Bayview Subdivision – Stage 11

Traffic Impact Assessment

Dover Investments Pty Ltd

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Definitions

Abbreviation	Definition
AADT	Annual Average Daily Traffic
AGTM	Austroads Guide to Traffic Management
ABS	Australian Bureau of Statistics
Byrne	Byrne Consultants
CoD	City of Darwin
DA	Development Application
DIPL	Department of Infrastructure and Planning
DoS	Degree of Saturation
Dover	Dover Investments Pty Ltd
LMR	Low-Medium Density Residential
LoS	Level of Service
LR	Low Density Residential
PB	Parsons Brinkerhoff
TIA	Traffic Impact Assessment

1 Introduction

1.1 Project Background

Dover Investments Pty Ltd (Dover) has engaged Byrne Consultants (Byrne) to prepare a Traffic Impact Assessment (TIA) for the proposed development of Stage 11 within the Bayview Subdivision located in Darwin, Northern Territory. Dover have previously completed 10 stages to date with Stage 11 consisting of three (3) new development lots, those being:

1. Lot A – 14 x Low Density Residential (LR) lots
2. Lot B – 2 x LR lots (split existing lot)
3. Lot C – 3 x LR lots. 2 x Low-Medium Density Residential (LMR) lots

From the 2021 Census, Australian Bureau of Statistics (ABS), Bayview consists of approximately 672 habited properties containing 1,702 people within the suburb.

The locations of these development lots are identified in Figure 1.1.

Figure 1.1 – Site Overview ***(source: Google)***

The previous traffic impact study undertaken for the project area include:

1. *Assessment for Traffic Access for Bayview Stage 10*, Parsons Brinkerhoff (PB), June 2003

The information provided in this report has been reviewed for any relevant background information.

1.2 Purpose & Methodology

The purpose of this report is to prepare a TIA report to support the Development Application (DA) submission and identify any traffic generation impacts caused by the proposed development. Comparison between the existing traffic conditions and developed traffic conditions have been undertaken with the assessment scope including the following:

1. Review of background traffic information and previous reporting
2. Carry out peak hour (AM / PM) traffic count surveys at the following intersections
    i. Stoddard Dr / Tiger Brennan Dr / Woolner Rd
    ii. Stoddard Dr / Tiger Brennan Dr
    iii. Stoddard Dr / Fanning Dr
    iv. Stoddard Dr / Bayview Blvd
3. Calculate future development traffic potential and its impacts to the existing intersections (if any)
4. Calculate peak hour traffic trip generation by the proposed development and directional splits at the existing intersections.
5. Calculate traffic growth rates for the AM/PM peak hour movements at the intersections.
6. Undertake SIDRA intersection analysis for existing case (2022) and development cases (2027 and 2032) cases for the AM /PM peak hours.
7. Identify any upgrade requirements to intersections as a direct result of the development traffic generated by the proposed development (if any).

2 Existing Operations

2.1 Overview

The Bayview residential and development area is connected to Tiger Brennan Drive via Stoddart Drive, as per Figure 1.1 above, in which the 4 highlighted intersections will be the focus of this study including:

1. Stoddard Dr / Tiger Brennan Dr / Woolner Rd
2. Stoddard Dr / Tiger Brennan Dr
3. Stoddard Dr / Fanning Dr
4. Stoddard Dr / Bayview Blvd

2.2 Background Traffic Data

2.2.1 Parsons Brinckerhoff, 2003 Study

An *Assessment of Traffic Access for Bayview Stage 10* report was developed by Parsons Brinckerhoff in 2003. This study assessed the stage 10 expansion of 55 additional dwellings. While this was a similar traffic impact study, the development and information presented in the report is since outdated and was not used for any future assessments as part of this report. Refer to Appendix A for the full report.

2.2.2 Census Growth Data

A review was undertaken of the latest census data to further understand the Bayview subdivision population statistics. A population comparison was made between the 2016 and the 2021 census which outlined a population increase of 1.1% over 5 years. This increase is likely the result of larger occupancies within the existing properties as the Bayview subdivision has not increased in total size (i.e. no new

developments). To account for this potential increased occupancy growth, a 0.2% linear background growth rate was adopted for the Bayview subdivision.

2.2.3 Department of Infrastructure and Planning (DIPL) Traffic Counts

Within the project area, all local roads are controlled by the City of Darwin (CoD) aside from Tiger Brennan Drive which is a Department of Infrastructure Planning, and Logistics (DIPL) controlled asset. DIPL's latest *Annual Traffic Report, 2021* was reviewed for recent traffic volume counts along Tiger Brennan Drive. The closest traffic count sites along Tiger Brennan Drive are outlined in Figure 2.1. Refer to Appendix B for output from the *Annual Traffic Report, 2021*.

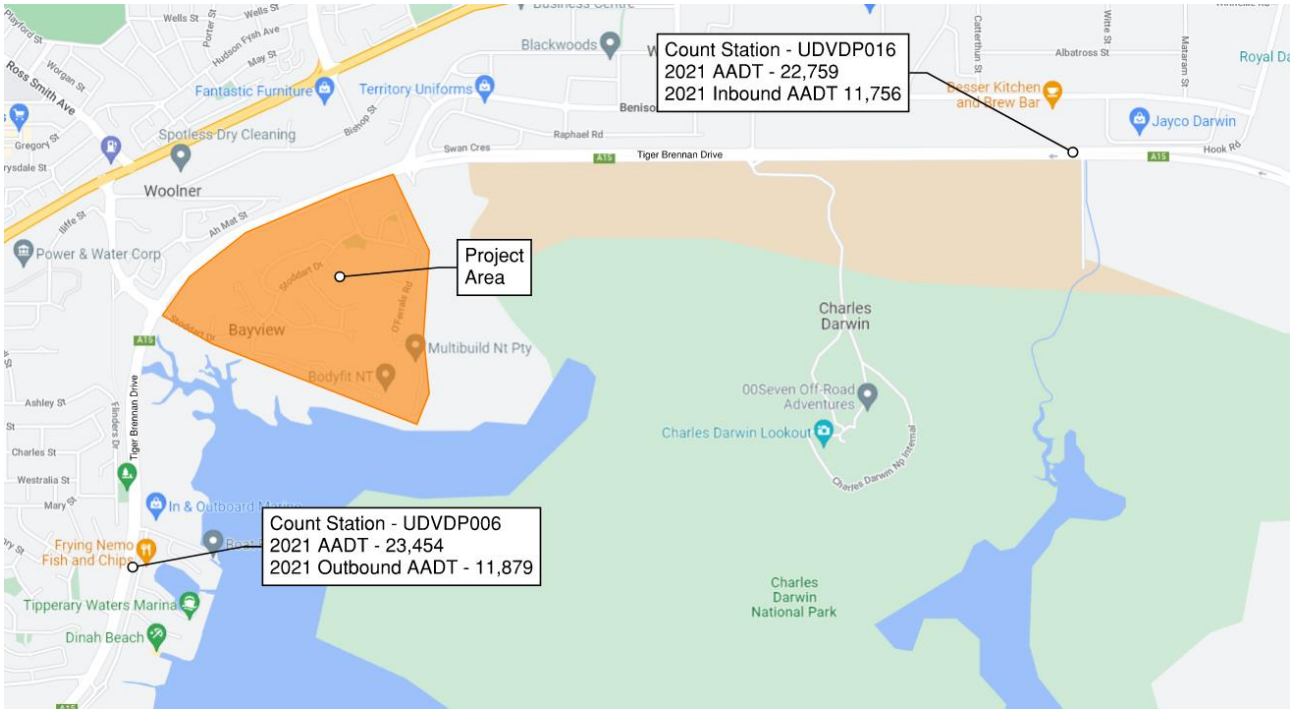

Figure 2.1 – Tiger Brennan Traffic Count Sites ***(source: Google)***

This traffic count information is available annually from 2012-2021 and has been assessed to further understand the approximate traffic growths rate for the traffic catchment.

A large fluctuation was identified for the 2012 data and this was excluded from the assessment. This traffic count data was tabulated and a line of best fit was applied to understand the potential future growth. This line of best fit was nominated as linear due to several increases and decreases in traffic counts throughout the years, making an exponential model un-realistic. The three (3) scenarios for different linear growth lines were reviewed and compared as outlined in Figure 2.2 and Figure 2.3 below:

- Scenario 1 - DIPL traffic data linear line of best fit - Purple Line
- Scenario 2 - 1.5% growth (inbound), 2.0% growth (outbound) - Blue Line
- Scenario 3 - 3.0% growth - Grey Line

From this analysis, the blue line growth rates were adopted:

- Inbound – Linear growth rate of 1.5% adopted
- Outbound – Linear growth rate of 2.0% adopted

These adopted growth rates continue from the last available traffic count AADT (2021) and both exceed the existing linear growth rate model (purple line).

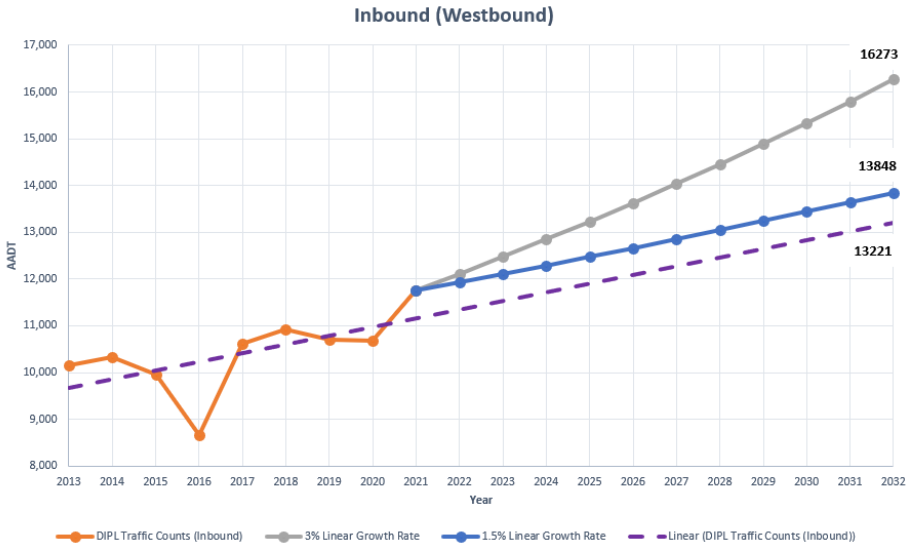

Figure 2.2 **– Tiger Brennan Drive Inbound Traffic Growth Assessment**

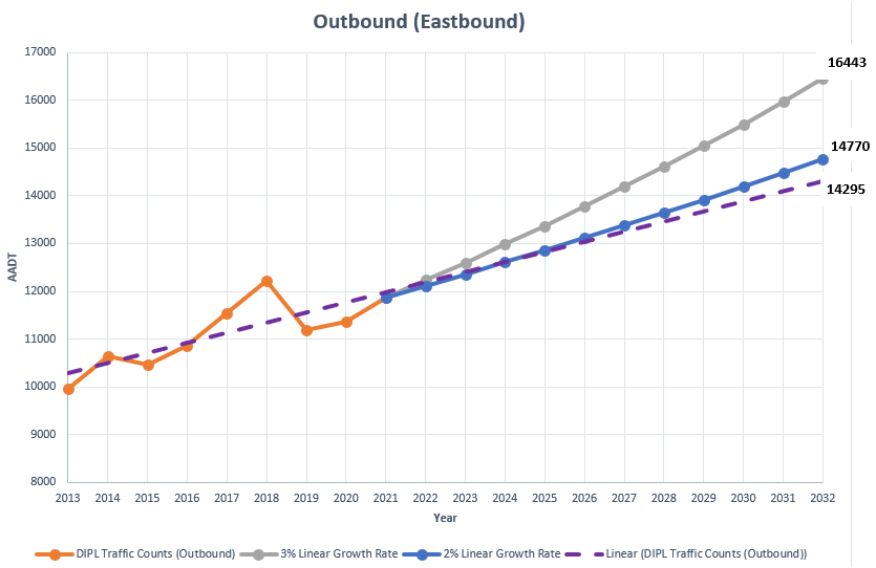

Figure 2.3 – Tiger Brennan Drive Outbound Traffic Growth Assessment

In addition, it should be noted that Tiger Brennan Drive underwent a major capacity upgrade in 2016 with comparison images (before and after) evident in Figure 2.4 below. This is likely to account for some of the traffic fluctuations around these years, particularly for the inbound data.

Figure 2.4 – Tiger Brennan Drive Upgrade Comparison Images (*source: Nearmap*)

2.2.4 City of Darwin Traffic Counts

Recent traffic count information was received by the City of Darwin within the project area. This included the following counting location, year and AADT:

- Stoddart Drive
  - #47, Aug 2020, 1625 Total Vehicles (7-day average)
  - #24, Sep 2016, 2179 Total Vehicles (7-day average)
- Bayview Boulevard
  - #53, Mar 2016, 684 Total Vehicles (7-day average)
  - #49, Mar 2016, 732 Total Vehicles (7-day average)
- Woolner Road
  - Top of Hill, Nov 2021, 6882 Total Vehicles (7-day average)
  - Bottom of Hill, Nov 2021, 6840 Total Vehicles (7-day average)
  - Bishop Street – Brewery Place, Sep 2015, 3642 Southbound Vehicles (7-day average)
  - Stuart highway - Bishop Street, Sep 2015, 3063 Southbound Vehicles (7-day average)

This information was reviewed however, it was difficult to determine any particular growth patterns or vehicle direction splits based on inconsistent information (i.e. Stoddart Drive decreasing in traffic volumes within a 5-year span, with counts occurring at slightly different locations).

This information was noted but ultimately disregarded in favour of the manual peak hour traffic counts collected. As the DIPL data had a constant and longer collection time, the growth rates along Tiger Brennan Drive have been adopted for Woolner Road for a consistent assessment approach. Refer to Appendix C for CoD traffic count reports.

2.2.5 Adopted Growth Rates

From reviewing the information outlined above, the following linear growth rates in Figure 2.5 have been adopted for this impact assessment.

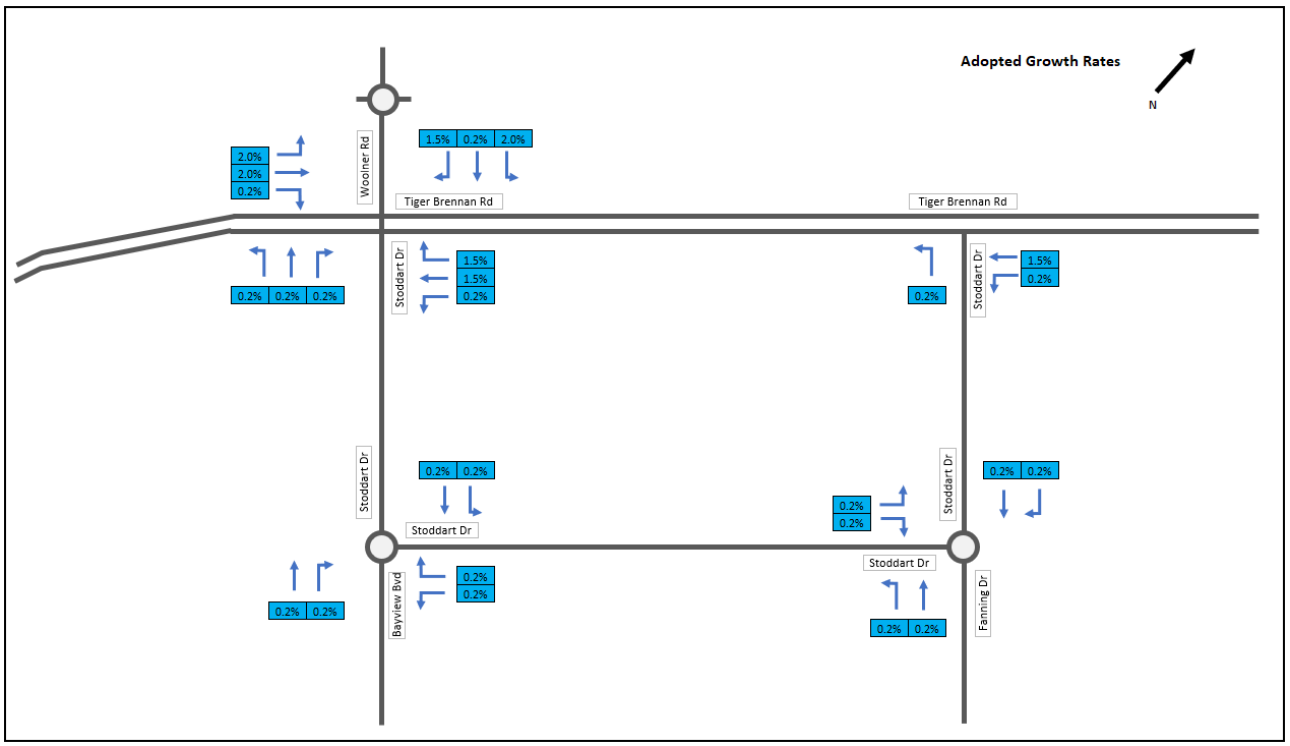

Figure 2.5 – Adopted Project Growth Rates

2.3 Traffic Survey Information

2.3.1 Intersection Traffic Counts

Byrne have conducted intersection traffic surveys for the peak hour traffic volumes (AM and PM) at each of the four (4) key intersections. These counts were undertaken on 1 day for each site, over a 2-hour AM/PM peak period and included counts of heavy vehicles and identified pedestrians / cyclists. The AM peak hour period surveyed was between 7:00AM – 9:00AM and the PM period between 4:00PM – 6:00PM. These volumes for each site are summarised in Figure 2.6 below with the heavy vehicle counts summarised in Figure 2.7.

For the full traffic count survey information, refer to Appendix D of this report.

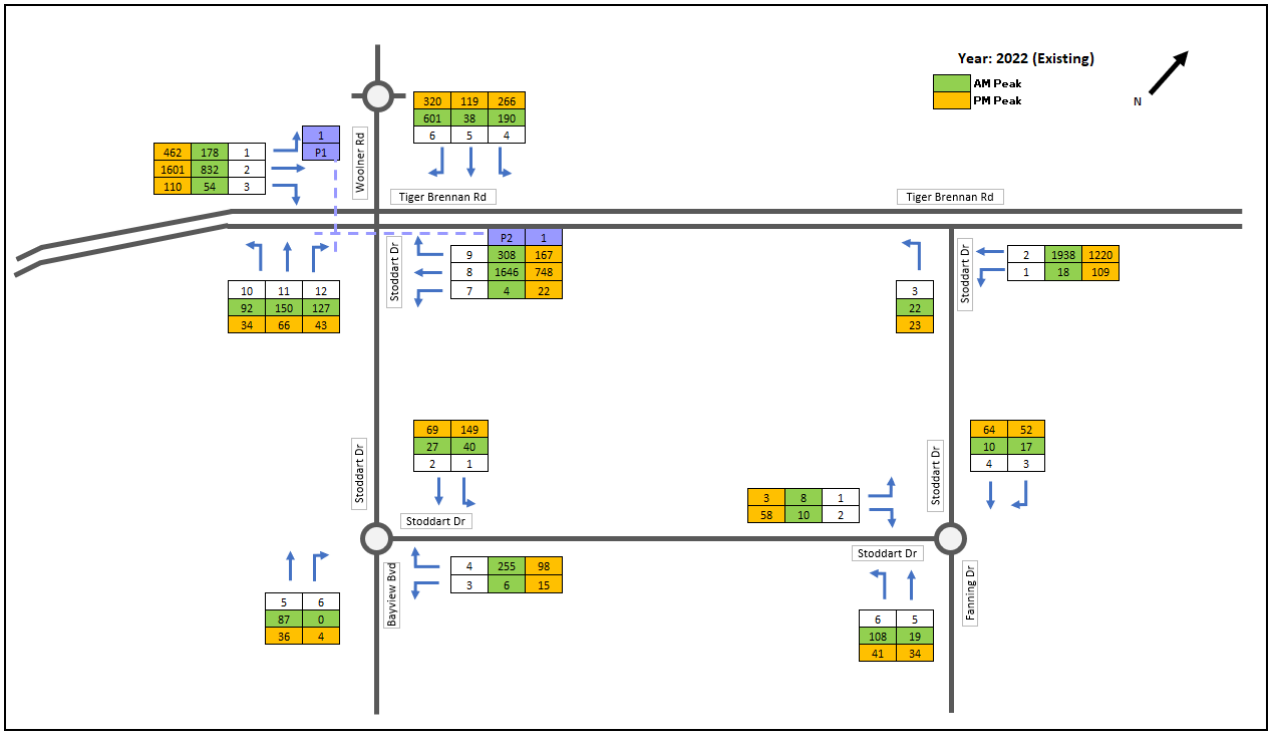

Figure 2.6 – Traffic Count Information Summary

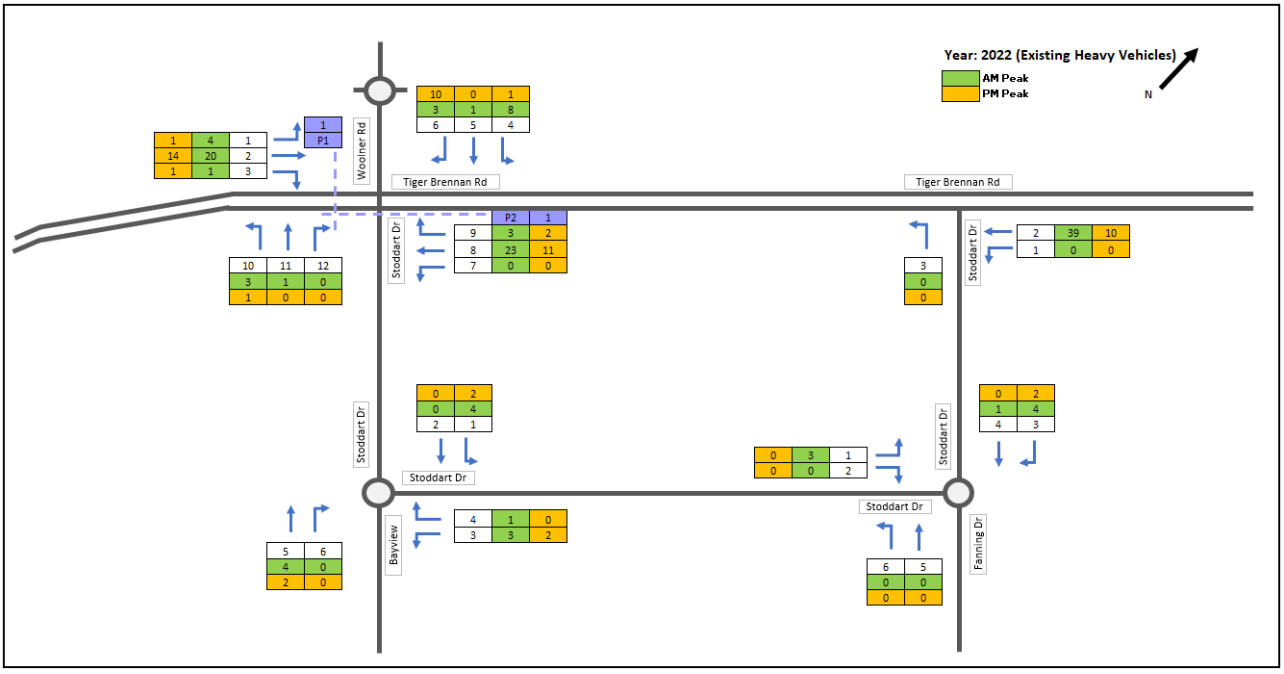

Figure 2.7 – Traffic Count Heavy Vehicle Summary

2.3.2 Traffic Movement Directional Splits

From the traffic count information, directional splits were calculated for any generated development traffic focussing on entering / exiting from Fanning Drive and how those volumes will be dispersed over the four (4) key intersections. These splits are summarised in Figure 2.8.

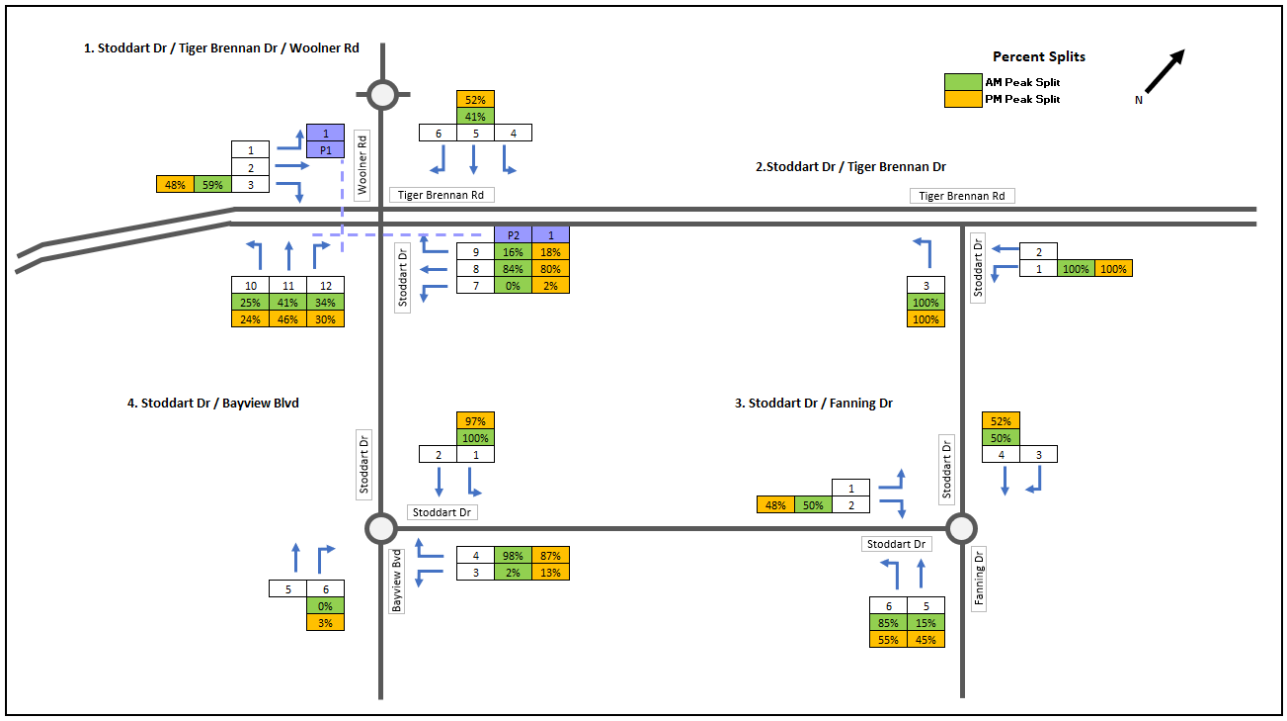

Figure 2.8 – Development Traffic Generation Splits

3 Development Traffic

3.1 Development Traffic Generation

The proposed development consists of 19 LR lots and 2 LMR lots. The LMR lots are assumed to account for approximately 8 individual residences, for a total of 28 residences. A trip generation factor of 10.7 was used per residency in accordance with *Austroads Guide to Traffic Management* (AGTM P12, 2020, Appendix D.1 Low Density Sydney). This is similar to the previous study conducted by PB who used a trip generation factor of 10 per residency. Using a nominated 10% AADT for peak hour flows, the total trips calculated during a peak hour period for the proposed development is estimated to be 31 vehicles. This is outlined in Table 3.1.

Table 3.1 – Development Trip Generation

Development	Equivalent LR Lots	Development Daily Trip Generation (veh trips)	Development Peak Hour Trip Generation (10%) (veh trips)
Lot A – 14 x LR lots	14	150	15
Lot B – 2 x LR lots	2	22	3
Lot C – 3 x LR lots. 2 x LMR lots (duplex + 7 townhouses)	12	129	13
TOTAL	**28**	**301**	**31**

3.2 Development Traffic Distribution

With the development traffic generation estimated, these peak hour figures were then applied to the 4 intersections throughout the road network assessment area. Starting with Intersection 3 (Fanning Drive / Stoddart Drive), the 31 generated trips were distributed using the traffic movement splits identified in Section 2.3.2. The results are summarised in Figure 3.1.

In addition, Figure 3.2 outlines the percent increase for the generated development traffic for each vehicle movement. All intersections exhibit at least 1 leg with an increase of 5.0% or greater, in which assessment of the intersection is required. The development does not anticipate an increase of heavy vehicle volumes within the subdivision. It is anticipated that an increase in Equivalent Standard Axels (ESA) will be less than 5.0% and as such, no existing pavement assessment has been conducted.

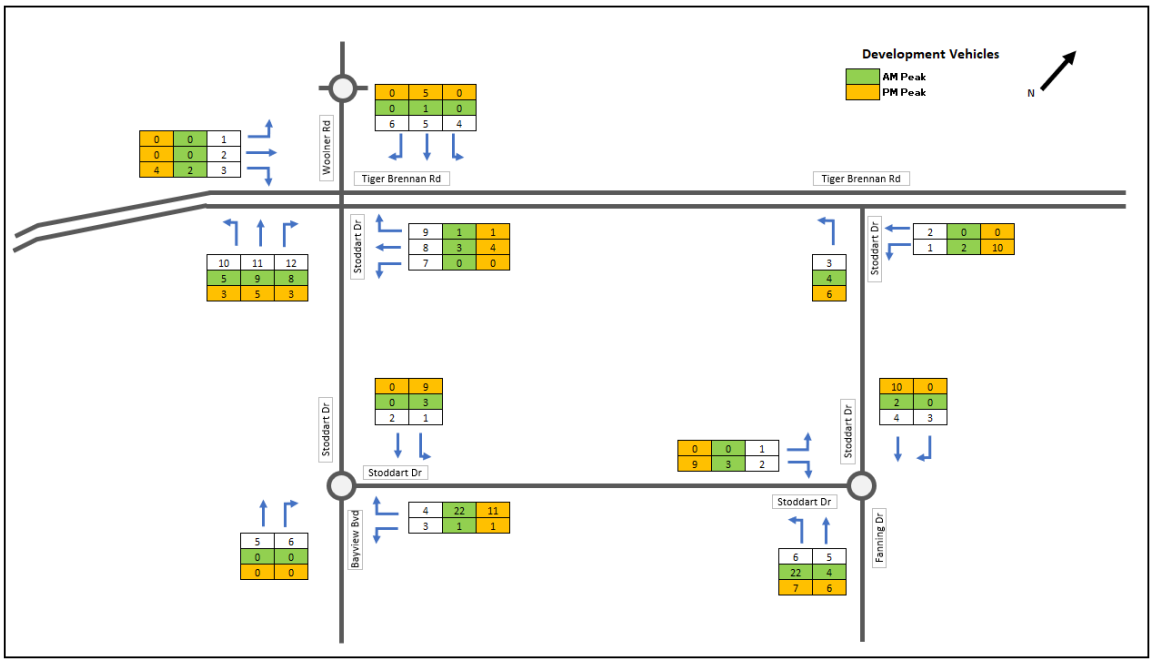

Figure 3.1 – Development Generated Vehicle Movements (2022)

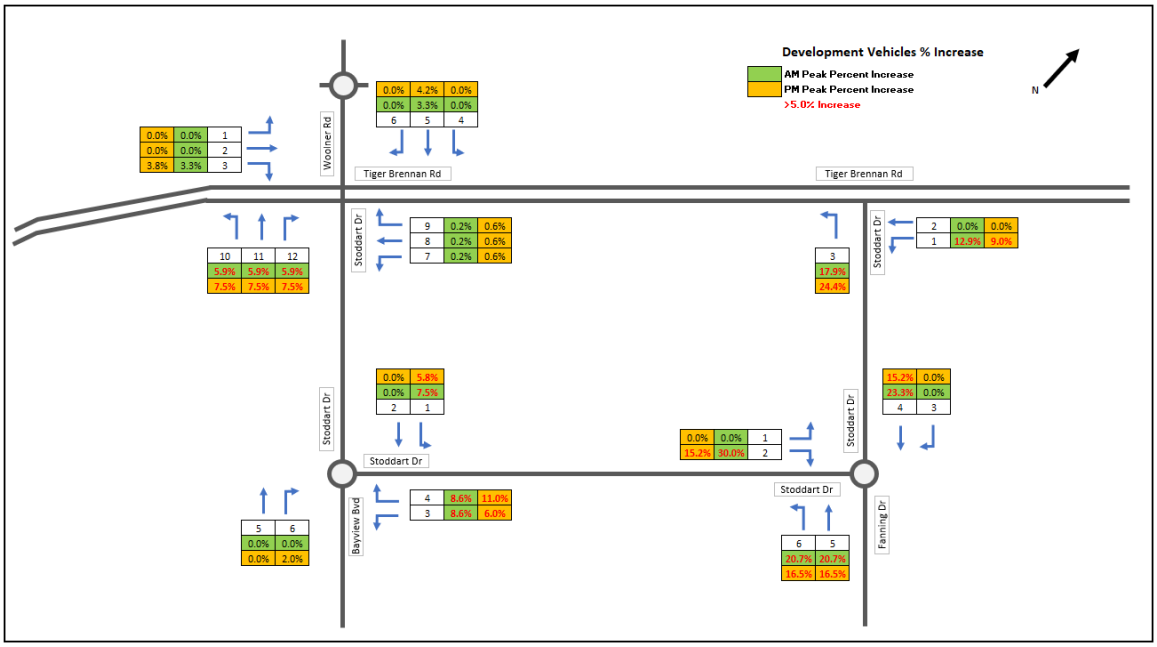

Figure 3.2 – Development Generated Vehicle Movement Percent Increases (2022)

4 Traffic Analysis

4.1 Growth Scenarios & Intersection Analysis

With the existing traffic counts, selected growth rates and estimated development vehicle generation, the following developed traffic scenarios were analysed:

- 2022 Background, AM and PM peak, Figure 2.6
- 2022 Background + Development, AM and PM peak, Figure 4.1
- 2027 Background + Development, AM and PM peak, Figure 4.2
- 2032 Background + Development, AM and PM peak, Figure 4.3

These traffic volume values are tabulated in Appendix E including heavy vehicle volumes. The scenarios were then modelled in SIDRA Intersection 9.0 software as separate intersections discussed in the following sections. Movement summary SIDRA modelling results for each intersection is compiled in Appendix F.

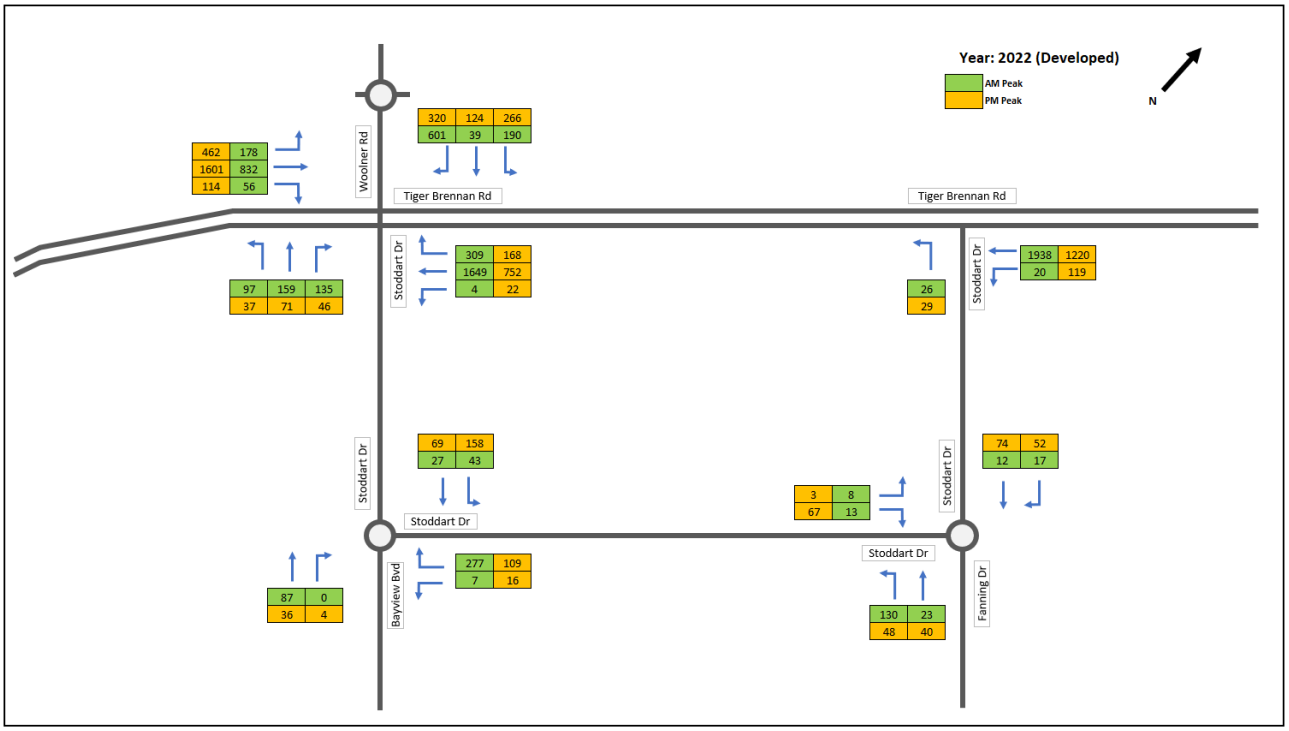

Figure 4.1 – 2022 Background + Development Peak Hours (Base Case)

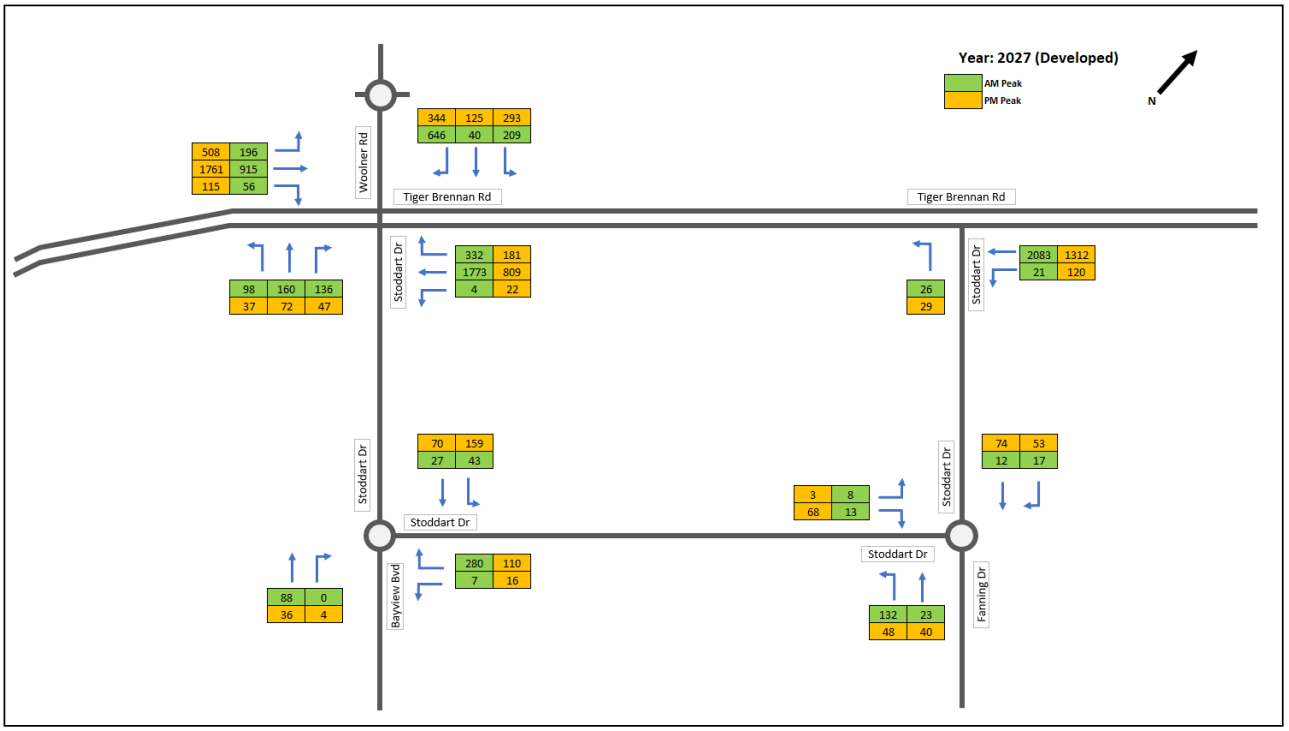

Figure 4.2 – 2027 Background + Development Peak Hours (5-Year Design Horizon)

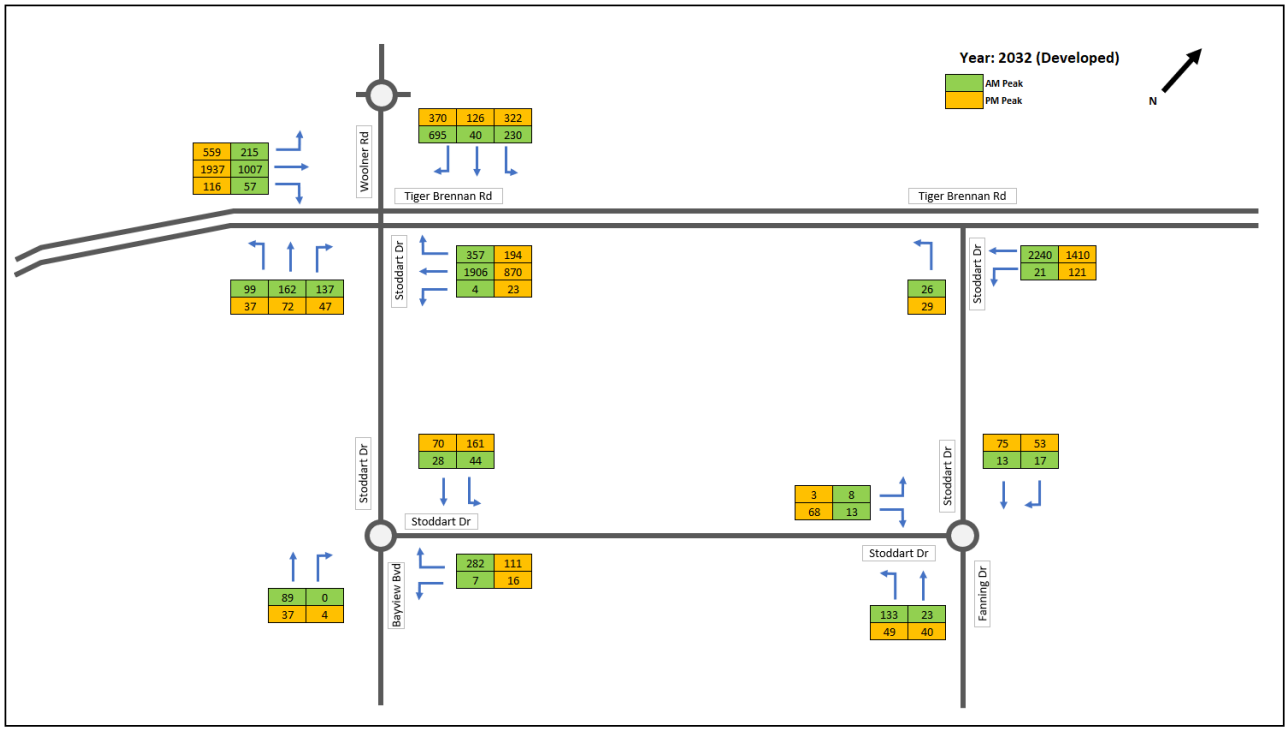

Figure 4.3 – 2032 Background + Development Peak Hours (10-Year Design Horizon)

4.1.1 SIDRA Intersection 1 Stoddard Dr / Tiger Brennan Dr / Woolner Rd

Intersection 1 (Stoddard Dr / Tiger Brennan Dr / Woolner Rd) is a major signalised intersection within the study area exhibiting large amount of lane configurations and complexities as per Figure 4.4. A fixed cycle time of 120 seconds was adopted to allow simpler comparison between the SIDRA models for the purposes of this study. In addition to the growth scenarios outlined above, the background traffic for 2027 and 2032 were modelled separately to further analyse the effect of the development traffic on the intersection.

An additional 31 vehicles are estimated to travel through during peak times and the modelling showed no capacity concerns. In comparing the Existing 2022 and the Developed 2022 volumes, the impact on this intersection is relatively minor. The majority of the intersection worsening is identified by the background growth along Tiger Brennan Drive and Woolner Road. Table 4.1, Table 4.2 and Table 4.3 outline the Degree of Saturation, Average Delay and Queue Length for this intersection.

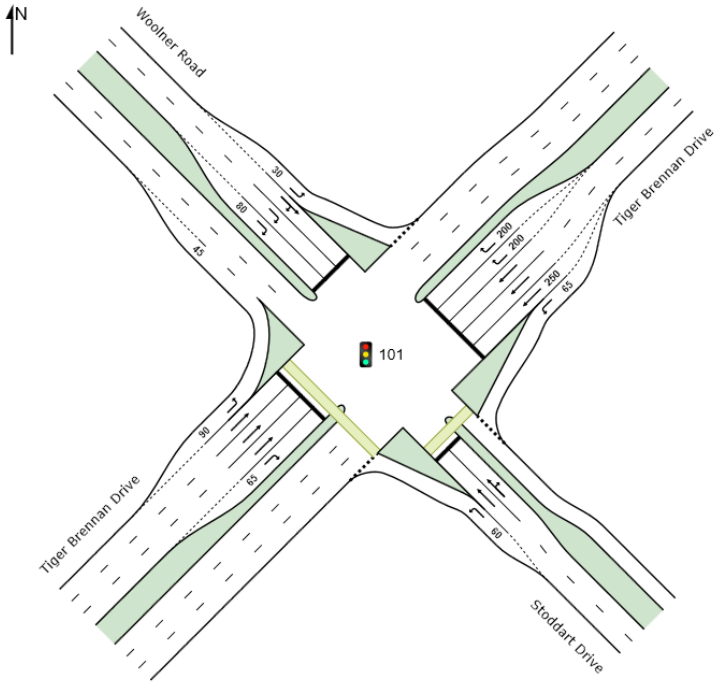

Figure 4.4 – Intersection 1 Modelled SIDRA Layout

Table 4.1 – Intersection 1 Degree of Saturation

AM Peak Degree of Saturation						
Approach	E 2022	B + D 2022	B 2027	B + D 2027	B 2032	B + D 2032
SouthEast: Stoddart Drive	0.767	0.751	0.777	0.821	0.857	0.829
NorthEast: Tiger Brennan Drive	0.753	0.756	0.809	0.812	0.87	0.872
NorthWest: Woolner Road	0.75	0.751	0.813	0.815	0.841	0.842
SouthWest: Tiger Brennan Drive	0.372	0.38	0.41	0.41	0.451	0.46
PM Peak Degree of Saturation						
Approach	E 2022	B + D 2022	B 2027	B + D 2027	B 2032	B + D 2032
SouthEast: Stoddart Drive	0.6	0.644	0.613	0.663	0.619	0.663
NorthEast: Tiger Brennan Drive	0.477	0.443	0.561	0.517	0.661	0.604
NorthWest: Woolner Road	0.613	0.621	0.703	0.712	0.757	0.766
SouthWest: Tiger Brennan Drive	0.628	0.613	0.691	0.684	0.767	0.761

Table 4.2 – Intersection 1 Average Delay

AM Peak Average Delay (s)						
Approach	**E 2022**	**B + D 2022**	**B 2027**	**B + D 2027**	**B 2032**	**B + D 2032**
SouthEast: Stoddart Drive	52.1	51.1	52.9	54.6	57.5	55.8
NorthEast: Tiger Brennan Drive	37.5	38.3	39.5	39.6	44.7	47.5
NorthWest: Woolner Road	46.4	46.4	48.7	49	49.9	50
SouthWest: Tiger Brennan Drive	25.1	25.8	25.3	25.4	25.7	26.3
PM Peak Average Delay (s)						
Approach	**E 2022**	**B + D 2022**	**B 2027**	**B + D 2027**	**B 2032**	**B + D 2032**
SouthEast: Stoddart Drive	53.3	52.9	52.9	53.3	52.9	53.5
NorthEast: Tiger Brennan Drive	25.9	26.2	25.4	25.7	25.6	25.7
NorthWest: Woolner Road	39.9	40	42.3	42.5	44.2	44.6
SouthWest: Tiger Brennan Drive	21	21.6	20.6	21.1	20.8	21.4

Table 4.3 – Intersection 1 Queue Length (m)

AM Peak Queue Length (m)						
Approach	**E 2022**	**B + D 2022**	**B 2027**	**B + D 2027**	**B 2032**	**B + D 2032**
SouthEast: Stoddart Drive	64.3	67.5	65.5	70.8	69.5	71.9
NorthEast: Tiger Brennan Drive	201.1	204.6	227.3	228.4	269.4	282
NorthWest: Woolner Road	99.9	100.2	113.1	113.8	125.6	125.9
SouthWest: Tiger Brennan Drive	84.3	85.5	94.4	94.4	106.1	107.7
PM Peak Queue Length (m)						
Approach	**E 2022**	**B + D 2022**	**B 2027**	**B + D 2027**	**B 2032**	**B + D 2032**
SouthEast: Stoddart Drive	25.4	27.4	26	28.4	26.3	28.4
NorthEast: Tiger Brennan Drive	60.9	62.3	64	65.6	68.4	70.2
NorthWest: Woolner Road	64.2	65.2	72	73.2	79.4	80.8
SouthWest: Tiger Brennan Drive	171.1	174.7	211.3	209	243.5	249.7

4.1.2 SIDRA Intersection 2 Stoddard Dr / Tiger Brennan Dr

Intersection 2 (Stoddard Dr / Tiger Brennan Dr) is an unsignalised left in / left out intersection comprising of left slip lanes as per Figure 4.5. In comparing the Existing 2022 and the Developed 2022 volumes, the impact on this intersection is relatively minor. Table 4.4, Table 4.5 and Table 4.6 outline the Degree of Saturation, Average Delay and Queue Length for this intersection.

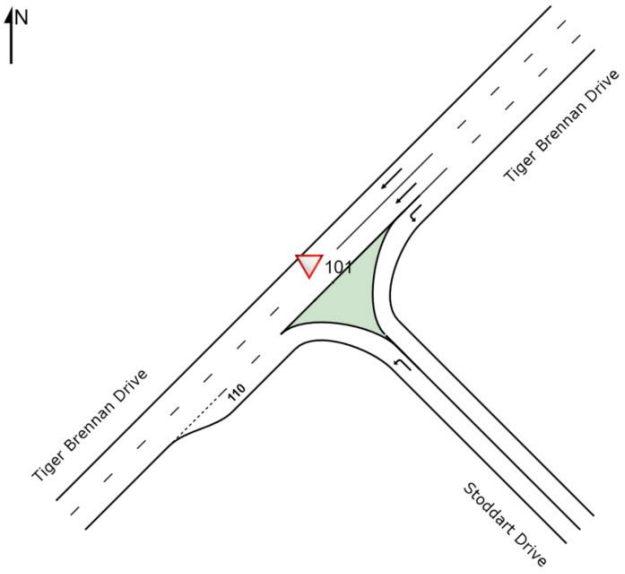

Figure 4.5 – Intersection 2 Modelled SIDRA Layout

Table 4.4 – Intersection 2 Degree of Saturation

Approach	AM Peak Degree of Saturation			PM Peak Degree of Saturation		
	E 2022	B + D 2022	B + D 2032	E 2022	B + D 2022	B + D 2032
SouthEast: Stoddart Drive	0.012	0.015	0.015	0.013	0.016	0.017
NorthEast: Tiger Brennan Drive	0.524	0.524	0.606	0.328	0.328	0.379

Table 4.5 – Intersection 2 Average Delay

Approach	AM Peak Average Delay (s)			PM Peak Average Delay (s)		
	E 2022	B + D 2022	B + D 2032	E 2022	B + D 2022	B + D 2032
SouthEast: Stoddart Drive	8.8	8.9	10.3	7	7	7.4
NorthEast: Tiger Brennan Drive	4.4	4.4	4.4	4.3	4.3	4.4

Table 4.6 – Intersection 2 Queue Length (m)

Approach	AM Peak Queue Length (m)			PM Peak Queue Length (m)		
	E 2022	B + D 2022	B + D 2032	E 2022	B + D 2022	B + D 2032
SouthEast: Stoddart Drive	0	0	0	0	0	0
NorthEast: Tiger Brennan Drive	0	0	0	0	0	0

4.1.3 SIDRA Intersection 3 Stoddard Dr / Fanning Dr

Intersection 3 (Stoddard Dr / Fanning Dr) is three-legged roundabout as per Figure 4.6. In comparing the Existing 2022 and the Developed 2022 volumes, the impact on this intersection is relatively minor. Table 4.7, Table 4.8 and Table 4.9 outline the Degree of Saturation, Average Delay and Queue Length for this intersection.

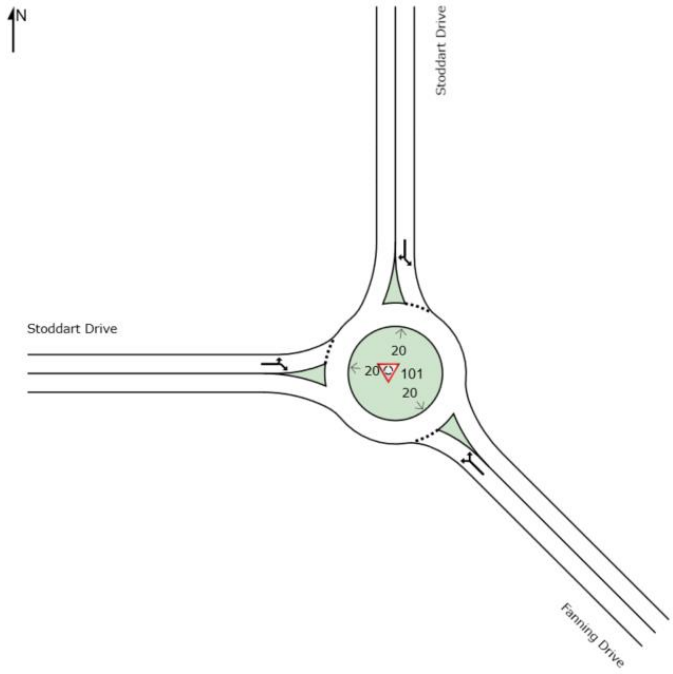

Figure 4.6 – Intersection 3 Modelled SIDRA Layout

Table 4.7 – Intersection 3 Degree of Saturation

Approach	AM Peak Degree of Saturation			PM Peak Degree of Saturation		
	E 2022	D 2022	D 2032	E 2022	D 2022	D 2032
SouthEast: Fanning Drive	0.089	0.106	0.108	0.059	0.068	0.07
North: Stoddart Drive	0.021	0.023	0.024	0.09	0.099	0.101
West: Stoddart Drive	0.015	0.017	0.018	0.046	0.053	0.055

Table 4.8 – Intersection 3 Average Delay

Approach	AM Peak Average Delay (s)			PM Peak Average Delay (s)		
	E 2022	D 2022	D 2032	E 2022	D 2022	D 2032
SouthEast: Fanning Drive	4.4	4.4	4.4	5.7	5.8	5.8
North: Stoddart Drive	7.1	6.9	6.8	6.2	6.1	6.1
West: Stoddart Drive	6.2	6.5	6.5	7.6	7.7	7.7

Table 4.9 – Intersection 3 Queue Length (m)

Approach	AM Peak Queue Length (m)			PM Peak Queue Length (m)		
	E 2022	D 2022	D 2032	E 2022	D 2022	D 2032
SouthEast: Fanning Drive	3	3.7	3.8	2	2.4	2.5
North: Stoddart Drive	0.8	0.9	0.9	3.2	3.5	3.6
West: Stoddart Drive	0.5	0.6	0.7	1.6	1.8	1.9

4.1.4 SIDRA Intersection 4 Stoddard Dr / Bayview Blvd

Intersection 4 (Stoddard Dr / Bayview Blvd) is three-legged roundabout as per Figure 4.7. In comparing the Existing 2022 and the Developed 2022 volumes, the impact on this intersection is relatively minor. Table 4.10, Table 4.11 and Table 4.12 outline the Degree of Saturation, Average Delay and Queue Length for this intersection.

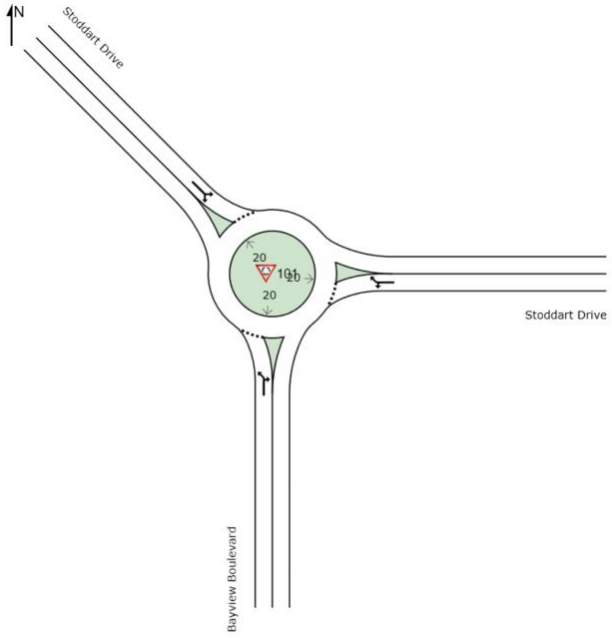

Figure 4.7 – Intersection 4 Modelled SIDRA Layout

Table 4.10 – Intersection 4 Degree of Saturation

Approach	AM Peak Degree of Saturation			PM Peak Degree of Saturation		
	E 2022	D 2022	D 2032	E 2022	D 2022	D 2032
South: Bayview Boulevard	0.085	0.086	0.089	0.034	0.034	0.035
East: Stoddart Drive	0.181	0.196	0.2	0.09	0.098	0.099
NorthWest: Stoddart Drive	0.043	0.044	0.047	0.137	0.142	0.143

Table 4.11 – Intersection 4 Average Delay

Approach	AM Peak Average Delay (s)			PM Peak Average Delay (s)		
	E 2022	D 2022	D 2032	E 2022	D 2022	D 2032
South: Bayview Boulevard	5.1	5.2	5.3	4.7	4.8	4.8
East: Stoddart Drive	7.7	7.7	7.7	7.5	7.5	7.5
NorthWest: Stoddart Drive	5.4	5.3	5.3	5	4.9	4.9

Table 4.12 – Intersection 4 Queue Length (m)

Approach	AM Peak Queue Length (m)			PM Peak Queue Length (m)		
	E 2022	D 2022	D 2032	E 2022	D 2022	D 2032
South: Bayview Boulevard	3.1	3.1	3.3	1.2	1.2	1.2
East: Stoddart Drive	6.7	7.4	7.6	3.1	3.4	3.4
NorthWest: Stoddart Drive	1.7	1.7	1.8	5.3	5.5	5.6

5 Conclusions

A summary of the Traffic Impact Assessment modelling results are as follows:

- Intersection 1 (Stoddard Dr / Tiger Brennan Dr / Woolner Rd) exhibited minor changes in the intersection performance due to the development traffic generation (no notable change). The intersection performance with respect to degree of saturation, average delay and queue length lowered during the 2027 and 2032 scenarios due to the applied background growth factors on Tiger Brennan Drive and Woolner Road, not the development traffic. It is beyond the scope of this TIA to suggest any upgrades to this intersection and impact by the proposed development is minimal.
- Intersection 2 (Stoddard Dr / Tiger Brennan Dr) exhibited a LoS of B and DoS <=0.6 during the 2032 growth scenario (AM / PM) due to growth rates applied to Tiger Brennan Drive. This intersection performs satisfactorily with the proposed development traffic.
- Intersection 3 (Stoddard Dr / Fanning Dr) and Intersection 4 (Stoddard Dr / Bayview Blvd) exhibited a LoS of A and a DoS <=0.2 for all growth scenarios performing satisfactorily with the proposed development traffic.

Appendix A Assessment for Traffic Access, PB, June 2003

Assessment of Traffic Access for Bayview Stage 10

12 June 2003

Bayview Haven Joint Venture

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Appendices

1. Introduction

The existing Bayview development has been designed to accommodate some 750 dwellings in a mix of differing densities, located within 9 discrete residential stages (Figure 1.1). Approved traffic access arrangements to the estate comprise:

- Full movement access via a signalised four way intersection at Tiger Brennan Drive/Woolner Road/Bayview Drive
- A left in-left out arrangement at the intersection of Stoddart Drive with Tiger Brennan Drive, located some 1.25 km to the east of Woolner Road.

During initial development of Bayview, full access was provided via the Stoddart Drive/Tiger Brennan Drive intersection. The design provided for left in/left out access, plus a protected right turn into Stoddart Drive and a left turn deceleration lane from Tiger Brennan Drive into Stoddart Drive. Access at this location was subsequently down graded to the current left in-left out arrangement when access via the intersection at Woolner Road was later constructed. The current access arrangements effectively require:

- All traffic entering Bayview (other than from the east via Tiger Brennan Drive) to use the Woolner Road intersection. In particular, traffic to the eastern precincts of the estate (Stages 7b, 8a, 8b, and 9) must all enter via the Woolner Road intersection, requiring travel via the internal Bayview road network to their destinations. More direct access off Tiger Brennan Drive is not enabled as noted above.

- Traffic exiting Bayview can either travel via the Stoddart Drive/Tiger Brennan Drive (TBD) intersection (left turning vehicles) or via the Woolner Road intersection. The high volume of inbound traffic on TBD in the AM peak period to the CBD constrains the volume of traffic able to exit from Stoddart Drive, with a significant proportion expected to reroute through Bayview to exit via Woolner Road to reduce delay.

This present study was commissioned by the Bayview Joint Venture to undertake an assessment of traffic impacts of a possible extension to the existing Bayview development, in the form of approximately 55 additional dwellings in Stage 10, located in an area abutting the eastern fringe of Bayview, with access via Fanning Drive.

In particular, the study was to:

- Undertake an assessment of access arrangements to Bayview for the existing development, and thence to determine how these might be impacted upon by traffic growth on Tiger Brennan Drive past Bayview.
- Undertake a traffic assessment of the effects of the Stage 10, and thence to determine required changes in access requirements.
- Develop and assess options for upgrading the eastern access to Bayview at the Stoddart Drive/TBD intersection.

Upgrading of the Stoddart Drive/TBD intersection would deliver two main future benefits:

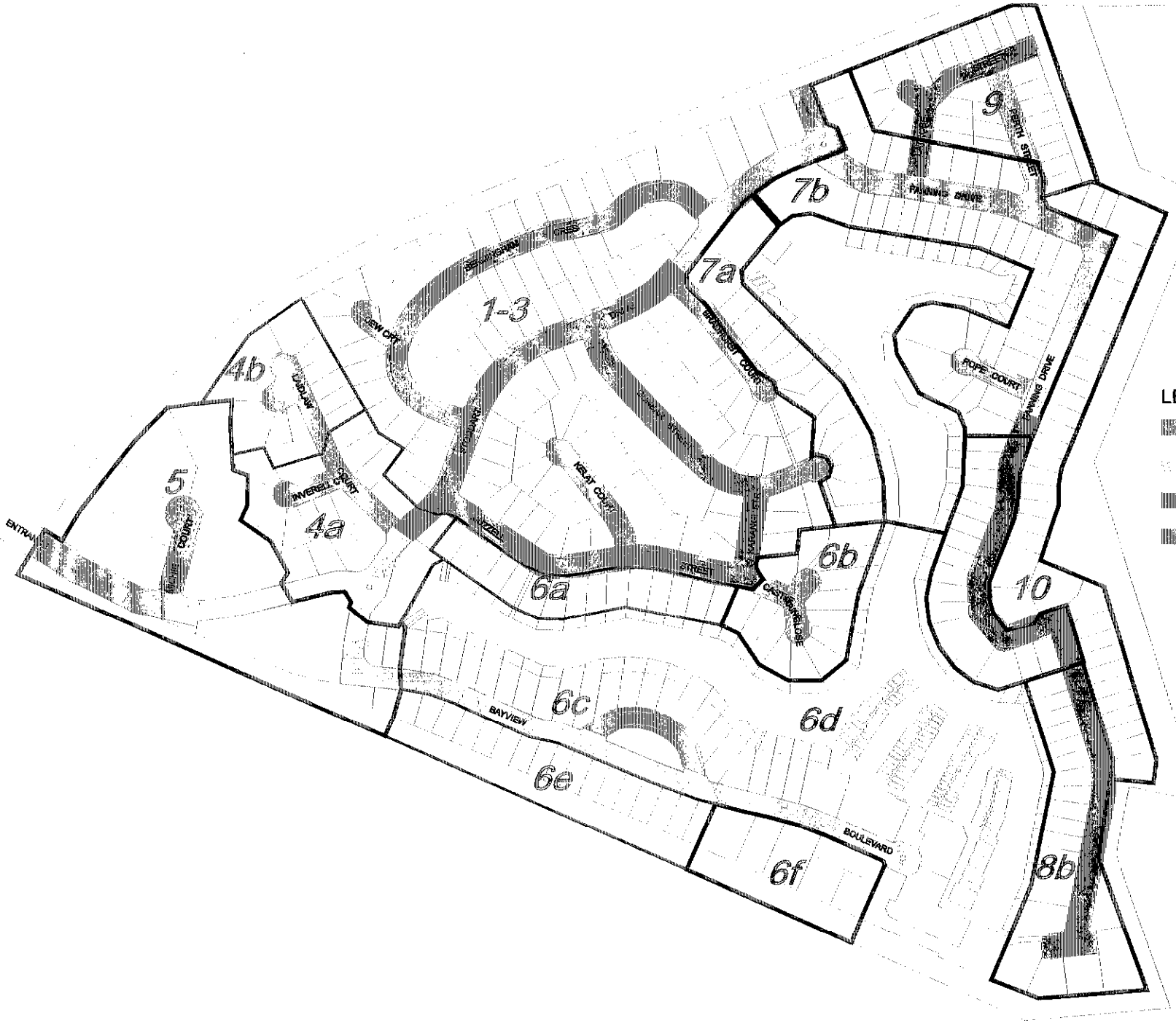
- Reducing the potential scope of and timing for further upgrading of the Woolner Road/TBD/Bayview Drive intersection in response to future development at Bayview.

- Reducing the through traffic impacts of demand generated by existing stages of Bayview to the east (Stages 7b, 8a, 8b, 9), and from the proposed Stage 10 extension, on residents within Bayview, by reducing the volume of through traffic on Stoddart Drive/Bayview Drive. The addition of new traffic from Stage 10 would impinge upon the amenity of existing residents along these existing routes.

1.1 Scope of Work

The tasks to be undertaken under the terms of this traffic study comprise:

- Review traffic forecast assumptions, based on current traffic counts and lot turnoffs.
- Update the traffic forecasting procedure to reflect observed Bayview traffic characteristics.
- Prepare revised traffic forecasts for:
  - The existing Bayview development
  - The addition of the proposed Stage 10
- Update peak hour traffic flow forecasts for Tiger Brennan Drive (to coincide with probable development of Stage 10).
- Undertake an assessment of traffic flows into/out of Bayview for the *status quo* case – maintaining the current form of the Stoddart Drive/TBD intersection.
- Develop alternative improvement options for the Stoddart Drive/TBD intersection.
- Assess the traffic performance of the improvement options, and the consequence of these improvements on the need to further upgrade the Woolner Road/TBD/Bayview Drive intersection.
- Recommend preferred staged improvements for the Stoddart Drive/TBD intersection.



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Bayview Development
Road Hierarchy

FIGURE 1.1

2. Traffic Forecasts

2.1 Introduction

A forecasting procedure for assessing the traffic impacts of developments within Bayview was previously developed by Parsons Brinckerhoff (PB)[1]. This procedure reflected the generation of traffic resulting from the planned distribution of residences throughout the estate, as a function of traffic parameters pertinent to Darwin. They took explicit account of recent AM peak hour traffic modelling work undertaken by PB for the then Department of Transport & Works (DTW) in Darwin[2]. Forecasts of PM peak hour traffic volumes were derived from the AM peak volumes by the application of factors derived from permanent traffic count data sourced from DTW.

The opportunity has been taken as part of this study to update various parameters and assumptions in the forecasting process, based on traffic count data collected in December 2002. The particular updates comprise:

- Revisions to the vehicle trip generation rate for Bayview.
- Minor changes in the assumed distribution of trips between Bayview and other parts of Darwin.
- Updated AM and PM peak hour traffic forecasts for Tiger Brennan Drive.
- Updated forecasts for peak traffic movements to/from Woolner Road.

Section 2.2 describes the updating process, whilst Sections 2.3 to 2.5 report the main elements of the forecasting process and summary traffic forecasts.

2.2 Updating of Traffic Parameters

2.2.1 Trip Generation Rates

Average AM peak hour trip generation rates for Bayview were updated with reference to:

- AM peak entry/exit traffic data collected at Woolner Road (counts undertaken on 12 December 2002).
- Estimates of occupied dwellings within Bayview (provided by the Bayview Joint Venture).
- Allowances for construction related traffic.

An updated average AM peak hour generation rate of 1.0 trips per household was derived from an analysis of entry and exit volumes at Woolner Road, allowing for a proportion of construction traffic, plus allowing for a small exit volume from Stoddart Drive. Coupled with AM peak hour trips comprising 9.0% of daily traffic, this is equivalent to an overall level of 10.0 trips per household per day. The generation rate for PM peak hour trips was retained at a level of 95% of AM peak rates.

1 *Bayview Haven Estate Traffic Impact Study,* prepared by PPK Environment & Infrastructure for Willing and Partners, October 1998.

2 *Darwin – Development of an AM Peak Hour Traffic Forecasting Model,* prepared by PPK Environment & Infrastructure , August 1999 for the Department of Transport & Works.

2.2.2 Trip Destination for Traffic from Bayview

The previous analysis of traffic movements from Bayview to other sectors of Darwin assumed a bias to the CBD and inner Darwin (49% of trips), with 37% of trips to the northern suburbs, and 15% to the east (Winnellie, Palmerston etc). Observations of traffic movements during the AM peak counts on 12 December 2002 suggested a higher proportion of traffic departing from Bayview via Woolner Road to the Parap/Fannie Bay area and to the northern suburbs. The trip distribution pattern was updated to reflect this observation, as noted in section 2.4 below. In particular, the assumed proportion to the northern suburbs was increased from 37% to 47%.

2.2.3 Traffic Growth on Tiger Brennan Drive

Updated estimates of peak hour traffic volumes along Tiger Brennan Drive have been prepared for 2005, the approximate date at which the proposed Stage 10 development could be completed and occupied. The estimation procedure considered two alternative approaches, both relating to the application of growth factors to current 2002 traffic volumes:

- Growth factors reflecting historic traffic growth trends on TBD over the past 5-6 years.
- Growth factors based on an analysis of traffic forecasts prepared by PB for the then Department of Transport and Works[3,4] (now Department of Infrastructure, Planning and Environment – DIPE).

The procedures for establishing the 2002 counts, and for deriving the respective growth factors, are described in the following paragraphs.

2002 Traffic Counts

Hourly traffic counts were provided by DIPE from permanent traffic counting stations on TBD just north of Gothenburg Crescent at Stuart Park, and just west of Benison Street at Winnellie. These volumes were in the form of directional counts by hour of day for the full month of September 2002. Counts in September can be reasonably taken as representing average annual volumes, not requiring further seasonal adjustment.

Previous analysis of traffic characteristics on TBD (PPK 1999) showed that the AM peak hour was from 7.30-8.30am. (Approximately 60% of the traffic volumes between 7 and 9am occur over this hour.) The 2002 DIPE counts were adjusted to reflect this peaking characteristic using data derived from counts in 1996/97. The final 2002 counts that form the basis for estimating the 2005 volumes are reported in Table 2.1.

A similar peaking analysis was undertaken for the PM peak hour.

Historic Growth Factors

These factors were derived for the period 1996-2002 (north of Gothenburg Crescent) and for 1997-2002 (west of Benison Street). Values adopted from this analysis for estimating AM peak hour demand in 2005 were:

3 *Darwin – Development of an AM Peak Hour Traffic Forecasting Model, prepared by PPK Environment & Infrastructure for the Department of Transport & Works, August 1999*

4 *Updated Traffic Forecasts for the 120,000/150,000/200,000 Population Levels in Darwin, prepared by PPK Environment & Infrastructure for Department of Transport & Works , August 2000.*

North of Gothenburg Crescent

- IN 2% p.a.
- OUT 3% p.a.

West of Benison Street

- IN 3% p.a.
- OUT 5% p.a.

Values adopted for the PM peak hour were the reverse of the AM peak values. This represented a reasonable approximation.

Table 2.1 Forecast Peak Traffic Flows on Tiger Brennan Drive

Location/Year	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
North of Gothenburg Cres[1]				
2002	1,700	570	550	1,520
2005 – Historic Growth Factors	1,800	630	600	1,620
2005 – Modelled Growth Factors	2,180	740	720	2,020
West of Benison Street[2]				
2002	1,200	520	470	1,160
2005 – Historic Growth Factors	1,320	600	550	1,270
2005 – Modelled Growth Factors	1,420	680	620	1,350

(1) On CBD approach to the Woolner Road/Tiger Brennan Drive/Bayview Drive intersection
(2) On eastern approach to Tiger Brennan Drive/Stoddart Drive intersection

Source: Permanent traffic counts, traffic projections, and consultant estimates

Modelled Growth Factors

Growth factors were derived from an analysis of forecast traffic growth between 1996 and the design 120,000 population level. This analysis assumed that the 120,000 population level would be reached in about 2014, with factors from 2002 to 2005 being derived by interpolation. Values of these factors for the AM peak hour were:

North of Gothenburg Crescent

- IN 7.7% p.a.
- OUT 9.1% p.a.

West of Benison Street

- IN 5.8% p.a.
- OUT 9.4% p.a.

PM peak hour factors were assumed to be the reverse of the AM growth factors, as the traffic model only forecasts AM peak hour traffic flows.

Summary TBD Traffic Forecasts

Table 2.1 reports the 2005 traffic forecasts for TBD at the two respective locations.

The forecasts based on the DIPE traffic model are significantly higher than those based on historic growth rates. They reflect the assumed distribution of future growth in population

and employment in Darwin, together with assumptions regarding future road network improvements. For the analyses presented in later chapters of this report, we have adopted the historic growth factor forecasts as the basis for the analysis, with sensitivity tests being undertaken with the higher modelled forecasts. These latter tests reflect wider network interactions which are not possible with simple historic growth factor extrapolations. They represent a **realistic** upper level of traffic growth on the Darwin arterial road network for the purposes of assessing the timing of potential future road upgrading needs.

2.2.4 Traffic Growth on Woolner Road

Turning movement counts taken on Woolner Road in December 2002 indicated that peak traffic demand has not increased to levels previously forecast, particularly for the right turn movement into Tiger Brennan Drive (south). The AM peak hour count in December 2002 totalled some 468 (or 510 seasonally adjusted) right turning vehicles. Allowing for an average 3% per annum growth rate, revised forecasts of key turning movements between Woolner Road and TBD (south) for 2005 are as reported in Table 2.2. Corresponding estimates as incorporated in previous analyses of traffic access requirements for Bayview are also included in the table for comparison.

Table 2.2 Revised Turning Movements at Woolner Road/TBD

Year	AM Peak Hour[1]		PM Peak Hour[2]	
	Revised	Previous	Revised	Previous
2002	510	650	150	180
2005[3]	560	820	160	190

(1) For right turn from Woolner Road into Tiger Brennan Drive (south)
(2) For left turn from Tiger Brennan Drive (south) into Woolner Road
(3) Assuming development of Bayview stages 1-9

Source: 12/12/02 Traffic Counts (Bayview Joint Venture) and consultant estimates

2.3 Traffic Generation

Traffic generated by the Bayview development, including stage 10, has been estimated as a function of average trip rates per dwelling (as updated in Section 2.2.1), and the number of dwellings located within each of the discrete subdivision areas.

The following traffic generation parameters have been adopted:

- Residential densities for each zoning category are:
  - 1 dwelling per R0/R1 zoned allotment
  - 1 dwelling per 300 m^2 for R2
  - 1 dwelling per 100 m^2 for R4.
- The daily number of trips generated per household is 10.0 trips, with 9% of these taking place in the AM peak hour.
- Trips taking place in the PM peak hour represent approximately 95% of the total AM peak flows, in the reverse direction. (This proportion was derived from an analysis of permanent traffic count data from Tiger Brennan Drive near to Gothenburg Crescent.)
- Commercial floor space is about 40% of the area zoned for commercial purposes.

- Trips attracted to the proposed commercial areas allowed for trips to work by employees and for travel by commercial vehicles.

2.4 Traffic Assignment

This section overviews the relative assignment of trips generated by the Bayview development. It is understood that there will be no schools or significant shopping facilities provided within Bayview, and so all such trips must necessarily travel to other such destinations elsewhere in Darwin. Assumptions upon which the assignment of Bayview traffic has been made comprise:

- Trip purpose during the AM peak hour comprises 50% for work trips, 10% for school, 20% for shopping, and 20% for other purposes. These values were derived from previous travel modelling work undertaken by PB in Darwin.

- Directional purpose movements from Bayview, as updated in accordance with the analysis outlined in section 2.2.2, were assumed as:

  - Work: south 50% north 40% east 10%
  - Shopping: south 25% north 70% east 5%
  - School: south 40% north 50% east 10%
  - Other: south 40% north 50% east 10%

  These directional movements imply the following broad trip destinations:

  - South: Travel via Tiger Brennan Drive to the Darwin CBD area
  - North: Travel via Woolner Road to the inner suburbs (Parap and Fannie Bay) and to the northern suburbs (Nightcliff, Casuarina and Sanderson)
  - East: Travel via Tiger Brennan Drive to Winnellie, Berrimah and Palmerston.

- During the AM peak hour, 85% of trips leave Bayview, with 15% returning.

- The relative distribution of trips to the Woolner Road and Stoddart Drive exits varied by precinct, reflecting the proximity of each.

Traffic which would turn right from Stoddart Drive onto Tiger Brennan Drive, or right turn from TBD into Stoddart Drive, was assigned to the Woolner Road entry/exit point for the left in/left access option at Stoddart Drive.

2.5 Traffic Forecast Summary

Figure 2.1 summarises the key forecast AM and PM peak hour traffic volumes at the Stoddart Drive and Woolner Road access points and midblock movements along Stoddart and Bayview Drives. Appendix A contains a listing of the spreadsheet analysis undertaken to derive these estimates for 2005 (stage 10), based on the methodology described above.

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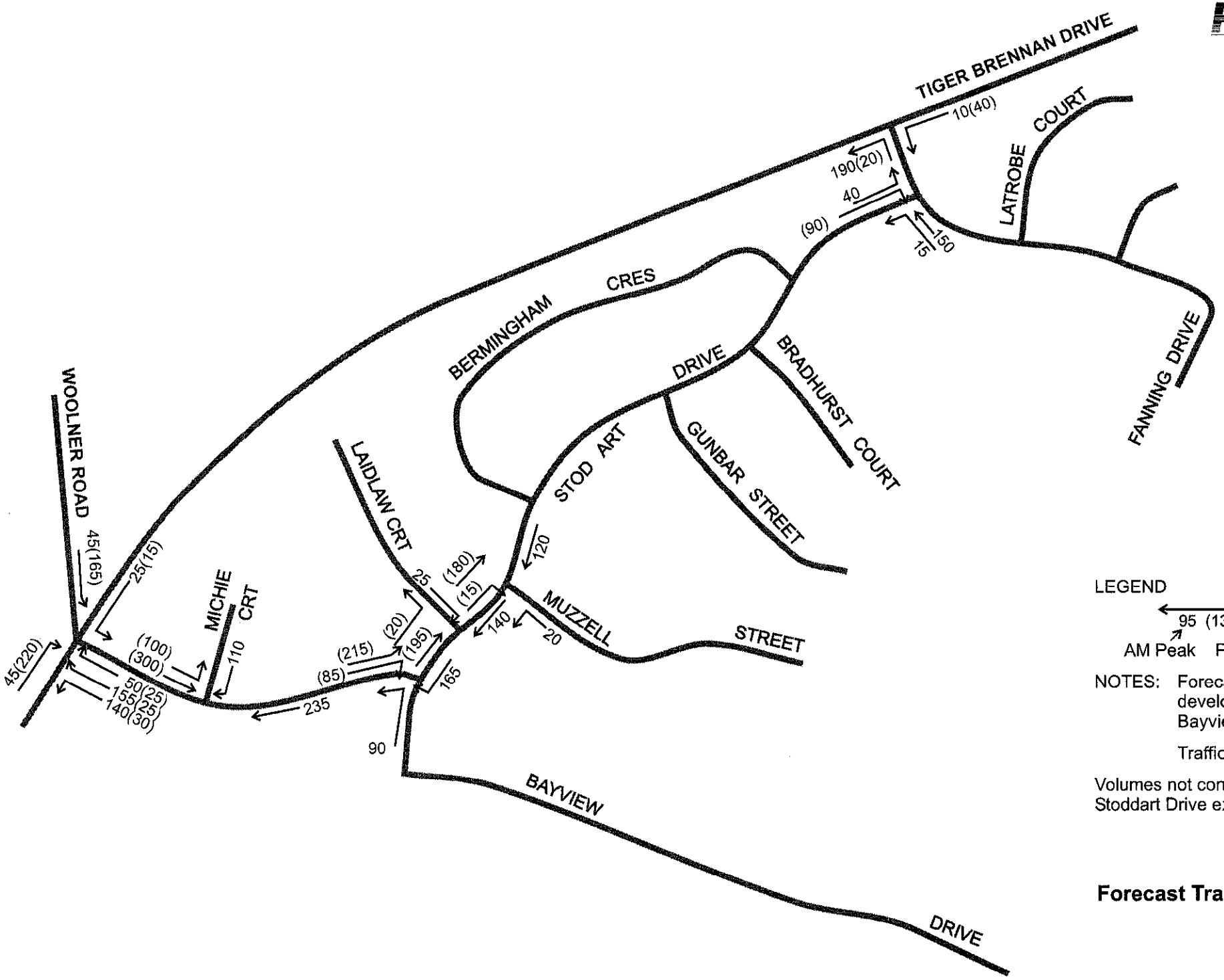


Forecast Traffic Volumes, 2005

FIGURE 2.1

3. Traffic Impact Assessment (*Status Quo*)

3.1 Introduction

Access into/out of Bayview Haven is presently provided via:

- The existing left in/left out arrangement at Stoddart Drive/Tiger Brennan Drive
- The full movement four way intersection at Bayview Drive/Tiger Brennan Drive/Woolner Road.

The future performances of these intersections will be influenced by growth in regional traffic movements (Tiger Brennan Drive, Woolner Road), and by growth in traffic demand from Bayview as residential infill continues. It is the growth in traffic flows on Tiger Brennan Drive, however, that will have the most significant impact on future intersection performance.

In reflection of the external traffic impacts on Bayview access, this chapter presents the following analyses of the status quo access arrangements:

- Performance of Stoddart Drive/Tiger Brennan Drive for 2002 and 2005 (Stage 10 complete). This analysis demonstrates that the growth in traffic flows on TBD will constrain the effective volume of traffic that can exit (left turn) onto TBD in the AM peak hour, (with residual traffic expected to reroute through Bayview to use the intersection at Bayview Drive/TBD/Woolner Road).

- Performance of Woolner Road/TBD/Bayview Drive intersection for 2002 and 2005 (Stage 10 complete). This analysis shows the extent to which the performance of this intersection is expected to decline over the period to 2005, as a function of regional traffic growth (primarily) and infill in Bayview stages 1-9 and additional demand from the proposed stage 10. It enables some indicative conclusions to be drawn as to the need for, and timing of, improvements to the intersection whether or not stage 10 of Bayview is developed.

- Assessment of the intersection of Stoddart Drive with Bayview Drive, and a general overview of internal traffic flows with respect to nominal desirable capacities of the road hierarchy expressed in the internal Bayview road network.

This chapter also considers the expected need to increase capacity on Tiger Brennan Drive between Winnellie and Woolner Road, in response to growth in regional traffic demand.

3.2 Performance of Stoddart Drive/Tiger Brennan Drive

The intersection of Stoddart Drive and Tiger Brennan Drive is currently a left in/left out configuration and is unsignalised with give-way control of Stoddart Drive, as shown in Figure 3.1 below.

Forecasts of (unconstrained) peak hour traffic movements left turning into TBD in 2005 are:

- Bayview stages 1-9 complete: 155 AM peak, 20 PM peak.
- Bayview stages 1-10 complete: 190 AM peak, 25 PM peak.

Left turn volumes from TBD into Stoddart Drive are forecast to be minor.

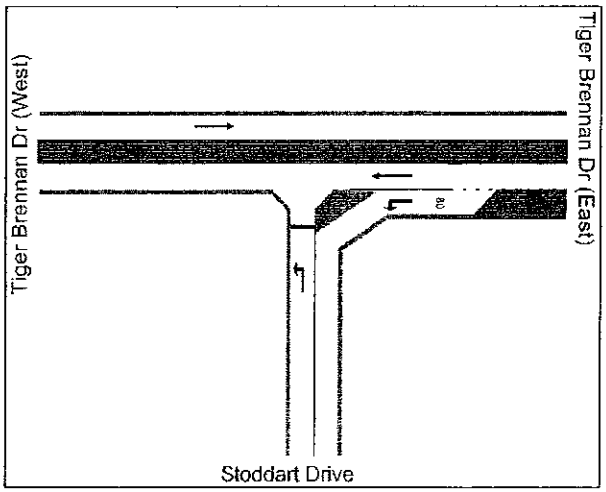


FIGURE 3.1
Intersection Geometry: Stoddart Drive left in/left out

Results from a SIDRA analysis undertaken for 2005 for the AM and PM peak hour periods are respectively summarised in Tables 3.1 and 3.2 below. The tables report the degree of saturation on Stoddart Drive and resultant queue length and delay for vehicles by 2005 for the Bayview stages 1-9 and 1-10 scenarios.

Table 3.1 AM peak performance – Stoddart Drive/Tiger Brennan Drive

Year	Degree of Saturation for Stoddart Drive	Queue Length (m)	Delay (sec)
2005 (stages 1 to 9)	1.292 (L)	224	360.6
2005 (stages 1 to 10)	1.583 (L)	375	605.2

Source: SIDRA Analysis

Table 3.2 PM peak performance – Stoddart Drive/Tiger Brennan Drive

Year	Degree of Saturation for Stoddart Drive	Queue Length (m)	Delay (sec)
2005 (stages 1 to 9)	0.047	2	16.5
2005 (stages 1 to 10)	0.047	2	16.5

Source: SIDRA Analysis

The main conclusions to be drawn from the above tables comprise:

- The high volume of inbound traffic on Tiger Brennan Drive in the AM peak period is expected to constrain the volume of traffic able to exit from Stoddart Drive due to insufficient gaps being available.

- Due to these gap constraints, a significant proportion of vehicles would likely choose to exit Bayview via the Woolner Road intersection to reduce queuing delays, leading to a higher level of internal traffic movements through Bayview on Stoddart Drive.
- The intersection performs satisfactorily during PM peak.

Assuming an acceptable delay of less than 60 seconds during the AM peak, only some 85 left turning vehicles will be able to find acceptable gaps at the Stoddart Drive exit by 2005. Therefore, some 70 (stages 1-9) and 105 (stages 1-10) vehicles would likely reroute to exit via the Woolner Road intersection, leading to increased queue length and delay for other vehicles already using that exit. This traffic shift from Stoddart Drive will also increase delays for traffic on the Woolner Road and Tiger Brennan Drive approaches as a consequence.

Estimates of resultant AM and PM peak hour traffic movements on the Bayview road network, assuming rerouting of surplus exiting traffic from Stoddart Drive to the Woolner Road intersection, are summarised in Figure 3.2 (for Bayview stages 1-10). These flows were subsequently used in the analysis of Woolner/Tiger Brennan Drive/Bayview Drive intersection (section 3.3) and the Stoddart Drive/Bayview Drive roundabout (section 3.5) to determine the consequences of no improvement at the Stoddart Drive exit.

3.3 Assessment of Woolner Road/Tiger Brennan Drive/Bayview Drive

The intersection of Woolner Road, Tiger Brennan Drive and Bayview Drive allows all traffic movements into and out of Bayview as illustrated in Figure 3.3. It is signalised, and for the purpose of this assessment, a 120 second cycle time has been assumed. Analysis of its performance assumed a rerouting of traffic from the Stoddart Drive exit (as described in section 3.2 above) during the AM peak period; details of the traffic volumes for each movement are provided in Appendix C.

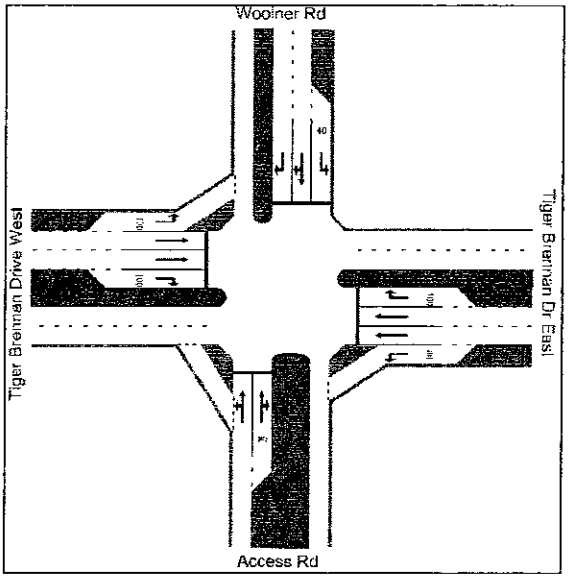
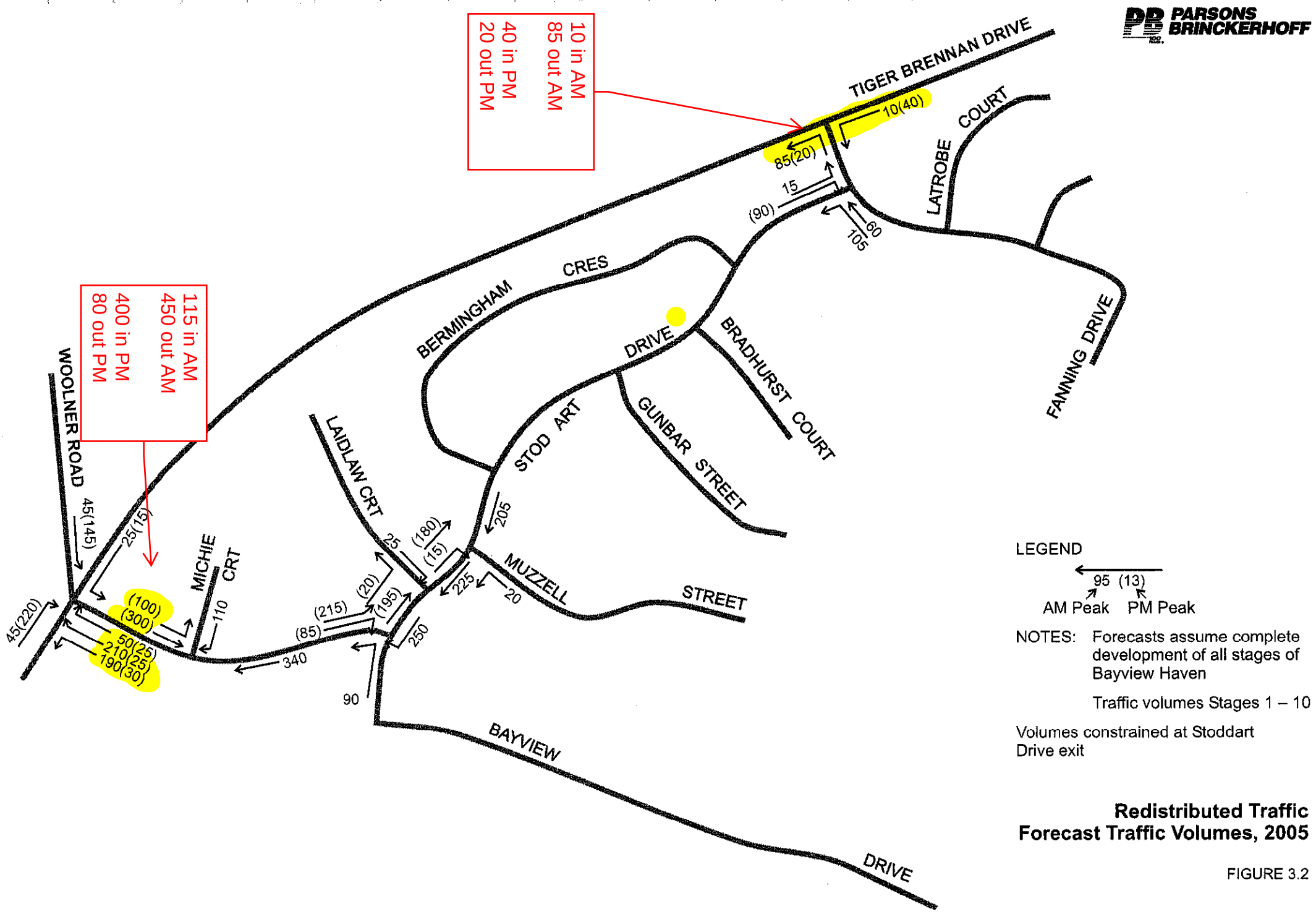


FIGURE 3.3
Intersection Geometry: Woolner Road/Tiger Brennan Drive/Bayview Drive



Redistributed Traffic Forecast Traffic Volumes, 2005

FIGURE 3.2

Results from the SIDRA analysis undertaken for 2005 for the AM and PM peak hours are summarised in Tables 3.3 and 3.4 respectively. The tables report the critical degree of saturation for each intersection approach, and compare the current traffic performance (from traffic counts 12th December 2002), and the currently approved stages 1 to 9 by 2005. Also shown in the tables are the performance results for stages 1-10 and the sensitivity test case, assuming higher regional traffic flows on TBD (refer section 2.2.3). For a summary of queue length and delay, refer to summaries in Appendix C.

Table 3.3 AM Peak Performance - Woolner Road/Tiger Brennan Drive/ Bayview Drive

Year	Critical Degree of Saturation x Approach			
	Tiger Brennan Drive (W)	Tiger Brennan Drive (E)	Woolner Road	Bayview Drive
2002	0.301 (T)	0.737 (T)	0.713 (T, R)	0.667 (L, T, R)
2005 (stages 1 to 9)	0.365 (T)	0.901 (T)	0.883 (T, R)	0.894 (L, T, R)
2005 (stages 1-10)	0.371 (T)	0.921 (T)	0.920 (T, R)	0.929 (L, T, R)
2005 Sensitivity [1]	0.454 (T)	0.972 (T)	0.960 (T, R)	0.945 (L, T, R)

[1] *Stages 1 to 10*

Source: SIDRA Analysis

Table 3.4 PM Peak Performance - Woolner Road/Tiger Brennan Drive/ Bayview Drive

Year	Critical Degree of Saturation x Approach			
	Tiger Brennan Drive (W)	Tiger Brennan Drive (E)	Woolner Road	Bayview Drive
2002	0.700 (T)	0.235 (T)	0.287 (T, R)	0.382 (L,T, R)
2005 (stages 1 to 9)	0.753 (T)	0.352 (R)	0.546 (T, R)	0.342 (T, R)
2005 (stages 1-10)	0.753 (T)	0.352 (R)	0.606 (T, R)	0.342 (T, R)
2005 Sensitivity [1]	0.808 (T)	0.389 (R)	0.606 (T, R)	0.342 (T, R)

[1] *Stages 1 to 10*

Source: SIDRA Analysis

3.3.1 Current Intersection Performance

Tables 3.3 and 3.4 show that the current intersection configuration performs satisfactorily in 2002 for all approaches in terms of degree of saturation for all movements. It is noted, however, that:

- Modelled queue lengths approach 215m on the TBD (east) approach in the AM peak hour. This length blocks both the right turn and left turn lanes. Average delays are approaching 30 seconds.
- Queue lengths on the Woolner Road approach are in the order of 120m, with a corresponding delay of 60 seconds, due to the high right turn volume.

3.3.2 Performance in 2005

In its current layout, the performance of this intersection can be expected to degrade by 2005. The analysis indicates that the Tiger Brennan Drive (east), Woolner Road and Bayview Drive approaches are expected to reach practical capacity (degree of saturation 0.9) by 2005 for full development of stages 1-9 and stage 10 within Bayview. The additional traffic generated by Stage 10 does not have a marked additional impact on the performance of the intersection. The sensitivity test shows high degrees of saturation on all approaches (excepting TBD west).

Key performance measures output from the Sidra analysis for the AM peak hour pertinent to this assessment comprise:

- Queue lengths on TBD (east) around 300m, with an average delay for the through traffic of 50-55 seconds.
- Queue lengths in the order of 160m on Woolner Road approach, with an average delay of over 70 seconds.
- Queues of over 120m and a corresponding average delay of over 60 seconds for traffic exiting from Bayview Drive.

These measures indicate that the intersection will not be performing well in 2005, and will likely need significant improvements to provide an acceptable level of service.

3.3.3 Need for Further Intersection Upgrading

In summary, the foregoing traffic analysis has shown:

- Upgrading of the intersection likely to be required by about 2005. Excessive degrees of saturation, queue lengths and delays are expected on the Tiger Brennan Drive (east), Woolner Road and Bayview Drive approaches.
- Traffic generated by the proposed Bayview Stage 10 development will not lead to a marked further degradation of intersection performance over and above that expected for stages 1-9 and background regional traffic growth.

More detailed analysis is needed to determine the optimum form of improvements, but will desirably include upgrading of the TBD (east) and Woolner Road approaches, and possibly the Bayview Drive approach. Such improvements would be the responsibility of DIPE.

The scope of improvements may, however, be influenced by the nature of potential improvements to Stoddart Drive, as discussed in Section 4.

3.4 Need for Upgrading of Tiger Brennan Drive

Significant growth in traffic demand along Tiger Brennan Drive is expected over the next 10-15 years as urban development in and around Darwin continues. Section 2.2.3 presented an analysis of peak hour growth near Gothenburg Crescent and near Benison Street, (as an input to the intersection analyses). This analysis needs to be taken further, as the extent of growth is expected to require upgrading of Tiger Brennan Drive in the medium term, and this can be expected to have an impact on future access arrangements to Bayview.

Forecast traffic flows on TBD by section are summarised in Table 3.5 for the AM and PM peak hours. This includes volumes for:

- 2002
- 2005 (Bayview stages 1-9)
- 2005 (Bayview stages 1-10)
- 2005 (sensitivity test)
- 2009

Table 3.5 Forecast Growth in Peak Traffic Demand on Tiger Brennan Drive

Year/Scenario	Directional Peak Hour Traffic by Location		
	South of Woolner Road	Woolner Road to Stoddart Drive	East of Stoddart Drive
2002			
AM - In	1,785	1,240	1,200
PM – Out	1,520	1,160	1,160
2005 (Stages 1-9)			
AM - In	1,990	1,395	1,320
PM – Out	1,805	1,270	1,270
2005 (Stages 1-10)			
AM - In	2,010	1,395[2]	1,320
PM – Out	1,940	1,270[2]	1,270
2005 (Sensitivity Test)			
AM - In	2,180	1,495	1,420
PM – Out	2,020	1,350	1,350
2009[1]			
AM - In	2,600	1,790	1,700
PM – Out	2,400	1,600	1,600

(1) Based on average growth rates determined from Darwin travel model – see section 2.2.3

(2) Same as stages 1-9, due to AM peak capacity constraints for traffic left turning from Stoddart Drive onto TBD.

Source: Section 2.2.3, consultant estimates

The main conclusions that can be drawn from the table are:

- By 2005, the section of Tiger Brennan Drive between Woolner Road and the CBD is expected to require two outbound lanes to meet projected PM peak hour traffic demand. (The inbound carriageway was previously duplicated.)

- The sensitivity test at 2005 indicates that Tiger Brennan Drive (inbound) will be operating at about 85% of effective service capacity (taken as 1,850 veh/lane/hour) between Stoddart Drive and Woolner Road, and at about 80% of effective service capacity east of Stoddart Drive. These levels will further constrain the effectiveness of the existing left turn from Stoddart Drive onto TBD, with fewer gaps for merging traffic.

- The traffic estimates at 2009, 4 years after the potential completion of stage 10, are shown to be around effective service capacity limits for TBD east of Woolner Road. Duplication of TBD between Woolner Road and Winnellie would probably be warranted by about this time. The timing of such roadworks (the responsibility of DIPE) is important in the context of the type of potential improvements needed for upgrading the Stoddart Drive/TBD intersection (chapter 4).

3.5 Performance of Stoddart Drive/Bayview Drive

The intersection of Stoddart Drive and Bayview Drive is a two way roundabout with 3 approach legs, all 11m collector roads, as shown in Figure 3.4. All returning PM peak traffic (with the exception of traffic from the east) is required to enter via the Woolner Road intersection. This results in high PM peak flows through the roundabout. With the redistribution of traffic internally due to queue length and delay at the Stoddart Drive exit, AM peak movements will also be high.

With development of stage 10, the highest peak hourly traffic volumes which are likely to occur at the roundabout by 2005 are forecast as follows:

- AM Peak: Some 250 vehicles turning from Stoddart Drive to Bayview Drive (W) and 90 vehicles from Bayview Drive (S) to Bayview Drive (W).
- PM Peak: Some 300 vehicles entering via the Bayview Drive (W) approach with 85 continuing through to Bayview Drive (S) and the remaining 215 vehicles turning left onto Stoddart Drive.

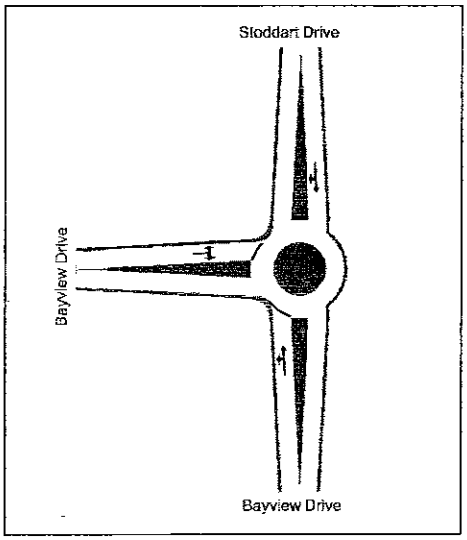


FIGURE 3.4
Intersection Geometry: Stoddart Drive/Bayview Drive

Results from a SIDRA analysis of this intersection are shown in Table 3.6. Additional queue length and delay statistics are provided in Appendix D.

Table 3.6 AM and PM Peak Performance – Stoddart Drive/Bayview Drive

		Critical Degree of Saturation x Approach		
Year	**Period**	**Bayview Drive (W)**	**Bayview Drive (S)**	**Stoddart Drive**
2005	AM	0.049	0.094	0.128
2005	PM	0.152	0.009	0.063

Source: SIDRA Analysis

The analysis demonstrates that congestion at this intersection will be low, even with full development of stage 10.

3.6 Road Network Assessment

Stoddart Drive and Bayview Drive have varying cross sections as illustrated in Figure 1.1 with pavement widths of:

- 8 m on Stoddart Drive between Laidlaw Court and Bradhurst Court.
- 11 m on Stoddart Drive between Bradhurst Court and Bermingham Crescent (east).
- 11 m Stoddart Drive between Laidlaw Court and Bayview Drive roundabout.
- 11 m along Bayview Drive between Michie Court and the roundabout with Stoddart Drive.
- 13 m on sections of both roads abutting Tiger Brennan Drive.

The estimated maximum PM peak hour traffic flow along Stoddart Drive by 2005 is 195 vehicles between Bayview Drive and Laidlaw Court. This volume decreases east of Laidlaw Court to 180 vehicles and continues to decrease to the east (Figures 2.1 and 3.2). The estimated total AM peak traffic flow by 2005 within the same section of Stoddart Drive is around 165 vehicles (Figure 2.1) but may increase to 250 vehicles (Figure 3.2) if vehicle flows from the Stoddart Drive exit are restricted.

It is important to put these volumes into context: the typical midblock capacity of one lane with an occasional parked vehicle is an estimated 600 vehicles per hour[5]. The volumes are therefore within estimated capacity limits. Given the pavement width of Stoddart Drive between Laidlaw Court and Bradhurst Court being only 8m, there is potential for parked vehicles along this section of Stoddart Drive to restrict the flow of vehicles. In this respect it is noted that previous recommendations[6] for the construction of off-street parking bays have been accepted by the Bayview Joint Venture. In conjunction with appropriate parking controls, such bays will remove the potential for parked vehicles to impede through traffic movements.

5 *Roadway Capacity, Guide to Traffic Engineering Practice Part 2 (Page 28),* AustRoads.
6 *Bayview Development Traffic Impact Study: Proposed Lease Extension,* prepared by PPK Environment & Infrastructure for Austcorp, August 2000.

4. Upgrading of Stoddart Drive/Tiger Brennan Drive

4.1 Introduction

This section investigates the potential to implement improvements to the Stoddart Drive / Tiger Brennan Drive intersection in such a way as to:

- Increase the capacity of the existing left in/left out arrangement
- Allow for right turn in/out access, thereby improving overall accessibility to the Bayview estate.

Improvements at Stoddart Drive would have a secondary benefit to the operation of the Woolner Road intersection, which is expected to need significant improvements within the next 3 years as indicated in chapter 3.

The approach taken in identifying and assessing potential improvements considered:

- The potential to implement improvements in a cost effective staged process
- The potential 'life' of improvements before further improvements become necessary due to regional traffic growth on Tiger Brennan Drive
- The need for (unsignalised) improvements to operate safely, given the high existing traffic volumes on Tiger Brennan Drive, and the high speed regime.

Development of the alternative options (Section 4.2) reflects this approach, and takes explicit account of the previous intersection configuration at Stoddart Drive/TBD, wherein a protected right turn lane from TBD into Stoddart Drive was provided, together with a left turn deceleration lane from TBD. We have sought to utilise this pavement as far as possible to reduce the costs of intersection upgrading, but bearing in mind the expected need for upgrading of Tiger Brennan Drive past Bayview as outlined in section 3.4.

4.2 Development of Improvement Options

This section describes a potential staged series of options to upgrade the capacity of the Stoddart Drive/TBD intersection. The process is aimed at enabling a trade-off in upgrading costs as a function of the effective life of the intersection being achieved at each stage of the process. The options comprise:

1. Upgrading of the existing left in/left out arrangement, without signalisation, with a 200 m long acceleration lane for traffic left turning from Stoddart Drive.
2. As for option 1, but restoring the right turn lane for traffic to right turn from TBD via a filter manoeuvre.
3. Signalise the intersection, to allow full movements into/out of Stoddart Drive. This would require an additional approach lane and exit lane (both about 150m in length) on Tiger Brennan Drive for the inbound and outbound directions.

4.3 Assessment of Improvement Options

4.3.1 Option 1

Option 1 comprises an acceleration lane out of Stoddart Drive into Tiger Brennan Drive with a 200 m minium length[7], as illustrated in Figure 4.1. The purpose of the acceleration lane is to allow turning traffic to accelerate up to speeds consistent with through traffic on TBD (in an 80 km/h speed zone), thereby enabling a safe zip merge procedure. This option does not include signalisation.

The analysis assumes that the upgraded intersection will not act as a constraint on left turning exit traffic i.e. there will be no rerouting of traffic to exit Bayview via the Woolner Road intersection, as described in chapter 3. (This assumption is consistent across all three improvement options.) Performance of this option in 2005 (stages 1 to 10) for the AM peak hour is reported in Table 4.1 and Appendix E. (Performance of the intersection in the PM peak is unaffected by this option.)

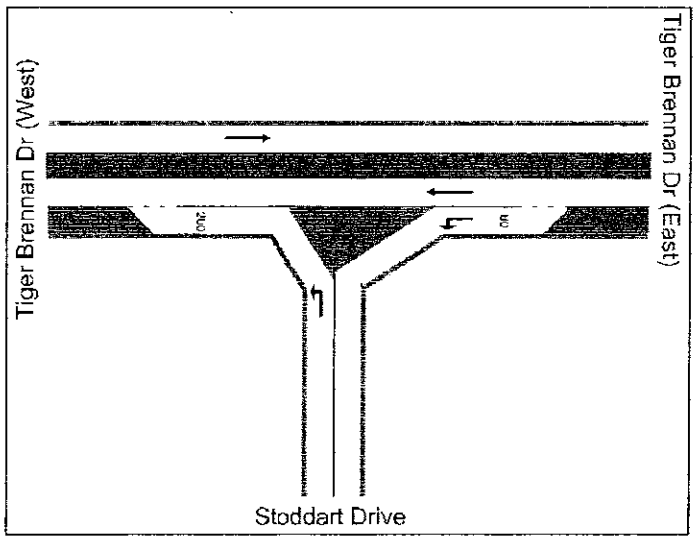


FIGURE 4.1
Intersection Geometry: Option 1

Table 4.1 Performance of Option 1 (2005)

Period	Critical Degree of Saturation x Approach		
	Tiger Brennan Drive (W)[(1)]	Tiger Brennan Drive (E)	Stoddart Drive
AM Peak	0.305	0.732	0.103

(1) TBD (W) traffic is free flowing and therefore ultimately unaffected by this improvement option. The DoS for TBD (east) reflects the through volume as a proportion of the effective service capacity.

Source: SIDRA Analysis

The results presented in Table 4.1 show that the Stoddart Drive approach performs satisfactorily at 2005, though there may be some safety concerns with the merging of exiting traffic onto the high speed regime on Tiger Brennan Drive. The effective life of this option will, nevertheless, be influenced by the future rate of growth in traffic on the Tiger Brennan Drive (east) approach. Disruptions to traffic movements inbound on TBD are likely

[7] *Intersections At Grade, Guide to Traffic Engineering Practice Part 5 (Table 5.8), AustRoads*

to become prevalent after traffic volumes exceed approximately 1,500 vehicles per hour. The analysis reported in section 3.4 indicates that this could occur shortly after 2005. Section 3.4 further suggests that upgrading of TBD (duplication) could be needed by about 2009.

4.3.2 Option 2

Option 2 (Figure 4.2) is similar to option 1, but allows traffic to turn right from Tiger Brennan Drive into Stoddart Drive. This will allow a decrease in the number of vehicles entering at Bayview Drive and lessen the amount of internal through traffic along Stoddart Drive. Most of the right turning will take place in the PM peak hour, when inbound volumes on TBD are forecast to be in the order of 550 vehicles per hour by 2005. The option would utilise the road pavement previously in place for the right turn manoeuvre. The left turn acceleration lane (option 1) has been included as part of this option, so that the overall benefits of a staged improvement can be assessed.

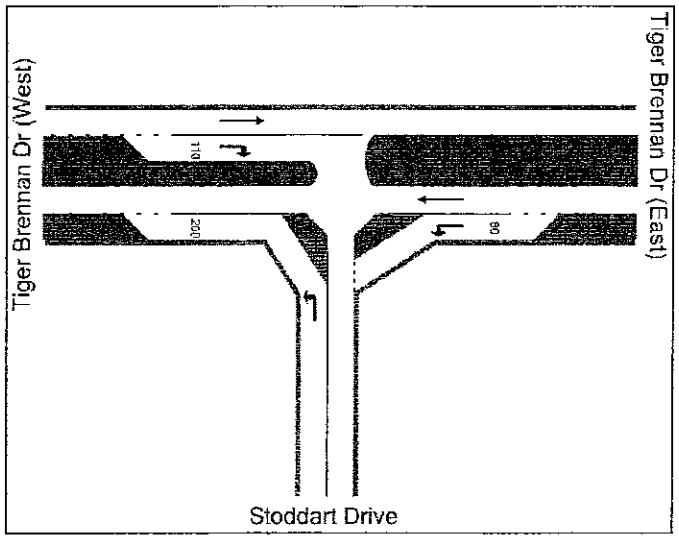


FIGURE 4.2
Intersection Geometry: Option 2

Summary peak hour performance of this option (stages 1-10 at Bayview) is reported in Table 4.2 and Appendix F.

Table 4.2 AM Peak Performance – Option 2 (2005)

Period	Critical Degree of Saturation x Approach		
	Tiger Brennan Drive (W)	Tiger Brennan Drive (E)	Stoddart Drive
AM Peak	0.308 (T)	0.732 (T)	0.103 (L)
PM Peak	0.702 (T)	0.289 (T)	0.011 (L)

Source: SIDRA Analysis

The results in Table 4.2 confirm that the combined improvements would provide an effective option for improving left turn exits from Stoddart Drive (mainly in the AM peak) and right turn

entry (into Stoddart Drive (mainly PM peak). Main issues and concerns with the option, however, are:

- Safety. There is some concern with the safe right turning of vehicles in the AM peak hour. Whilst the number of vehicles expected to turn is low, there may be some difficulties for drivers to safely pick suitable gaps in the inbound traffic flow on TBD, given the high volume and the 80 km/h speed regime. (There is not expected to be the same concern in the PM peak when inbound volumes are much lower.) The turn manoeuvres can probably be undertaken safely in the short term, but as traffic demand on TBD increases (Table 3.5) then safety concerns will arise.

- TBD development. Operation of the unsignalised arrangement would be unsafe when Tiger Brennan Drive is duplicated in due course, when right turning traffic would need to cross two lanes of heavy, high speed traffic. The timing of duplication of Tiger Brennan Drive will therefore impact upon how long an unsignalised arrangement could safely function.

In summary, this option offers a workable short term solution, but one which will have increasing safety concerns as traffic on TBD continues to increase.

4.3.3 Option 3

This option incorporates signalisation of the intersection, with the following main features:

- Full turn movements to be provided.
- The Tiger Brennan Drive approaches (east and west) would need to be upgraded to provide an additional 200m approach and exit lane. These additional lanes would be required to provide sufficient capacity for the through traffic movements on TBD.
- A right turn lane into Stoddart Drive would be needed, plus a deceleration/left turn lane into Stoddart Drive.

The concept is illustrated in Figure 4.3.

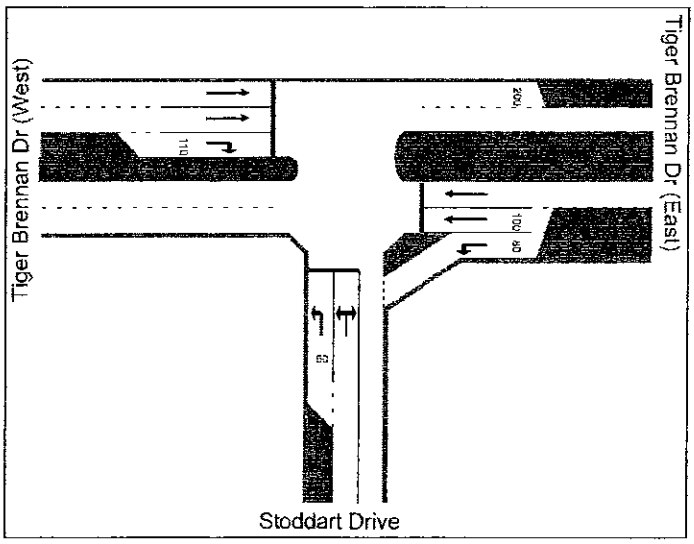


FIGURE 4.3
Intersection Geometry: Option 3

Performance of this option arrangement has been analysed using Sidra for Bayview stages 1-10, with the results presented in Table 4.3.

Table 4.3 AM Peak Performance – Option 3

Period	Critical Degree of Saturation x Approach		
	Tiger Brennan Drive (W)	Tiger Brennan Drive (E)	Stoddart Drive
AM Peak	0.360 (R)	0.646 (T)	0.590 (L, R)
PM Peak	0.519 (T)	0.379 (T)	0.180 (R)

Source: SIDRA Analysis

The results presented in Table 4.3 show that this option will operate efficiently at 2005 (and beyond). Modelled delays and queue lengths (Appendix F) are low on Tiger Brennan Drive. This option therefore represents a safe and efficient arrangement for at least the short to medium term. A separate analysis for this option (stages 1-9 in Appendix F) has also demonstrated that the addition of stage 10 at Bayview would lead to little net impact on intersection performance.

What needs to be considered with this option is the timing of future duplication of Tiger Brennan Drive by DIPE. Duplication would involve the construction of a second carriageway, with a substantial median (indicatively in the order of 5m or more). The Option 3 layout will become redundant when duplication takes place, with the intersection then needing to be reconstructed to reflect the dual carriageways and median. If the need for duplication is warranted by say 2008/09 as suggested in section 3.4, then the expenditure on this option may become redundant within a very short timeframe.

4.4 Implications for Woolner Road Intersection

Section 3.3 presented the results of an analysis of the performance of this intersection, assuming no upgrading of the Stoddart Drive/TBD intersection. It concluded that significant upgrading might be needed by around 2005, depending on the future growth in traffic on Tiger Brennan Drive. Such improvements would likely be needed irrespective of whether or not stage 10 is constructed at Bayview. In summary, conclusions reached were:

- Upgrading of the intersection would likely be required by about 2005, for most approaches.
- The incremental addition of traffic from the proposed stage 10 in Bayview is not likely to have any marked impact on upgrading requirements.

A reassessment of how the upgrading of the Stoddart Drive exit would impact on the need for further improvements to the Woolner Road intersection has been undertaken. This reanalysis (see detailed Sidra results in Appendix H) has shown that the need for improvements could be deferred for in the order of 3-4 years, due to the shifting of traffic movements to Stoddart Drive/TBD. This timing would be consistent with the expected need to upgrade Tiger Brennan Drive by about 2009 (section 3.4).

5. Summary

The performance of the Woolner Road and Stoddart Drive intersections have been documented respectively in Sections 3 and 4. A summary of the findings are presented in this section for further consideration, together with a proposed staged upgrading strategy for the Stoddart Drive/TBD intersection.

The analysis has clearly demonstrated that the addition of stage 10 at Bayview will not have any significant impact on the need for, or timing of, intersection upgrading requirements either at Stoddart Drive or at the Woolner Road intersection. This is discussed further below.

5.1 Summary

5.1.1 Woolner Road/Tiger Brennan Drive/Bayview Drive Intersection

Analysis undertaken assuming no upgrading of the Stoddart Drive/Tiger Brennan Drive intersection (Section 3) has demonstrated the following impacts at the intersection of Woolner Road with Tiger Brennan Drive and Bayview Drive:

- Upgrading of most approaches is likely to be required by about 2005. The forecast growth in AM peak hour regional traffic, plus increased traffic from Bayview as infill in the current 9 stages continues, will lead to increasingly poor levels of service on the Woolner Road, Tiger Brennan Drive (east) and Bayview Drive approaches. Intersection degrees of saturation (DoS) will exceed 0.90, and queue lengths and average delays will start to become excessive.

- Approval of Bayview stage 10 will not change the need for or scope of required improvements at the intersection. Traffic generated by the Stage 10 development would represent only a marginal increase in traffic flows.

Section 3.4 has also shown that the expected growth in traffic demand on Tiger Brennan Drive will require several sections to be duplicated, comprising:

- The outbound lane between the CBD and Woolner Road (from the current single lane to two lanes) – required to meet projected PM peak hour demand by about 2005.

- The carriageway between Woolner Road and Winnellie to a full 2+2 lane cross section, by about 2009. (The extent of duplication, probably to Amy Johnson Avenue, would need to be determined through a more detailed investigation.)

5.1.2 Improvements to Stoddart Drive/Tiger Brennan Drive

The intersection analyses reported in Section 4 considered a range of potential staged improvements to this intersection. In particular the analyses showed that improvements are desirable, whether or not stage 10 of Bayview proceeds.

- The left in/left out configuration of Stoddart Drive will not provide a satisfactory AM peak hour performance in 2005 due to gap constraints in the high volume inbound traffic flow on Tiger Brennan Drive. This constraint is expected to effectively lead to rerouting of a significant proportion of traffic through Bayview to exit via the Woolner Road intersection. The configuration was shown to be deficient for traffic from the currently approved stages 1 to 9.

- An acceleration lane for left turning traffic from Stoddart Drive into Tiger Brennan Drive (Option 1) would provide an acceptable level of service to enable unconstrained movements of traffic from Bayview (including stage 10) until about 2005. At this time the merging of traffic from Stoddart Drive is expected to begin to impact on inbound traffic flows on TBD (when AM peak hour traffic volumes are expected to reach about 1,500 veh/lane/hour). Disruptions to TBD traffic flows will start to become significant.

- The further provision of a right turn lane into Stoddart Drive (Option 2) would provide for more direct entry of traffic to the northern and eastern stages of Bayview (stages 7b, 8a/8b, 9, 10), bypassing entry at Woolner Road. This would benefit operations of the Woolner Road intersection, and also result in reduced internal traffic movements within Bayview. The main concerns with this option relate to safety, and the potential for crashes if right turning vehicles are not able to properly judge gaps in the high speed inbound peak traffic flows on TBD, particularly in the AM peak hour.

- A full access intersection at Stoddart Drive (Options 3) would need to be signalised for safety reasons. The intersection performance analysis showed that this option would provide an acceptable level of service beyond 2005, though its "life" would be constrained by the growth in traffic on TBD and the need for this road to be duplicated past Stoddart Drive (indicatively by around 2009 as noted in section 5.1.1).

The options analysed represent a potential staged sequence of improvements, utilising the previous pavement as far as possible as a means of containing construction costs.

5.2 Staged Improvements to Stoddart Drive/Tiger Brennan Drive Intersection

Developing a recommended staged program of improvements for this intersection is strongly influenced by the growth in regional traffic demand on Tiger Brennan Drive, and the consequential need to duplicate the section between Woolner Road and Winnellie in the medium term (by about 2009). The objective is to define improvements that will improve accessibility to Bayview at Stoddart Drive, that will be operationally and cost effective, but which will also provide an effective life before DIPE needs to upgrade TBD. In reflection of these objectives, the following alternative upgrading approaches could be considered:

- Construct a left turn acceleration lane for traffic exiting Bayview at the Stoddart Drive exit by say 2004. This would allow unconstrained left turning of traffic from Bayview up to about 2006, before these movements begin to cause significant impacts on inbound AM peak hour traffic flows on TBD. The effectiveness of this option would then begin to decline.

- The median be reopened to enable outbound traffic to turn right into Stoddart Drive from Tiger Brennan Drive, also by 2004. This would be a minimal cost option, but raises some safety concerns in the AM peak hour.

OR

- Signalise the intersection by 2005. This would avoid constructing the left turn acceleration lane, but would incur significant cost to widen the TBD approaches and exits to provide two lanes on each. This option is not regarded as cost effective, if the timetable for the duplication of this section of TBD is accepted as being about 2009.

A preferred and more realistic approach to improving traffic efficiency would be for DIPE to commence planning for upgrading Tiger Brennan Drive, with the objectives of:

- Duplicating TBD between Stoddart Drive and Woolner Road by approximately 2005/06.
- Signalising the Stoddart Drive intersection when duplication takes place.
- Upgrading the Woolner Road intersection as part of the works.

Duplication of the outbound lane on TBD between the CBD and Woolner Road would be also warranted by about 2005.

Upgrading of the Stoddart Drive exit by the Bayview Haven Joint Venture does not seem warranted, given the relatively short time frame prior to the more extensive regional road improvements being needed. Construction of the left turn acceleration lane will likely only provide limited efficient life before traffic conditions on TBD reduce its effectiveness.

Appendix B DIPL Annual Traffic Report Outputs

Urban Primary Count Stations **Year: 2021**

Table: 1.1 AADT For Primary Stations - 10 Year Period **Region: Darwin**

Road Name / Location	ADT Station	Direction	Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Tiger Brennan Drive													
Outbound ramp to Roystonea Avenue	UDVDP032	Outbound	Veh						2697	2892	2905	2791	2922
SITE INSTALLED - 2017 - OUTBOUND ONLY													
Tiger Brennan Drive	UDVDP022	Inbound	Veh	8519	9243	9989	8708	7371	10335	10490	10295	9868	10794
800m West of Berrimah Road		Outbound	Veh	7087	7864	8676	8227	7704	9134	9390	9581	8965	10087
		Both	Veh	15606	17107	18665	16935	15075	19469	19880	19876	18833	20881
Tiger Brennan Drive	UDVDP016	Inbound	Veh	6465	10153	10341	9961	8672	10618	10919	10696	10687	11756
500m West of Hook Road		Outbound	Veh	9075	9477	9644	9616	8241	9949	10245	10006	10035	11003
		Both	Veh	15540	19630	19985	19577	16913	20567	21164	20702	20722	22759
Tiger Brennan Drive	UDVDP006	Inbound	Veh	10464	9752	9908	10673	10283	10940	11280	10583	10667	11575
200m North of Gothenberg Crescent		Outbound	Veh	10244	9957	10636	10473	10851	11544	12231	11189	11362	11879
		Both	Veh	20708	19709	20544	21146	21134	22484	23511	21772	22029	23454
Trower Road	UDVDP009	Inbound	Veh	12928	13105	12948	13513	14552	14295	13919	13393	13550	14408
50m West of Ryland Road		Outbound	Veh	11463	10532	13671	13455	14142	12492	13889	13616	13451	13734
		Both	Veh	24391	23637	26619	26968	28694	26787	27808	27009	27001	28142
Vanderlin Drive	UDVDP013	Inbound	Veh	10307	10403	10807	10692	10794	10420	10078	9909	9807	10194
100m West of Lee Point Road		Outbound	Veh	11158	10478	10890	10678	10663	10175	9821	9617	9486	9830
		Both	Veh	21465	20881	21697	21370	21457	20595	19899	19526	19293	20024
Vanderlin Drive	UDVDP012	Inbound	Veh	7533	8042	8394	8614	8906	8252	8400	8296	8135	8678
100m North of Manunda Terrace		Outbound	Veh	7473	7975	8284	8480	8753	8023	8485	8357	8230	8608
		Both	Veh	15006	16017	16678	17094	17659	16275	16885	16653	16365	17286

Darwin Total = 31

Appendix C CoD Traffic Count Reports

Traffic Summary

Bayview - Stoddart Drive @ Number 47
0:00 Tuesday, 11 August 2020 to 0:00 Tuesday, 18 August 2020 (7.00 days)

Volume

	All Days	Weekdays	Weekend	
Both directions	11374	8359	3015	
East (bound)	4575	3257	1318	
West (bound)	6799	5102	1697	

Speed

	All Days	Weekdays	Weekend	
Mean speed	44.3	44.5	43.6	km/h
Median speed	44.6	45.0	43.9	km/h
85% speed	51.8	52.2	51.1	km/h
Peak speed	77.7 (04:00)	-	-	km/h
Mean Exceeding	54.2	54.2	54.0	km/h
Number speeding	2717	2096	621	
Percent speeding	23.9	25.1	20.6	

Posted speed limit = 50 km/h

Class

Class	All Days	Weekdays	Weekend	
1 - SV	10684	7774	2910	
2 - SVT	106	90	16	
3 - TB2	564	475	89	
4 - TB3	7	7	0	
5 - T4	7	7	0	
6 - ART3	1	1	0	
7 - ART4	4	4	0	
8 - ART5	0	0	0	
9 - ART6	1	1	0	
10 - BD	0	0	0	
11 - DRT	0	0	0	
12 - TRT	0	0	0	

Traffic Summary

Stoddart Drive @ No.24 Bayview
0:00 Tuesday, 13 September 2016 to 0:00 Tuesday, 20 September 2016 (7.00 days)

Volume

	All Days	Weekdays	Weekend	
Both directions	15250	10997	4253	
West (bound)	8288	6051	2237	
East (bound)	6962	4946	2016	

Speed

	All Days	Weekdays	Weekend	
Mean speed	47.0	47.3	46.3	km/h
Median speed	47.9	47.9	47.2	km/h
85% speed	55.1	55.4	54.7	km/h
Peak speed	93.7 (12:00)	-	-	km/h
Mean Exceeding	55.0	55.1	54.9	km/h
Number speeding	6040	4493	1547	
Percent speeding	39.6	40.9	36.4	

Posted speed limit = 50 km/h

Class

Class	All Days	Weekdays	Weekend	
1 - SV	14238	10203	4035	
2 - SVT	152	104	48	
3 - TB2	804	642	162	
4 - TB3	30	24	6	
5 - T4	12	11	1	
6 - ART3	6	6	0	
7 - ART4	6	6	0	
8 - ART5	0	0	0	
9 - ART6	1	0	1	
10 - BD	0	0	0	
11 - DRT	1	1	0	
12 - TRT	0	0	0	

Traffic Summary

Bayview Boulevard Bayview @ number 53
0:00 Tuesday, 15 March 2016 to 0:00 Tuesday, 22 March 2016 (7.00 days)

Volume

	All Days	Weekdays	Weekend	
Both directions	4786	3485	1301	
West (bound)	2369	1726	643	
East (bound)	2417	1759	658	

Speed

	All Days	Weekdays	Weekend	
Mean speed	36.3	36.4	35.9	km/h
Median speed	36.7	36.7	36.4	km/h
85% speed	45.0	45.0	45.0	km/h
Peak speed	85.5 (22:00)	-	-	km/h
Mean Exceeding	53.4	53.6	53.0	km/h
Number speeding	235	174	61	
Percent speeding	4.9	5.0	4.7	

Posted speed limit = 50 km/h

Class

Class	All Days	Weekdays	Weekend	
1 - SV	4320	3114	1206	
2 - SVT	19	7	12	
3 - TB2	415	337	78	
4 - TB3	25	20	5	
5 - T4	2	2	0	
6 - ART3	2	2	0	
7 - ART4	3	3	0	
8 - ART5	0	0	0	
9 - ART6	0	0	0	
10 - BD	0	0	0	
11 - DRT	0	0	0	
12 - TRT	0	0	0	

Traffic Summary

Bayview Boulevard Bayview @ number 49
0:00 Tuesday, 15 March 2016 to 0:00 Tuesday, 22 March 2016 (7.00 days)

Volume

	All Days	Weekdays	Weekend	
Both directions	5124	3752	1372	
West (bound)	2559	1880	679	
East (bound)	2565	1872	693	

Speed

	All Days	Weekdays	Weekend	
Mean speed	39.7	39.7	39.6	km/h
Median speed	40.3	40.3	40.0	km/h
85% speed	48.2	48.2	48.2	km/h
Peak speed	87.5 (22:00)	-	-	km/h
Mean Exceeding	53.7	53.8	53.6	km/h
Number speeding	526	383	143	
Percent speeding	10.3	10.2	10.4	

Posted speed limit = 50 km/h

Class

Class	All Days	Weekdays	Weekend	
1 - SV	4638	3362	1276	
2 - SVT	26	13	13	
3 - TB2	414	344	70	
4 - TB3	42	29	13	
5 - T4	1	1	0	
6 - ART3	2	2	0	
7 - ART4	1	1	0	
8 - ART5	0	0	0	
9 - ART6	0	0	0	
10 - BD	0	0	0	
11 - DRT	0	0	0	
12 - TRT	0	0	0	

TERRITORY TRAFFIC SURVEYS
DATA ACQUISITION SPECIALISTS

Traffic Summary

Woolner Rd @ top of hill, Woolner
0:00 Saturday, 30 October 2021 to 0:00 Saturday, 6 November 2021 (7 days)

Volume

	All Days	Weekdays	Weekend	
Both directions	48173	34543	13630	
North	24919	17602	7317	
South	23254	16941	6313	

Speed

	All Days	Weekdays	Weekend	
Mean speed	46.0	45.7	46.7	km/h
Median speed	46.6	46.4	46.8	km/h
85% speed	52.7	52.6	52.9	km/h
Peak speed	130.9 (13)	-	-	km/h
Mean Exceeding	63.9	63.9	63.8	km/h
Number speeding	867	596	271	
Percent speeding	1.800	1.725	1.988	

Posted speed limit = 60 km/h

Class

Class	All Days	Weekdays	Weekend	
1 - SV	44867	31941	12926	
2 - SVT	512	317	195	
3 - TB2	2367	1912	455	
4 - TB3	226	212	14	
5 - T4	61	48	13	
6 - ART3	47	43	4	
7 - ART4	38	26	12	
8 - ART5	8	8	0	
9 - ART6	41	32	9	
10 - BD	2	1	1	
11 - DRT	3	2	1	
12 - TRT	1	1	0	

TERRITORY TRAFFIC SURVEYS
DATA ACQUISITION SPECIALISTS

Traffic Summary

Woolner Rd @ bottom of hill, Woolner
0:00 Saturday, 30 October 2021 to 0:00 Saturday, 6 November 2021 (7 days)

Volume

	All Days	Weekdays	Weekend	
Both directions	47877	34321	13556	
North	24340	17176	7164	
South	23537	17145	6392	

Speed

	All Days	Weekdays	Weekend	
Mean speed	54.1	53.9	54.7	km/h
Median speed	54.4	54.2	54.5	km/h
85% speed	60.3	60.1	60.5	km/h
Peak speed	107.7 (22)	-	-	km/h
Mean Exceeding	63.7	63.7	63.9	km/h
Number speeding	7696	5357	2339	
Percent speeding	16.07	15.61	17.25	

Posted speed limit = 60 km/h

Class

Class	All Days	Weekdays	Weekend	
1 - SV	42613	30234	12379	
2 - SVT	425	240	185	
3 - TB2	4466	3547	919	
4 - TB3	147	139	8	
5 - T4	40	30	10	
6 - ART3	66	43	23	
7 - ART4	69	44	25	
8 - ART5	10	9	1	
9 - ART6	35	29	6	
10 - BD	5	5	0	
11 - DRT	0	0	0	
12 - TRT	1	1	0	

Traffic Summary

Woolner Road Outbound between Bishop Street and Brewery Place
0:00 Friday, 18 September 2015 to 0:00 Friday, 25 September 2015 (7 days)

Volume

	All Days	Weekdays	Weekend	
Both directions	25495	19106	6389	
South	25495	19106	6389	
North	0	0	0	

Speed

	All Days	Weekdays	Weekend	
Mean speed	38.6	38.1	39.8	km/h
Median speed	38.9	38.5	40.0	km/h
85% speed	43.9	43.9	45.0	km/h
Peak speed	77.4 (18:00)	-	-	km/h
Mean Exceeding	63.7	64.7	62.4	km/h
Number speeding	19	11	8	
Percent speeding	0.1	0.1	0.1	

Posted speed limit = 60 km/h

Class

Class	All Days	Weekdays	Weekend	
1 - SV	23351	17340	6011	
2 - SVT	279	202	77	
3 - TB2	1563	1309	254	
4 - TB3	172	150	22	
5 - T4	54	45	9	
6 - ART3	18	13	5	
7 - ART4	20	13	7	
8 - ART5	6	6	0	
9 - ART6	32	28	4	
10 - BD	0	0	0	
11 - DRT	0	0	0	
12 - TRT	0	0	0	

Traffic Summary

Woolner Road Outbound between Stuart Highway and Bishop Street
0:00 Friday, 18 September 2015 to 0:00 Friday, 25 September 2015 (7 days)

Volume

	All Days	Weekdays	Weekend	
Both directions	21442	15719	5723	
South	21441	15718	5723	
North	0	0	0	

Speed

	All Days	Weekdays	Weekend	
Mean speed	38.6	38.4	39.3	km/h
Median speed	38.5	38.5	39.2	km/h
85% speed	43.6	43.2	43.9	km/h
Peak speed	72.8 (23:00)	-	-	km/h
Mean Exceeding	64.0	63.3	64.8	km/h
Number speeding	24	13	11	
Percent speeding	0.1	0.1	0.2	

Posted speed limit = 60 km/h

Class

Class	All Days	Weekdays	Weekend	
1 - SV	19744	14326	5418	
2 - SVT	218	154	64	
3 - TB2	1089	919	170	
4 - TB3	258	210	48	
5 - T4	37	27	10	
6 - ART3	25	20	5	
7 - ART4	27	22	5	
8 - ART5	11	11	0	
9 - ART6	29	26	3	
10 - BD	4	4	0	
11 - DRT	0	0	0	
12 - TRT	0	0	0	

Appendix D Traffic Count Information

1. Stoddart Dr / Tiger Brennan Dr / Woolner Rd

Date: Wednesday, 3 August 2022

AM Period Between 7-9am

Time Start	7:00	**Time Finish**	9:00

	Tiger Brennan Drive Eastbound												**Woolner Drive Southbound**											
	Direction 1 (Left)				Direction 2 (Through)				Direction 3 (Right)				Direction 4 (Left)				Direction 5 (Through)				Direction 6 (Right)			
Time Block (15mins)	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds
A - 7:00-7:15	28				144	1			3				30	2			4				56	5	1	
B - 7:15-7:30	35				149	3			6	1			41	1			2	1		1	109	3		
C - 7:30-7:45	37				188				10				50	1	1		5	1			132	2		
D - 7:45-8:00	49	1			256	7			13				48	1			12				151	1		
E - 8:00-8:15	43	3			182	10			23				52	5			10				178			
F - 8:15-8:30	45				186	3	1		7	1			32	1			10				134	3		
G - 8:30-8:45	59				126	9			4	1			42	1			10				101	2		
H - 8:45-9:00	42				123	5			12	2			31				10	2			100	4		

Peak Hour Calc	
A-D	3579
B-E	4010
C-F	4150
D-G	3882
E-H	3275

	Tiger Brennan Drive Westbound												**Stoddart Drive Northbound**											
	Direction 7 (Left)				Direction 8 (Through)				Direction 9 (Right)				Direction 10 (Left)				Direction 11 (Through)				Direction 12 (Right)			
Time Block (15mins)	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds
A - 7:00-7:15	1				220	3		2	19		1		7	1			13				39		1	
B - 7:15-7:30	1				340	10	2		38	1			11	2			33	1	4		27			
C - 7:30-7:45	1				441	5			97	1			17	2			43	1	1		33			
D - 7:45-8:00	1				433	5			92	2			35				41				38			
E - 8:00-8:15	0				354	4			71				17				38				27			
F - 8:15-8:30	2				395	9			45				20	1			27			2	29			
G - 8:30-8:45	1				317	5			79	2			10				18	1			19			
H - 8:45-9:00	2				184	8			28	2			10				16	1	1		4	2		

Pedestrian Movements - Times crossing activated

Time Block (15mins)	PD1	PD2
A - 7:00-7:15		
B - 7:15-7:30	1	
C - 7:30-7:45		
D - 7:45-8:00		
E - 8:00-8:15		
F - 8:15-8:30		1
G - 8:30-8:45		
H - 8:45-9:00		

1. Stoddart Dr / Tiger Brennan Dr / Woolner Rd

Date: Tuesday, 2 August 2022

PM Period Between 4-6pm

Time Start	16:00	**Time Finish**	18:00

	Tiger Brennan Drive Eastbound												**Woolner Drive Southbound**											
	Direction 1 (Left)				Direction 2 (Through)				Direction 3 (Right)				Direction 4 (Left)				Direction 5 (Through)				Direction 6 (Right)			
Time Block (15mins)	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds
A - 16:00-16:15	80	1			325	3			15				60	2			20				90	1		
B - 16:15-16:30	90				277	3			12				58	1			28				61	1		
C - 16:30-16:45	110	1			425	3	1		24				72				23		1		79	3	1	
D - 16:45-17:00	125				475	3			35	1			55				31				103	3	2	
E - 17:00-17:15	136				410	5			38				80				37				67	3	1	
F - 17:15-17:30	85				120	2			40				60				36				98	2	1	
G - 17:30-17:45	86				451	2	1		16				41				24				77	1		
H - 17:45-18:00	75	1			142	3			21	1			39				18				105	1	2	

Peak Hour Calc	
A-D	3789
B-E	3917
C-F	3828
D-G	3731
E-H	3198

	Tiger Brennan Drive Westbound												**Stoddart Drive Northbound**											
	Direction 7 (Left)				Direction 8 (Through)				Direction 9 (Right)				Direction 10 (Left)				Direction 11 (Through)				Direction 12 (Right)			
Time Block (15mins)	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds
A - 16:00-16:15	7	1			203	1			50	1			14	1			10	2			18		1	
B - 16:15-16:30	5				173	3	3		15	1			15				12				20			
C - 16:30-16:45	7				208	2	1		43				8				16				5			
D - 16:45-17:00	8				193	1	5		57	1			8				15				6			
E - 17:00-17:15	2		1		163	5	1		50				2	1			23				12			
F - 17:15-17:30	3				158	3	1		41				6				22		1		8			
G - 17:30-17:45	3				150				37		2		7				20				11			
H - 17:45-18:00	0				119	3	1		17				7	1			23				12		1	

Pedestrian Movements - Times crossing activated

Time Block (15mins)	PD1	PD2
A - 16:00-16:15		
B - 16:15-16:30		
C - 16:30-16:45	1	1
D - 16:45-17:00		
E - 17:00-17:15		
F - 17:15-17:30		
G - 17:30-17:45		1
H - 17:45-18:00		

2.Stoddart Dr / Tiger Brennan Dr

Date:	Thursday, 4 August 2022		
AM Period Between 7-9am			
Time Start	7:30	**Time Finish**	8:30

	Tiger Brennan Drive Westbound								Stoddart Drive			
	Direction 1 (Left)				Direction 2 (Through)				Direction 3 (Left)			
Time Block (15mins)	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds
A - 7:00-7:15	1	1		1	271	6	1		4		1	
B - 7:15-7:30	3	1		1	339	3	1	1	0		1	3
C - 7:30-7:45	2			1	490	10			6			1
D - 7:45-8:00	7			1	521	11			2			
E - 8:00-8:15	5			1	464	11			7			
F - 8:15-8:30	4				424	7		1	7			
G - 8:30-8:45	9	1			353	12			7			
H - 8:45-9:00	5				228	10		1	5			

Peak Hour Calc	
A-D	1646
B-E	1846
C-F	1939
D-G	1810
E-H	1518

Date:	Wednesday, 3 August 2022		
PM Period Between 4-6pm			
Time Start	16:30	**Time Finish**	17:30

	Tiger Brennan Drive Westbound								Stoddart Drive			
	Direction 1 (Left)				Direction 2 (Through)				Direction 3 (Left)			
Time Block (15mins)	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds
A - 16:00-16:15	17				187	2	1		7			
B - 16:15-16:30	27				422	5	1		3			
C - 16:30-16:45	27		1		292	1	1		3			
D - 16:45-17:00	25		1		266	1	1		8			
E - 17:00-17:15	30				230	3			9			
F - 17:15-17:30	33				250	4	2		4			
G - 17:30-17:45	23				195		3		9			
H - 17:45-18:00	17				228	4	2		5			

Peak Hour Calc	
A-D	1284
B-E	1342
C-F	1177
D-G	1082
E-H	1033

3. Stoddart Dr / Fanning Dr

Date: Friday, 5 August 2022
AM Period Between 7-9am

Time Start	7:00	Time Finish	9:00

	Stoddart Drive Eastbound								Stoddart Drive Southbound								Fanning Drive Northbound							
	Direction 1 (Left)				Direction 2 (Right)				Direction 3 (Right)				Direction 4 (Through)				Direction 5 (Through)				Direction 6 (Left)			
Time Block (15mins)	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds
A - 7:00-7:15	0	1			2			1	2	1			2				2			1	19			2
B - 7:15-7:30	0	2			4			6	3	3		1	3	1		1	5			5	29			1
C - 7:30-7:45	2	1	1		2		1	2	2	1			1				5			2	22			
D - 7:45-8:00	3				2		1		6				2			1	5		1		30			
E - 8:00-8:15	0				2				2				3				4		1	1	27		1	
F - 8:15-8:30	0	1			3			1	7	1			2				6				10			
G - 8:30-8:45	1				6				7	1			2				3				9			
H - 8:45-9:00	1			1	9				5				5				10				18			1

Peak Hour Calc	
A-D	153
B-E	164
C-F	148
D-G	142
E-H	142

Date: Thursday, 4 August 2022
PM Period Between 4-6pm

Time Start	16:00	Time Finish	18:00

	Stoddart Drive Eastbound								Stoddart Drive Southbound								Fanning Drive Northbound							
	Direction 1 (Left)				Direction 2 (Right)				Direction 3 (Right)				Direction 4 (Through)				Direction 5 (Through)				Direction 6 (Left)			
Time Block (15mins)	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds
A - 16:00-16:15	1				14				4				9				6				9			
B - 16:15-16:30	3				13				7				14				7				9			
C - 16:30-16:45	0				12				2			1	25				9				6			
D - 16:45-17:00	1				10			1	13			2	19				5				4			
E - 17:00-17:15	1				11			1	9	1	1		17				6				6			1
F - 17:15-17:30	1				16				16				21		1		6			1	13			
G - 17:30-17:45	1				20		1	1	13				13		1		16		1	4	8			2
H - 17:45-18:00	0			1	11			2	12	1		2	13				6		2		14			

Peak Hour Calc	
A-D	202
B-E	209
C-F	229
D-G	246
E-H	250

4. Stoddart Dr / Bayview Blvd

Date: Friday, 5 August 2022
AM Period Between 7-9am

Time Start	7:00	**Time Finish**	9:00

	Stoddart Drive Southbound								**Stoddart Drive Westbound**								**Bayview Boulevard Northbound**							
	Direction 1 (Left)				Direction 2 (Through)				Direction 3 (Right)				Direction 4 (Through)				Direction 5 (Through)				Direction 6 (Right)			
Time Block (15mins)	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds
A - 7:00-7:15	7				0							1	42	1			16				0			3
B - 7:15-7:30	4	2			2				1	2			52		1		21	2	1		0		1	1
C - 7:30-7:45	2	1			3			1	1	1		1	70	1	5	1	20	2			0			
D - 7:45-8:00	17				8				1				75				25		1		0			
E - 8:00-8:15	14			1	14				0			1	57				17				0			2
F - 8:15-8:30	14	1			2	1			0	1			40			2	15	1			0			
G - 8:30-8:45	18				9				0				28				10	1			0			
H - 8:45-9:00	12				3				3				36				12		1		0			1

Peak Hour Calc	
A-D	367
B-E	404
C-F	395
D-G	364
E-H	304

Date: Thursday, 4 August 2022
PM Period Between 4-6pm

Time Start	16:00	**Time Finish**	18:00

	Stoddart Drive Southbound								**Stoddart Drive Westbound**								**Bayview Boulevard Northbound**							
	Direction 1 (Left)				Direction 2 (Through)				Direction 3 (Right)				Direction 4 (Through)				Direction 5 (Through)				Direction 6 (Right)			
Time Block (15mins)	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds	LV	HV	Cycle	Peds
A - 16:00-16:15	26				2				2				20				2				2			
B - 16:15-16:30	19	1			14				3				21				6				3			
C - 16:30-16:45	39				8				4				20	1			6				0			
D - 16:45-17:00	27				13				1				12				6				1			1
E - 17:00-17:15	39	1			13				1	1			18				9	1			0			
F - 17:15-17:30	35		2		17				5			1	20				6				3			1
G - 17:30-17:45	52				18				4				33		1	1	15				0			
H - 17:45-18:00	21	1			21				3	1			27				4	1			1			

Peak Hour Calc	
A-D	257
B-E	283
C-F	303
D-G	348
E-H	365

Appendix E Traffic Volume Calculations Overview

AM Peaks

1. Stoddart Dr / Tiger Brennan Dr / Woolner Rd

		Traffic Development (AADT)								Heavy Vehicles			
Approaching Road	**Direction**	**2022 Existing**	**2027 Background**	**2032 Background**	**Development Traffic**	**2022 Developed**	**Adopted Annual Growth %**	**2027 Developed**	**2032 Developed**	**2022 Existing**	**2022 Developed**	**2027 Developed**	**2032 Developed**
Tiger Brennan Road Southwest	Left	178	196	215	0	178	2.0%	196	215	4	4	4	5
	Through	832	915	1007	0	832	2.0%	915	1007	20	20	22	24
	Right	54	55	55	2	56	0.2%	56	57	1	1	1	1
Woolner Road Northwest	Left	190	209	230	0	190	2.0%	209	230	8	8	9	10
	Through	38	38	39	1	39	0.2%	40	40	1	1	1	1
	Right	601	646	695	0	601	1.5%	646	695	3	3	3	3
Tiger Brennan Road Northeast	Left	4	4	4	0	4	0.2%	4	4	0	0	1	1
	Through	1646	1769	1902	3	1649	1.5%	1773	1906	23	23	25	27
	Right	308	331	356	1	309	1.5%	332	357	3	3	3	3
Stoddart Drive Southeast	Left	92	93	94	5	97	0.2%	98	99	3	3	3	3
	Through	150	152	153	9	159	0.2%	160	162	1	1	1	1
	Right	127	128	130	8	135	0.2%	136	137	0	0	1	1

2.Stoddart Dr / Tiger Brennan Dr

		Traffic Development (AADT)								Heavy Vehicles			
Approaching Road	**Direction**	**2022 Existing**	**2027 Background**	**2032 Background**	**Development Traffic**	**2022 Developed**	**Adopted Annual Growth %**	**2027 Developed**	**2032 Developed**	**2022 Existing**	**2022 Developed**	**2027 Developed**	**2032 Developed**
Tiger Brennan Road Northeast	Left	18	18	18	2	20	0.2%	21	21	0	0	1	1
	Through	1938	2083	2240	0	1938	1.5%	2083	2240	39	39	42	45
Stoddart Drive Southeast	Left	22	22	22	4	26	0.2%	26	26	0	0	1	1

3. Stoddart Dr / Fanning Dr

		Traffic Development (AADT)								Heavy Vehicles			
Approaching Road	**Direction**	**2022 Existing**	**2027 Background**	**2032 Background**	**Development Traffic**	**2022 Developed**	**Adopted Annual Growth %**	**2027 Developed**	**2032 Developed**	**2022 Existing**	**2022 Developed**	**2027 Developed**	**2032 Developed**
Stoddart Drive West	Left	8	8	8	0	8	0.2%	8	8	3	3	3	3
	Right	10	10	10	3	13	0.2%	13	13	0	0	1	1
Stoddart Drive North	Right	17	17	17	0	17	0.2%	17	17	4	4	4	4
	Through	10	10	10	2	12	0.2%	12	13	1	1	1	1
Fanning Drive Southwest	Through	19	19	19	4	23	0.2%	23	23	0	0	1	1
	Left	108	109	110	22	130	0.2%	132	133	0	0	1	1

4. Stoddart Dr / Bayview Blvd

		Traffic Development (AADT)								Heavy Vehicles			
Approaching Road	**Direction**	**2022 Existing**	**2027 Background**	**2032 Background**	**Development Traffic**	**2022 Developed**	**Adopted Annual Growth %**	**2027 Developed**	**2032 Developed**	**2022 Existing**	**2022 Developed**	**2027 Developed**	**2032 Developed**
Stoddart Drive Northwest	Left	40	40	41	3	43	0.2%	43	44	4	4	4	4
	Right	27	27	28	0	27	0.2%	27	28	0	0	1	1
Stoddart Drive East	Through	6	6	6	1	7	0.2%	7	7	3	3	3	3
	Right	255	258	260	22	277	0.2%	280	282	1	1	1	1
Bayview Blvd South	Through	87	88	89	0	87	0.2%	88	89	4	4	4	4
	Right	0	0	0	0	0	0.2%	0	0	0	0	1	1

PM Peaks

1. Stoddart Dr / Tiger Brennan Dr / Woolner Rd

		Traffic Development (AADT)								Heavy Vehicles			
Approaching Road	Direction	2022 Existing	2027 Background	2032 Background	Development Traffic	2022 Developed	Adopted Annual Growth %	2027 Developed	2032 Developed	2022 Existing	2022 Developed	2027 Developed	2032 Developed
Tiger Brennan Road Southwest	Left	462	508	559	0	462	2.0%	508	559	1	1	1	1
	Through	1601	1761	1937	0	1601	2.0%	1761	1937	14	14	15	17
	Right	110	111	112	4	114	0.2%	115	116	1	1	1	1
Woolner Road Northwest	Left	266	293	322	0	266	2.0%	293	322	1	1	1	1
	Through	119	120	121	5	124	0.2%	125	126	0	0	1	1
	Right	320	344	370	0	320	1.5%	344	370	10	10	11	12
Tiger Brennan Road Northeast	Left	22	22	22	0	22	0.2%	22	23	0	0	1	1
	Through	748	804	864	4	752	1.5%	809	870	11	11	12	13
	Right	167	180	193	1	168	1.5%	181	194	2	2	2	2
Stoddart Drive Southeast	Left	34	34	35	3	37	0.2%	37	37	1	1	1	1
	Through	66	67	67	5	71	0.2%	72	72	0	0	1	1
	Right	43	43	44	3	46	0.2%	47	47	0	0	1	1

2.Stoddart Dr / Tiger Brennan Dr

		Traffic Development (AADT)								Heavy Vehicles			
Approaching Road	Direction	2022 Existing	2027 Background	2032 Background	Development Traffic	2022 Developed	Adopted Annual Growth %	2027 Developed	2032 Developed	2022 Existing	2022 Developed	2027 Developed	2032 Developed
Tiger Brennan Road Northeast	Left	109	110	111	10	119	0.2%	120	121	0	0	1	1
	Through	1220	1312	1410	0	1220	1.5%	1312	1410	10	10	11	12
Stoddart Drive Southeast	Left	23	23	23	6	29	0.2%	29	29	0	0	1	1

3. Stoddart Dr / Fanning Dr

		Traffic Development (AADT)								Heavy Vehicles			
Approaching Road	Direction	2022 Existing	2027 Background	2032 Background	Development Traffic	2022 Developed	Adopted Annual Growth %	2027 Developed	2032 Developed	2022 Existing	2022 Developed	2027 Developed	2032 Developed
Stoddart Drive West	Left	3	3	3	0	3	0.2%	3	3	0	0	1	1
	Right	58	59	59	9	67	0.2%	68	68	0	0	1	1
Stoddart Drive North	Right	52	53	53	0	52	0.2%	53	53	2	2	2	2
	Through	64	65	65	10	74	0.2%	74	75	0	0	1	1
Fanning Drive Southwest	Through	34	34	35	6	40	0.2%	40	40	0	0	1	1
	Left	41	41	42	7	48	0.2%	48	49	0	0	1	1

4. Stoddart Dr / Bayview Blvd

		Traffic Development (AADT)								Heavy Vehicles			
Approaching Road	Direction	2022 Existing	2027 Background	2032 Background	Development Traffic	2022 Developed	Adopted Annual Growth %	`	2032 Developed	2022 Existing	2022 Developed	2027 Developed	2032 Developed
Stoddart Drive Northwest	Left	149	150	152	9	158	0.2%	159	161	2	2	2	2
	Right	69	70	70	0	69	0.2%	70	70	0	0	1	1
Stoddart Drive East	Through	15	15	15	1	16	0.2%	16	16	2	2	2	2
	Right	98	99	100	11	109	0.2%	110	111	0	0	1	1
Bayview Blvd South	Through	36	36	37	0	36	0.2%	36	37	2	2	2	2
	Right	4	4	4	0	4	0.2%	4	4	0	0	1	1

Appendix F SIDRA Movement Summary Outputs

MOVEMENT SUMMARY

Site: 101 [1. AM 2022 Background (Existing) (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	92	3	97	3.3	0.109	17.2	LOS B	2.6	18.6	0.53	0.66	0.53	45.4
22	T1	150	1	158	0.7	* 0.767	61.5	LOS E	9.1	64.3	1.00	0.90	1.16	27.3
23	R2	127	0	134	0.0	0.767	66.2	LOS E	8.8	61.6	1.00	0.90	1.17	28.7
Approach		369	4	388	1.1	0.767	52.1	LOS D	9.1	64.3	0.88	0.84	1.01	30.9
NorthEast: Tiger Brennan Drive														
24	L2	4	0	4	0.0	0.003	8.0	LOS A	0.0	0.2	0.15	0.62	0.15	54.7
25	T1	1646	23	1733	1.4	* 0.733	32.0	LOS C	28.4	201.1	0.91	0.81	0.91	47.2
26	R2	308	3	324	1.0	* 0.753	66.9	LOS E	9.8	69.4	1.00	0.86	1.14	29.2
Approach		1958	26	2061	1.3	0.753	37.5	LOS D	28.4	201.1	0.92	0.82	0.94	43.1
NorthWest: Woolner Road														
27	L2	190	8	200	4.2	0.202	8.6	LOS A	3.1	22.7	0.35	0.62	0.35	50.7
28	T1	38	1	40	2.6	* 0.750	52.6	LOS D	10.6	75.1	0.97	0.88	1.09	28.4
29	R2	601	3	633	0.5	0.750	57.9	LOS E	14.2	99.9	0.99	0.88	1.09	30.6
Approach		829	12	873	1.4	0.750	46.4	LOS D	14.2	99.9	0.84	0.82	0.92	33.5
SouthWest: Tiger Brennan Drive														
30	L2	178	4	187	2.2	0.103	8.2	LOS A	0.0	0.0	0.00	0.60	0.00	65.5
31	T1	832	20	876	2.4	0.372	26.4	LOS C	11.8	84.3	0.74	0.64	0.74	50.9
32	R2	54	1	57	1.9	0.266	60.6	LOS E	3.1	22.2	0.95	0.75	0.95	30.6
Approach		1064	25	1120	2.3	0.372	25.1	LOS C	11.8	84.3	0.63	0.64	0.63	51.1
All Vehicles		4220	67	4442	1.6	0.767	37.4	LOS D	28.4	201.1	0.83	0.78	0.86	41.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. AM 2022 Background + Development (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	97	3	102	3.1	0.115	17.3	LOS B	2.7	19.7	0.53	0.66	0.53	45.4
22	T1	159	1	167	0.6	* 0.751	60.1	LOS E	9.6	67.5	1.00	0.89	1.14	27.6
23	R2	135	0	142	0.0	0.751	64.8	LOS E	9.2	64.6	1.00	0.89	1.14	29.0
Approach		391	4	412	1.0	0.751	51.1	LOS D	9.6	67.5	0.88	0.83	0.99	31.1
NorthEast: Tiger Brennan Drive														
24	L2	4	0	4	0.0	0.003	8.0	LOS A	0.0	0.2	0.15	0.62	0.15	54.7
25	T1	1649	23	1736	1.4	* 0.749	33.0	LOS C	28.9	204.6	0.92	0.82	0.92	46.7
26	R2	309	3	325	1.0	* 0.756	67.0	LOS E	9.9	69.7	1.00	0.86	1.14	29.2
Approach		1962	26	2065	1.3	0.756	38.3	LOS D	28.9	204.6	0.93	0.83	0.95	42.7
NorthWest: Woolner Road														
27	L2	190	8	200	4.2	0.202	8.6	LOS A	3.1	22.7	0.35	0.62	0.35	50.7
28	T1	39	1	41	2.6	* 0.751	52.6	LOS D	10.7	75.3	0.97	0.88	1.09	28.4
29	R2	601	3	633	0.5	0.751	58.0	LOS E	14.3	100.2	0.99	0.88	1.09	30.6
Approach		830	12	874	1.4	0.751	46.4	LOS D	14.3	100.2	0.84	0.82	0.92	33.5
SouthWest: Tiger Brennan Drive														
30	L2	178	4	187	2.2	0.103	8.3	LOS A	0.0	0.0	0.00	0.60	0.00	65.5
31	T1	832	20	876	2.4	0.380	27.1	LOS C	12.0	85.5	0.75	0.65	0.75	50.4
32	R2	56	1	59	1.8	0.276	60.7	LOS E	3.2	23.0	0.95	0.75	0.95	30.6
Approach		1066	25	1122	2.3	0.380	25.8	LOS C	12.0	85.5	0.64	0.65	0.64	50.6
All Vehicles		4249	67	4473	1.6	0.756	37.9	LOS D	28.9	204.6	0.84	0.78	0.87	40.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. AM 2027 Background (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	93	3	98	3.2	0.117	19.3	LOS B	2.8	20.4	0.57	0.67	0.57	44.3
22	T1	152	1	160	0.7	* 0.777	61.9	LOS E	9.3	65.5	1.00	0.91	1.18	27.2
23	R2	128	1	135	0.8	0.777	66.6	LOS E	8.9	62.8	1.00	0.91	1.19	28.6
Approach		373	5	393	1.3	0.777	52.9	LOS D	9.3	65.5	0.89	0.85	1.03	30.7
NorthEast: Tiger Brennan Drive														
24	L2	4	1	4	25.0	0.003	8.4	LOS A	0.0	0.2	0.15	0.62	0.15	54.2
25	T1	1769	27	1862	1.5	* 0.788	34.0	LOS C	32.1	227.3	0.94	0.85	0.95	46.1
26	R2	331	3	348	0.9	* 0.809	69.3	LOS E	10.9	76.8	1.00	0.89	1.21	28.6
Approach		2104	31	2215	1.5	0.809	39.5	LOS D	32.1	227.3	0.95	0.86	0.99	42.1
NorthWest: Woolner Road														
27	L2	209	9	220	4.3	0.228	9.0	LOS A	3.7	26.6	0.37	0.63	0.37	50.3
28	T1	38	1	40	2.6	* 0.813	55.9	LOS E	11.5	81.1	0.97	0.94	1.19	27.7
29	R2	646	3	680	0.5	0.813	61.2	LOS E	16.1	113.1	0.99	0.93	1.17	29.8
Approach		893	13	940	1.5	0.813	48.7	LOS D	16.1	113.1	0.85	0.86	0.98	32.8
SouthWest: Tiger Brennan Drive														
30	L2	196	4	206	2.0	0.113	8.3	LOS A	0.0	0.0	0.00	0.60	0.00	65.6
31	T1	915	22	963	2.4	0.410	26.9	LOS C	13.2	94.4	0.76	0.65	0.76	50.6
32	R2	55	1	58	1.8	0.271	60.7	LOS E	3.2	22.6	0.95	0.75	0.95	30.6
Approach		1166	27	1227	2.3	0.410	25.3	LOS C	13.2	94.4	0.64	0.65	0.64	51.0
All Vehicles		4536	76	4775	1.7	0.813	38.8	LOS D	32.1	227.3	0.84	0.80	0.90	40.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. AM 2027 Background + Development (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	98	3	103	3.1	0.124	19.9	LOS B	3.0	21.9	0.58	0.67	0.58	44.0
22	T1	160	1	168	0.6	*0.821	63.9	LOS E	10.1	70.8	1.00	0.95	1.25	26.9
23	R2	136	1	143	0.7	0.821	68.6	LOS E	9.6	67.8	1.00	0.95	1.25	28.1
Approach		394	5	415	1.3	0.821	54.6	LOS D	10.1	70.8	0.90	0.88	1.08	30.2
NorthEast: Tiger Brennan Drive														
24	L2	4	1	4	25.0	0.003	8.4	LOS A	0.0	0.2	0.15	0.62	0.15	54.2
25	T1	1773	27	1866	1.5	*0.790	34.1	LOS C	32.2	228.4	0.94	0.86	0.96	46.0
26	R2	332	3	349	0.9	*0.812	69.4	LOS E	10.9	77.1	1.00	0.89	1.22	28.6
Approach		2109	31	2220	1.5	0.812	39.6	LOS D	32.2	228.4	0.95	0.86	1.00	42.0
NorthWest: Woolner Road														
27	L2	209	9	220	4.3	0.230	9.3	LOS A	3.8	27.6	0.38	0.63	0.38	50.1
28	T1	40	1	42	2.5	*0.815	56.1	LOS E	11.5	81.4	0.97	0.94	1.19	27.7
29	R2	646	3	680	0.5	0.815	61.4	LOS E	16.2	113.8	0.99	0.93	1.17	29.8
Approach		895	13	942	1.5	0.815	49.0	LOS D	16.2	113.8	0.85	0.86	0.99	32.8
SouthWest: Tiger Brennan Drive														
30	L2	196	4	206	2.0	0.113	8.3	LOS A	0.0	0.0	0.00	0.60	0.00	65.6
31	T1	915	22	963	2.4	0.410	26.9	LOS C	13.2	94.4	0.76	0.65	0.76	50.6
32	R2	56	1	59	1.8	0.276	60.7	LOS E	3.2	23.0	0.95	0.75	0.95	30.6
Approach		1167	27	1228	2.3	0.410	25.4	LOS C	13.2	94.4	0.64	0.65	0.64	50.9
All Vehicles		4565	76	4805	1.7	0.821	39.1	LOS D	32.2	228.4	0.85	0.81	0.91	40.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. AM 2032 Background (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	94	3	99	3.2	0.129	22.8	LOS C	3.2	22.9	0.62	0.68	0.62	42.5
22	T1	153	1	161	0.7	* 0.857	66.9	LOS E	9.9	69.5	1.00	0.99	1.33	26.3
23	R2	130	1	137	0.8	0.857	71.7	LOS E	9.5	66.6	1.00	0.99	1.34	27.5
Approach		377	5	397	1.3	0.857	57.5	LOS E	9.9	69.5	0.91	0.91	1.15	29.5
NorthEast: Tiger Brennan Drive														
24	L2	4	1	4	25.0	0.003	8.4	LOS A	0.0	0.2	0.15	0.62	0.15	54.2
25	T1	1902	27	2002	1.4	* 0.847	39.3	LOS D	38.0	269.4	0.97	0.93	1.05	43.2
26	R2	356	3	375	0.8	* 0.870	73.7	LOS E	12.3	86.4	1.00	0.94	1.33	27.7
Approach		2262	31	2381	1.4	0.870	44.7	LOS D	38.0	269.4	0.98	0.93	1.09	39.7
NorthWest: Woolner Road														
27	L2	230	10	242	4.3	0.258	9.8	LOS A	4.5	32.4	0.40	0.64	0.40	49.8
28	T1	39	1	41	2.6	* 0.841	57.6	LOS E	12.2	86.2	0.97	0.97	1.23	27.4
29	R2	695	3	732	0.4	0.841	62.7	LOS E	17.9	125.6	0.99	0.96	1.21	29.4
Approach		964	14	1015	1.5	0.841	49.9	LOS D	17.9	125.6	0.85	0.88	1.01	32.5
SouthWest: Tiger Brennan Drive														
30	L2	215	5	226	2.3	0.124	8.3	LOS A	0.0	0.0	0.00	0.60	0.00	65.5
31	T1	1007	24	1060	2.4	0.451	27.4	LOS C	14.9	106.1	0.78	0.67	0.78	50.2
32	R2	55	1	58	1.8	0.271	60.7	LOS E	3.2	22.6	0.95	0.75	0.95	30.6
Approach		1277	30	1344	2.3	0.451	25.7	LOS C	14.9	106.1	0.65	0.66	0.65	50.8
All Vehicles		4880	80	5137	1.6	0.870	41.7	LOS D	38.0	269.4	0.86	0.85	0.97	39.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. AM 2032 Background + Development (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	99	3	104	3.0	0.137	23.5	LOS C	3.4	24.7	0.63	0.69	0.63	42.2
22	T1	162	1	171	0.6	* 0.829	64.3	LOS E	10.2	71.9	1.00	0.96	1.26	26.8
23	R2	137	1	144	0.7	0.829	69.1	LOS E	9.8	68.9	1.00	0.96	1.27	28.0
Approach		398	5	419	1.3	0.829	55.8	LOS E	10.2	71.9	0.91	0.89	1.11	29.9
NorthEast: Tiger Brennan Drive														
24	L2	4	1	4	25.0	0.003	8.4	LOS A	0.0	0.2	0.15	0.62	0.15	54.2
25	T1	1906	27	2006	1.4	* 0.867	42.6	LOS D	39.8	282.0	0.99	0.97	1.10	41.6
26	R2	357	3	376	0.8	* 0.872	74.0	LOS E	12.3	86.9	1.00	0.94	1.33	27.6
Approach		2267	31	2386	1.4	0.872	47.5	LOS D	39.8	282.0	0.99	0.96	1.13	38.6
NorthWest: Woolner Road														
27	L2	230	10	242	4.3	0.257	10.1	LOS B	4.6	33.3	0.41	0.64	0.41	49.6
28	T1	40	1	42	2.5	* 0.842	57.7	LOS E	12.3	86.4	0.97	0.97	1.24	27.4
29	R2	695	3	732	0.4	0.842	62.8	LOS E	17.9	125.9	0.99	0.96	1.21	29.4
Approach		965	14	1016	1.5	0.842	50.0	LOS D	17.9	125.9	0.85	0.88	1.02	32.5
SouthWest: Tiger Brennan Drive														
30	L2	215	5	226	2.3	0.124	8.3	LOS A	0.0	0.0	0.00	0.60	0.00	65.5
31	T1	1007	24	1060	2.4	0.460	28.2	LOS C	15.1	107.7	0.79	0.68	0.79	49.6
32	R2	57	1	60	1.8	0.280	60.8	LOS E	3.3	23.4	0.95	0.76	0.95	30.5
Approach		1279	30	1346	2.3	0.460	26.3	LOS C	15.1	107.7	0.66	0.67	0.66	50.3
All Vehicles		4909	80	5167	1.6	0.872	43.2	LOS D	39.8	282.0	0.87	0.87	0.98	38.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. PM 2022 Background (Existing) (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	32	1	34	3.1	0.028	7.5	LOS A	0.4	3.0	0.28	0.57	0.28	51.7
22	T1	66	0	69	0.0	*0.600	64.9	LOS E	3.6	25.4	1.00	0.78	1.07	26.6
23	R2	43	0	45	0.0	0.600	69.5	LOS E	3.5	24.4	1.00	0.78	1.08	28.1
Approach		141	1	148	0.7	0.600	53.3	LOS D	3.6	25.4	0.84	0.73	0.89	30.4
NorthEast: Tiger Brennan Drive														
24	L2	22	0	23	0.0	0.016	9.3	LOS A	0.2	1.6	0.23	0.64	0.23	53.6
25	T1	748	11	787	1.5	0.267	17.7	LOS B	8.6	60.9	0.61	0.52	0.61	57.8
26	R2	167	2	176	1.2	0.477	64.4	LOS E	5.1	35.8	0.99	0.78	0.99	29.8
Approach		937	13	986	1.4	0.477	25.9	LOS C	8.6	60.9	0.67	0.57	0.67	49.4
NorthWest: Woolner Road														
27	L2	266	1	280	0.4	0.353	12.3	LOS B	6.6	46.4	0.49	0.68	0.49	48.9
28	T1	119	0	125	0.0	*0.613	52.8	LOS D	8.2	57.5	0.98	0.79	0.98	29.1
29	R2	320	10	337	3.1	0.613	58.0	LOS E	8.9	64.2	0.99	0.81	0.99	30.4
Approach		705	11	742	1.6	0.613	39.9	LOS D	8.9	64.2	0.80	0.76	0.80	35.1
SouthWest: Tiger Brennan Drive														
30	L2	462	1	486	0.2	0.262	7.9	LOS A	0.0	0.0	0.00	0.60	0.00	66.1
31	T1	1601	14	1685	0.9	*0.602	21.7	LOS C	24.3	171.1	0.75	0.67	0.75	54.4
32	R2	110	1	116	0.9	*0.628	65.8	LOS E	6.8	48.2	1.00	0.80	1.04	29.3
Approach		2173	16	2287	0.7	0.628	21.0	LOS C	24.3	171.1	0.60	0.66	0.60	54.1
All Vehicles		3956	41	4164	1.0	0.628	26.7	LOS C	24.3	171.1	0.66	0.66	0.66	47.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. PM 2022 Background + Development (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	37	1	39	2.7	0.033	7.5	LOS A	0.5	3.4	0.28	0.57	0.28	51.7
22	T1	71	0	75	0.0	*0.644	65.4	LOS E	3.9	27.4	1.00	0.80	1.11	26.5
23	R2	46	0	48	0.0	0.644	70.0	LOS E	3.8	26.4	1.00	0.80	1.12	28.0
Approach		154	1	162	0.6	0.644	52.9	LOS D	3.9	27.4	0.83	0.74	0.91	30.5
NorthEast: Tiger Brennan Drive														
24	L2	22	0	23	0.0	0.016	9.3	LOS A	0.2	1.6	0.23	0.64	0.23	53.6
25	T1	752	11	792	1.5	0.273	18.4	LOS B	8.8	62.3	0.62	0.53	0.62	57.2
26	R2	168	2	177	1.2	0.443	63.2	LOS E	5.0	35.5	0.98	0.78	0.98	30.1
Approach		942	13	992	1.4	0.443	26.2	LOS C	8.8	62.3	0.67	0.58	0.67	49.2
NorthWest: Woolner Road														
27	L2	266	1	280	0.4	0.349	12.2	LOS B	6.6	46.1	0.49	0.68	0.49	48.9
28	T1	124	0	131	0.0	*0.621	52.9	LOS D	8.2	57.9	0.98	0.79	0.99	29.1
29	R2	320	10	337	3.1	0.621	58.2	LOS E	9.1	65.2	0.99	0.81	1.00	30.4
Approach		710	11	747	1.5	0.621	40.0	LOS D	9.1	65.2	0.80	0.76	0.80	35.1
SouthWest: Tiger Brennan Drive														
30	L2	462	1	486	0.2	0.262	8.0	LOS A	0.0	0.0	0.00	0.60	0.00	66.1
31	T1	1601	14	1685	0.9	*0.613	22.5	LOS C	24.8	174.7	0.76	0.68	0.76	53.8
32	R2	114	1	120	0.9	*0.600	64.3	LOS E	7.0	49.2	1.00	0.80	1.01	29.7
Approach		2177	16	2292	0.7	0.613	21.6	LOS C	24.8	174.7	0.61	0.67	0.61	53.7
All Vehicles		3983	41	4193	1.0	0.644	27.2	LOS C	24.8	174.7	0.67	0.67	0.67	46.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. PM 2027 Background (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	34	1	36	2.9	0.030	7.7	LOS A	0.5	3.3	0.29	0.57	0.29	51.5
22	T1	67	1	71	1.5	* 0.613	65.1	LOS E	3.7	26.0	1.00	0.78	1.08	26.5
23	R2	43	1	45	2.3	0.613	69.8	LOS E	3.5	25.1	1.00	0.78	1.09	27.9
Approach		144	3	152	2.1	0.613	52.9	LOS D	3.7	26.0	0.83	0.73	0.90	30.5
NorthEast: Tiger Brennan Drive														
24	L2	22	1	23	4.5	0.017	9.3	LOS A	0.2	1.7	0.23	0.64	0.23	53.6
25	T1	804	12	846	1.5	0.278	16.8	LOS B	9.0	64.0	0.59	0.51	0.59	58.7
26	R2	180	2	189	1.1	0.561	66.0	LOS E	5.6	39.2	1.00	0.78	1.00	29.4
Approach		1006	15	1059	1.5	0.561	25.4	LOS C	9.0	64.0	0.66	0.56	0.66	49.7
NorthWest: Woolner Road														
27	L2	293	1	308	0.3	0.461	15.1	LOS B	8.7	61.1	0.58	0.72	0.58	47.1
28	T1	120	1	126	0.8	* 0.703	55.4	LOS E	8.5	60.4	0.99	0.85	1.08	28.5
29	R2	344	11	362	3.2	0.703	60.9	LOS E	10.0	72.0	1.00	0.85	1.07	29.7
Approach		757	13	797	1.7	0.703	42.3	LOS D	10.0	72.0	0.83	0.80	0.88	34.4
SouthWest: Tiger Brennan Drive														
30	L2	508	1	535	0.2	0.288	8.0	LOS A	0.0	0.0	0.00	0.60	0.00	66.1
31	T1	1761	15	1854	0.9	* 0.686	21.2	LOS C	30.0	211.3	0.76	0.68	0.76	54.8
32	R2	111	1	117	0.9	* 0.691	67.9	LOS E	7.1	49.8	1.00	0.82	1.10	28.8
Approach		2380	17	2505	0.7	0.691	20.6	LOS C	30.0	211.3	0.61	0.67	0.61	54.5
All Vehicles		4287	48	4513	1.1	0.703	26.6	LOS C	30.0	211.3	0.67	0.67	0.68	47.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. PM 2027 Background + Development (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	37	1	39	2.7	0.033	7.7	LOS A	0.5	3.6	0.29	0.57	0.29	51.6
22	T1	72	1	76	1.4	* 0.663	65.7	LOS E	4.0	28.4	1.00	0.81	1.13	26.4
23	R2	47	1	49	2.1	0.663	70.3	LOS E	3.8	27.4	1.00	0.81	1.14	27.8
Approach		156	3	164	1.9	0.663	53.3	LOS D	4.0	28.4	0.83	0.75	0.93	30.4
NorthEast: Tiger Brennan Drive														
24	L2	22	1	23	4.5	0.017	9.5	LOS A	0.2	1.7	0.24	0.64	0.24	53.4
25	T1	809	12	852	1.5	0.284	17.4	LOS B	9.3	65.6	0.60	0.52	0.60	58.1
26	R2	181	2	191	1.1	0.517	64.7	LOS E	5.5	38.9	0.99	0.78	0.99	29.7
Approach		1012	15	1065	1.5	0.517	25.7	LOS C	9.3	65.6	0.67	0.57	0.67	49.6
NorthWest: Woolner Road														
27	L2	293	1	308	0.3	0.458	15.0	LOS B	8.6	60.5	0.57	0.71	0.57	47.2
28	T1	125	1	132	0.8	* 0.712	55.6	LOS E	8.6	60.9	0.99	0.85	1.09	28.5
29	R2	344	11	362	3.2	0.712	61.1	LOS E	10.2	73.2	1.00	0.86	1.08	29.6
Approach		762	13	802	1.7	0.712	42.5	LOS D	10.2	73.2	0.83	0.80	0.89	34.3
SouthWest: Tiger Brennan Drive														
30	L2	508	1	535	0.2	0.288	8.0	LOS A	0.0	0.0	0.00	0.60	0.00	66.1
31	T1	1761	15	1854	0.9	* 0.684	21.9	LOS C	29.6	209.0	0.77	0.69	0.77	54.2
32	R2	115	1	121	0.9	* 0.656	66.2	LOS E	7.2	50.7	1.00	0.81	1.06	29.2
Approach		2384	17	2509	0.7	0.684	21.1	LOS C	29.6	209.0	0.62	0.68	0.62	54.1
All Vehicles		4314	48	4541	1.1	0.712	27.1	LOS C	29.6	209.0	0.67	0.68	0.69	47.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. PM 2032 Background (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	35	1	37	2.9	0.032	8.2	LOS A	0.5	3.6	0.30	0.58	0.30	51.2
22	T1	67	1	71	1.5	*0.619	65.2	LOS E	3.7	26.3	1.00	0.79	1.09	26.5
23	R2	44	1	46	2.3	0.619	69.8	LOS E	3.6	25.4	1.00	0.79	1.09	27.9
Approach		146	3	154	2.1	0.619	52.9	LOS D	3.7	26.3	0.83	0.74	0.90	30.5
NorthEast: Tiger Brennan Drive														
24	L2	22	1	23	4.5	0.017	9.3	LOS A	0.2	1.7	0.23	0.64	0.23	53.6
25	T1	864	13	909	1.5	0.294	16.4	LOS B	9.6	68.4	0.59	0.51	0.59	59.1
26	R2	193	2	203	1.0	0.661	68.5	LOS E	6.1	43.3	1.00	0.81	1.08	28.8
Approach		1079	16	1136	1.5	0.661	25.6	LOS C	9.6	68.4	0.66	0.57	0.67	49.7
NorthWest: Woolner Road														
27	L2	322	1	339	0.3	0.527	18.3	LOS B	11.2	78.4	0.66	0.75	0.66	45.3
28	T1	121	1	127	0.8	*0.757	57.0	LOS E	8.9	62.7	0.99	0.89	1.15	28.1
29	R2	370	12	389	3.2	0.757	62.6	LOS E	11.0	79.4	1.00	0.89	1.13	29.3
Approach		813	14	856	1.7	0.757	44.2	LOS D	11.2	79.4	0.86	0.83	0.95	33.8
SouthWest: Tiger Brennan Drive														
30	L2	559	1	588	0.2	0.317	8.0	LOS A	0.0	0.0	0.00	0.60	0.00	66.1
31	T1	1937	17	2039	0.9	*0.746	21.6	LOS C	34.5	243.5	0.78	0.71	0.78	54.5
32	R2	112	1	118	0.9	*0.767	70.8	LOS E	7.3	51.8	1.00	0.86	1.20	28.2
Approach		2608	19	2745	0.7	0.767	20.8	LOS C	34.5	243.5	0.63	0.69	0.63	54.4
All Vehicles		4646	52	4891	1.1	0.767	27.0	LOS C	34.5	243.5	0.68	0.69	0.71	47.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [1. PM 2032 Background + Development (Site Folder: 1. Tiger Brennan Dr / Woolner Rd / Stoddart Dr AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	37	1	39	2.7	0.034	8.2	LOS A	0.5	3.8	0.30	0.58	0.30	51.2
22	T1	72	1	76	1.4	* 0.663	65.7	LOS E	4.0	28.4	1.00	0.81	1.13	26.4
23	R2	47	1	49	2.1	0.663	70.3	LOS E	3.8	27.4	1.00	0.81	1.14	27.8
Approach		156	3	164	1.9	0.663	53.5	LOS D	4.0	28.4	0.83	0.75	0.94	30.4
NorthEast: Tiger Brennan Drive														
24	L2	23	1	24	4.3	0.017	9.5	LOS A	0.2	1.8	0.24	0.64	0.24	53.4
25	T1	870	13	916	1.5	0.301	17.0	LOS B	9.9	70.2	0.60	0.52	0.60	58.5
26	R2	194	2	204	1.0	0.604	66.6	LOS E	6.0	42.6	1.00	0.79	1.03	29.3
Approach		1087	16	1144	1.5	0.604	25.7	LOS C	9.9	70.2	0.67	0.57	0.67	49.6
NorthWest: Woolner Road														
27	L2	322	1	339	0.3	0.522	18.7	LOS B	11.2	78.6	0.66	0.75	0.66	45.1
28	T1	126	1	133	0.8	* 0.766	57.3	LOS E	8.9	63.2	0.99	0.90	1.16	28.1
29	R2	370	12	389	3.2	0.766	62.9	LOS E	11.2	80.8	1.00	0.90	1.14	29.2
Approach		818	14	861	1.7	0.766	44.6	LOS D	11.2	80.8	0.87	0.84	0.95	33.7
SouthWest: Tiger Brennan Drive														
30	L2	559	1	588	0.2	0.317	8.0	LOS A	0.0	0.0	0.00	0.60	0.00	66.1
31	T1	1937	17	2039	0.9	* 0.761	22.4	LOS C	35.4	249.7	0.80	0.72	0.80	53.9
32	R2	116	1	122	0.9	* 0.722	68.6	LOS E	7.4	52.5	1.00	0.84	1.13	28.7
Approach		2612	19	2749	0.7	0.761	21.4	LOS C	35.4	249.7	0.64	0.70	0.64	53.9
All Vehicles		4673	52	4919	1.1	0.766	27.5	LOS C	35.4	249.7	0.69	0.70	0.71	46.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle 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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Stoddart Drive												
P5	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
SouthWest: Tiger Brennan Drive												
P8	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	228.8	227.1	0.99
All		2	2	54.2	LOS E	0.0	0.0	0.95	0.95	223.8	220.5	0.99

Pedestrians

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2. AM 2022 Existing (Site Folder: Tiger Brennan Dr / Stoddart Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	22	0	23	0.0	0.012	8.8	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
Approach		22	0	23	0.0	0.012	8.8	NA	0.0	0.0	0.00	0.53	0.00	54.9
NorthEast: Tiger Brennan Drive														
24	L2	18	0	19	0.0	0.010	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
25	T1	1938	39	2040	2.0	0.524	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		1956	39	2059	2.0	0.524	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.5
All Vehicles		1978	39	2082	2.0	0.524	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [2. AM 2022 Developed (Site Folder: Tiger Brennan Dr / Stoddart Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	26	0	27	0.0	0.015	8.9	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
Approach		26	0	27	0.0	0.015	8.9	NA	0.0	0.0	0.00	0.53	0.00	54.9
NorthEast: Tiger Brennan Drive														
24	L2	20	0	21	0.0	0.011	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
25	T1	1938	39	2040	2.0	0.524	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		1958	39	2061	2.0	0.524	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.5
All Vehicles		1984	39	2088	2.0	0.524	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [2. AM 2027 Developed (Site Folder: Tiger Brennan Dr / Stoddart Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	26	1	27	3.8	0.015	9.5	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
Approach		26	1	27	3.8	0.015	9.5	NA	0.0	0.0	0.00	0.53	0.00	54.8
NorthEast: Tiger Brennan Drive														
24	L2	21	1	22	4.8	0.012	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
25	T1	2083	42	2193	2.0	0.564	4.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.5
Approach		2104	43	2215	2.0	0.564	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.5
All Vehicles		2130	44	2242	2.1	0.564	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [2. AM 2032 Developed (Site Folder: Tiger Brennan Dr / Stoddart Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	26	1	27	3.8	0.015	10.3	LOS B	0.0	0.0	0.00	0.53	0.00	54.8
Approach		26	1	27	3.8	0.015	10.3	NA	0.0	0.0	0.00	0.53	0.00	54.8
NorthEast: Tiger Brennan Drive														
24	L2	21	1	22	4.8	0.012	5.7	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
25	T1	2240	45	2358	2.0	0.606	4.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.4
Approach		2261	46	2380	2.0	0.606	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.4
All Vehicles		2287	47	2407	2.1	0.606	4.5	NA	0.0	0.0	0.00	0.53	0.00	54.4

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [2. PM 2022 Existing (Site Folder: Tiger Brennan Dr / Stoddart Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	23	0	24	0.0	0.013	7.0	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
Approach		23	0	24	0.0	0.013	7.0	NA	0.0	0.0	0.00	0.53	0.00	54.9
NorthEast: Tiger Brennan Drive														
24	L2	109	0	115	0.0	0.061	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
25	T1	1220	10	1284	0.8	0.328	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.7
Approach		1329	10	1399	0.8	0.328	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.8
All Vehicles		1352	10	1423	0.7	0.328	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.8

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [2. PM 2022 Developed (Site Folder: Tiger Brennan Dr / Stoddart Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	29	0	31	0.0	0.016	7.0	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
Approach		29	0	31	0.0	0.016	7.0	NA	0.0	0.0	0.00	0.53	0.00	54.9
NorthEast: Tiger Brennan Drive														
24	L2	119	0	125	0.0	0.067	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
25	T1	1220	10	1284	0.8	0.328	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.7
Approach		1339	10	1409	0.7	0.328	4.3	NA	0.0	0.0	0.00	0.53	0.00	54.8
All Vehicles		1368	10	1440	0.7	0.328	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.8

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [2. PM 2027 Developed (Site Folder: Tiger Brennan Dr / Stoddart Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	29	1	31	3.4	0.017	7.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
Approach		29	1	31	3.4	0.017	7.2	NA	0.0	0.0	0.00	0.53	0.00	54.8
NorthEast: Tiger Brennan Drive														
24	L2	120	1	126	0.8	0.068	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
25	T1	1312	11	1381	0.8	0.352	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.7
Approach		1432	12	1507	0.8	0.352	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.7
All Vehicles		1461	13	1538	0.9	0.352	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.7

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [2. PM 2032 Developed (Site Folder: Tiger Brennan Dr / Stoddart Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Stoddart Drive														
21	L2	29	1	31	3.4	0.017	7.4	LOS A	0.0	0.0	0.00	0.53	0.00	54.8
Approach		29	1	31	3.4	0.017	7.4	NA	0.0	0.0	0.00	0.53	0.00	54.8
NorthEast: Tiger Brennan Drive														
24	L2	121	1	127	0.8	0.068	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	54.9
25	T1	1410	12	1484	0.9	0.379	4.2	LOS A	0.0	0.0	0.00	0.53	0.00	54.7
Approach		1531	13	1612	0.8	0.379	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.7
All Vehicles		1560	14	1642	0.9	0.379	4.4	NA	0.0	0.0	0.00	0.53	0.00	54.7

Site Level of Service (LOS) Method: Delay (SIDRA). 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: 101 [3. AM 2022 Existing (Site Folder: Stoddart Dr / Fanning Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Fanning Drive														
21a	L1	108	0	114	0.0	0.089	3.8	LOS A	0.4	3.0	0.09	0.44	0.09	55.9
23a	R1	19	0	20	0.0	0.089	7.8	LOS A	0.4	3.0	0.09	0.44	0.09	55.8
Approach		127	0	134	0.0	0.089	4.4	LOS A	0.4	3.0	0.09	0.44	0.09	55.9
North: Stoddart Drive														
7a	L1	10	1	11	10.0	0.021	3.8	LOS A	0.1	0.8	0.06	0.56	0.06	54.0
9	R2	17	4	18	23.5	0.021	9.0	LOS A	0.1	0.8	0.06	0.56	0.06	53.6
Approach		27	5	28	18.5	0.021	7.1	LOS A	0.1	0.8	0.06	0.56	0.06	53.8
West: Stoddart Drive														
10	L2	8	3	8	37.5	0.015	4.3	LOS A	0.1	0.5	0.10	0.55	0.10	52.3
12a	R1	10	0	11	0.0	0.015	7.8	LOS A	0.1	0.5	0.10	0.55	0.10	54.2
Approach		18	3	19	16.7	0.015	6.2	LOS A	0.1	0.5	0.10	0.55	0.10	53.3
All Vehicles		172	8	181	4.7	0.089	5.0	LOS A	0.4	3.0	0.09	0.47	0.09	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [3. AM 2022 Developed (Site Folder: Stoddart Dr / Fanning Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Fanning Drive														
21a	L1	130	0	137	0.0	0.106	3.8	LOS A	0.5	3.7	0.09	0.44	0.09	55.9
23a	R1	23	0	24	0.0	0.106	7.8	LOS A	0.5	3.7	0.09	0.44	0.09	55.8
Approach		153	0	161	0.0	0.106	4.4	LOS A	0.5	3.7	0.09	0.44	0.09	55.9
North: Stoddart Drive														
7a	L1	12	1	13	8.3	0.023	3.8	LOS A	0.1	0.9	0.08	0.55	0.08	54.2
9	R2	17	4	18	23.5	0.023	9.0	LOS A	0.1	0.9	0.08	0.55	0.08	53.8
Approach		29	5	31	17.2	0.023	6.9	LOS A	0.1	0.9	0.08	0.55	0.08	53.9
West: Stoddart Drive														
10	L2	8	3	8	37.5	0.017	4.4	LOS A	0.1	0.6	0.11	0.55	0.11	52.1
12a	R1	13	0	14	0.0	0.017	7.8	LOS A	0.1	0.6	0.11	0.55	0.11	54.0
Approach		21	3	22	14.3	0.017	6.5	LOS A	0.1	0.6	0.11	0.55	0.11	53.2
All Vehicles		203	8	214	3.9	0.106	5.0	LOS A	0.5	3.7	0.09	0.47	0.09	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [3. AM 2027 Developed (Site Folder: Stoddart Dr / Fanning Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Fanning Drive														
21a	L1	132	1	139	0.8	0.108	3.8	LOS A	0.5	3.8	0.09	0.44	0.09	55.9
23a	R1	23	1	24	4.3	0.108	7.8	LOS A	0.5	3.8	0.09	0.44	0.09	55.6
Approach		155	2	163	1.3	0.108	4.4	LOS A	0.5	3.8	0.09	0.44	0.09	55.9
North: Stoddart Drive														
7a	L1	12	1	13	8.3	0.023	3.8	LOS A	0.1	0.9	0.08	0.55	0.08	54.2
9	R2	17	4	18	23.5	0.023	9.0	LOS A	0.1	0.9	0.08	0.55	0.08	53.8
Approach		29	5	31	17.2	0.023	6.9	LOS A	0.1	0.9	0.08	0.55	0.08	53.9
West: Stoddart Drive														
10	L2	8	3	8	37.5	0.018	4.4	LOS A	0.1	0.7	0.11	0.55	0.11	52.1
12a	R1	13	1	14	7.7	0.018	7.9	LOS A	0.1	0.7	0.11	0.55	0.11	53.7
Approach		21	4	22	19.0	0.018	6.5	LOS A	0.1	0.7	0.11	0.55	0.11	53.1
All Vehicles		205	11	216	5.4	0.108	5.0	LOS A	0.5	3.8	0.09	0.46	0.09	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [3. AM 2032 Developed (Site Folder: Stoddart Dr / Fanning Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Fanning Drive														
21a	L1	133	1	140	0.8	0.108	3.8	LOS A	0.5	3.8	0.09	0.44	0.09	55.9
23a	R1	23	1	24	4.3	0.108	7.8	LOS A	0.5	3.8	0.09	0.44	0.09	55.6
Approach		156	2	164	1.3	0.108	4.4	LOS A	0.5	3.8	0.09	0.44	0.09	55.9
North: Stoddart Drive														
7a	L1	13	1	14	7.7	0.024	3.8	LOS A	0.1	0.9	0.08	0.54	0.08	54.3
9	R2	17	4	18	23.5	0.024	9.0	LOS A	0.1	0.9	0.08	0.54	0.08	53.8
Approach		30	5	32	16.7	0.024	6.8	LOS A	0.1	0.9	0.08	0.54	0.08	54.0
West: Stoddart Drive														
10	L2	8	3	8	37.5	0.018	4.4	LOS A	0.1	0.7	0.11	0.55	0.11	52.1
12a	R1	13	1	14	7.7	0.018	7.9	LOS A	0.1	0.7	0.11	0.55	0.11	53.7
Approach		21	4	22	19.0	0.018	6.5	LOS A	0.1	0.7	0.11	0.55	0.11	53.1
All Vehicles		207	11	218	5.3	0.108	4.9	LOS A	0.5	3.8	0.09	0.46	0.09	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [3. PM 2022 Existing (Site Folder: Stoddart Dr / Fanning Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Fanning Drive														
21a	L1	41	0	43	0.0	0.059	3.9	LOS A	0.3	2.0	0.18	0.50	0.18	54.7
23a	R1	34	0	36	0.0	0.059	7.9	LOS A	0.3	2.0	0.18	0.50	0.18	54.6
Approach		75	0	79	0.0	0.059	5.7	LOS A	0.3	2.0	0.18	0.50	0.18	54.6
North: Stoddart Drive														
7a	L1	64	0	67	0.0	0.090	4.0	LOS A	0.4	3.2	0.19	0.52	0.19	54.4
9	R2	52	2	55	3.8	0.090	9.0	LOS A	0.4	3.2	0.19	0.52	0.19	54.6
Approach		116	2	122	1.7	0.090	6.2	LOS A	0.4	3.2	0.19	0.52	0.19	54.5
West: Stoddart Drive														
10	L2	3	0	3	0.0	0.046	4.0	LOS A	0.2	1.6	0.13	0.58	0.13	52.5
12a	R1	58	0	61	0.0	0.046	7.8	LOS A	0.2	1.6	0.13	0.58	0.13	53.2
Approach		61	0	64	0.0	0.046	7.6	LOS A	0.2	1.6	0.13	0.58	0.13	53.2
All Vehicles		252	2	265	0.8	0.090	6.4	LOS A	0.4	3.2	0.17	0.53	0.17	54.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [3. PM 2022 Developed (Site Folder: Stoddart Dr / Fanning Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Fanning Drive														
21a	L1	48	0	51	0.0	0.068	3.9	LOS A	0.3	2.4	0.18	0.51	0.18	54.7
23a	R1	40	0	42	0.0	0.068	7.9	LOS A	0.3	2.4	0.18	0.51	0.18	54.5
Approach		88	0	93	0.0	0.068	5.8	LOS A	0.3	2.4	0.18	0.51	0.18	54.6
North: Stoddart Drive														
7a	L1	74	0	78	0.0	0.099	4.0	LOS A	0.5	3.5	0.21	0.52	0.21	54.4
9	R2	52	2	55	3.8	0.099	9.1	LOS A	0.5	3.5	0.21	0.52	0.21	54.6
Approach		126	2	133	1.6	0.099	6.1	LOS A	0.5	3.5	0.21	0.52	0.21	54.5
West: Stoddart Drive														
10	L2	3	0	3	0.0	0.053	4.0	LOS A	0.3	1.8	0.15	0.58	0.15	52.4
12a	R1	67	0	71	0.0	0.053	7.9	LOS A	0.3	1.8	0.15	0.58	0.15	53.1
Approach		70	0	74	0.0	0.053	7.7	LOS A	0.3	1.8	0.15	0.58	0.15	53.1
All Vehicles		284	2	299	0.7	0.099	6.4	LOS A	0.5	3.5	0.18	0.53	0.18	54.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [3. PM 2027 Developed (Site Folder: Stoddart Dr / Fanning Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Fanning Drive														
21a	L1	48	1	51	2.1	0.069	4.0	LOS A	0.3	2.4	0.18	0.50	0.18	54.6
23a	R1	40	1	42	2.5	0.069	8.0	LOS A	0.3	2.4	0.18	0.50	0.18	54.4
Approach		88	2	93	2.3	0.069	5.8	LOS A	0.3	2.4	0.18	0.50	0.18	54.5
North: Stoddart Drive														
7a	L1	74	1	78	1.4	0.100	4.0	LOS A	0.5	3.6	0.21	0.52	0.21	54.4
9	R2	53	2	56	3.8	0.100	9.1	LOS A	0.5	3.6	0.21	0.52	0.21	54.6
Approach		127	3	134	2.4	0.100	6.1	LOS A	0.5	3.6	0.21	0.52	0.21	54.5
West: Stoddart Drive														
10	L2	3	1	3	33.3	0.055	4.4	LOS A	0.3	1.9	0.15	0.58	0.15	51.4
12a	R1	68	1	72	1.5	0.055	7.9	LOS A	0.3	1.9	0.15	0.58	0.15	53.0
Approach		71	2	75	2.8	0.055	7.7	LOS A	0.3	1.9	0.15	0.58	0.15	53.0
All Vehicles		286	7	301	2.4	0.100	6.4	LOS A	0.5	3.6	0.19	0.53	0.19	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [3. PM 2032 Developed (Site Folder: Stoddart Dr / Fanning Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
SouthEast: Fanning Drive														
21a	L1	49	1	52	2.0	0.070	4.0	LOS A	0.3	2.5	0.18	0.50	0.18	54.6
23a	R1	40	1	42	2.5	0.070	8.0	LOS A	0.3	2.5	0.18	0.50	0.18	54.4
Approach		89	2	94	2.2	0.070	5.8	LOS A	0.3	2.5	0.18	0.50	0.18	54.5
North: Stoddart Drive														
7a	L1	75	1	79	1.3	0.101	4.0	LOS A	0.5	3.6	0.21	0.52	0.21	54.4
9	R2	53	2	56	3.8	0.101	9.1	LOS A	0.5	3.6	0.21	0.52	0.21	54.6
Approach		128	3	135	2.3	0.101	6.1	LOS A	0.5	3.6	0.21	0.52	0.21	54.5
West: Stoddart Drive														
10	L2	3	1	3	33.3	0.055	4.4	LOS A	0.3	1.9	0.15	0.58	0.15	51.4
12a	R1	68	1	72	1.5	0.055	7.9	LOS A	0.3	1.9	0.15	0.58	0.15	53.0
Approach		71	2	75	2.8	0.055	7.7	LOS A	0.3	1.9	0.15	0.58	0.15	53.0
All Vehicles		288	7	303	2.4	0.101	6.4	LOS A	0.5	3.6	0.19	0.53	0.19	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [4. AM 2022 Existing (Site Folder: Stoddart Dr / Bayview Bvd)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
South: Bayview Boulevard														
1a	L1	87	4	92	4.6	0.085	5.0	LOS A	0.4	3.1	0.41	0.50	0.41	54.8
3	R2	1	0	1	0.0	0.085	10.0	LOS A	0.4	3.1	0.41	0.50	0.41	55.3
Approach		88	4	93	4.5	0.085	5.1	LOS A	0.4	3.1	0.41	0.50	0.41	54.9
East: Stoddart Drive														
4	L2	6	3	6	50.0	0.181	4.5	LOS A	0.9	6.7	0.12	0.59	0.12	51.0
6a	R1	255	1	268	0.4	0.181	7.8	LOS A	0.9	6.7	0.12	0.59	0.12	53.1
Approach		261	4	275	1.5	0.181	7.7	LOS A	0.9	6.7	0.12	0.59	0.12	53.1
NorthWest: Stoddart Drive														
27a	L1	40	4	42	10.0	0.043	3.8	LOS A	0.2	1.7	0.02	0.52	0.02	55.1
29a	R1	27	0	28	0.0	0.043	7.7	LOS A	0.2	1.7	0.02	0.52	0.02	55.2
Approach		67	4	71	6.0	0.043	5.4	LOS A	0.2	1.7	0.02	0.52	0.02	55.1
All Vehicles		416	12	438	2.9	0.181	6.8	LOS A	0.9	6.7	0.17	0.56	0.17	53.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [4. AM 2022 Developed (Site Folder: Stoddart Dr / Bayview Bvd)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
South: Bayview Boulevard														
1a	L1	87	4	92	4.6	0.086	5.2	LOS A	0.4	3.1	0.43	0.51	0.43	54.8
3	R2	1	0	1	0.0	0.086	10.1	LOS B	0.4	3.1	0.43	0.51	0.43	55.3
Approach		88	4	93	4.5	0.086	5.2	LOS A	0.4	3.1	0.43	0.51	0.43	54.8
East: Stoddart Drive														
4	L2	7	3	7	42.9	0.196	4.5	LOS A	1.0	7.4	0.12	0.59	0.12	51.2
6a	R1	277	1	292	0.4	0.196	7.8	LOS A	1.0	7.4	0.12	0.59	0.12	53.1
Approach		284	4	299	1.4	0.196	7.7	LOS A	1.0	7.4	0.12	0.59	0.12	53.1
NorthWest: Stoddart Drive														
27a	L1	43	4	45	9.3	0.044	3.8	LOS A	0.2	1.7	0.02	0.51	0.02	55.2
29a	R1	27	0	28	0.0	0.044	7.7	LOS A	0.2	1.7	0.02	0.51	0.02	55.3
Approach		70	4	74	5.7	0.044	5.3	LOS A	0.2	1.7	0.02	0.51	0.02	55.2
All Vehicles		442	12	465	2.7	0.196	6.8	LOS A	1.0	7.4	0.17	0.56	0.17	53.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [4. AM 2027 Developed (Site Folder: Stoddart Dr / Bayview Bvd)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
South: Bayview Boulevard														
1a	L1	88	4	93	4.5	0.088	5.2	LOS A	0.4	3.2	0.43	0.52	0.43	54.7
3	R2	1	1	1	100.0	0.088	12.8	LOS B	0.4	3.2	0.43	0.52	0.43	51.3
Approach		89	5	94	5.6	0.088	5.3	LOS A	0.4	3.2	0.43	0.52	0.43	54.7
East: Stoddart Drive														
4	L2	7	3	7	42.9	0.198	4.5	LOS A	1.1	7.5	0.12	0.59	0.12	51.2
6a	R1	280	1	295	0.4	0.198	7.8	LOS A	1.1	7.5	0.12	0.59	0.12	53.1
Approach		287	4	302	1.4	0.198	7.7	LOS A	1.1	7.5	0.12	0.59	0.12	53.1
NorthWest: Stoddart Drive														
27a	L1	43	4	45	9.3	0.045	3.8	LOS A	0.2	1.8	0.02	0.51	0.02	55.2
29a	R1	27	1	28	3.7	0.045	7.7	LOS A	0.2	1.8	0.02	0.51	0.02	55.1
Approach		70	5	74	7.1	0.045	5.3	LOS A	0.2	1.8	0.02	0.51	0.02	55.2
All Vehicles		446	14	469	3.1	0.198	6.9	LOS A	1.1	7.5	0.17	0.56	0.17	53.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [4. AM 2032 Developed (Site Folder: Stoddart Dr / Bayview Bvd)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
South: Bayview Boulevard														
1a	L1	89	4	94	4.5	0.089	5.2	LOS A	0.4	3.3	0.44	0.52	0.44	54.7
3	R2	1	1	1	100.0	0.089	12.8	LOS B	0.4	3.3	0.44	0.52	0.44	51.3
Approach		90	5	95	5.6	0.089	5.3	LOS A	0.4	3.3	0.44	0.52	0.44	54.7
East: Stoddart Drive														
4	L2	7	3	7	42.9	0.200	4.5	LOS A	1.1	7.6	0.13	0.59	0.13	51.2
6a	R1	282	1	297	0.4	0.200	7.8	LOS A	1.1	7.6	0.13	0.59	0.13	53.1
Approach		289	4	304	1.4	0.200	7.7	LOS A	1.1	7.6	0.13	0.59	0.13	53.1
NorthWest: Stoddart Drive														
27a	L1	44	4	46	9.1	0.047	3.8	LOS A	0.2	1.8	0.02	0.51	0.02	55.2
29a	R1	28	1	29	3.6	0.047	7.7	LOS A	0.2	1.8	0.02	0.51	0.02	55.1
Approach		72	5	76	6.9	0.047	5.3	LOS A	0.2	1.8	0.02	0.51	0.02	55.2
All Vehicles		451	14	475	3.1	0.200	6.9	LOS A	1.1	7.6	0.17	0.56	0.17	53.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [4. PM 2022 Existing (Site Folder: Stoddart Dr / Bayview Bvd)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
South: Bayview Boulevard														
1a	L1	36	2	38	5.6	0.034	4.2	LOS A	0.2	1.2	0.25	0.44	0.25	55.2
3	R2	4	0	4	0.0	0.034	9.2	LOS A	0.2	1.2	0.25	0.44	0.25	55.7
Approach		40	2	42	5.0	0.034	4.7	LOS A	0.2	1.2	0.25	0.44	0.25	55.3
East: Stoddart Drive														
4	L2	15	2	16	13.3	0.090	4.4	LOS A	0.4	3.1	0.20	0.58	0.20	52.1
6a	R1	98	0	103	0.0	0.090	8.0	LOS A	0.4	3.1	0.20	0.58	0.20	53.2
Approach		113	2	119	1.8	0.090	7.5	LOS A	0.4	3.1	0.20	0.58	0.20	53.0
NorthWest: Stoddart Drive														
27a	L1	149	2	157	1.3	0.137	3.7	LOS A	0.7	5.3	0.04	0.49	0.04	55.6
29a	R1	69	0	73	0.0	0.137	7.7	LOS A	0.7	5.3	0.04	0.49	0.04	55.5
Approach		218	2	229	0.9	0.137	5.0	LOS A	0.7	5.3	0.04	0.49	0.04	55.5
All Vehicles		371	6	391	1.6	0.137	5.7	LOS A	0.7	5.3	0.11	0.51	0.11	54.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [4. PM 2022 Developed (Site Folder: Stoddart Dr / Bayview Bvd)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
South: Bayview Boulevard														
1a	L1	36	2	38	5.6	0.034	4.3	LOS A	0.2	1.2	0.26	0.45	0.26	55.1
3	R2	4	0	4	0.0	0.034	9.2	LOS A	0.2	1.2	0.26	0.45	0.26	55.7
Approach		40	2	42	5.0	0.034	4.8	LOS A	0.2	1.2	0.26	0.45	0.26	55.2
East: Stoddart Drive														
4	L2	16	2	17	12.5	0.098	4.4	LOS A	0.5	3.4	0.20	0.58	0.20	52.1
6a	R1	109	0	115	0.0	0.098	8.0	LOS A	0.5	3.4	0.20	0.58	0.20	53.2
Approach		125	2	132	1.6	0.098	7.5	LOS A	0.5	3.4	0.20	0.58	0.20	53.0
NorthWest: Stoddart Drive														
27a	L1	158	2	166	1.3	0.142	3.7	LOS A	0.8	5.5	0.04	0.49	0.04	55.6
29a	R1	69	0	73	0.0	0.142	7.7	LOS A	0.8	5.5	0.04	0.49	0.04	55.5
Approach		227	2	239	0.9	0.142	4.9	LOS A	0.8	5.5	0.04	0.49	0.04	55.6
All Vehicles		392	6	413	1.5	0.142	5.7	LOS A	0.8	5.5	0.11	0.51	0.11	54.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Roundabout Capacity Model: SIDRA Standard.
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: 101 [4. PM 2027 Developed (Site Folder: Stoddart Dr / Bayview Bvd)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
South: Bayview Boulevard														
1a	L1	36	2	38	5.6	0.035	4.3	LOS A	0.2	1.2	0.26	0.44	0.26	55.2
3	R2	4	1	4	25.0	0.035	9.6	LOS A	0.2	1.2	0.26	0.44	0.26	54.7
Approach		40	3	42	7.5	0.035	4.8	LOS A	0.2	1.2	0.26	0.44	0.26	55.2
East: Stoddart Drive														
4	L2	16	2	17	12.5	0.099	4.4	LOS A	0.5	3.4	0.20	0.58	0.20	52.1
6a	R1	109	1	115	0.9	0.099	8.0	LOS A	0.5	3.4	0.20	0.58	0.20	53.1
Approach		125	3	132	2.4	0.099	7.5	LOS A	0.5	3.4	0.20	0.58	0.20	53.0
NorthWest: Stoddart Drive														
27a	L1	158	2	166	1.3	0.143	3.7	LOS A	0.8	5.6	0.04	0.49	0.04	55.6
29a	R1	69	1	73	1.4	0.143	7.7	LOS A	0.8	5.6	0.04	0.49	0.04	55.4
Approach		227	3	239	1.3	0.143	4.9	LOS A	0.8	5.6	0.04	0.49	0.04	55.6
All Vehicles		392	9	413	2.3	0.143	5.8	LOS A	0.8	5.6	0.12	0.51	0.12	54.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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: 101 [4. PM 2032 Developed (Site Folder: Stoddart Dr / Bayview Bvd)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	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
South: Bayview Boulevard														
1a	L1	37	2	39	5.4	0.036	4.3	LOS A	0.2	1.3	0.27	0.44	0.27	55.2
3	R2	4	1	4	25.0	0.036	9.6	LOS A	0.2	1.3	0.27	0.44	0.27	54.7
Approach		41	3	43	7.3	0.036	4.8	LOS A	0.2	1.3	0.27	0.44	0.27	55.2
East: Stoddart Drive														
4	L2	16	2	17	12.5	0.101	4.4	LOS A	0.5	3.5	0.21	0.58	0.21	52.1
6a	R1	111	1	117	0.9	0.101	8.0	LOS A	0.5	3.5	0.21	0.58	0.21	53.1
Approach		127	3	134	2.4	0.101	7.6	LOS A	0.5	3.5	0.21	0.58	0.21	53.0
NorthWest: Stoddart Drive														
27a	L1	161	2	169	1.2	0.146	3.7	LOS A	0.8	5.7	0.04	0.48	0.04	55.6
29a	R1	70	1	74	1.4	0.146	7.7	LOS A	0.8	5.7	0.04	0.48	0.04	55.4
Approach		231	3	243	1.3	0.146	4.9	LOS A	0.8	5.7	0.04	0.48	0.04	55.6
All Vehicles		399	9	420	2.3	0.146	5.8	LOS A	0.8	5.7	0.12	0.51	0.12	54.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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