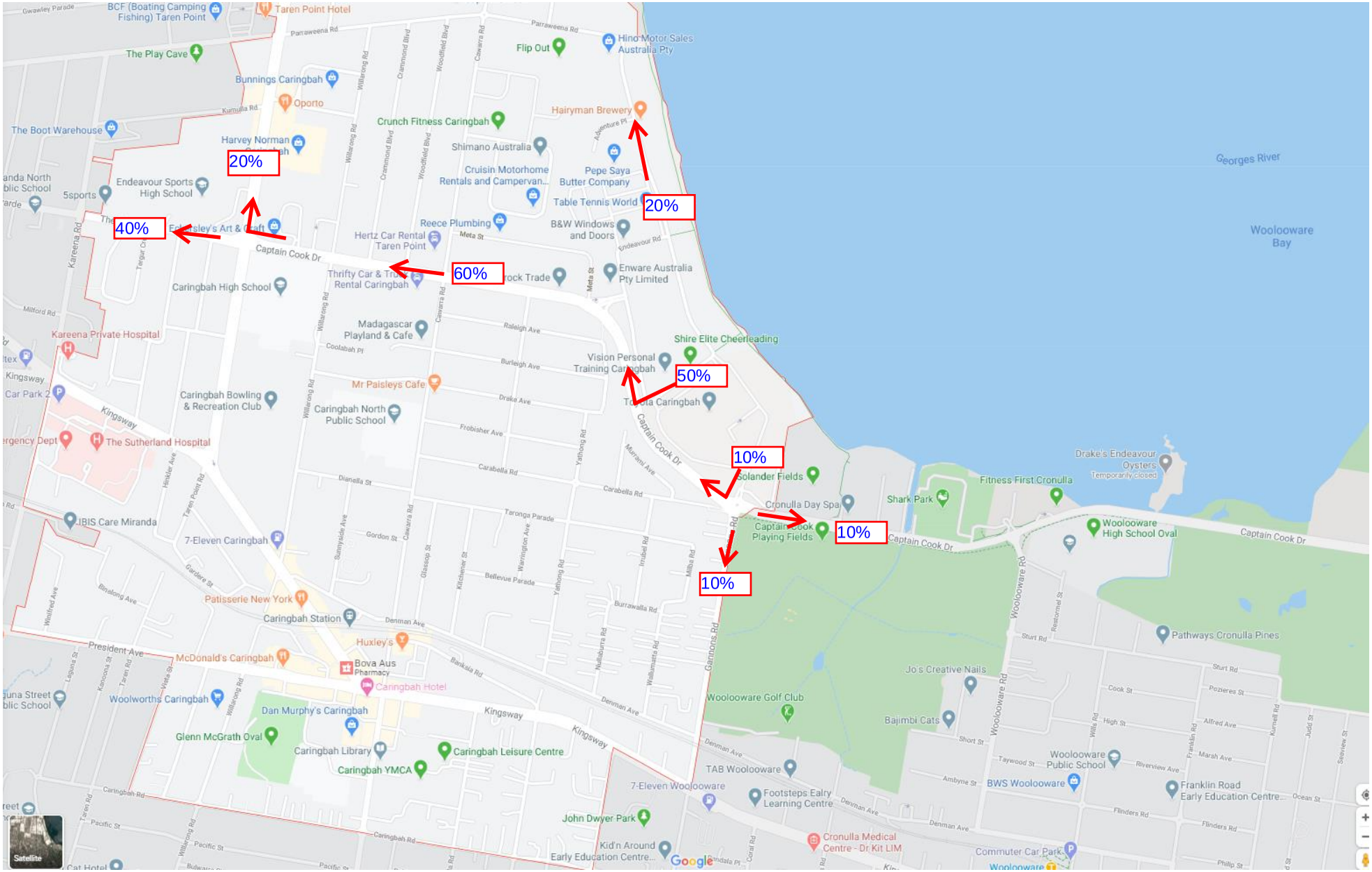
Scenario 1 & 2 - Outbound Distribution



Scenario 3 & 4 - Inbound Distribution

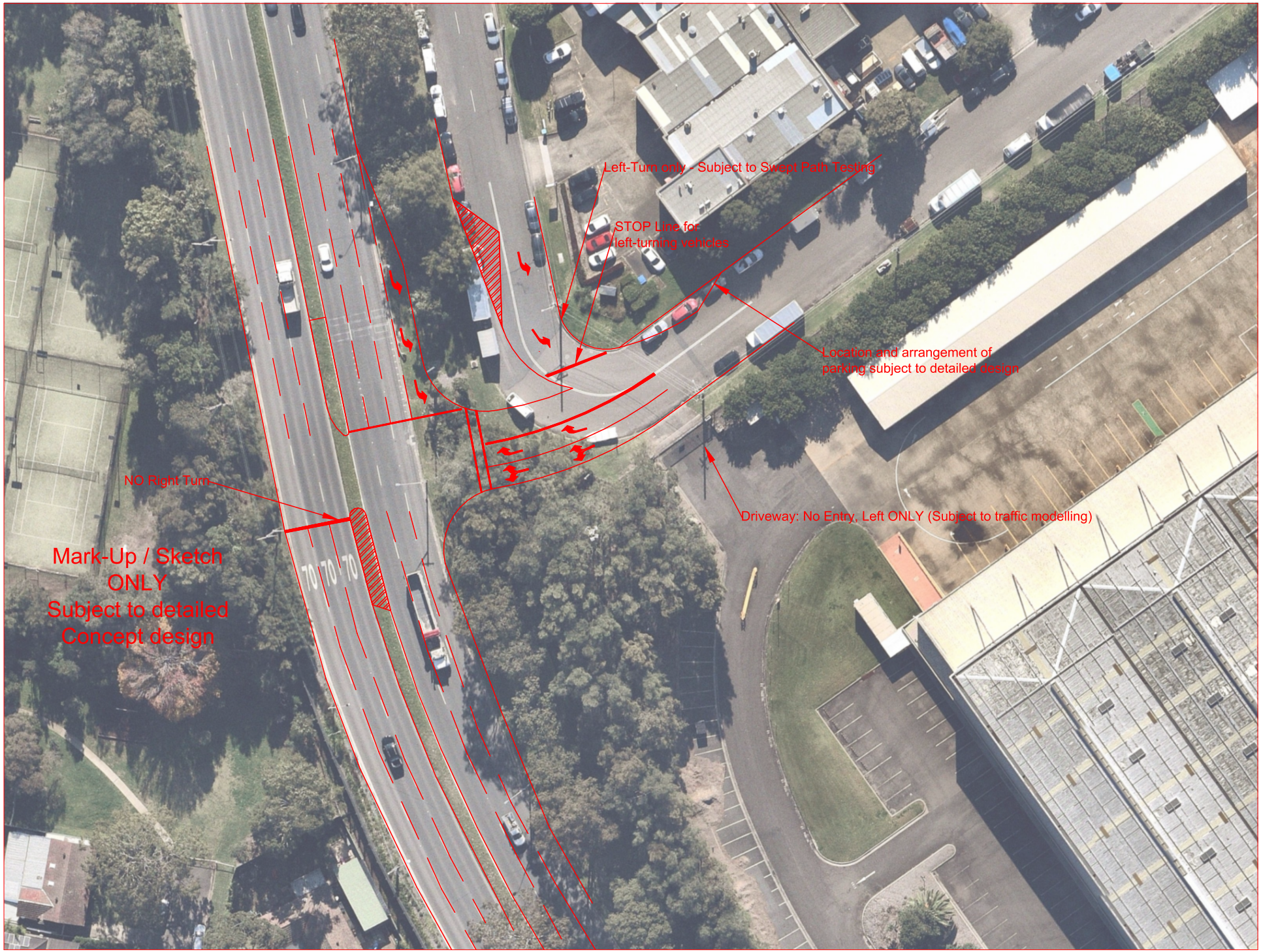


Scenario 3 & 4 - Outbound Distribution



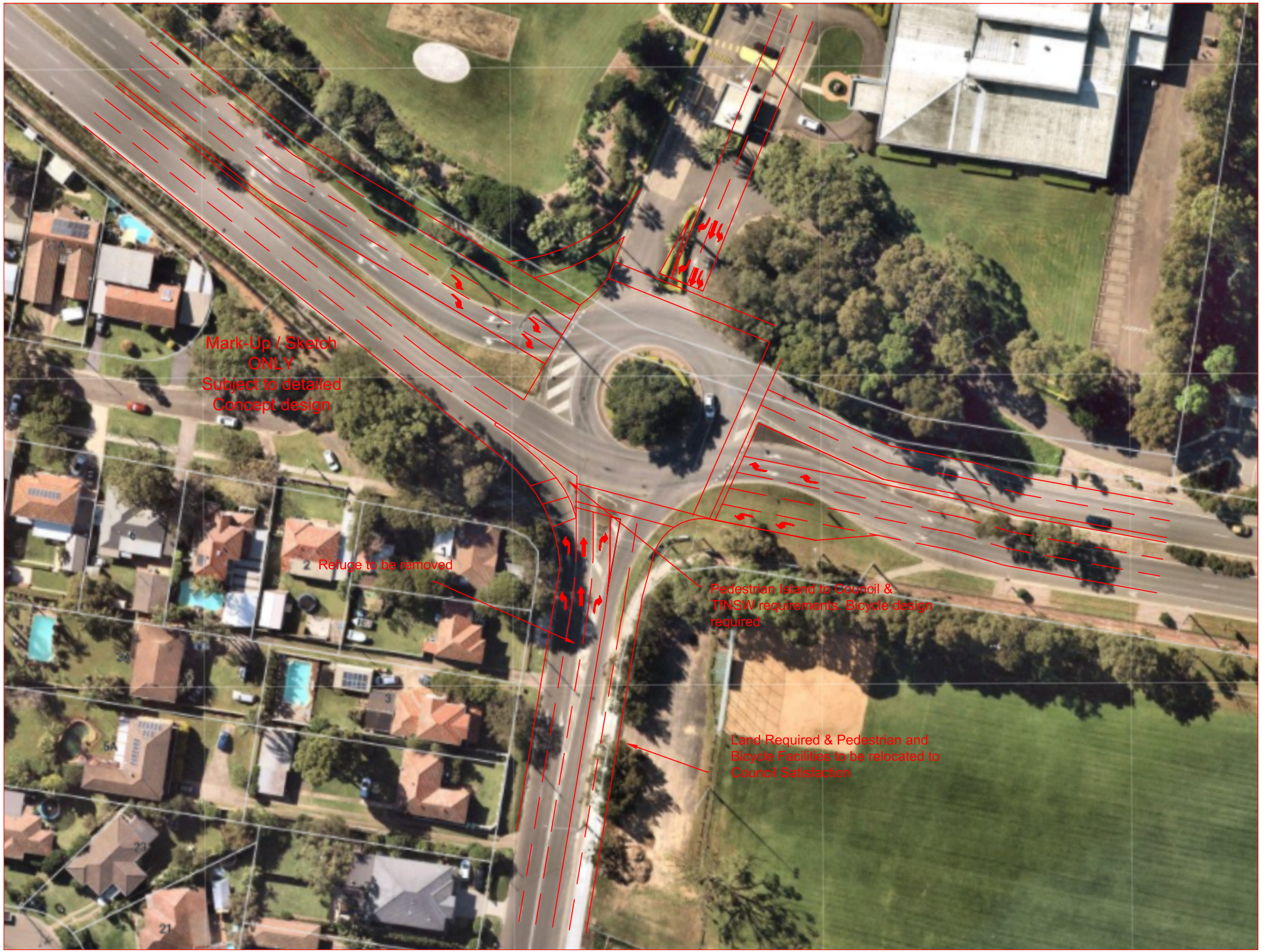

**ANNEXURE E: SKETCH OF POTENTIAL NEW INTERSECTION AT ENDEAVOUR ROAD / CAPTAIN COOK DRIVE**

**(1 SHEET)**


Left-Turn only - Subject to Swept Path Testing
STOP Line for left-turning vehicles
Location and arrangement of parking subject to detailed design
NO Right Turn
Driveway: No Entry, Left ONLY (Subject to traffic modelling)
Mark-Up / Sketch ONLY
Subject to detailed Concept design
70
70
70


# ANNEXURE F: SKETCH OF POTENTIAL NEW INTERSECTION AT GANNONS ROAD / CAPTAIN COOK DRIVE

**(1 SHEET)**


Mark-Up / Sketch
ONLY
Subject to detailed
Concept design
Refuge to be removed
Pedestrian Island to Council &
TfNSW requirements. Bicycle design
required
Land Required & Pedestrian and
Bicycle Facilities to be relocated to
Council Satisfaction