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# TRANSPORT AND TRAFFIC PLANNING ASSOCIATES

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4 February 2022
Ref: 20/2022

**Focoze Pty Ltd**
C/- PDA Planning
Tony Fish
Email: tfish@pdaplanning.com.au

Dear Tony,

**Re: Proposed Residential Subdivision**
**Bucketts Way, Tinonee**

I refer to the above matter and your instructions for me to assess the proposal's suitability in respect of the findings of the original Traffic Impact Assessment prepared by Better Transport Futures (BTF) in March 2007.

Approved Development Scheme

I understand a development consent was granted for a residential subdivision scheme to create up to 143 rural residential lots on the site. Primary vehicle access is proposed at Bucketts Way, while a secondary emergency only vehicle access will be located at Urray Road. The approved access at Bucketts Way, which has a channelised right turn treatment (CHR), was constructed circa 2016 (recent aerial image reproduced below).

*Source: Nearmap*

Traffic Assessment

The BTF report revealed the following AM and PM peak background traffic on Bucketts Way in 2006 (at the time of its assessment):

| | |
|---|---|
| AM Peak | 317 vph (two way) |
| PM Peak | 273 vph (two way) |

More recent traffic data collected at Bucketts Way revealed the following background growth over 7 years:

| | |
|---|---|
| 2007 | 3,249 vpd (two way) |
| 2014 | 4,173 vpd (two way) |

Based on the above, the average annualised growth rate is equivalent to 4%.

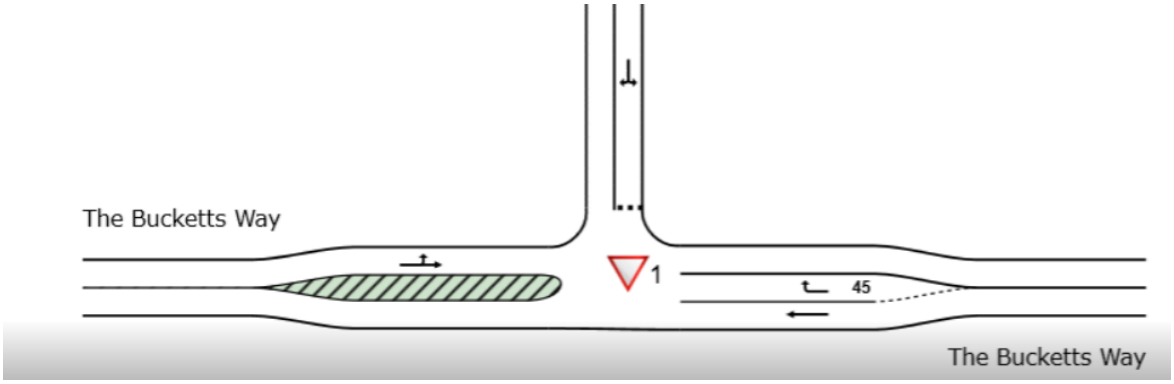
Application of the calculated growth rate to the 2006 background traffic would project the following 2022 background traffic on Bucketts Way:

| | |
|---|---|
| AM Peak | 594 vph (two way) |
| PM Peak | 511 vph (two way) |

The BTF report assessed the approved development scheme to generate some 121 vph in the peak periods. It is understood that the current proposal will reduce the residential yield; however, to provide a conservative basis to this assessment, it is proposed to retain the approved traffic generation outcome, distributed as follows:

| AM Peak | | PM Peak | |
|---|---|---|---|
| In (20%) | Out (80%) | In (20%) | Out (80%) |
| 25 | 96 | 96 | 25 |

A SIDRA model was developed (below) to assess the intersection's post-development operation.




*Source: SIDRA 9*

The assessment indicates that the intersection will operate with a satisfactory performance following full development on the site. The SIDRA model results provided in Appendix A of this submission are summarised below, while a guide to interpret the model results is reproduced overleaf for reference.

| AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|
| Worst performing approach | Average Delay | Level of Service | Worst performing approach | Average Delay | Level of Service |
| Site access | 8.2s | A | Site access | 9.1s | A |

*Note: Worst performing approach reported as per RMS requirement*

Appying the annualised growth rate to the background traffic (with a 10-year projection to 2032) reveals the following operational outcome:

| AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|
| Worst performing approach | Average Delay | Level of Service | Worst performing approach | Average Delay | Level of Service |
| Site access | 12.8s | A | Site access | 10.5s | A |

The assessment findings conclude that the originally envisaged and approved Bucketts Way intersection treatment (i.e. CHR) will continue to accommodate the development with no undue difficulty.

Having considered the BTF assessment and undertaken further SIDRA modelling analysis of the proposal using more current traffic data, it is my opinion that the proposal will have no adverse traffic impact on the local road network.

I trust the above is suitable to your requirements. Otherwise, please do not hesitate to contact me at 9411 5660 to discuss further.

Yours faithfully,

Bernardyslo

Bernard Lo BE(Civil), MTrans, MIEAust, PRE 0001491
Director
Transport and Traffic Planning Associates

# Criteria for Interpreting Results of SIDRA Analysis

## *1. Level of Service (LOS)*

| LOS | Traffic Signals and Roundabouts | Give Way and Stop Signs |
|---|---|---|
| 'A' | Good | Good |
| 'B' | Good with acceptable delays and spare capacity | Acceptable delays and spare capacity |
| 'C' | Satisfactory | Satisfactory but accident study required |
| 'D' | Operating near capacity | Near capacity and Accident Study required |
| 'E' | At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode | At capacity and requires other control mode |
| 'F' | Unsatisfactory and requires additional capacity | Unsatisfactory and requires other control mode |

## *2. Average Vehicle Delay (AVD)*

The AVD provides a measure of the operational performance of an intersection as indicated on the table below, which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

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

## *3. Degree of Saturation (DS)*

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by **traffic signals** both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a **roundabout or GIVE WAY or STOP signs**, satisfactory intersection operation is indicated by a DS of 0.8 or less.

## Appendix A

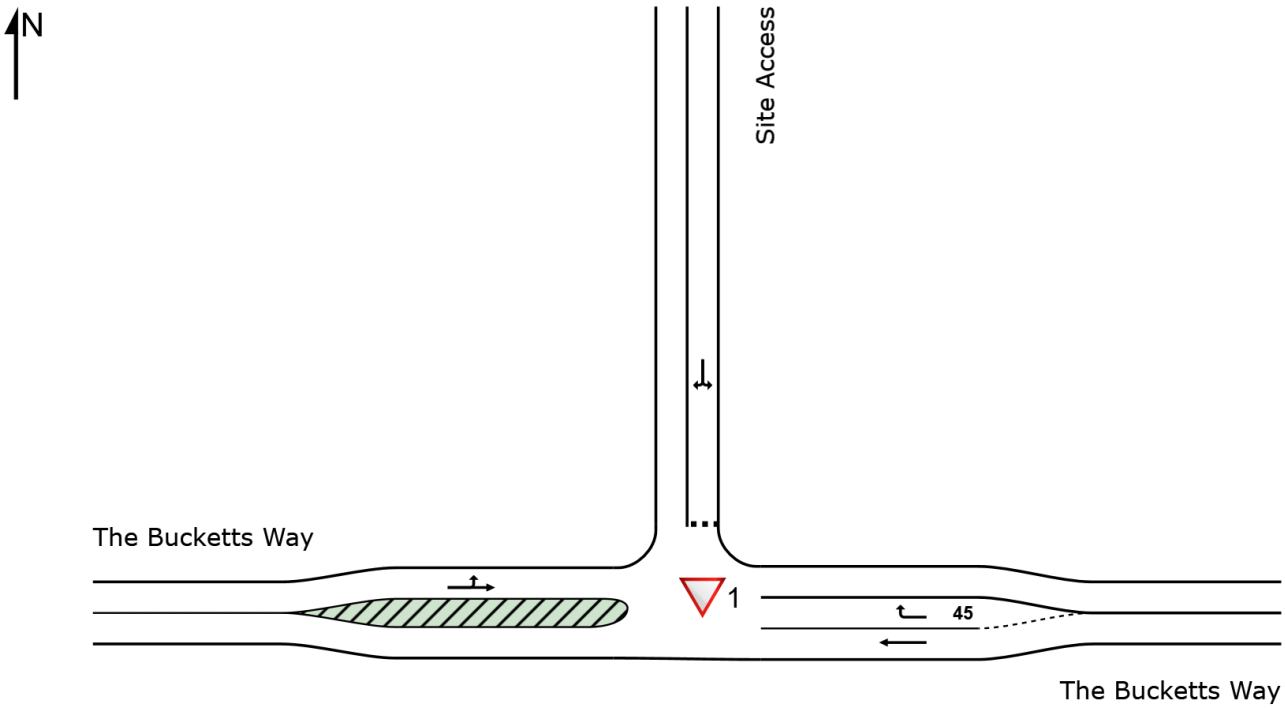
## SIDRA Results

# SITE LAYOUT

## Site: 1 [The Bucketts Way & Site Access (Site Folder: General)]

The Bucketts Way and Site Access, Taree South
Site Category: Residential Subdivision
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

## Site: 1 [The Bucketts Way & Site Access AM Peak (Site Folder: General)]

The Bucketts Way and Site Access, Taree South
Site Category: Residential Subdivision
Give-Way (Two-Way)

**Vehicle Movement Performance**

| Mov ID | Turn | INPUT VOLUMES [ Total veh/h | HV ] % | DEMAND FLOWS [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh. veh | Dist ] m | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: The Bucketts Way | | | | | | | | | | | | | | |
| 5 | T1 | 178 | 0.0 | 187 | 0.0 | 0.097 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 79.9 |
| 6 | R2 | 12 | 0.0 | 13 | 0.0 | 0.011 | 8.2 | LOS A | 0.0 | 0.3 | 0.46 | 0.63 | 0.46 | 63.3 |
| Approach | | 190 | 0.0 | 200 | 0.0 | 0.097 | 0.5 | NA | 0.0 | 0.3 | 0.03 | 0.04 | 0.03 | 78.6 |
| North: Site Access | | | | | | | | | | | | | | |
| 7 | L2 | 48 | 0.0 | 51 | 0.0 | 0.143 | 7.3 | LOS A | 0.5 | 3.8 | 0.55 | 0.76 | 0.55 | 55.6 |
| 9 | R2 | 48 | 0.0 | 51 | 0.0 | 0.143 | 10.9 | LOS A | 0.5 | 3.8 | 0.55 | 0.76 | 0.55 | 55.2 |
| Approach | | 96 | 0.0 | 101 | 0.0 | 0.143 | 9.1 | LOS A | 0.5 | 3.8 | 0.55 | 0.76 | 0.55 | 55.4 |
| West: The Bucketts Way | | | | | | | | | | | | | | |
| 10 | L2 | 12 | 0.0 | 13 | 0.0 | 0.231 | 7.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 0.00 | 74.2 |
| 11 | T1 | 416 | 0.0 | 438 | 0.0 | 0.231 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 0.00 | 79.5 |
| Approach | | 428 | 0.0 | 451 | 0.0 | 0.231 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 0.00 | 79.4 |
| All Vehicles | | 714 | 0.0 | 752 | 0.0 | 0.231 | 1.5 | NA | 0.5 | 3.8 | 0.08 | 0.12 | 0.08 | 74.8 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: 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 road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

## Site: 1 [The Bucketts Way & Site Access PM Peak (Site Folder: General)]

The Bucketts Way and Site Access, Taree South
Site Category: Residential Subdivision
Give-Way (Two-Way)

**Vehicle Movement Performance**

| Mov ID | Turn | INPUT VOLUMES [ Total veh/h | HV ] % | DEMAND FLOWS [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh. veh | Dist ] m | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: The Bucketts Way | | | | | | | | | | | | | | |
| 5 | T1 | 204 | 0.0 | 215 | 0.0 | 0.111 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 79.9 |
| 6 | R2 | 48 | 0.0 | 51 | 0.0 | 0.040 | 7.9 | LOS A | 0.2 | 1.2 | 0.43 | 0.65 | 0.43 | 63.5 |
| Approach | | 252 | 0.0 | 265 | 0.0 | 0.111 | 1.5 | NA | 0.2 | 1.2 | 0.08 | 0.12 | 0.08 | 76.2 |
| North: Site Access | | | | | | | | | | | | | | |
| 7 | L2 | 12 | 0.0 | 13 | 0.0 | 0.033 | 6.6 | LOS A | 0.1 | 0.8 | 0.47 | 0.66 | 0.47 | 56.3 |
| 9 | R2 | 12 | 0.0 | 13 | 0.0 | 0.033 | 9.9 | LOS A | 0.1 | 0.8 | 0.47 | 0.66 | 0.47 | 55.9 |
| Approach | | 24 | 0.0 | 25 | 0.0 | 0.033 | 8.2 | LOS A | 0.1 | 0.8 | 0.47 | 0.66 | 0.47 | 56.1 |
| West: The Bucketts Way | | | | | | | | | | | | | | |
| 10 | L2 | 48 | 0.0 | 51 | 0.0 | 0.193 | 7.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.09 | 0.00 | 73.2 |
| 11 | T1 | 307 | 0.0 | 323 | 0.0 | 0.193 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.09 | 0.00 | 78.3 |
| Approach | | 355 | 0.0 | 374 | 0.0 | 0.193 | 1.0 | NA | 0.0 | 0.0 | 0.00 | 0.09 | 0.00 | 77.5 |
| All Vehicles | | 631 | 0.0 | 664 | 0.0 | 0.193 | 1.5 | NA | 0.2 | 1.2 | 0.05 | 0.12 | 0.05 | 75.9 |

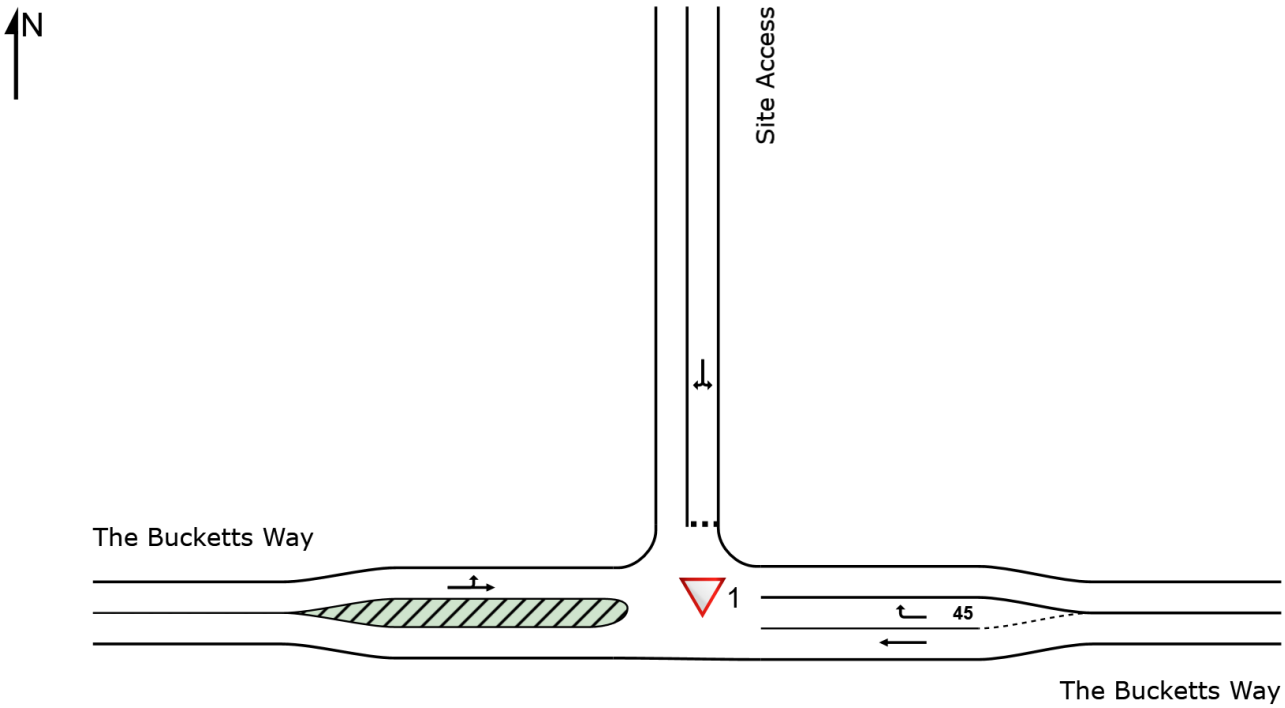
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS 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 road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# SITE LAYOUT

## Site: 1 [The Bucketts Way & Site Access (Site Folder: 10 Year Future)]

The Bucketts Way and Site Access, Taree South
Site Category: Residential Subdivision
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



# MOVEMENT SUMMARY

## Site: 1 [The Bucketts Way & Site Access AM Peak (Site Folder: 10 Year Future)]

The Bucketts Way and Site Access, Taree South
Site Category: Residential Subdivision
Give-Way (Two-Way)

**Vehicle Movement Performance**

| Mov ID | Turn | INPUT VOLUMES [ Total veh/h | HV ] % | DEMAND FLOWS [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh. veh | Dist ] m | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: The Bucketts Way | | | | | | | | | | | | | | |
| 5 | T1 | 263 | 0.0 | 277 | 0.0 | 0.143 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 79.9 |
| 6 | R2 | 12 | 0.0 | 13 | 0.0 | 0.015 | 9.4 | LOS A | 0.1 | 0.4 | 0.56 | 0.70 | 0.56 | 62.1 |
| Approach | | 275 | 0.0 | 289 | 0.0 | 0.143 | 0.4 | NA | 0.1 | 0.4 | 0.02 | 0.03 | 0.02 | 78.9 |
| North: Site Access | | | | | | | | | | | | | | |
| 7 | L2 | 48 | 0.0 | 51 | 0.0 | 0.220 | 8.9 | LOS A | 0.8 | 5.7 | 0.70 | 0.89 | 0.73 | 52.6 |
| 9 | R2 | 48 | 0.0 | 51 | 0.0 | 0.220 | 16.8 | LOS B | 0.8 | 5.7 | 0.70 | 0.89 | 0.73 | 52.2 |
| Approach | | 96 | 0.0 | 101 | 0.0 | 0.220 | 12.8 | LOS A | 0.8 | 5.7 | 0.70 | 0.89 | 0.73 | 52.4 |
| West: The Bucketts Way | | | | | | | | | | | | | | |
| 10 | L2 | 12 | 0.0 | 13 | 0.0 | 0.339 | 7.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 74.3 |
| 11 | T1 | 616 | 0.0 | 648 | 0.0 | 0.339 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 79.5 |
| Approach | | 628 | 0.0 | 661 | 0.0 | 0.339 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 79.4 |
| All Vehicles | | 999 | 0.0 | 1052 | 0.0 | 0.339 | 1.5 | NA | 0.8 | 5.7 | 0.07 | 0.10 | 0.08 | 75.5 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

## Site: 1 [The Bucketts Way & Site Access PM Peak (Site Folder: 10 Year Future)]

The Bucketts Way and Site Access, Taree South
Site Category: Residential Subdivision
Give-Way (Two-Way)

**Vehicle Movement Performance**

| Mov ID | Turn | INPUT VOLUMES [ Total veh/h | HV ] % | DEMAND FLOWS [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh. veh | Dist ] m | Prop. Que | Effective Stop Rate | Aver. No. Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East: The Bucketts Way | | | | | | | | | | | | | | |
| 5 | T1 | 302 | 0.0 | 318 | 0.0 | 0.164 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 79.9 |
| 6 | R2 | 48 | 0.0 | 51 | 0.0 | 0.048 | 8.7 | LOS A | 0.2 | 1.4 | 0.51 | 0.71 | 0.51 | 62.9 |
| Approach | | 350 | 0.0 | 368 | 0.0 | 0.164 | 1.2 | NA | 0.2 | 1.4 | 0.07 | 0.10 | 0.07 | 77.0 |
| North: Site Access | | | | | | | | | | | | | | |
| 7 | L2 | 12 | 0.0 | 13 | 0.0 | 0.046 | 7.3 | LOS A | 0.2 | 1.1 | 0.58 | 0.75 | 0.58 | 54.4 |
| 9 | R2 | 12 | 0.0 | 13 | 0.0 | 0.046 | 13.6 | LOS A | 0.2 | 1.1 | 0.58 | 0.75 | 0.58 | 54.1 |
| Approach | | 24 | 0.0 | 25 | 0.0 | 0.046 | 10.5 | LOS A | 0.2 | 1.1 | 0.58 | 0.75 | 0.58 | 54.3 |
| West: The Bucketts Way | | | | | | | | | | | | | | |
| 10 | L2 | 48 | 0.0 | 51 | 0.0 | 0.272 | 7.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.06 | 0.00 | 73.5 |
| 11 | T1 | 454 | 0.0 | 478 | 0.0 | 0.272 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.06 | 0.00 | 78.7 |
| Approach | | 502 | 0.0 | 528 | 0.0 | 0.272 | 0.7 | NA | 0.0 | 0.0 | 0.00 | 0.06 | 0.00 | 78.1 |
| All Vehicles | | 876 | 0.0 | 922 | 0.0 | 0.272 | 1.2 | NA | 0.2 | 1.4 | 0.04 | 0.10 | 0.04 | 76.8 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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NA: 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 road movements.
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Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.