

25 November 2019

C1786.001  
H MAART

Wavelengths 252 (Pty) Ltd  
PO Box 479  
KNYSNA  
6570

Attention: Mr Jaco Botha

**TRAFFIC STATEMENT FOR THE BERG 'n SEE RETIREMENT VILLAGE DEVELOPMENT ON ERVEN  
15309 & 16440, FERNWOOD IN KNYNSNA**

**1. Background**

SMEC South Africa (Pty) Ltd has been appointed by Wavelengths 252 (Pty) Ltd to do a traffic statement for the proposed development of the Berg 'n See Retirement Village in Fernwood, Knysna. The development is situated approximately 7km's South East of central Knysna. It will get access off Duthie Drive, which connects the Rexford residential area with the Pezula Golf Estate. The development site plan is attached as **APPENDIX A**. The retirement village will comprise of 137 units which can accommodate up to 230 people.



***Development Site Location***

## 2. Traffic on Duthie Drive

The sole access to the development is directly off Duthie Drive, which is classified as a Class 4 Local Distributor, under the authority of Knysna Municipality. The access point to the development forms a 4-way junction with Duthie Drive and the private property access to the West. On 19 November 2019, a 12-Hour traffic count (06h00 – 18h00) was conducted at the Development / Duthie Drive / Private Property Access junction. The AM (morning), MM (mid-day) and PM (afternoon) peak hour volumes obtained from the count are shown in the table below. The traffic counts have been attached as **APPENDIX B**.

Peak	Peak Hour	Peak Hour Volume
AM	07:45 – 08:45	204
MM	12:15 – 13:15	132
PM	16:15 – 17:15	177

## 3. Trip Generation and Trip Distribution

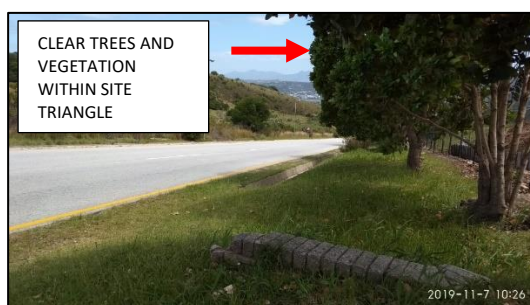
Trip generation rates for peak hours are obtained from the *TMH17, South African Trip Data Manual, 2018*. The manual gives the AM and PM peak hour trip rates for a retirement development as 0.35 and 0.40 for the MM peak hour. Due to the MM peak hour volume being much lower than the AM & PM peak hour volumes, only the latter will be used in the analysis. The trip generation of the proposed development of 137 units will therefore yield approximately 48 trips during the AM & PM peak hours.

The traffic split ratio as stipulated in the TMH17 for in:out movements is 40:60 and 50:50 for the AM and PM peak hours respectively. For analysis purposes, the traffic split to and from the development is based on the current traffic distribution on Duthie Drive during the AM and PM Peak hours (**APPENDIX C**). Operational analysis of the intersection was done using the SIDRA computer software. The analysis was done for the year 2024, where a growth rate of 3% per annum was applied to the current traffic. The results of the analysis is attached as **APPENDIX D**, and it can be concluded that the access will operate at an acceptable service level upon completion of the development in the future (2024).

## 4. Shoulder Sight Distance

The Shoulder Sight Distance (SSD) criteria evaluates the safety of vehicles entering the main road from a side street. The “DRAFT UTG 5- Geometric Design of Urban Collector Roads” gives a minimum SSD of 120m for a passenger vehicle entering a 7.5m wide road with a speed limit of 60km/h.

From the current access point to the development, the SSD to the North (Knysna) is in excess of 160m and 120m to the South (Pezula). Both these SSD measurements satisfies the DRAFT UTG 5 requirement and are deemed acceptable. It should however be noted that the current vegetation along the road reserve obstructs the SSD of vehicles entering Duthie Drive from the development. The trees and vegetation must be cleared within the sight triangles.



**SSD to North (Knysna-direction)**



**SSD to South (Pezula-direction)**

The diagram below shows the SSD as measured on site.



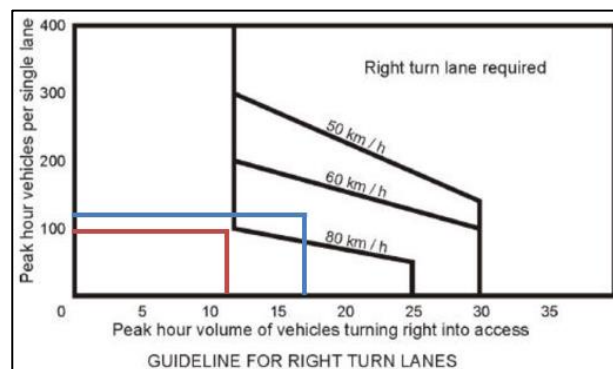
##### 5. Stopping Sight Distance

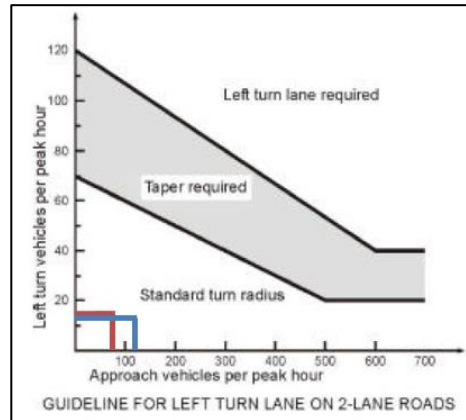
Stopping Sight Distance is the capability of the driver to bring his vehicle safely to a standstill after observing a hazard in the road. Similar to the Shoulder Sight Distance, the driver would have 120m of Stopping Sight Distance when he approaches the Development intersection from Pezula-direction. Considering that Duthie Drive has a downhill grade of approximately 10%, the Stopping Sight Distance for vehicles travelling downhill approaching the Development becomes critical. According to the “DRAFT UTG 5- Geometric Design of Urban Collector Roads” at a speed of 60km/h on a downhill grade of 10%, a Stopping Sight Distance of 100m is required. This requirement is satisfied and the access point is deemed safe in terms of Stopping Sight Distance.

##### 6. Turning Lanes

The “Road Access Guidelines of WCPA, 2<sup>nd</sup> Edition, 2002” is used as the guideline document to determine whether a right turn and left turn lane is warranted. The figures below illustrate the guidelines for implementing the respective turning lanes. The red and blue lines indicate the expected AM and PM peak hour volumes respectively on Duthie Drive. It can be concluded that the low traffic generated by the development does not warrant a right turn lane.

The figure below illustrates whether the future expected AM and PM peak hour traffic warrants left turning lanes for the proposed development access. The red and blue lines indicate the expected AM and PM peak hour volumes respectively on Duthie Drive. It can be concluded that the low traffic generated by the development does not warrant a left turn lane.





## 7. Summary and Recommendations

The findings of the investigation can be summarised as follows;

- The proposed development is a retirement village which will comprise of 137 units which can accommodate up to 230 people.
- The trip generation of the proposed development of 137 units will yield approximately 48 trips during the peak hour.
- The expected peak hour traffic volume generated by the development together with the current traffic on Duthie Drive, grown at 3% per annum for 5 years will be 286 and 255 vehicles during the AM and PM peak hours respectively.
- The current access to the development is found to be satisfying the requirements of "DRAFT UTG 5" in terms of Shoulder Sight Distance (SSD) and Stopping Sight Distance for both directions.
- The trees and vegetation must be cleared within the sight triangles to improve the current Shoulder Sight Distance.
- Right and left turn lanes are not warranted.

The following recommendations are to be put in place to ensure a safe access point to the Berg 'n See Retirement development;

- **The trees and vegetation must be cleared within the sight triangles to improve the current Shoulder Sight Distance.**
- **To warn motorists of the Duthie Drive / Development intersection, erect a W101- Warning Sign at 80m on both approaches of the intersection.**
- **Provide the access road with a hard surface (bitumen or paved), with a RTM 1 painted stop line and R1 stop sign.**

Yours sincerely,

Henry Maart (Pr Tech Eng)  
SMEC South Africa (Pty) Ltd

**APPENDIX A**  
***Site Plan***





# SITE PLAN

SCALE 1 : 1000

AREA (COVERAGE):  
 BLOCK A: 409 sqm  
 BLOCK B: 183 sqm  
 BLOCK C: 343 sqm  
 BLOCK D: 207 sqm  
 BLOCK E: 401 sqm  
 BLOCK F: 438 sqm  
 BLOCK G: 557 sqm  
 BLOCK H: 134 sqm  
 BLOCK J: 2690 sqm  
 BLOCK K: 255 sqm  
 SUPPORT BUILDING: 934.8 sqm  
 GUARD HOUSE: 9.5 sqm  
 GARAGES: 628 sqm  
 WALKWAYS & RAMPS: 1415.5 sqm

TOTAL FOOTPRINT: 8605 sqm

SITE AREA: 34943 sqm  
 COVERAGE: 24.6%

FLOOR AREA:  
 BLOCK A: 818 sqm  
 BLOCK B: 366 sqm  
 BLOCK C: 686 sqm  
 BLOCK D: 414 sqm  
 BLOCK E: 802 sqm  
 BLOCK F: 876 sqm  
 BLOCK G: 1114 sqm  
 BLOCK H: 268 sqm  
 BLOCK J: 7274 sqm  
 BLOCK K: 765 sqm  
 SUPPORT BUILDING: 2349 sqm  
 GARAGES: 628 sqm

TOTAL FLOOR AREA: 16 360 sqm

UNITS  
 1. STUDIOS: 29  
 2. FRAIL CARE: 9 (28 beds)  
 3. 3-BED APARTMENTS: 15  
 4. 2-BED APARTMENTS: 44  
 5. 1-BED APARTMENTS: 27  
 6. EN-SUITE ROOMS: 13

TOTAL UNITS: 137

PARKING REQUIRED:  
 PARKING PROVIDED: 180  
 GARAGES: 32  
 OPEN PARKING: 95  
 BLOCK J BASEMENT: 53



# SITE PLAN

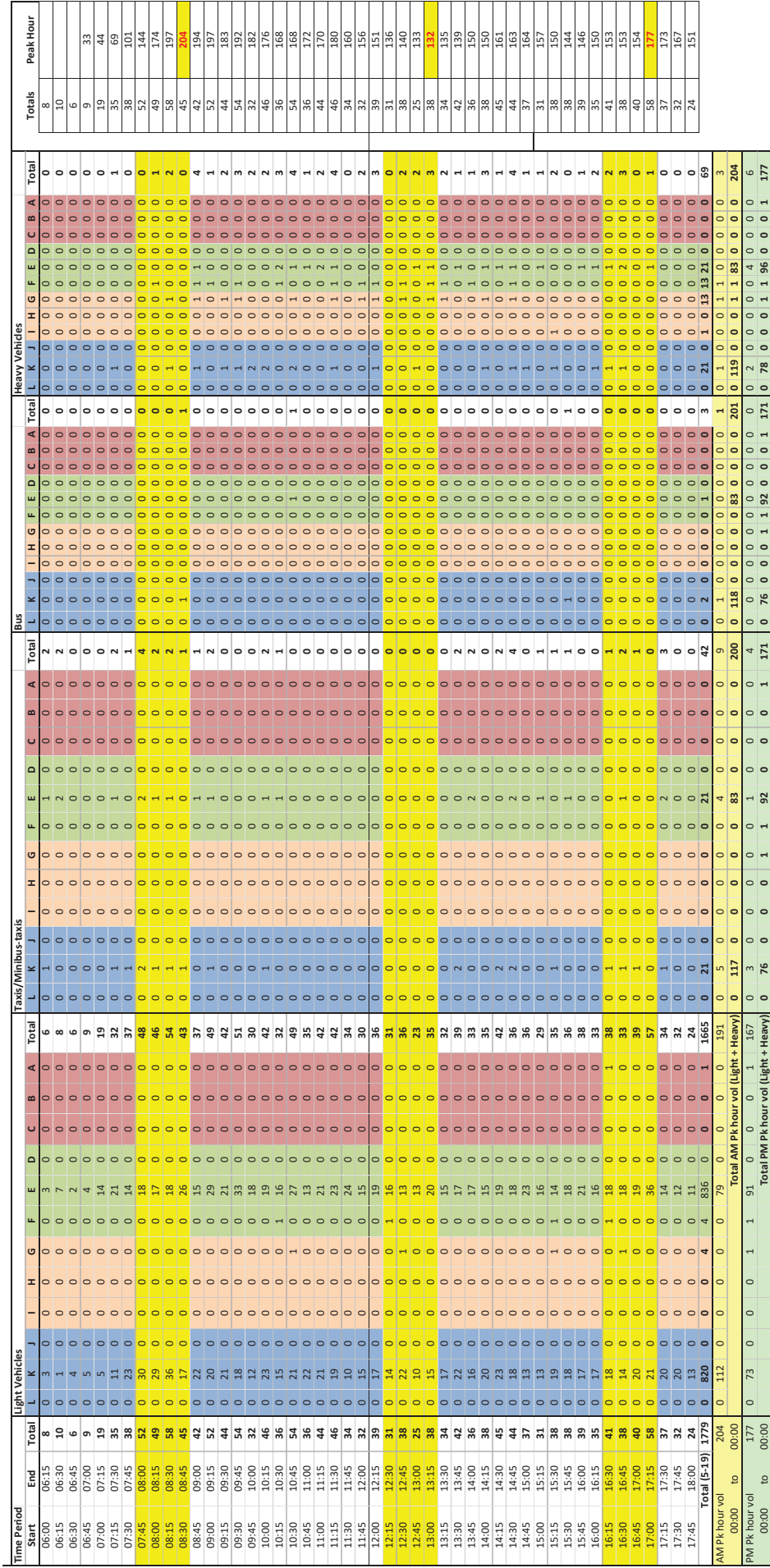
SCALE 1 : 2000

BERG 'n SEE - FERNWOOD

JG-A

**APPENDIX B**  
***Traffic Counts***

The diagram illustrates the site layout for the proposed development. It features a central grey rectangular area representing the development site, which is divided into four quadrants labeled I, II, III, and IV. A dashed line labeled 'Gate' runs vertically through the center of the site. To the left of the site is a blue rectangular area labeled 'Drainage Drive (North)'. To the right is a green rectangular area labeled 'Drainage Drive (South)'. Below the site is a red rectangular area labeled 'Gate' and 'Reservoir Road'. A north arrow is located in the top left corner. The diagram also shows 'Development Entrance' and 'Existing Position' labels.

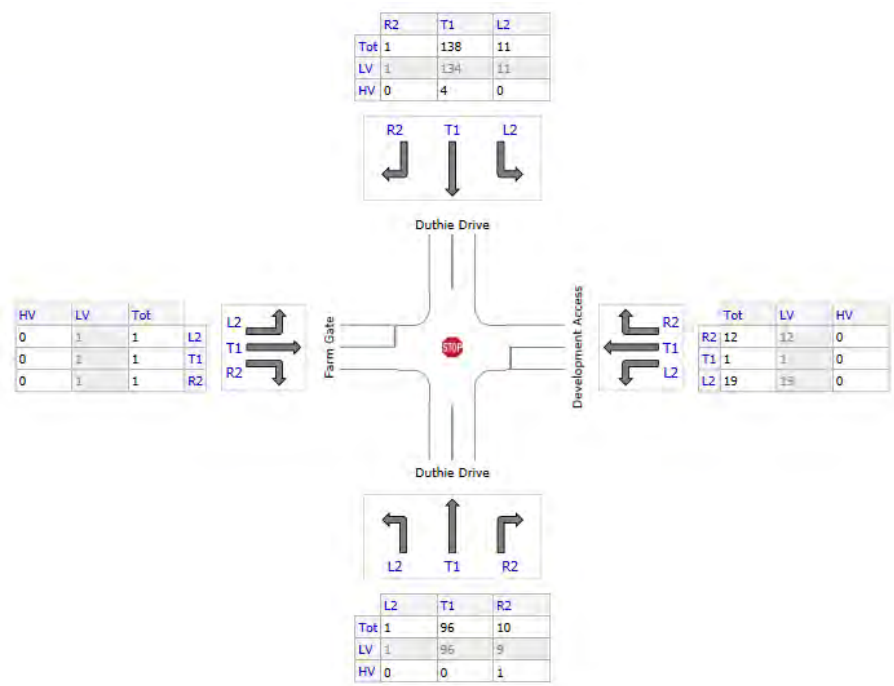




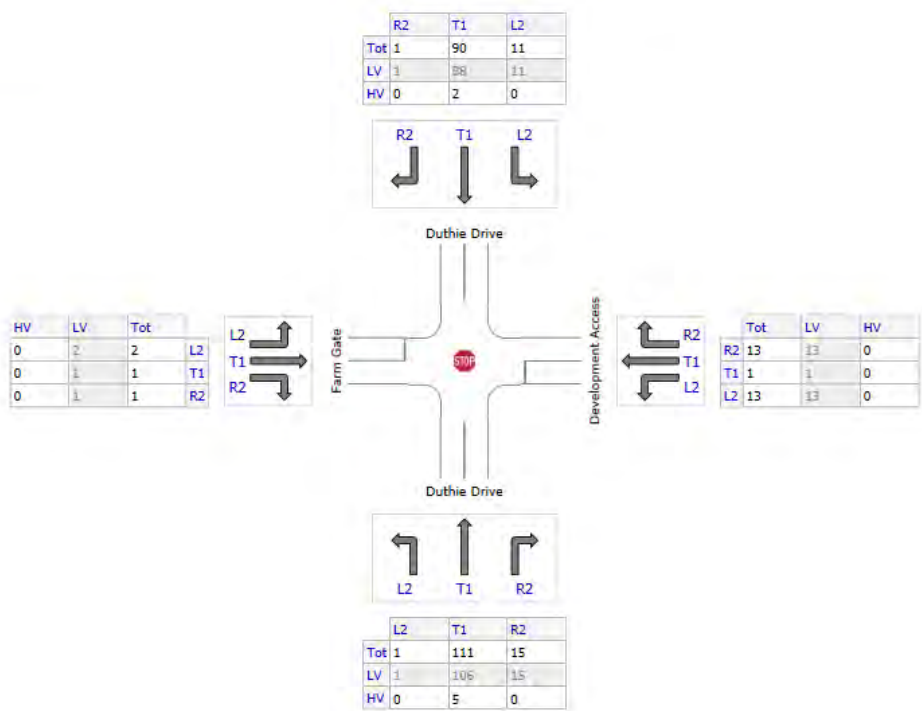
## **APPENDIX C**

### ***Development + Future Traffic***

# AM PEAK HOUR VOLUMES



# PM PEAK HOUR VOLUMES



**APPENDIX D**  
***SIDRA Operational Analysis***

# MOVEMENT SUMMARY



**Site: 1 [Fernwood Estate, Knysna (AM Peak)]**

New Site

Site Category: (None)

Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Duthie Drive												
1	L2	1	0,0	0,065	6,1	LOS A	0,1	0,6	0,07	0,06	0,07	57,6
2	T1	109	0,0	0,065	0,1	LOS A	0,1	0,6	0,07	0,06	0,07	59,2
3	R2	11	10,0	0,065	6,2	LOS A	0,1	0,6	0,07	0,06	0,07	56,5
Approach		122	0,9	0,065	0,7	NA	0,1	0,6	0,07	0,06	0,07	58,9
East: Development Access												
4	L2	22	0,0	0,037	8,6	LOS A	0,1	0,9	0,29	0,88	0,29	51,5
5	T1	1	0,0	0,037	9,1	LOS A	0,1	0,9	0,29	0,88	0,29	51,3
6	R2	14	0,0	0,037	9,2	LOS A	0,1	0,9	0,29	0,88	0,29	51,1
Approach		36	0,0	0,037	8,9	LOS A	0,1	0,9	0,29	0,88	0,29	51,4
North: Duthie Drive												
7	L2	13	0,0	0,089	5,6	LOS A	0,0	0,1	0,00	0,05	0,00	57,9
8	T1	157	2,9	0,089	0,0	LOS A	0,0	0,1	0,00	0,05	0,00	59,5
9	R2	1	0,0	0,089	5,8	LOS A	0,0	0,1	0,00	0,05	0,00	57,3
Approach		170	2,7	0,089	0,4	NA	0,0	0,1	0,00	0,05	0,00	59,4
West: Farm Gate												
10	L2	1	0,0	0,004	8,4	LOS A	0,0	0,1	0,27	0,88	0,27	51,5
11	T1	1	0,0	0,004	9,0	LOS A	0,0	0,1	0,27	0,88	0,27	51,3
12	R2	1	0,0	0,004	9,2	LOS A	0,0	0,1	0,27	0,88	0,27	51,0
Approach		3	0,0	0,004	8,9	LOS A	0,0	0,1	0,27	0,88	0,27	51,3
All Vehicles		332	1,7	0,089	1,6	NA	0,1	0,9	0,06	0,15	0,06	58,1

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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY



**Site: 1 [Fernwood Estate, Knysna (PM Peak)]**

New Site

Site Category: (None)

Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Duthie Drive												
1	L2	1	0,0	0,078	5,9	LOS A	0,1	0,8	0,06	0,08	0,06	57,5
2	T1	126	4,5	0,078	0,1	LOS A	0,1	0,8	0,06	0,08	0,06	59,0
3	R2	17	0,0	0,078	5,8	LOS A	0,1	0,8	0,06	0,08	0,06	56,8
Approach		144	3,9	0,078	0,8	NA	0,1	0,8	0,06	0,08	0,06	58,8
East: Development Access												
4	L2	15	0,0	0,032	8,4	LOS A	0,1	0,8	0,24	0,89	0,24	51,6
5	T1	1	0,0	0,032	8,9	LOS A	0,1	0,8	0,24	0,89	0,24	51,3
6	R2	15	0,0	0,032	9,0	LOS A	0,1	0,8	0,24	0,89	0,24	51,1
Approach		31	0,0	0,032	8,7	LOS A	0,1	0,8	0,24	0,89	0,24	51,3
North: Duthie Drive												
7	L2	13	0,0	0,061	5,6	LOS A	0,0	0,1	0,01	0,07	0,01	57,7
8	T1	102	2,2	0,061	0,0	LOS A	0,0	0,1	0,01	0,07	0,01	59,3
9	R2	1	0,0	0,061	5,8	LOS A	0,0	0,1	0,01	0,07	0,01	57,1
Approach		116	2,0	0,061	0,7	NA	0,0	0,1	0,01	0,07	0,01	59,1
West: Farm Gate												
10	L2	2	0,0	0,005	8,5	LOS A	0,0	0,1	0,26	0,87	0,26	51,6
11	T1	1	0,0	0,005	8,9	LOS A	0,0	0,1	0,26	0,87	0,26	51,4
12	R2	1	0,0	0,005	8,9	LOS A	0,0	0,1	0,26	0,87	0,26	51,2
Approach		5	0,0	0,005	8,7	LOS A	0,0	0,1	0,26	0,87	0,26	51,5
All Vehicles		295	2,7	0,078	1,7	NA	0,1	0,8	0,06	0,17	0,06	57,9

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.

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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.