

# 1545 WOODROFFE AVENUE, CIRCLE K TRANSPORTATION IMPACT ASSESSMENT



Project No.: OCP-21-2432-06

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March, 2022

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## TABLE OF CONTENTS

<b>1.0</b>	<b>SCREENING FORM</b>	<b>1</b>
1.1	Trip Generation Triggers	1
1.2	Location Trigger	1
1.3	Safety Trigger	1
<b>2.0</b>	<b>DESCRIPTION OF PROPOSED DEVELOPMENT</b>	<b>1</b>
<b>3.0</b>	<b>EXISTING CONDITIONS</b>	<b>3</b>
3.1	Roadways	3
3.2	Intersections	4
3.2.1	Woodroffe Avenue at West Hunt Club Road	4
3.2.2	Woodroffe Avenue at Medhurst Drive/Knoxdale Road	6
3.2.3	Woodroffe Avenue at Meadowlands Drive/Tallwood Drive	7
3.3	Existing Driveways	8
3.4	Existing Multi-Use Pathways	9
3.5	Existing Transit Network	9
3.6	Existing Area Traffic Management Measures	11
3.7	Existing Peak Hour Travel Demand by Mode	11
3.8	Existing Collision History	12
3.9	Existing Traffic Volumes	13
3.10	Existing Traffic Operations	14
<b>4.0</b>	<b>PLANNED CONDITIONS</b>	<b>16</b>
4.1	Roadway Network Modifications	16
4.2	Other Study Area Developments	16
<b>5.0</b>	<b>STUDY AREA AND TIME PERIODS</b>	<b>16</b>
5.1	Study Area	16
5.2	Time Periods	16
5.3	Horizon Years	16
<b>6.0</b>	<b>EXEMPTION REVIEW</b>	<b>17</b>
<b>7.0</b>	<b>DEVELOPMENT GENERATED TRAFFIC</b>	<b>17</b>
7.1	Trip Generation Reductions	18

<b>8.0</b>	<b>BACKGROUND NETWORK TRAFFIC</b> .....	<b>20</b>
8.1	Transit Network Plans.....	20
8.2	General background Growth.....	21
8.3	Other Area Development .....	24
<b>9.0</b>	<b>DEMAND RATIONALIZATION</b> .....	<b>24</b>
<b>10.0</b>	<b>DEVELOPMENT DESIGN</b> .....	<b>27</b>
10.1	Design for Suitable Modes .....	27
10.2	Circulation and Access .....	27
<b>11.0</b>	<b>PARKING</b> .....	<b>29</b>
<b>12.0</b>	<b>BOUNDARY STREET</b> .....	<b>29</b>
12.1	Segment Mobility.....	30
12.1.1	Pedestrian Level of Service (PLOS).....	30
12.1.2	Bicycle Level of Service (BLOS) .....	30
12.1.3	Transit Level of Service (TLOS).....	31
12.1.4	Truck Level of Service (tkLOS).....	32
12.2	Road Safety .....	32
<b>13.0</b>	<b>ACCESS INTERSECTION DESIGN</b> .....	<b>32</b>
13.1	Location and Design of Access .....	32
13.1.1	Access sightlines .....	32
13.2	Access Intersection Control .....	34
13.3	Access Intersection Design.....	34
<b>14.0</b>	<b>TRANSPORTATION DEMAND MANAGEMENT</b> .....	<b>35</b>
<b>15.0</b>	<b>NEIGHBOURHOOD TRAFFIC MANAGEMENT</b> .....	<b>35</b>
15.1	Adjacent Neighbourhoods.....	35
<b>16.0</b>	<b>TRANSIT</b> .....	<b>35</b>
16.1	Route Capacity .....	35
16.2	Transit Priority.....	35
<b>17.0</b>	<b>REVIEW OF NETWORK CONCEPT</b> .....	<b>35</b>
<b>18.0</b>	<b>INTERSECTION DESIGN</b> .....	<b>36</b>
18.1	Intersection Control .....	36

18.2 Intersection Design .....36

    18.2.1 Intersection Vehicular Level of Service (LOS) .....36

    18.2.2 Intersection Pedestrian Level of Service (PLOS) .....45

    18.2.3 Intersection Bicycle Level of Service (BLOS) .....46

    18.2.4 Intersection Transit Level of Service (TLOS) .....46

    18.2.5 Intersection Truck Level of Service (tkLOS) .....47

19.0 CONSTRUCTION TRAFFIC MANAGEMENT ..... 47

20.0 SUMMARY AND RECOMMENDATIONS ..... 48

List of Figures

Figure 2.1 Proposed Development Location ..... 2

Figure 3.1 Woodroffe Avenue at West Hunt Club Road ..... 5

Figure 3.2 Woodroffe Avenue at Medhurst Drive/Knoxdale Road ..... 6

Figure 3.3 Woodroffe Avenue at Meadowlands Drive/Tallwood Drive..... 7

Figure 3.4 Existing Driveways ..... 8

Figure 3.5 Existing Multi-use Pathways ..... 9

Figure 3.6 Existing Transit Routes.....10

Figure 3.7 Transit Stop Locations.....11

Figure 8.1 2022 Background Traffic Volumes.....22

Figure 8.2 2027 Background Traffic Volumes.....23

Figure 9.1 2022 Background Traffic Volumes with Mode Share Reductions .....25

Figure 9.2 2027 Background Traffic Volumes with Mode Share Reductions .....26

Figure 10.1 Drive through and Car Wash Queueing Diagram .....28

Figure 13.1 Accesses Sightlines .....34

Figure 18.1 Development Generated Traffic.....38

## List of Tables

Table 2.1 ITE Trip Generation .....	3
Table 3.1 Collision data .....	12
Table 3.2 Definition of LOS for Intersections .....	14
Table 3.3 Existing Conditions.....	14
Table 6.1 Exemptions Review.....	17
Table 7.1 Existing Site Generated Trips.....	18
Table 7.2 Development Generate Vehicle Trips with Existing Trip Reductions .....	18
Table 7.3 Pass-by Trip Reductions .....	19
Table 7.4 Development Generated New Vehicle Trips.....	19
Table 7.5 Development Generated Person Trips.....	20
Table 8.1 Future Background Mode Share Targets .....	21
Table 11.1 City of Ottawa By-Law Parking Requirements.....	29
Table 11.2 City of Ottawa By-Law Parking Requirement .....	29
Table 12.1 Pedestrian Level of Service.....	30
Table 12.2 Bicycle Level of Service.....	31
Table 12.3 Transit Level of Service.....	31
Table 12.4 Truck Level of Service.....	32
Table 13.1 Length of Sight Triangle Leg – Case A, No Traffic Control .....	33
Table 18.1 Definition of LOS for Intersections.....	36
Table 18.2 2022 Background Traffic Operating Conditions .....	39
Table 18.3 2027 Background Traffic Operating Conditions .....	40
Table 18.4 2022 Total Traffic Operating Conditions .....	42
Table 18.5 2027 Total Traffic Operating Conditions.....	43
Table 18.6 Signalized Intersection Pedestrian Level of Service.....	45
Table 18.7 Signalized Intersection Bicycle Level of Service.....	46
Table 18.8 Signalized Intersection Truck Level of Service.....	47

List of Appendices

Appendix A – TIA Step 1 Screening Form

Appendix B – Site Plan

Appendix C – Traffic Data

Appendix D – Synchro 10 Output Reports

Appendix E – TDM Checklist

Appendix F – Certification Form

## 1.0 SCREENING FORM

The following section describes the initial assessment of the proposed development with respect to the Traffic Impact Assessment (TIA) Screening Form and will provide reasoning for potential triggers. The TIA screening form is attached in [Appendix A](#).

### 1.1 Trip Generation Triggers

The proposed development's land use types are gas station with convenience market and fast-food restaurant with drive-through window. The fast-food portion of the development has a total Gross Floor Area (GFA) of 111.4 m<sup>2</sup>, where the gas and convenience market has a GFA of 333.6 m<sup>2</sup>. The development size is larger than the minimum of 100 m<sup>2</sup> for fast food restaurant. As such, the criteria for the trip generation trigger is met.

### 1.2 Location Trigger

The proposed development is neither located within a Design Priority Area (DPA) or a Transit-oriented Development (TOD) zone. The site will have a new driveway access onto Woodroffe Avenue which is designated as part of the City's Rapid Transit Network, and Spine Bicycle Network. As such, the criteria for a location trigger has not been met.

### 1.3 Safety Trigger

The proposed development has two driveways within 150 m of a Signalized intersection (Woodroffe Avenue and Medhurst Drive). As there is a significant number of collisions located within a 500 m radius of the proposed development and it includes a drive-thru, the criteria for a safety trigger has been met.

## 2.0 DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development will be located at 1545 Woodroffe Avenue in Nepean. The proposed development has a lot area of 7818.8 m<sup>2</sup> and is located within the northeast quadrant of the signalized intersection of Woodroffe Avenue and Medhurst Drive. The proposed development is expected to include a gas station with a convenience market (333.6 m<sup>2</sup>), a retail area (55.8 m<sup>2</sup>), a fast food restaurant with drive thru (111.4 m<sup>2</sup>), a fueling area with 12 fueling pumps, and, a car wash with a single automated bay (122.6 m<sup>2</sup>). The build-out date is expected to be 2022. [Figure 2.1](#) shows the location of the proposed development, subject lands, and surrounding area. The site plan can be found in [Appendix B](#).





Figure 2.1 Proposed Development Location

The development is in a General Mixed-Use zone with a subcode of GM15 under The City of Ottawa Zoning By-Law. The zone permits the development of automobile service stations, car washes and gas bars.

Table 2.1 Illustrates the land use, associated trip generation based on the average rate from ITE Trip Generation Manual, 10<sup>th</sup> Edition methods and data for Land Use Code (LUC) 937 (coffee/donut shop with drive through), 960 (super convenience market/gas station), 882 (marijuana dispensary), and, 948 (automated car wash).



Table 2.1 ITE Trip Generation

Description	Development Area	ITE Land Use Code Description	ITE LUC	Trip Generation Rate		Trip Generation			
						AM Peak		PM Peak	
				AM Peak	PM Peak	Entering	Exiting	Entering	Exiting
Fast-food restaurant with drive through	1200 ft <sup>2</sup> (111.4 m <sup>2</sup> )	coffee/donut shop with drive through	937	88.99	43.38	54	53	26	26
Gas Station with Convenience Market	12 fueling spots / (333.6 m <sup>2</sup> )	Super convenience Market/Gas Station	960	28.08	22.96	168	169	138	138
Marijuana Dispensary	600 ft <sup>2</sup> (55.8 m <sup>2</sup> )	Marijuana Dispensary	882	10.44	21.83	3	3	6	7
Car Wash	1320 ft <sup>2</sup> (122.6 m <sup>2</sup> )	Automated Car Was	948	N/a	14.2	N/a	N/a	9	10
Total						225	225	179	181

From the table above, it is shown that the proposed development is expected to generate 450 trips during the AM peak hour, 225 entering and 225 exiting the proposed site. During the PM peak, the proposed development is expected to generate 360 total trips, 179 entering and 181 exiting the proposed site. All trip generation is based on vehicle trips, as per the City of Ottawa TIA Guidelines all trip generation must be person trips. As such all generated trips are multiplied by 1.28 resulting in; 576 trips during the AM peak hour, 288 entering and 288 exiting the proposed site, 461 total trips, 229 entering and 232 exiting the proposed site.

### 3.0 EXISTING CONDITIONS

The following outlines the existing site characteristics and a summary of the expected development transportation conditions.

#### 3.1 Roadways

The following section outlines the existing roadways in the study area obtained from the City of Ottawa Official Plan, Annex 1 – Road Classification and Right-of-Way. MP performed a field review on March 29, 2021, to confirm geometries, lane configurations and existing conditions carried forward in the TIA.

Within the vicinity of the proposed development, is Woodroffe Avenue, a four-lane divided urban arterial roadway with a 44.5 m right-of-way. Woodroffe Avenue runs north-south, with a posted speed limit of 60 km/h, concrete sidewalks, a designated bike and a designated transit priority lane within the vicinity of the proposed development.

Within the vicinity of the proposed development, Medhurst Avenue is a two-lane undivided urban collector roadway, with a 24 m right-of-way. Medhurst Avenue runs east-west, with a posted speed limit of 40 km/h, concrete sidewalks on both sides of the roadway

Within the vicinity of the proposed development, West Hunt Club Road is a four-lane divided urban arterial roadway, with a 30 m right-of-way. West Hunt Club road runs east-west, with a posted speed limit of 80 km/h, a multi-use pathway running parallel with the westbound lane.

Within the vicinity of the proposed development, Knoxdale Road is a two-lane undivided urban collector, with a 24 m right-of-way. Knoxdale Road runs east-west, with a posted speed limit of 40 km/h and has concrete sidewalks on both sides of the roadway.

Within the vicinity of the proposed development, Meadowlands Drive is a two-lane undivided urban major collector, with a 26 m right-of-way. Meadowlands Drive runs east-west, with a posted speed limit of 40 km/h and has concrete sidewalks on both sides of the roadway.

Within the vicinity of the proposed development, Tallwood Drive is a four-lane divided urban collector, with a 28 m right-of-way. Tallwood Drive runs east-west, with a posted speed limit of 40 km/h and has concrete sidewalks on both sides of the roadway.

## 3.2 Intersections

The following section documents the existing intersection within the study area, their control type, lane configurations, turning restrictions, and, any other relevant data. The following three intersections were identified within the study area:

- Woodroffe Avenue at West Hunt Club Road;
- Woodroffe Avenue at Medhurst Drive/Knoxdale Road, and
- Woodroffe Avenue at Meadowlands Drive/Tallwood Drive.

### 3.2.1 Woodroffe Avenue at West Hunt Club Road

Woodroffe Avenue at West Hunt Club Road is a four leg, signalized intersection, located to the south of the proposed development.



Figure 3.1 Woodroffe Avenue at West Hunt Club Road

- Woodroffe Avenue – Northbound: 5 lane cross section, one left-turn lane, two through lanes, one channelized right-turn lane, one designated transit priority lane, and a designated bike lane with posted signage.
- Woodroffe Avenue – Southbound: 6 lane cross section, two left-turn lane, two through lanes, one channelized right-turn lane, one designated transit priority lane, and a designated bike lane with posted signage.
- West Hunt Club Road – Eastbound: 4 lane cross section, one left-turn lane, two through lanes, one channelized right-turn lane and a designated bike lane with posted signage.
- West Hunt Club Road – Westbound: 4 lane cross section, one left-turn lane, two through lanes, one channelized right-turn lane and a designated bike lane with posted signage.



### 3.2.2 Woodroffe Avenue at Medhurst Drive/Knoxdale Road

Woodroffe Avenue at Medhurst Drive/Knoxdale Road is a four leg, signalized intersection, located adjacent to the proposed development.



Figure 3.2 Woodroffe Avenue at Medhurst Drive/Knoxdale Road

- Woodroffe Avenue – Northbound: 4 lane cross section, one left-turn lane, two through lanes, one shared right-turn lane/designated transit priority lane, and a designated bike lane with posted signage.
- Woodroffe Avenue – Southbound: 5 lane cross section, one left-turn lane, two through lanes, one channelized right-turn lane, one designated transit priority lane, and a designated bike lane with posted signage.
- Knoxdale Road – Eastbound: 4 lane cross section, two left-turn lanes, one through lane, one channelized right-turn lane.
- Medhurst Drive – Westbound: 2 lane cross section, one left-turn lane and one shared right-through lane.



### 3.2.3 Woodroffe Avenue at Meadowlands Drive/Tallwood Drive

Woodroffe Avenue at Meadowlands Drive/Tallwood Drive is a four leg, signalized intersection, located adjacent to the proposed development.

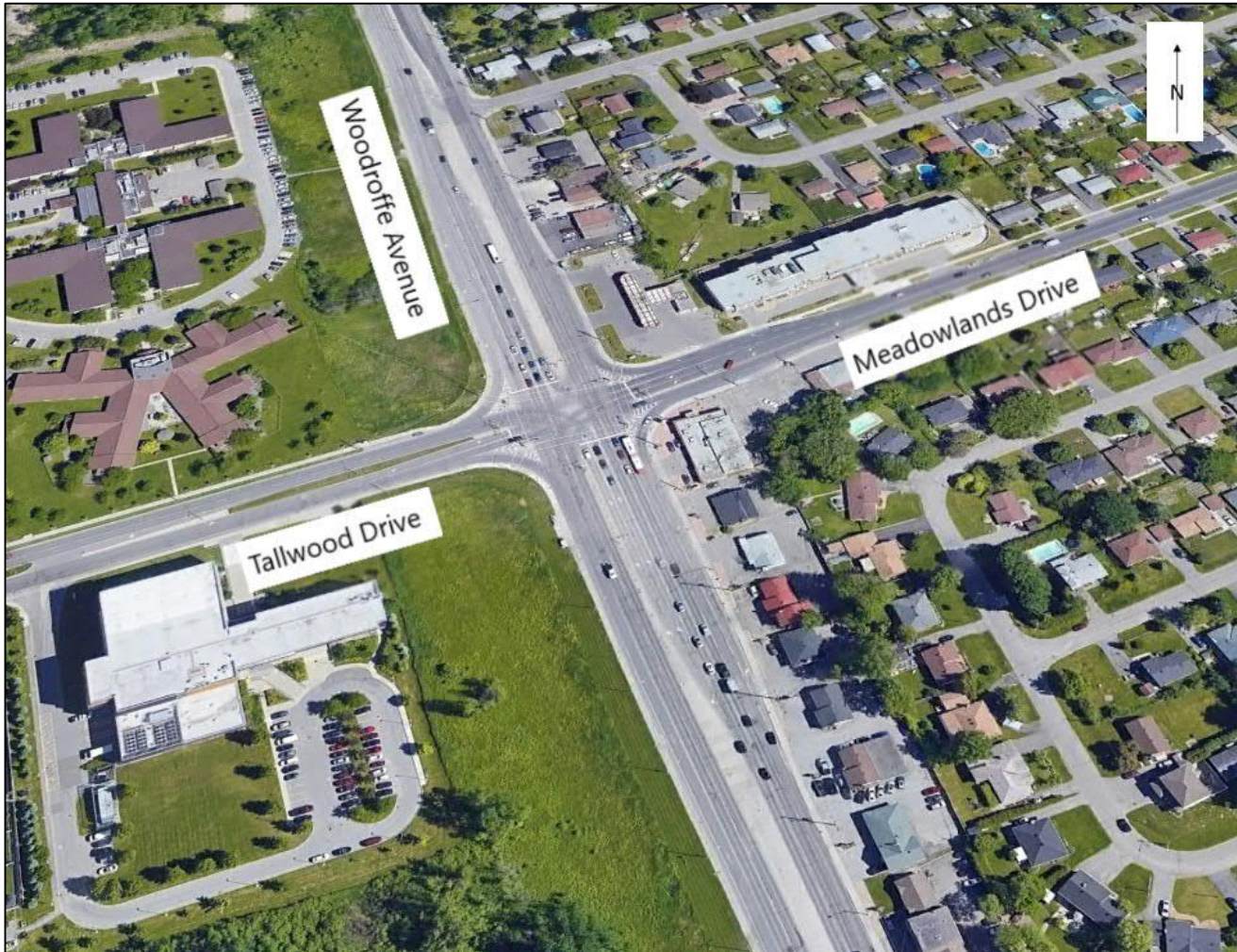


Figure 3.3 Woodroffe Avenue at Meadowlands Drive/Tallwood Drive

- Woodroffe Avenue – Northbound: 6 lane cross section, two left-turn lanes, two through lanes, one channelized right-turn lane, and one designated transit priority lane,
- Woodroffe Avenue – Southbound: 5 lane cross section, one left-turn lane, two through lanes, one channelized right-turn lane, one designated transit priority lane, and a designated bike lane with posted signage.
- Tallwood Drive – Eastbound: 3 lane cross section, one left turn lane, one through lane, and one channelized right turn lane.
- Meadowlands Drive – Westbound: 4 lane cross section, two left turn lanes, one through lane, and one channelized right turn lane.



### 3.3 Existing Driveways

The following section documents the existing driveway entrance within a 200m of the proposed site access. Figure 3.4 illustrates the driveways within the vicinity of the proposed site.



Figure 3.4 Existing Driveways

As shown in the Figure 3.4 there are numerous private driveways within 200m of the proposed site. On Medhurst Drive there are 12 private driveways, on Brockington Crescent there are 37 private driveways, and on Abitibi Crescent there are 8 private driveways, all within 200m of the proposed development.

### 3.4 Existing Multi-Use Pathways

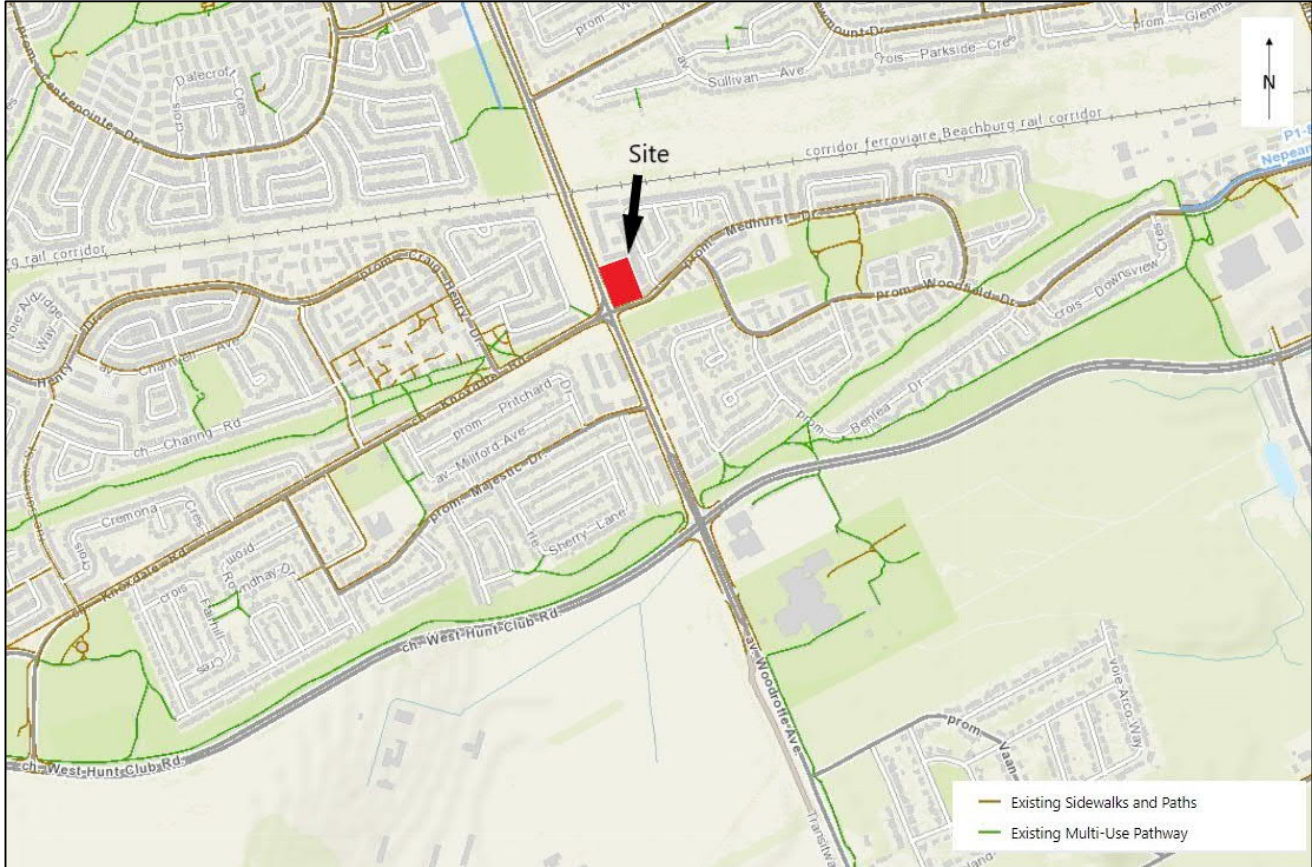


Figure 3.5 Existing Multi-use Pathways

As shown in the Figure 3.5, there are multiple multi-use pathways within the vicinity of the proposed development. There is a network of multi-use pathways that run parallel to West Hunt Club Road, a network of multi-use pathways that run parallel to Knoxdale Road, and multiple multi-use pathways connecting all neighbourhoods within the vicinity of the proposed development.

### 3.5 Existing Transit Network

The following section documents the existing transit networks within the surrounding area. Figure 3.6 illustrates the existing bus routes within the study area of the proposed site.



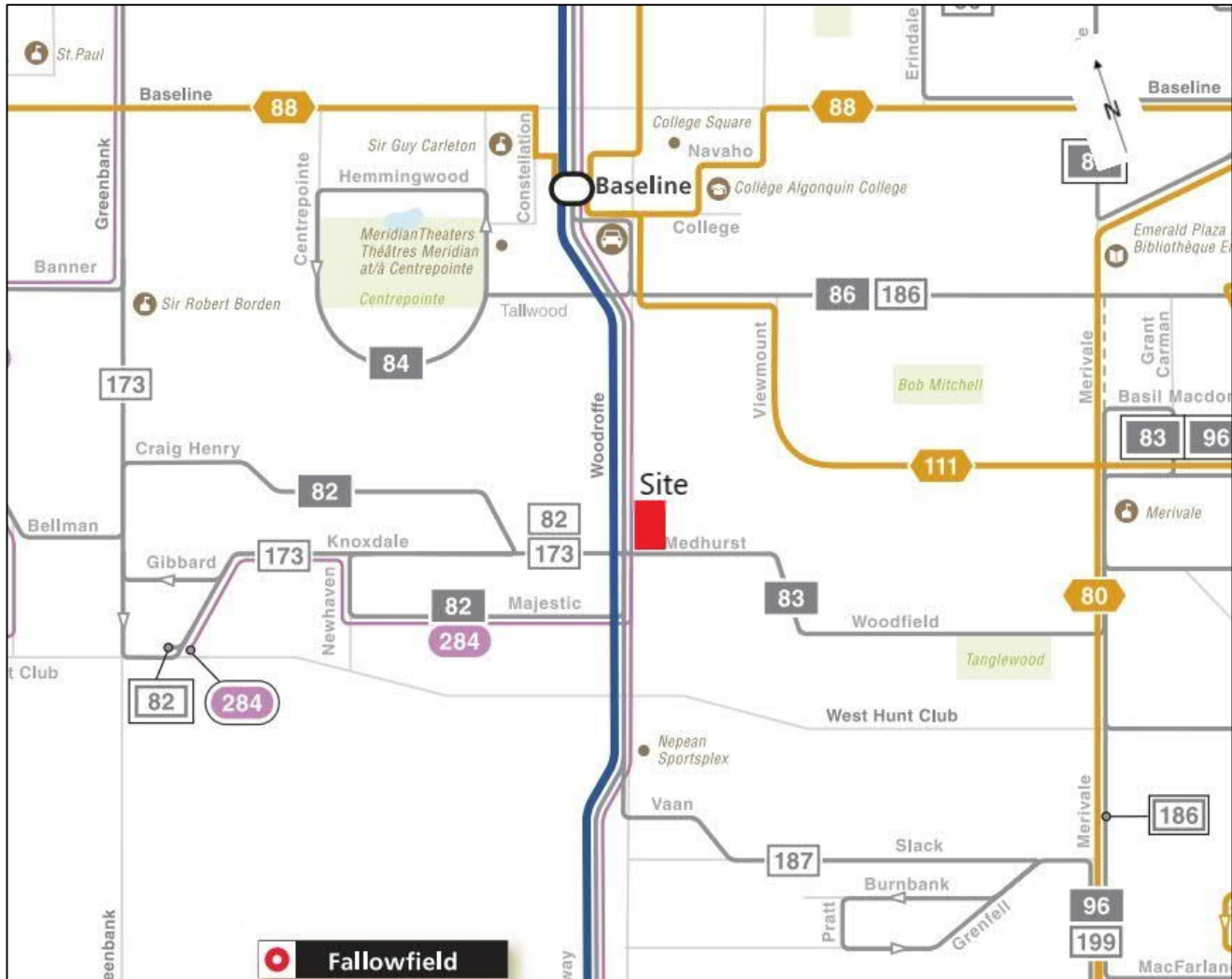


Figure 3.6 Existing Transit Routes

Currently there are eight (8) transit routes that service the proposed development having stops at the intersection of Woodroffe Avenue and Medhurst Drive/Knoxdale Road, including:

- Route 73: Provides service from Leikin Street to Tunney's Pasture Station running approximately every 30 minutes;
- Route 74: Provides service from Riverview Station to Tunney's Pasture Station running approximately every 15 minutes;
- Route 75: Provides service from the Minto Recreational Center in Barrhaven to Tunney's Pasture during the hours of 5am to midnight. Between the hours of Midnight and 5am this route services from Barrhaven Station to the Rideau Centre Station running approximately every 15 minutes;
- Route 82: Provides service from the Barrhaven Station to Tunneys Pasture Station running approximately every 30 minutes;
- Route 83: Provides Service from Viewmount Drive and Grant Carman Drive to Tunneys Pasture Station running approximately every 30 minutes;



- Route 173: Provides service from Barrhaven Station to Bayshore Shopping Centre Station running approximately every 30 minutes;
- Route 187: Provides service from MacFarlane Road and Briggs Avenue to Baseline Station running approximately every 30 minutes from 6:30-8:00 and 14:40-17:50;
- Route 284: provides service from Knoxdale Road and Conover to Tunneys Pasture Station running approximately every 15 minutes from 6:30-9:00 and 15:00-18:30.

Figure 3.7 Illustrates the location of the transit stops within the vicinity of the proposed development.

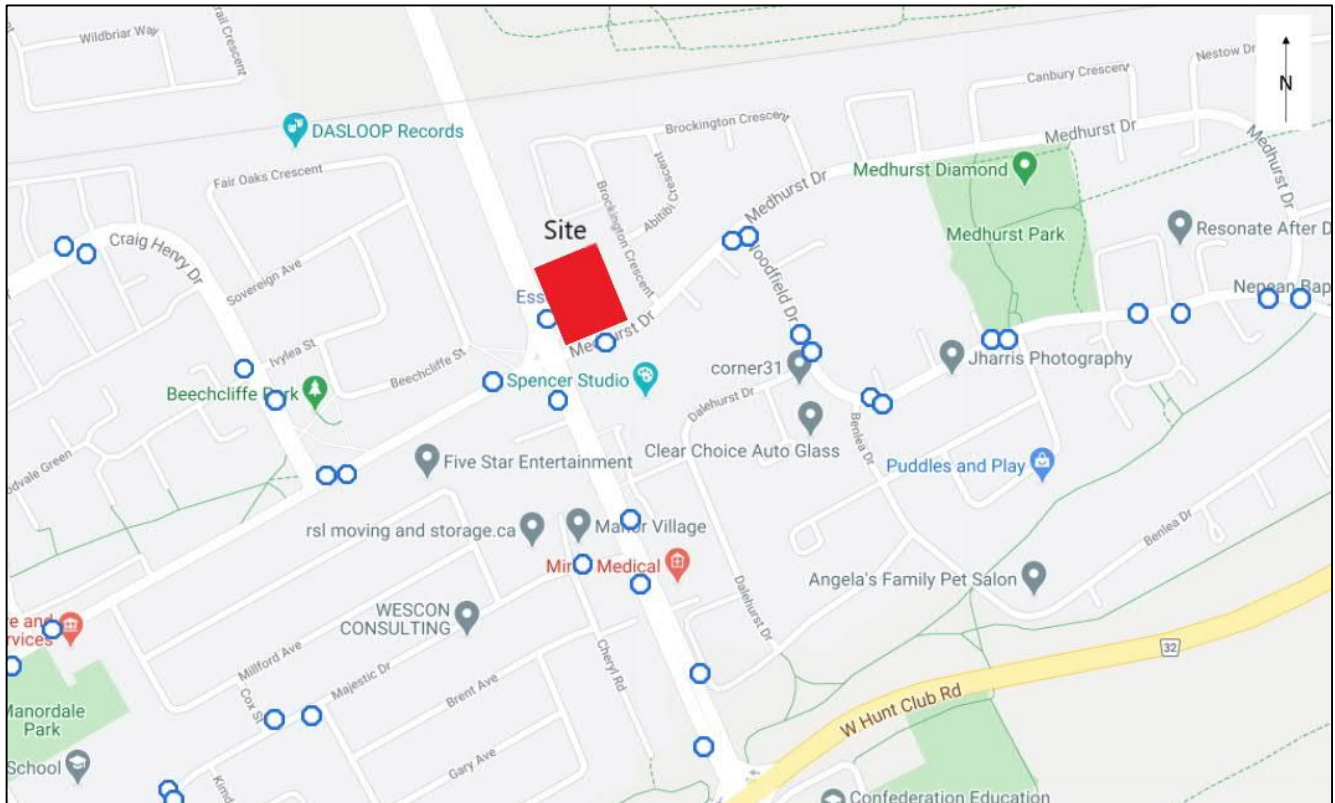


Figure 3.7 Transit Stop Locations

### 3.6 Existing Area Traffic Management Measures

Within a vicinity of 250 m of each study intersection no area traffic management measures were identified. No traffic calming measure was identified along Woodroffe Avenue corridor within the study area.

### 3.7 Existing Peak Hour Travel Demand by Mode

The proposed site is located in Ottawa's inner suburbs area. Transit mode shares leaving the area to other areas of Ottawa account for 24% of morning peak period trips as of 2011, where the 2031 target for transit mode shares leaving is 28%. The 2011 transit mode shares of the morning peak trips arriving to the area is 16% where the target 2031 rate is 21%.

Based on the most recent Capital Region Origin-Destination Survey which was conducted in Winter 2012, for the Merivale area can be found in [Appendix C](#). Based on this survey the Merivale area was shown to have the following mode shares; 15 % of auto passenger, 18% transit, 2 % bicycle, 2 % walking and 2 % other. It should be noted that the other category accounts for trips such as taxis, school buses, motorcycle and scooters. As such for the purposes of modelling the traffic conditions and projections of future conditions, the percentages of other trips will be distributed to auto driver, resulting in 63% auto driver trips.

### 3.8 Existing Collision History

Collision data was provided by the city for the years 2015-2019. The data was reviewed for boundary roads within the study area, as identified in [section 3.0](#). The data was divided into 7 sections, Table 3.1 illustrates the data.

- West Hunt Club Road Between Knoxdale Road and 354m East of Woodroffe Avenue;
- Knoxdale Road Between Woodroffe Avenue and Bertona Street;
- Medhurst Drive Between Woodroffe Avenue and Woodfield Drive;
- Tallwood Drive Between Woodroffe Avenue and Centerpoint Drive;
- Meadowlands Drive Between Woodroffe Avenue and Thatcher Street;
- Woodroffe Avenue Between Meadowlands Drive and Medhurst Drive; and,
- Woodroffe Avenue Between Medhurst Drive and West Hunt Club Road.

Table 3.1 Collision data

Location	Collisions							
	2015	2016	2017	2018	2019	total	Cyclist	Pedestrian
West Hunt Club Road Between Knoxdale Road and 354 m East of Woodroffe Avenue	29	38	50	33	30	180	1	0
Knoxdale Road Between Woodroffe Avenue and Bertona Street	1	1	1	1	1	5	0	0
Medhurst Drive Between Woodroffe Avenue and Woodfield Drive	1	2	2	0	0	5	0	0
Tallwood Drive Between Woodroffe Avenue and Centerpoint Drive	5	1	1	3	4	14	0	0
Meadowlands Drive Between Woodroffe Avenue and Thatcher Street	22	18	19	15	18	92	0	0

Location	Collisions							
	2015	2016	2017	2018	2019	total	Cyclist	Pedestrian
Woodroffe Avenue Between Meadowlands Drive and Medhurst Drive	34	23	28	35	26	146	2	0
Woodroffe Avenue Between Medhurst Drive and West Hunt Club Road	2	5	3	3	3	16	0	2

As seen from the table above there was a total of 180 vehicle and 1 cyclist collisions on West Hunt Club Road between Knoxdale Road and 354m East of Woodroffe Avenue, 5 collisions on Knoxdale Road between Woodroffe Avenue and Bertona Street, 5 collisions on Medhurst Drive between Woodroffe Avenue and Woodfield Drive, 14 collisions on Tallwood Drive between Woodroffe Avenue and Centerpoint Drive, 92 collisions on Meadowlands Drive between Woodroffe Avenue and Thatcher Street, 146 vehicular and 2 cyclists collisions on Woodroffe Avenue between Meadowlands Drive and Medhurst Drive, and, 16 vehicular and 2 pedestrian collisions on Woodroffe Avenue between Medhurst Drive and West Hunt Club Road. When reviewing the TMC data and collision data in conjunction of one another we can see that, there is a relatively low number of cyclist using the roadway network within the study area. This causes some concern with number of collisions involving cyclist. However, the number of pedestrians that use the network within the study area is a significantly larger number than that of the cyclist it is to be expected that there would collisions noted with pedestrians.

It was brought to MP attention that this area may be an area of safety concern based on the comments provided by the City of Ottawa Councillor for this area. Area residents have reported a perceived safety concern at the in the vicinity of the proposed development. As this is an existing condition, it is recommended that consideration be given to monitoring the collision experience in the area and at the intersection of Woodroffe Avenue and Medhurst Drive, primarily.

### 3.9 Existing Traffic Volumes

MP obtained TMC data from the City of Ottawa for the following Intersections:

- Woodroffe Avenue at West Hunt Club Road (2019-10-22);
- Woodroffe Avenue at Medhurst Drive/Knoxdale Road (2018-01-16); and,
- Woodroffe Avenue at Meadowlands Drive/Tallwood Drive (2016-03-23).

In order to use these counts, MP utilized a growth factor of 1.5% to adjust values to 2021. This factor was decided based on the City of Ottawa Transportation Master Plan, which states that the City of Ottawa is expected to increase its population from 922,00 to 1.14 Million residents from 2011 to 2031. This results in an annual growth rate of 1.1%. Since traffic growth is a function of both population and employment growth, a growth rate of 1.5% was used to ensure that both background growths are taken into account. The TMC data received and the 2021 baseline Traffic Volume scenario for the AM and PM Peak periods can be found in [Appendix C](#).

### 3.10 Existing Traffic Operations

Level of Service (LOS) is a qualitative measure of the operating conditions, based on lane configuration, signal operation/phasing. LOS criteria for signalized and unsignalized intersection based on the Multi Modal Level Of Service (MMLoS) Guidelines, are illustrated in Table 3.2.

Table 3.2 Definition of LOS for Intersections

Level of Service	v/c Ratio
A	0 to 0.60
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	> 1.00

Existing traffic operations analysis was performed using Synchro 10 software. Signal timing information was provided by the city. Table 3.3 summarizes the existing conditions.

Table 3.3 Existing Conditions

	Intersection LOS		AM Peak Hour			PM Peak Hour		
	AM	PM	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)
Woodroffe Avenue and West Hunt Club Road								
EBL	F	E	C	0.72	82.6	F	1.03	144.1
EBT			F	1.14	112.0	A	0.60	39.9
EBR			A	0.30	10.1	C	0.75	28.8
WBL			A	0.59	75.1	A	0.57	68.7
WBT			C	0.74	44.1	F	1.06	84.6
WBR			A	0.31	9.7	A	0.46	18.9
NBL			F	1.01	137.7	F	1.23	188.1
NBT			F	1.37	211.7	D	0.81	52.5
NBR			A	0.48	14.8	A	0.20	2.8
SBL			F	1.32	201.6	A	0.60	31.3
SBT			B	0.67	60.7	F	1.13	111.4
SBR			A	0.27	20.3	A	0.36	21.9
Woodroffe Avenue and Medhurst Drive/Knoxdale Road								



	Intersection LOS		AM Peak Hour			PM Peak Hour		
	AM	PM	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)
EBL	C	D	C	0.77	57.8	C	0.75	77.2
EBT			B	0.68	55.5	A	0.15	40.4
EBR			A	0.27	5.3	A	0.16	0.8
WBL			A	0.46	59.8	A	0.52	63.7
WBTR			C	0.79	46.5	D	0.82	59.8
NBL			A	0.45	91.1	C	0.78	106.9
NBT			E	0.98	18.3	C	0.78	23.4
NBR			A	0.12	0.0	A	0.15	0.6
SBL			C	0.75	115.1	D	0.83	85.2
SBT			A	0.58	31.9	E	0.99	58.0
SBR			A	0.21	4.6	C	0.71	18.6
Woodroffe Avenue and Meadowlands Drive/Tallwood Drive								
EBL	F	E	F	1.00	158.7	B	0.69	77.1
EBT			C	0.71	57.1	A	0.57	47.7
EBR			A	0.47	16.6	D	0.81	38.9
WBL			A	0.59	72.2	E	0.95	93.3
WBT			A	0.53	49.6	A	0.59	47.7
WBR			A	0.55	18.0	B	0.63	21.7
NBL			C	0.75	66.3	C	0.71	70.5
NBT			F	1.23	144.4	D	0.84	45.0
NBR			A	0.57	16.3	A	0.30	7.6
SBL			D	0.90	98.3	F	1.21	181.0
SBT			A	0.57	31.0	F	1.06	80.8
SBR			A	0.13	0.4	A	0.22	4.8
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn								

The intersection of Woodroffe Avenue and West Hunt Club is operating at an overall LOS of F during the AM peak hour. All movements operate at a LOS of C or better, and a v/c or 0.74 or less with the exceptions of the eastbound through, northbound left, northbound through and the southbound left movement all operating above capacity. During the PM peak hour the intersection is operating at an LOS of E. All movements operate at a LOS of D or better with a v/c of 0.81 or less with the exceptions of the eastbound left, westbound through, northbound left and the southbound through movements, all operating above capacity.

The intersection of Woodroffe Avenue and Medhurst Drive/Knoxdale Road is operating at an LOS of C during the AM peak hour. All movements operate at a LOS of C or better with a v/c of 0.79 or less with the exception of the northbound through lane that operates at an LOS of E with a v/c of 0.98. During the PM peak hour, the intersection operates at an LOS of D. All movements operate at an LOS of D or better with a v/c of 0.83 or less, with the exception of the Southbound through lane that operates at an LOS of E and a v/c of 0.99.

The intersection of Woodroffe Avenue and Meadowlands Drive/Tallwood Drive operates at an LOS of F during the AM peak hour. All movements operate at and LOS of D or better with a v/c of 0.90 or less, with the

exceptions of the eastbound left lane and the northbound through lane that operate above capacity. During the PM peak hour the intersection operates at an LOS of E. All movements operate at an LOS of E or better with a v/c of 0.95 or less with the exception of the southbound left and the southbound through lanes that operate above capacity.

The large volumes during the AM Peak hour heading northbound and eastbound through the study limits, and contrary, the high volumes during the PM Peak hour heading southbound and westbound show that the study area has a heavy commuter traffic pattern.

These patterns are consistent with what was seen during the field review done by MP. During the field review MP noted that the buses came infrequently, and based on the OC Transpo schedule it was confirmed that it is very likely that a bus will not trigger the transit priority phase at the intersection of Woodroffe and Meadowlands. As such the transit-priority phase was not coded into the synchro analysis, and 6 seconds were taken off the cycle length, instead of including a hold phase that would be present on each cycle. Synchro 10 reports can be found in [Appendix D](#).

## 4.0 PLANNED CONDITIONS

### 4.1 Roadway Network Modifications

According to the City of Ottawa Transportation Master Plan, there are no roadway network modifications planned within the study area.

### 4.2 Other Study Area Developments

There are no other Development Applications within 500m of the proposed development.

## 5.0 STUDY AREA AND TIME PERIODS

### 5.1 Study Area

The proposed study area is limited to the following intersection:

- Woodroffe Avenue at West Hunt Club Road;
- Woodroffe Avenue at Medhurst Drive/Knoxdale Road; and,
- Woodroffe Avenue at Meadowlands Drive/Tallwood Drive.

### 5.2 Time Periods

The proposed time periods for the analysis are:

- AM Peak (8:00-9:00) hour of adjacent roadways, and;
- PM Peak (16:15-17:15) hour of adjacent roadways.

### 5.3 Horizon Years

The proposed horizon years for analysis are:

- Existing Conditions (2021);
- Future Background (2022) and Total Future Traffic (2022) Conditions; and,
- Horizon Background (2027) and Total Horizon Traffic (2027) Conditions.

## 6.0 EXEMPTION REVIEW

Table 6.1 summarizes the exemptions review in accordance with the City of Ottawa TIA Guidelines

Table 6.1 Exemptions Review

Module	Element	Exempted	Reasoning
<b>Design Review Component</b>			
4.1 Development Design	4.1.2 Circulation and Access	No	Not exempted due to being a Site Plan
	4.1.3 New Street Networks	Yes	The development is not a subdivision
4.2 Parking	4.2.1 Parking Supply	No	Not exempted due to being a Site Plan
	4.2.2 Spillover Parking	Yes	The development has more parking spots than needed 24 spaces required, 40 spaces will be provided
<b>Network Impact Component</b>			
4.5 Transportation Demand Management	All elements	Yes	The development is expected to have fewer than 60 employees
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbours	NO	The development uses collector and arterial streets for access
4.8 Network Concept		Yes	It is assumed that the gas station will not generate more than 200 new person trips during peak hour

## 7.0 DEVELOPMENT GENERATED TRAFFIC

As stated in Section 2.1, the development generated person traffic trips are expected to be: 576 trips during the AM peak hour (288 entering and 288 exiting the proposed site) and 461 total trips during the PM peak hour (229 entering and 232 exiting the proposed site), before reductions.

## 7.1 Trip Generation Reductions

As the site is currently in use by another gas station, the number of generated trips from the current gas station, with a convenience market, ITE Land Use Code 945, is to be reduced from the network. The reduction is summarized in Table 7.1.

Table 7.1 Existing Site Generated Trips

Description	Development Area	ITE Land Use Code Description	ITE LUC	Trip Generation			
				AM Peak		PM Peak	
				Entering	Exiting	Entering	Exiting
Gas station with convenience market	10 fueling spots	Gasoline/service station with convenience mart	945	65	61	71	69

As such, 126 trips, 65 entering and 61 exiting will be reduced from the AM Peak hour generation and a total of 140 trips, 71 entering and 69 exiting will be reduced from the PM Peak hour. Table 7.2 states the development generated traffic with the reduction from the existing site traffic.

Table 7.2 Development Generate Vehicle Trips with Existing Trip Reductions

Description	Development Area	ITE Land Use Code Description	ITE LUC	Trip Generation			
				AM Peak		PM Peak	
				Entering	Exiting	Entering	Exiting
Fast-food restaurant with drive through	1200 ft <sup>2</sup> (111.4 m <sup>2</sup> )	coffee/donut shop with drive through	937	54	53	26	26
Gas Station with Convenience Market	12 fueling spots / (333.6 m <sup>2</sup> )	Super convenience Market/Gas Station	960	103	108	67	69
Marijuana Dispensary	600 ft <sup>2</sup> (55.8 m <sup>2</sup> )	Marijuana Dispensary	882	3	3	6	7
Car Wash	1320 ft <sup>2</sup> (122.6 m <sup>2</sup> )	Automated Car Was	948	N/a	N/a	9	10
Total				160	164	108	112

Based on ITE Trip Generation Handbook 3<sup>rd</sup> edition a fast-food restaurant and the gas station will both have pass-by trips related to their use as well as newly generated trips. Pass-by trips act as vehicles already on the network that while driving by use the site. As such, these pass-by trips will be reduced from the new trip generation. As the restaurant is expected to be a Tim Hortons, MP utilised ITE Land Use Code 938 Coffee/Donut Shop with Drive-Through Window and No Indoor Seating, as no data is available for ITE Land use code 937, for a reduction rate of 89% of all trips are pass-by trips, for the use of Gas station MP utilised the ITE Land Use Code for 945 Gasoline / Service Station with Convenience Market, as there is no data available for 960, with a rate



of 56% of all trips are pass-by trips. As there is no data available for ITE Land Use Code 960. Table 7.3 summarises the pass-by reductions.

Table 7.3 Pass-by Trip Reductions

Description	Development Area	ITE Land Use Code Description	ITE LUC	Rates	Trip Generation			
					AM Peak		PM Peak	
					Entering	Exiting	Entering	Exiting
Fast-food restaurant with drive through	1200 ft	coffee/donut shop with drive through	938	0.89	48	47	23	23
Gas Station with Convenience Market	12 fueling spots /	Super convenience Market/Gas Station	945	0.56	64	67	42	43
Total					112	114	65	66

Based on the pass-by rates the newly generated traffic can be reduced by 226 trips during the Am Peak hour with 112 entering and 114 exiting, and 131 trips during the PM Peak hour with 65 entering and 66 entering. Table 7.4 illustrates the resulting newly generated trips.

Table 7.4 Development Generated New Vehicle Trips

Description	Development Area	ITE Land Use Code Description	Trip Generation			
			AM Peak		PM Peak	
			Entering	Exiting	Entering	Exiting
Fast-food restaurant with drive through	1200 ft <sup>2</sup> (111.4 m <sup>2</sup> )	coffee/donut shop with drive through	6	6	3	3
Gas Station with Convenience Market	12 fueling spots / (333.6 m <sup>2</sup> )	Super convenience Market/Gas Station	39	41	25	26
Marijuana Dispensary	600 ft <sup>2</sup> (55.8 m <sup>2</sup> )	Marijuana Dispensary	3	3	6	7
Car Wash	1320 ft <sup>2</sup> (122.6 m <sup>2</sup> )	Automated Car Was	N/a	N/a	9	10
Total			48	50	43	46

After all the reductions the proposed development is expected to generate 98 new vehicle trips during the AM Peak hour and 89 During the PM Peak hour. However, all these volumes must be multiplied by a factor of 1.28 based from the City of Ottawa Transportation Impact Assessment Guidelines 2017 in order to represent the vehicle trips as Person Trips. Table 7.5 Illustrates the number of person trips generated by the proposed development.

Table 7.5 Development Generated Person Trips

Trip Type	Trip Generation			
	AM Peak		PM Peak	
	Entering	Exiting	Entering	Exiting
Pass-by Trips	143	146	83	84
New Trips	61	64	55	59
total	204	210	138	143

As shown in Table 7.5 the proposed development is expected to generate 405 person trips during the Am Peak hour with 289 trips being pass-by and 129 being newly generated trips. During the PM peak hour the proposed development is expected to generate 281 trips with 167 of the trips being pass-by and 114 being newly generated person trips. Since the proposed development is expected to included land uses that rely heavily on vehicle traffic (gas station and restaurant with drive-through), for the purpose of this analysis all generated trips will be assumed to be auto driver trips.

As this development is planned to have mix uses such as a gas station, Tim Hortons, convenience store, and a cannabis shop, it is too be expected that the current traffic pattern will change as current there is only a gas station with convenience store. There is a potential that there will be more site generated traffic in the evening then currently is present. However, as during the evenings the amount of vehicles on the roadways are significantly less than during the AM and PM peak hour, this additional site traffic during the evenings is expected to have less of an impact.

## 8.0 BACKGROUND NETWORK TRAFFIC

As previously stated in [Section 3.9](#), MP received turning movements counts from the city taken at:

- Woodroffe Avenue at West Hunt Club Road (2019-10-22);
- Woodroffe Avenue at Medhurst Drive/Knoxdale Road (2018-01-16); and,
- Woodroffe Avenue at Meadowlands Drive/Tallwood Drive (2016-03-23).

The traffic volumes were projected to 2021, applied to the network and balanced accordingly.

### 8.1 Transit Network Plans

As stated previously in this report, the expected build out and occupancy year is 2022. Additionally, the proposed development and surrounding study area is serviced by public transit, has adequate pedestrian and cycling facilities, and a number of multi-use pathways. The City of Ottawa Long Range Financial Plan (2011) estimates a transit ridership increase of 3.8% from 2016 to 2020 and 2.0% increase from 2021-2025. The City of Ottawa Transportation Master Plan has also identified mode share targets for the year 2031. Table 8.1 shows the mode share targets expected for the background traffic within the study area.

Table 8.1 Future Background Mode Share Targets

Travel Mode	Mode Share Target	Rationale
Auto Drive	50%	Currently average of 63 % of person trips. This is expected to decrease in the future as more transit and cycling options become available.
Auto Passenger	9%	% of auto passenger person trips is not change in proportion to Auto Drivers.
Transit	26%	Transit person trips are expected to increase over time, as predicted by City of Ottawa Long Range Financial Plan.
Bicycle	5%	% of cycling is expected to increase as cycling networks become more accessible and increase
Walk	10%	% of walking person trips is expected to increase.

There are currently plans to extend an LRT line down Woodroffe Avenue from Baseline Station to Barrhaven. Based on the City of Ottawa TMP, the LRT line is not expected to be built until some time following 2031. The plan for 2031 is to extend BRT along the Woodroffe Ave corridor. The BRT line is expected to be converted to LRT at some time following 2031. It is understood that the Woodroffe Ave cross section may change as a result of the BRT/LRT on the same corridor and this change in cross section may impact the travel patterns in the area. Since the analysis horizons for this study only include 2022 and 2027, the impact of the BRT/LRT extension was not considered in the analysis.

## 8.2 General background Growth

To project the traffic volume to the current and future years, a growth rate of 1.5% was applied to the existing vehicle traffic volumes to project them to the year 2022 and 2027. The growth rate is considered appropriate as it is to include both the population and employment growth within the City of Ottawa. [Figure 8.1](#) and [8.2](#) shows the expected future background traffic volume during the 2022 buildout year and the 2027 horizon year

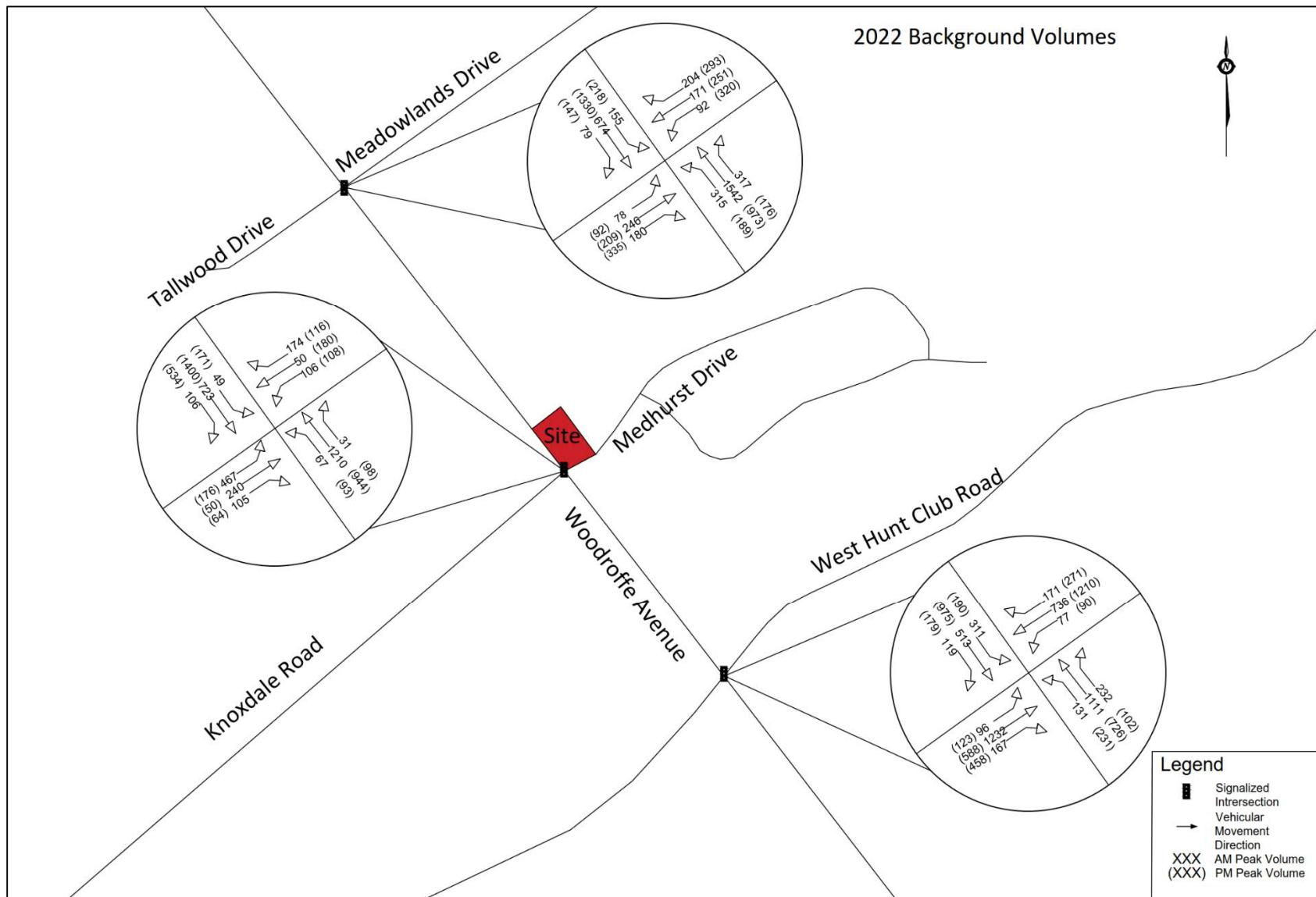


Figure 8.1 2022 Background Traffic Volumes

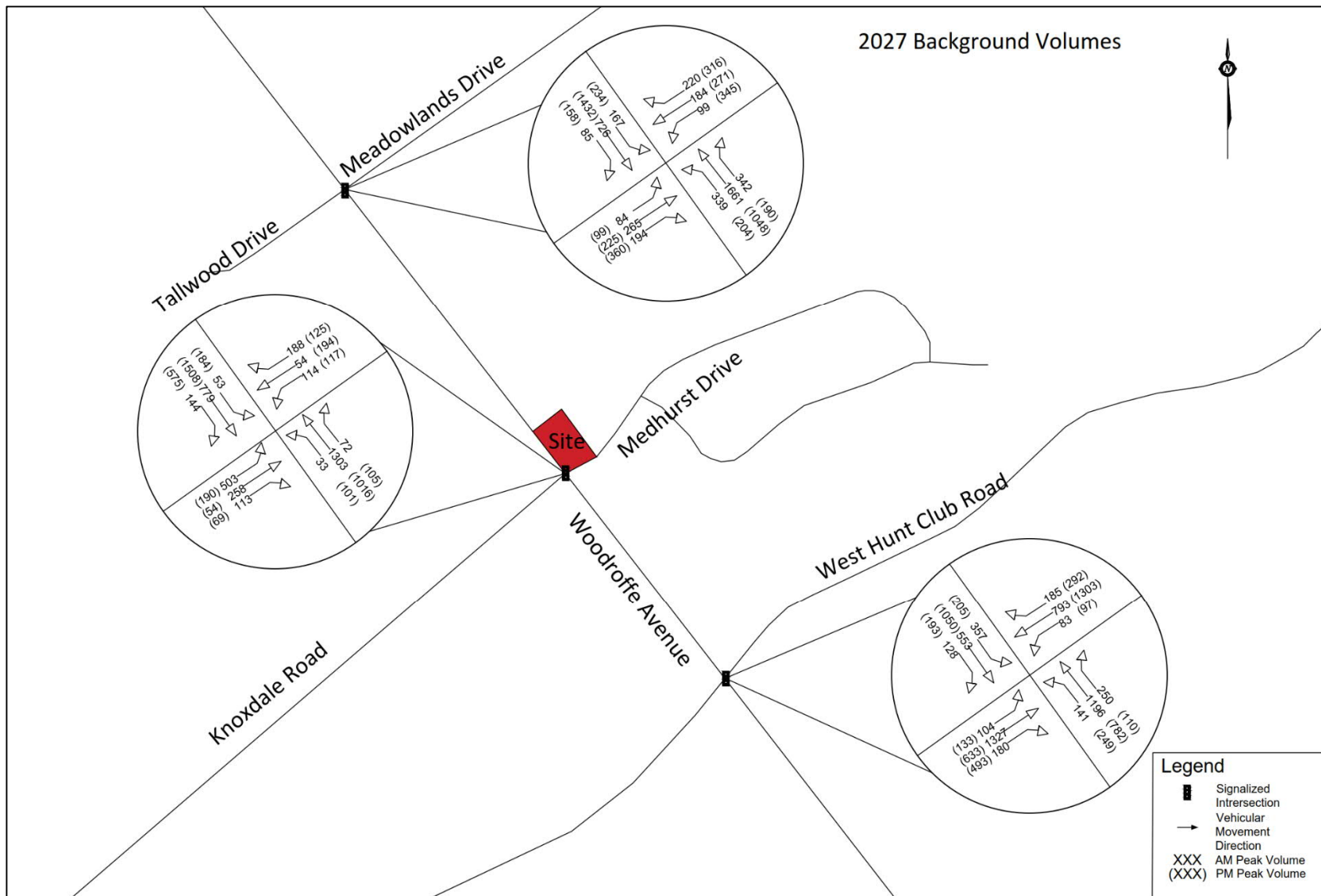


Figure 8.2 2027 Background Traffic Volumes



### 8.3 Other Area Development

As stated previously there are no other developments within the study area of the proposed development.

## 9.0 DEMAND RATIONALIZATION

As illustrated in [Section 3.10](#), currently during the AM peak and PM peak hour there are movements that are at currently operating over capacity at the intersections of Woodroffe Avenue and West Hunt Club Road, and the intersection of Woodroffe Avenue and Tallwood Drive/Meadowlands Drive. When the growth rate is applied for future conditions it is expected that at the intersection of Woodroffe Avenue and Meadowlands Drive/Tallwood Drive the movements states in [section 3.10](#), as well as the movements of the southbound left turn during the AM peak hour and the westbound left turn during the PM peak hour are all expected to exceed capacity of the roadways. At the intersection of Woodroffe Avenue and Medhurst Drive/Knoxdale Road, during the AM Peak hour the northbound through movement, and during the PM peak hour the southbound through movement are expected to exceed capacity. At the intersection of Woodroffe Avenue and West Hunt Club Road during the PM peak hour the northbound through movement is expected to exceed capacity.

As currently there is a 18% transit mode share within the area of Nepean, where the site is located, as stated in [Section 3.7](#), whereby the year 2031 the city expects a transit mode share of 26%. A reduction can be applied to the background traffic volumes in order to achieve this designated transit mode share percentage. This would reduce the volume of auto drivers on the network and in turn aid in reducing the potential for movements to operate exceeding their respective capacity limits. Increasing the transit mode share from 18% to 26% is a reasonable increase within the network as there are multiple bus routes that travel through this corridor connecting Baseline Station to the north and Fallowfield Station to the south of the proposed development. As well as, there are designated bus lanes along the Woodroffe Avenue corridor allowing for unimpeded bus movements, which make using transit a more attractive option.

Through the other mode shares such as cycling and walking is expected to increase from 2% to 5% and 10% respectively, that the auto driver mode share will be reduced to 50% by the year 2031 when taking into account theses increasing and that of the transit mode share. As such reduction can be made to the future background traffic to show the projected mode shares.

[Figure 9.1](#) and [Figure 9.2](#) show the background traffic for the 2022 buildout year and 2027 horizon year scenarios with the reduction in traffic.

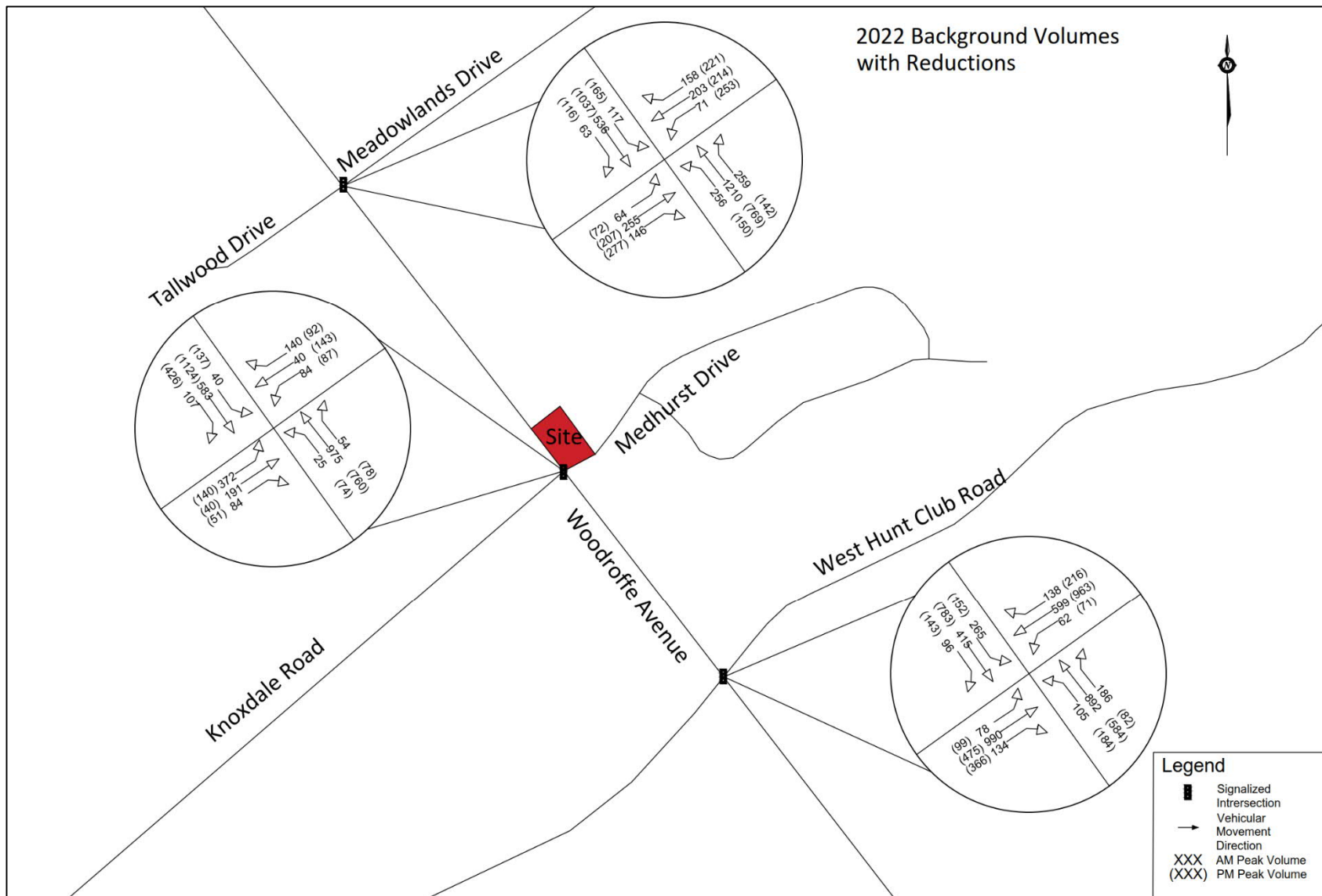


Figure 9.1 2022 Background Traffic Volumes with Mode Share Reductions

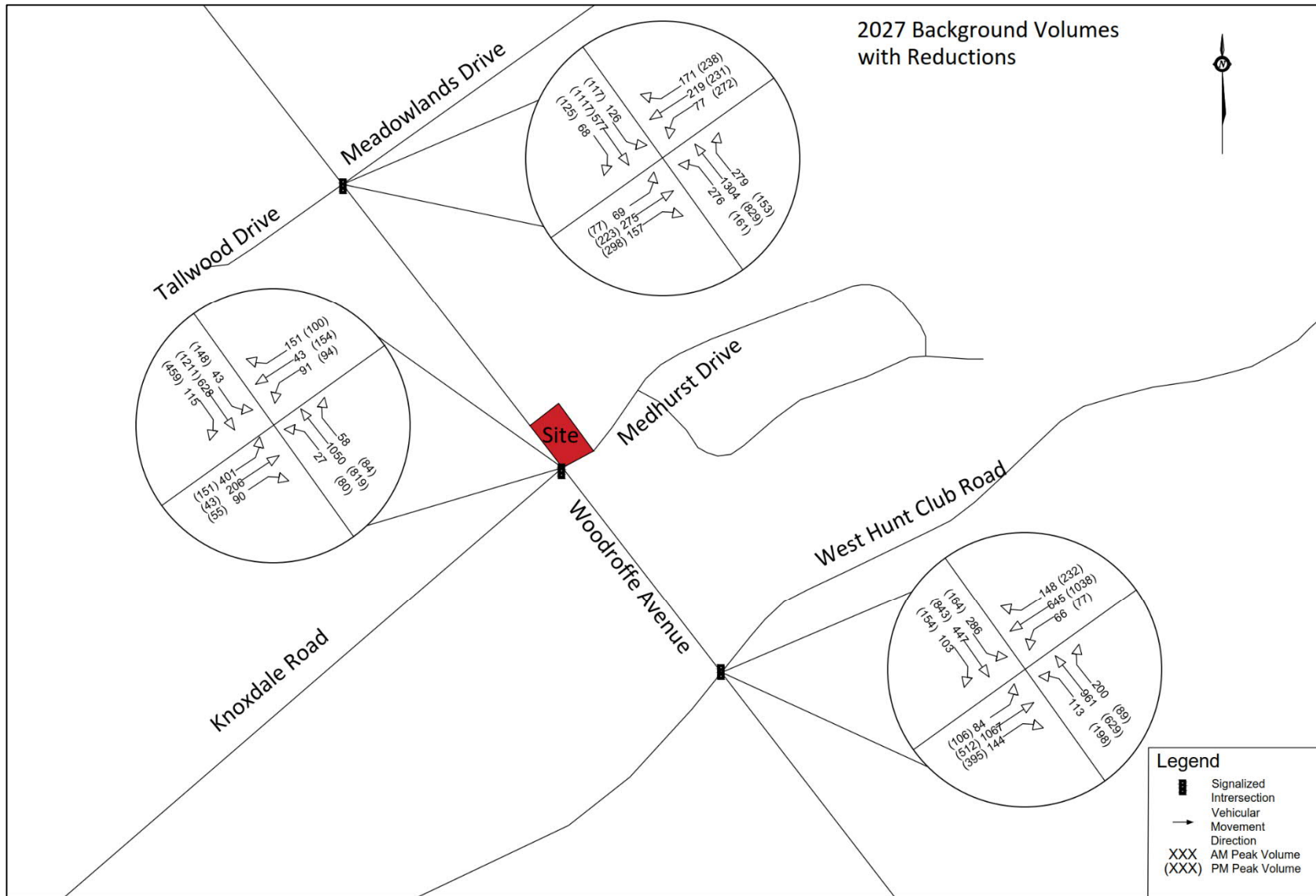


Figure 9.2 2027 Background Traffic Volumes with Mode Share Reductions

## 10.0 DEVELOPMENT DESIGN

This section will review the proposed development and its transportation network elements in order to ensure that a safe and efficient design has been proposed, to encourage walking, cycling, and transit use. The City of Ottawa's TDM-supportive Development Design and Infrastructure checklist has been completed and attached in [Appendix E](#) for reference. The TDM-supportive Development Design and Infrastructure checklist outlines the TDM elements to be included in the proposed development. The proposed development is expected to satisfy the required and basic measures for walking & cycling routes with the exception of 1.2.5, 1.2.8 as road speeds are above 30km/h, 1.3.2 as there are no wayfinding signage. The proposed development is expected to satisfy the required and basic measures for walking & cycling end-of-trip facilities with the exception of 2.2.1 as this is not an office building, and 2.3.1 as there is no shower. The proposed development is expected to have shelter, lighting and benches at the existing bus stop on Woodroffe Road. The proposed development is expected to satisfy the required TDM for parking as there is no limit on the number of parking spaces.

### 10.1 Design for Suitable Modes

The proposed development is expected to provide a total of 40 parking spaces, one (1) barrier free parking space, one (1) loading space, a carwash queue lane able to accommodate up to 14 vehicles, and a drive-through queue lane able to accommodate 13 vehicles. It is anticipated that the proposed development will include two (2) bicycle parking spaces.

As described in [Section 3.5](#), the closest transit stops to the proposed development are located at the Intersection of Woodroffe Avenue and Medhurst Drive, adjacent to the proposed accesses to the development.

### 10.2 Circulation and Access

The proposed development is anticipated to use the existing access onto Medhurst Drive and a new access onto Woodroffe Avenue. The existing accesses onto Woodroffe are expected to be closed. The new proposed access will be a right-in-right-out access along Woodroffe Avenue, offset 130 m from the intersection of Woodroffe Avenue and Medhurst Drive. While the existing access will be a right turn, left turn access onto Medhurst Drive, offset 65 m from the intersection of Woodroffe Avenue and Medhurst Drive.

The car wash is expected to be able to accommodate a queue of 14 vehicles. Based on the city of Ottawa By-Law 2008-250, the automated car wash must have 10 queuing spaces before the car wash and 1 space after the car wash. Based on the proposed site plan this minimum is met.

The drive through for the expected Tim Hortons is expected to have 13 queuing spaces. Based on the City of Ottawa By-Law 2008-250, as it will include an order board, the drive-through is required to accommodate 7 vehicles in advance of the board and a minimum of 11 total queuing spaces. Based on the proposed site plan this need is met. MP anticipates that 13 queuing spaces will be sufficient not to cause any spill over queuing onto the site, blocking any parking spaces or pumping stations. Based off of the Traffic Impact Study for the Imperial Oil Esso Station located the proposed site done by Read, Voorhees & Associates done in 2015 where they analyzed multiple Esso gas stations with Tim Horton restaurants, they found that the maximum drive through queue length to be 13 vehicles. MP conducted a Traffic Impact Study done for a Tim Hortons in the





## 11.0 PARKING

The site shows a total of 42 parking spaces which includes one (1) barrier free parking space. The City of Ottawa Zoning By-Law 2008-250, Section 101, Schedule 1A lists the proposed development as being in Area C (Suburban). Table 101 within the City of Ottawa By-law gives the minimum rates for varying land uses. The proposed development is located further than 600 m from rapid transit and given there is no limit on the number of parking spaces imposed on the development. Table 11.1 illustrates the City of Ottawa By-Law minimum number of parking spaces for the proposed development.

Table 11.1 City of Ottawa By-Law Parking Requirements

Land Use	Minimum Parking Spaces Rate	Gross Floor Area (m)	Minimum Parking Spaces
Restaurant	10 per 100 m <sup>2</sup>	111.4	11.1
Convince Store	3.4 per 100 m <sup>2</sup>	333.6	11.3
Retail	3.4 per 100 m <sup>2</sup>	55.8	1.9
Total			24

The proposed development exceeds the minimum number of parking spacers required (24) and is expected to be able to accommodate any potential additional parking demand from the proposed development.

Bicycle parking spaces must be provided in accordance with the City of Ottawa Zoning By-Law 2008-250, Section 101. Table 11.2 illustrates the bicycle parking spaces required as per the City of Ottawa's By-Law.

Table 11.2 City of Ottawa By-Law Parking Requirement

Land Use	Minimum Parking Spaces Rate	Gross Floor Area (m)	Minimum Parking Spaces
Restaurant	1 per 250 m <sup>2</sup>	111.4	0.4
Convince Store	1 per 250 m <sup>2</sup>	333.6	1.3
Retail	1 per 250 m <sup>2</sup>	55.8	0.2
Total			2

As stated previously the proposed site plan does not show bicycle parking, however, two (2) bicycle parking spaces are expected to be provided.

## 12.0 BOUNDARY STREET

This section will examine the design elements of the noted boundary street and their ability to accommodate the proposed development as well as being consistent with the City of Ottawa's Complete Street design philosophy as well as its urban design objectives.

## 12.1 Segment Mobility

This section will examine the design elements of the noted boundary streets and their ability to accommodate the proposed development as well as being consistent with the City of Ottawa's Complete Streets design philosophy as well as its urban design objectives.

### 12.1.1 Pedestrian Level of Service (PLOS)

Based on Exhibit 22 of the City of Ottawa MMLOS Guidelines, the MMLOS Target for Woodroffe Avenue is C and the target for Medhurst Drive is C. Table 12.1 Illustrates the PLOS of the boundary streets

Table 12.1 Pedestrian Level of Service

Side of Roadway	Sidewalk Width (m)	Boulevard Width (m)	Motor Vehicle Traffic Volume (AADT)	Presence of On-Street Parking	Operating Speed	LOS
Woodroffe Avenue						
Northbound	2	N/a	10863	No	70	F
Southbound	2	N/a	9853	No	70	F
Medhurst Drive						
Eastbound	1.85	N/a	2035	No	50	B
Westbound	2	N/a	2072	No	50	B

The northbound lane and southbound lane of Woodroffe Avenue both have a sidewalk with a width of 2m, no presence of a boulevard, AADT above 3000, no on-street parking with an operating speed of 70km/h, resulting in a PLOS of D. The eastbound and westbound lanes of Medhurst Drive have a 1.85m and a 2m sidewalk respectively, no presence of a boulevard, an AADT below 3000, no on-street parking and an operating speed of 50km/h resulting in an PLOS of B. As such Woodroffe Avenue does not meet the target however Medhurst Drive Does.

### 12.1.2 Bicycle Level of Service (BLOS)

Based on Exhibit 22 of the City of Ottawa MMLOS Guidelines, the MMLOS Target for Woodroffe Avenue is C and the target for Medhurst Drive is D. Table 12.2 Illustrates the BLOS of the boundary streets

Table 12.2 Bicycle Level of Service

Bike Lane Facility	Parking Facilities	Bike Lane Width (m)	Number of Travel Lanes	Operating Speed	BLOS
Woodroffe Avenue					
Bike Lanes	None	1.6	more than 2 in each direction	70	E
Medhurst Drive					
Mixed Traffic	N/A	N/A	2 travel lanes	50	D

Woodroffe Avenue has designated bike lanes with a width of 1.6m, no curbside parking, more than two lanes of traffic in each direction and an operating speed of 70 km/h. In accordance with Exhibit 11 of the City of Ottawa's MMLOS Guidelines, Woodroffe Avenue has a BLOS of E. Medhurst Drive is considered mixed traffic, 2 total travel lanes and an operating speed of 50 km/h. In accordance with Exhibit 11 of the City of Ottawa's MMLOS Guidelines, Medhurst Drive has a BLOS of D. As such Woodroffe Avenue does not meet the target however Medhurst Drive Does.

### 12.1.3 Transit Level of Service (TLOS)

Based on Exhibit 22 of the City of Ottawa MMLOS Guidelines, the MMLOS Target for Woodroffe Avenue is C and the target for Medhurst Drive is D. Table 12.3 Illustrates the TLOS of the boundary streets

Table 12.3 Transit Level of Service

Side of Roadway	Facility Type	LOS
Woodroffe Avenue		
Northbound	Bus Lane with Limited Driveway Friction	B
Southbound	Bus Lane with Limited Driveway Friction	B
Medhurst Drive		
Eastbound	Mixed with Frequent Driveway Friction	F
Westbound	Mixed with Frequent Driveway Friction	F

Woodroffe Avenue has a designated bus lane with limited driveway friction along both the northbound and southbound segments. In accordance with Exhibit 15 of the City of Ottawa's MMLOS Guidelines, Woodroffe Avenue has a TLOS of B. Medhurst Drive is designated as mixed traffic with frequent driveway friction both in the eastbound and westbound segments. In accordance with Exhibit 15 of the City of Ottawa's MMLOS Guidelines, Medhurst Drive has a BLOS of F. As such Woodroffe Avenue meets the target however Medhurst Drive does not.

### 12.1.4 Truck Level of Service (tkLOS)

Based on Exhibit 22 of the City of Ottawa MMLOS Guidelines, the MMLOS Target for Woodroffe Avenue is E, where Medhurst Drive does not have a target. Table 12.4 Illustrates the tkLOS of the boundary streets

Table 12.4 Truck Level of Service

Side of Roadway	Curb Lane Width	Number of Travel Lanes per Direction	tkLOS
Woodroffe Avenue			
Northbound	3.5	3	A
Southbound	3.5	3	A
Medhurst Drive			
Eastbound	3.8	1	B
Westbound	5	1	B

Woodroffe Avenue has both the northbound and southbound segments having a curb lane width of 3.5m, 3 travel lanes per direction resulting in a tkLOS of A based upon Exhibit 20 of the City of Ottawa's MMLOS Guidelines. Medhurst Drive has the eastbound and westbound segments having a curb lane radius of larger than 3.7m, and 1 lane in each direction resulting in a tkLOS of B based upon Exhibit 20 of the City of Ottawa's MMLOS Guidelines. As such Woodroffe Avenue meets the target.

## 12.2 Road Safety

Available collision data within the study area was reviewed and is presented in Section 3.7. No road safety concerns were identified on boundary streets or within the study area. As City of Ottawa collision records do not indicate direction of travel for vehicles involved, collision diagrams are not feasible.

## 13.0 ACCESS INTERSECTION DESIGN

This section will examine design elements of the proposed development's access points and assess their alignment with the City of Ottawa's Complete Street philosophy, MMLOS Guidelines and urban design objectives.

### 13.1 Location and Design of Access

The proposed development is anticipated to use the existing access onto Medhurst Drive and a new access onto Woodroffe Avenue. The new proposed access will be a right-in right-out access along Woodroffe Avenue, offset 130 m from the intersection of Woodroffe Avenue and Medhurst Drive. While the existing access will be a full-moves access onto Medhurst Drive, offset 65 m from the intersection of Woodroffe Avenue and Medhurst Drive.

#### 13.1.1 Access sightlines

MP performed a field visit to review the sightlines in the field April 19, 2021 for the proposed development site access.



TAC Geometric Design Guide for Canadian Roads, June 2017, was used to determine the required sight distance. Section 9.9.2 Departure Sight Triangles (Stop Controlled) Table 9.9.1 Length of Sight Triangle Leg – Case A was used in the review of the sight lines for the access of the proposed development

Table 13.1 shows the minimum required Length of Sight Triangle Leg. Woodroffe Avenue has a design speed of 80 km/h, as such 80 km/h will be the design speed analysed. Medhurst Drive has a design speed of 60 km/h, as such 60 km/h will be the design speed analysed.

Table 13.1 Length of Sight Triangle Leg – Case A, No Traffic Control

Design Speed (km/h)	Length of Leg (m)
60	55
80	75

As stated previously the development is expected to have one new right-in-right-out access onto Woodroffe Avenue approximately 65 m from the intersection of Woodroffe Avenue and Medhurst Drive. Based on the site review done and desktop review, it is anticipated that the sight lines from the existing access will be adequate. The sightlines from the access go well past the intersection to the south of the proposed access. It is anticipated that any vehicles performing a turning movement onto Woodroffe Avenue from Medhurst Drive/Knoxdale Road will be traveling at reduced speeds, as such, the sightlines are expected to be sufficient.

As stated previously, the proposed development will use the existing access onto Medhurst Drive approximately 35 m from the intersection of Woodroffe Avenue and Medhurst Drive. Based on the site review done and desktop review, it is anticipated that the sight lines from the existing access will be adequate. The sightlines from the proposed access onto Medhurst goes past the intersection, onto Knoxdale Road, well above the 55 m required to the west and approximately 100 m to the east. It is anticipated that any vehicles performing a turning movement from Woodroffe Avenue onto Medhurst Drive will be traveling at reduced speeds, as such, the sightlines are expected to be sufficient.

Figure 13.1 illustrates the sightlines the site accesses.

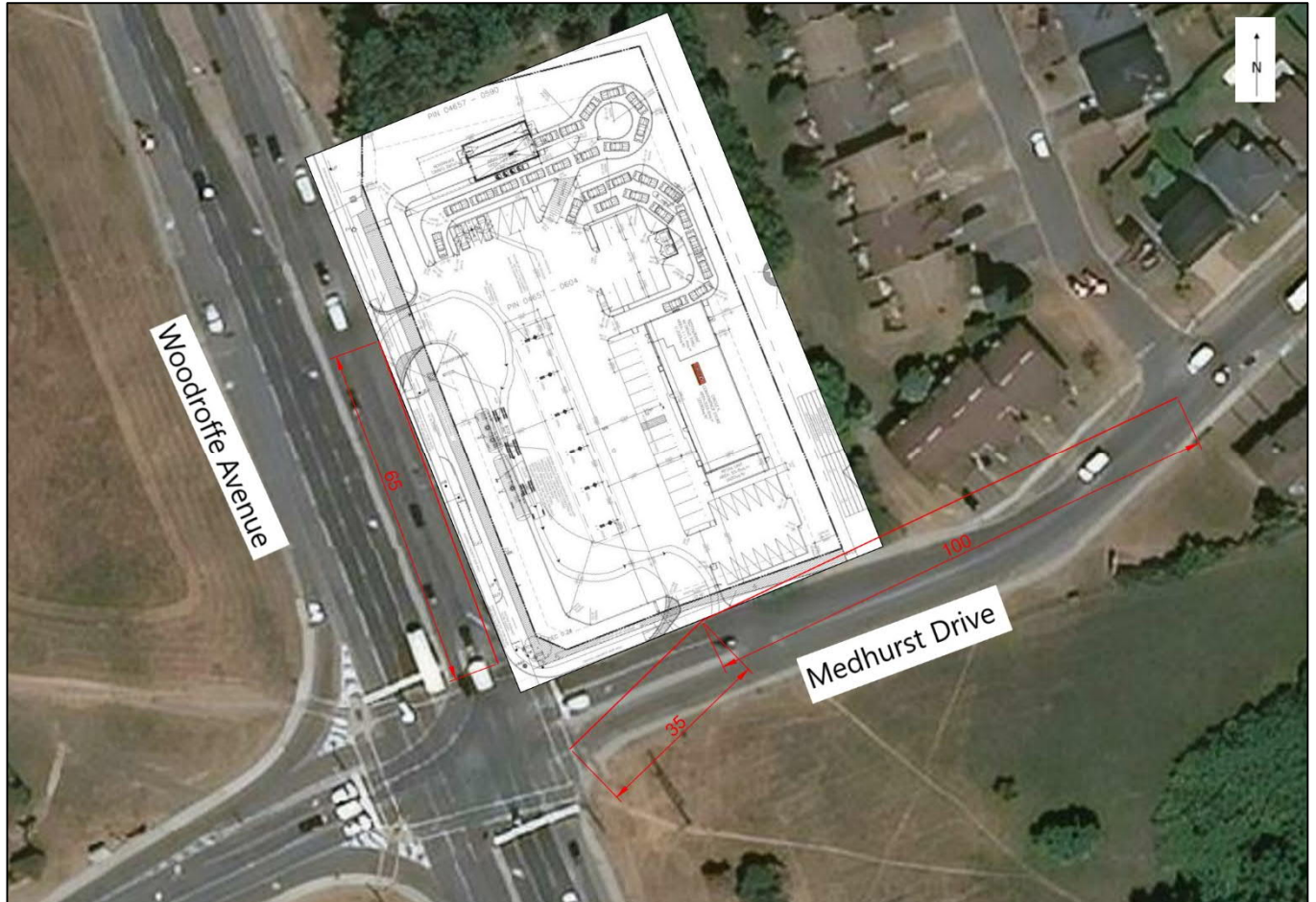


Figure 13.1 Accesses Sightlines

### 13.2 Access Intersection Control

In consideration of existing and projected volumes of traffic anticipated to utilize the site access, yield-stop control at the minor approach (site driveways) is recommended. No other traffic control measures are warranted at the proposed site access.

### 13.3 Access Intersection Design

No concerns are anticipated due to the existing sightlines of the existing site accesses and expected low speed that the vehicles will be traveling as the access intersections are close to the signalized intersection at Woodroffe Avenue and Medhurst Drive. As the site accesses will not be signalized, the MMLOS for the access onto Woodroffe Avenue will be the same for all modes as those for the boundary street MMLOS presented in Section 12 for Woodroffe Avenue. The same is applied for the access onto Medhurst Drive and the MMLOS of the Medhurst Drive as a boundary street.

## 14.0 TRANSPORTATION DEMAND MANAGEMENT

The proposed development is expected to generate fewer than 60 employees and/or students on location at a given time. As such, this section is exempted from this TIA report.

## 15.0 NEIGHBOURHOOD TRAFFIC MANAGEMENT

This module reviews significant access routes to the development and identifies any required neighbourhood traffic management (NTM) measures to mitigate impacts on collector and local roads.

### 15.1 Adjacent Neighbourhoods

The proposed development has an access onto Medhurst Drive, a collector roadway. Based on the background traffic and the development generated traffic the road classification is not expected to change.

## 16.0 TRANSIT

This section will review the potential impacts of the proposed development on existing and planned transit networks and services in order to ensure TLOS is not negatively impacted.

### 16.1 Route Capacity

It is anticipated that the proposed development will generate relatively low transit trips during the AM and PM peak hours, respectively. The relatively low number of development-generated transit trips are expected to be adequately accommodated by the existing transit routes and is not anticipated to result in any requirements for additional transit capacity. Further, it is not anticipated that the existing transit routes will require modification as a result of the proposed development.

### 16.2 Transit Priority

As noted in [Section 3.5](#), there are eight (8) routes in the area, namely Route 73, 74, 75, 82, 83, 173, 187, and 284 which travelers may use to travel to and from the development. It is anticipated that the relatively low number of development-generated transit trips can be accommodated, and it is not anticipated that any additional transit trips will result in impacts to travel time.

As the proposed development is removing the two existing access which currently has a transit stop right between the two existing accesses and adding one new access onto Woodroffe Road approximately 65 m to the north of the transit stop, it is expected that the proposed development will reduce the existing impacts the accesses have on the transit network.

## 17.0 REVIEW OF NETWORK CONCEPT

Since the proposed development is not expected to generate more than 200 peak hour person trips, this section has been omitted from this TIA report.

## 18.0 INTERSECTION DESIGN

This section will determine the design elements of the study area intersections required to accommodate the proposed development, ensuring they are consistent with the City of Ottawa Complete Streets philosophy and MMLOS practices.

### 18.1 Intersection Control

All study intersections within the study area of the proposed development are signalized, with the two access intersections being yield-stop controlled. No signal warrants are needed due to the low volumes of vehicles at the yield-stop controlled access intersection.

### 18.2 Intersection Design

#### 18.2.1 Intersection Vehicular Level of Service (LOS)

Analysis of vehicular LOS was performed in accordance with the City of Ottawa's TIA Guidelines (2017) and MMLOS Guidelines. LOS descriptions for the analysis are provided in Table 18.1. All existing and projected traffic operations were modelled in Synchro 10.

Table 18.1 Definition of LOS for Intersections

Level of Service	v/c Ratio
A	0 to 0.60
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	> 1.00

Existing signal timing information such as phasing, pedestrian minimums and clearance intervals were provided by the City of Ottawa and used in the analysis of existing conditions for all critical intersections within the study area. The traffic signal timing forms can be found in [Appendix C](#). Signal timings were optimized for future conditions with all Synchro 10 parameters taken in accordance with Appendix C: Synchro Analysis Parameters of the City of Ottawa TIA Guidelines (2017). Additionally, all pedestrian clearance timings as well as amber and all red times that were provided by the City of Ottawa were used in the analysis of future operating conditions.



MP reviewed the existing 2021 which can be found in [Section 3.3](#), the future 2022 Buildout year: background, and total traffic, and the 2027 background and total traffic operating conditions at all study area intersections.

[Figure 18.1](#) Illustrates the Trip Generation Assignment throughout the network for the total traffic scenarios.

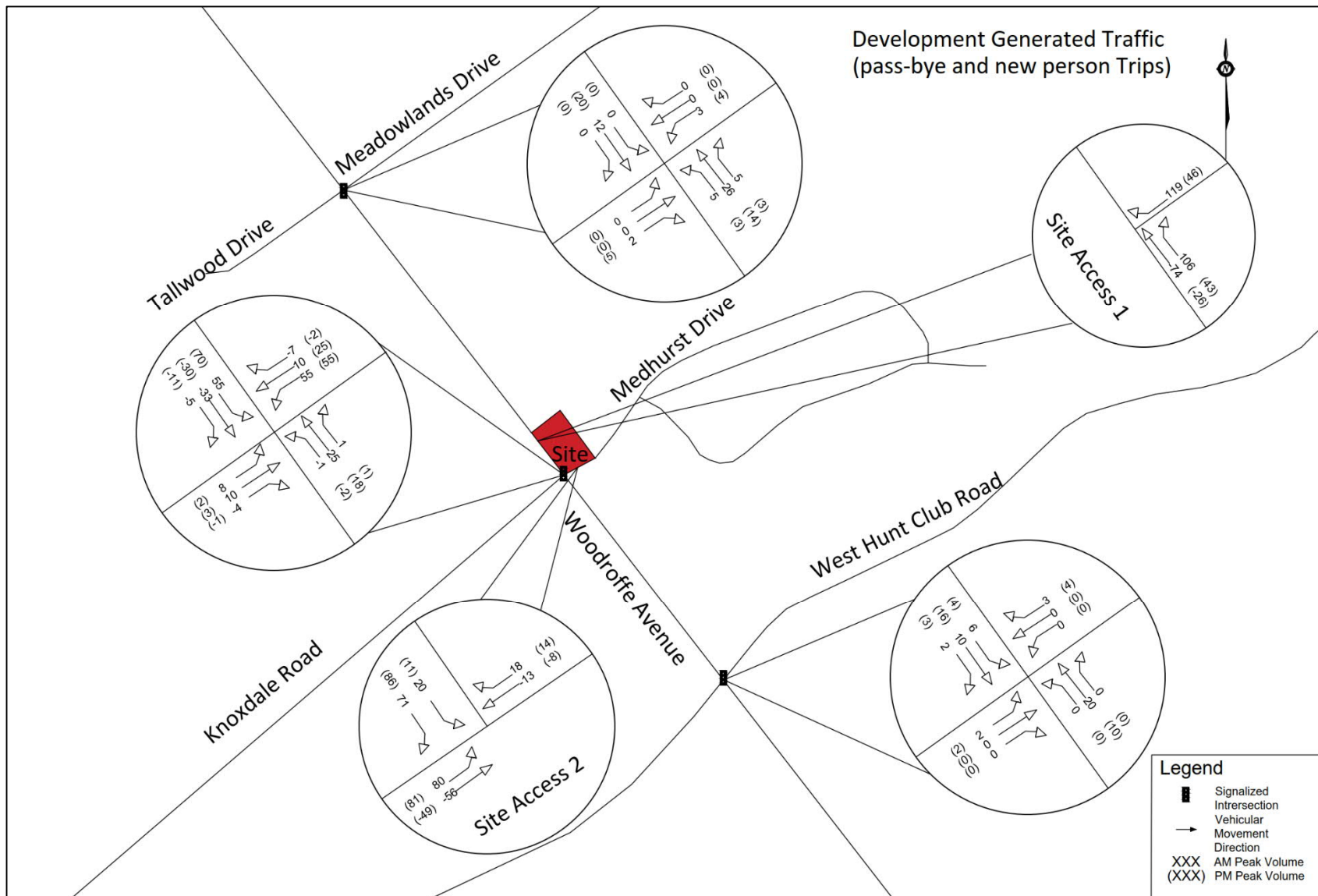


Figure 18.1 Development Generated Traffic

Synchro 10 reports for all analysis periods can be found in [Appendix D](#). Table 18.2 summarizes the 2022 Background traffic V/C and LOS according to the City of Ottawa TIA methodology.

Table 18.2 2022 Background Traffic Operating Conditions

		Intersection LOS		AM Peak Hour			PM Peak Hour		
		AM	PM	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)
Woodroffe Avenue and West Hunt Club Road									
EBL	D	D	B	0.70	90.3	C	0.74	90.4	
EBT			D	0.86	47.3	A	0.41	34.8	
EBR			A	0.22	4.6	A	0.52	15.2	
WBL			E	0.97	165.6	A	0.54	72.9	
WBT			B	0.61	40.3	D	0.82	47.3	
WBR			A	0.25	5.6	A	0.33	7.1	
NBL			B	0.64	73.5	D	0.82	82.9	
NBT			E	0.94	62.2	A	0.57	40.1	
NBR			A	0.35	10.9	A	0.15	0.5	
SBL			D	0.87	77.9	A	0.59	39.6	
SBT			A	0.46	48.8	E	0.91	68.7	
SBR			A	0.19	17.9	A	0.26	15.9	
Woodroffe Avenue and Medhurst Drive/Knoxdale Road									
EBL	C	C	B	0.63	53.9	A	0.57	67.7	
EBT			A	0.54	50.4	A	0.11	39.4	
EBR			A	0.21	1.8	A	0.13	0.7	
WBL			A	0.45	61.8	A	0.45	64.7	
WBTR			B	0.62	26.5	B	0.63	48.2	
NBL			A	0.30	88.0	B	0.63	109.7	
NBT			C	0.70	12.9	A	0.55	17.3	
NBR			A	0.08	0.2	A	0.11	1.1	
SBL			A	0.44	74.7	C	0.76	81.9	
SBT			A	0.40	27.2	B	0.70	33.0	
SBR			A	0.14	2.0	A	0.53	11.2	
Woodroffe Avenue and Meadowlands Drive/Tallwood Drive									
EBL	D	D	D	0.81	116.4	A	0.54	68.7	
EBT			A	0.51	48.6	A	0.40	42.9	
EBR			A	0.34	9.5	A	0.55	18.0	
WBL			A	0.45	66.0	C	0.75	68.6	
WBT			A	0.41	47.1	A	0.40	41.1	
WBR			A	0.42	9.8	A	0.46	12.0	
NBL			A	0.60	58.1	A	0.59	65.6	
NBT			E	0.96	54.4	B	0.67	37.9	
NBR			A	0.44	10.4	A	0.24	4.3	
SBL			B	0.65	67.9	E	0.95	108.6	
SBT			A	0.42	27.3	D	0.83	42.5	

	Intersection LOS		AM Peak Hour			PM Peak Hour		
	AM	PM	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)
SBR			A	0.10	0.3	A	0.17	2.2
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn								

It is expected that, at the intersection of Woodroffe Avenue and West Hunt Club Road, all approaches will operate under capacity with a LOS of D or better with the exception of the westbound left and northbound through movement during the AM peak and the southbound through movement during the PM peak hour which are expected to operate at an LOS of E.

It is expected that, at the intersection of Woodroffe Avenue and Medhurst Drive/Knoxdale Road, all approaches will operate under capacity with a LOS of C or better.

It is expected that, at the intersection of Woodroffe Avenue and Meadowlands Drive/Tallwood Drive, all approaches will operate under capacity with a LOS of D or better with the exception of the northbound through movement during the AM peak and the southbound left movement during the PM peak hour which are expected to operate at an LOS of E.

Table 18.3 summarizes the 2027 Background traffic V/C and LOS according to the City of Ottawa TIA methodology.

Table 18.3 2027 Background Traffic Operating Conditions

	Intersection LOS		AM Peak Hour			PM Peak Hour		
	AM	PM	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)
Woodroffe Avenue and West Hunt Club Road								
EBL	E	D	C	0.75	95.6	D	0.86	109.9
EBT			E	0.98	64.2	A	0.45	35
EBR			A	0.25	5.7	A	0.56	15.4
WBL			D	0.86	129.4	C	0.71	92.6
WBT			B	0.68	43.4	D	0.88	50.9
WBR			A	0.27	6.9	A	0.38	14.5
NBL			B	0.66	74.0	D	0.90	96.2
NBT			E	0.98	68.8	B	0.61	41.7
NBR			A	0.37	12.3	A	0.16	0.9
SBL			E	0.93	83.9	A	0.60	35.5
SBT			A	0.49	50.1	E	0.95	73.2
SBR			A	0.20	18.5	A	0.30	23.2
Woodroffe Avenue and Medhurst Drive/Knoxdale Road								
EBL	C	D	B	0.69	56.2	A	0.60	68.9
EBT			A	0.57	51.4	A	0.12	39.5
EBR			A	0.22	2.5	A	0.13	0.6
WBL			A	0.47	62.2	A	0.46	64.5
WBTR			B	0.68	35.8	B	0.67	50.1



	Intersection LOS		AM Peak Hour			PM Peak Hour		
	AM	PM	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)
NBL			A	0.32	87.9	B	0.70	109.7
NBT			C	0.76	13.6	B	0.61	20.5
NBR			A	0.09	0.2	A	0.12	0.5
SBL			A	0.49	77.5	C	0.80	85.5
SBT			A	0.43	28.2	C	0.79	36.9
SBR			A	0.16	2.5	A	0.59	13.1
Woodroffe Avenue and Meadowlands Drive/Tallwood Drive								
EBL			D	0.86	126.3	A	0.58	70.4
EBT			A	0.55	49.7	A	0.43	43.6
EBR			A	0.37	11.2	A	0.60	20.9
WBL			A	0.48	67.0	C	0.79	71.8
WBT			A	0.44	47.7	A	0.43	41.8
WBR			A	0.47	15.9	A	0.49	14.3
NBL	D	D	B	0.65	59.9	B	0.63	67.1
NBT			E	0.98	55.4	C	0.74	40.9
NBR			A	0.46	10.5	A	0.26	5.3
SBL			D	0.87	97.9	E	0.96	109.3
SBT			A	0.45	27.9	D	0.90	47.9
SBR			A	0.11	0.3	A	0.19	2.8
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn								

It is expected that, at the intersection of Woodroffe Avenue and West Hunt Club Road, all approaches will operate under capacity with a LOS of D or better with the exception of the eastbound through, northbound through, and southbound left movement during the AM peak, and the southbound through movement during the PM peak hour which are expected to operate at an LOS of E.

It is expected that, at the intersection of Woodroffe Avenue and Medhurst Drive/Knoxdale Road, all approaches will operate under capacity with a LOS of C or better.

It is expected that, at the intersection of Woodroffe Avenue and Meadowlands Drive/Tallwood Drive, all approaches will operate under capacity with a LOS of D or better with the exception of the northbound through movement during the AM peak and the southbound left movement during the PM peak hour which are expected to operate at an LOS of E.

Table 18.4 summarizes the 2022 future total traffic V/C and LOS according to the City of Ottawa TIA methodology.

Table 18.4 2022 Total Traffic Operating Conditions

		Intersection LOS		AM Peak Hour			PM Peak Hour		
		AM	PM	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)
Woodroffe Avenue and West Hunt Club Road									
EBL	D	D	C	0.72	91.8	C	0.76	91.5	
EBT			D	0.86	47.3	A	0.41	35.0	
EBR			A	0.22	4.6	A	0.52	15.3	
WBL			E	0.97	165.6	A	0.54	72.9	
WBT			B	0.61	40.3	D	0.82	47.8	
WBR			A	0.25	5.9	A	0.34	7.5	
NBL			B	0.64	73.5	D	0.82	82.9	
NBT			E	0.96	65.8	A	0.57	40.2	
NBR			A	0.35	10.9	A	0.14	0.5	
SBL			D	0.89	82.1	A	0.60	41.3	
SBT			A	0.47	47.7	E	0.92	70.0	
SBR			A	0.19	16.1	A	0.26	15.3	
Woodroffe Avenue and Medhurst Drive/Knoxdale Road									
EBL	C	D	A	0.60	51.9	A	0.55	66.7	
EBT			A	0.56	51.1	A	0.12	39.5	
EBR			A	0.19	1.2	A	0.13	0.7	
WBL			B	0.64	68.0	B	0.68	73.5	
WBTR			B	0.65	33.8	B	0.67	51.0	
NBL			A	0.31	90.0	B	0.62	108.9	
NBT			D	0.85	17.1	B	0.63	20.4	
NBR			A	0.10	0.2	A	0.12	1.2	
SBL			B	0.68	82.1	D	0.85	84.4	
SBT			A	0.39	28.3	B	0.69	33.2	
SBR			A	0.14	1.7	A	0.52	10.8	
Woodroffe Avenue and Meadowlands Drive/Tallwood Drive									
EBL	D	D	D	0.81	116.4	A	0.54	68.7	
EBT			A	0.51	48.6	A	0.40	42.9	
EBR			A	0.35	9.8	A	0.55	18.2	
WBL			A	0.47	66.6	C	0.76	69.2	
WBT			A	0.41	47.1	A	0.40	41.1	
WBR			A	0.42	10.0	A	0.46	12.0	
NBL			B	0.61	58.4	A	0.60	65.9	
NBT			E	0.98	58.6	B	0.68	38.3	
NBR			A	0.45	10.8	A	0.24	4.5	
SBL			B	0.65	67.9	E	0.95	109.1	
SBT			A	0.43	27.5	D	0.85	43.5	
SBR			A	0.10	0.3	A	0.17	2.2	
Woodroffe Avenue and Access 1									

	Intersection LOS		AM Peak Hour			PM Peak Hour		
	AM	PM	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)
NBTR	C	B	-	-	-	-	-	-
WBR			A	0.34	20.6	A	0.09	12.7
Medhurst Drive and Access 2								
EBTL	B	B	A	0.06	8	A	0.07	8.1
WBTR			-	-	-	-	-	-
SBLR			A	0.14	11.5	A	0.15	11.5
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn								

It is expected that, at the intersection of Woodroffe Avenue and West Hunt Club Road, all approaches will operate under capacity with a LOS of D or better with the exception of the westbound left and northbound through movement during the AM peak and the southbound through movement during the PM peak hour which are expected to operate at an LOS of E.

It is expected that, at the intersection of Woodroffe Avenue and Medhurst Drive/Knoxdale Road, all approaches will operate under capacity with a LOS of D or better.

It is expected that, at the intersection of Woodroffe Avenue and Meadowlands Drive/Tallwood Drive, all approaches will operate under capacity with a LOS of D or better with the exception of the northbound through movement during the AM peak and the southbound left movement during the PM peak hour which are expected to operate at an LOS of E.

Both accesses are expected to operate at an LOS of A with a v/c of 0.34 or better.

Table 18.5 summarizes the 2027 future total traffic V/C and LOS according to the City of Ottawa TIA methodology.

Table 18.5 2027 Total Traffic Operating Conditions

	Intersection LOS		AM Peak Hour			PM Peak Hour		
	AM	PM	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)
Woodroffe Avenue and West Hunt Club Road								
EBL	E	D	C	0.76	97.3	D	0.87	11.2
EBT			E	0.98	64.2	A	0.46	35.1
EBR			A	0.25	5.7	A	0.57	15.5
WBL			D	0.86	129.4	C	0.71	92.6
WBT			B	0.68	43.5	D	0.89	51.8
WBR			A	0.28	7.2	A	0.39	14.8
NBL			B	0.66	74.0	D	0.90	96.2
NBT			E	1.00	73.6	B	0.62	41.7
NBR			A	0.37	12.3	A	0.16	0.9
SBL			E	0.94	88.9	B	0.61	37.5
SBT			A	0.50	49.3	E	0.96	74.8

	Intersection LOS		AM Peak Hour			PM Peak Hour		
	AM	PM	LOS	V/C	Delay (s)	LOS	V/C	Delay (s)
SBR			A	0.20	16.8	A	0.30	22.4
Woodroffe Avenue and Medhurst Drive/Knoxdale Road								
EBL	C	D	B	0.64	53.1	A	0.59	68.2
EBT			A	0.59	52.1	A	0.13	39.7
EBR			A	0.21	2.0	A	0.12	0.6
WBL			B	0.67	69.4	B	0.69	73.1
WBTR			B	0.69	36.5	C	0.71	53.1
NBL			A	0.33	90.1	B	0.70	109.5
NBT			E	0.94	21.7	C	0.71	24.8
NBR			A	0.11	0.2	A	0.13	0.5
SBL			B	0.68	80.9	D	0.84	80.4
SBT			A	0.42	29.1	C	0.78	36.9
SBR			A	0.15	2.2	A	0.58	12.6
Woodroffe Avenue and Meadowlands Drive/Tallwood Drive								
EBL	D	D	D	0.86	126.4	A	0.58	70.4
EBT			A	0.55	49.7	A	0.43	43.6
EBR			A	0.37	11.5	B	0.61	21.7
WBL			A	0.49	67.7	C	0.80	72.6
WBT			A	0.44	47.7	A	0.43	41.8
WBR			A	0.47	15.9	A	0.49	14.3
NBL			B	0.66	60.3	B	0.64	67.5
NBT			E	1.00	59.9	C	0.75	41.4
NBR			A	0.47	10.8	A	0.27	5.5
SBL			D	0.87	97.9	E	0.96	109.6
SBT			A	0.46	28.0	E	0.92	49.8
SBR			A	0.11	0.3	A	0.19	2.8
Woodroffe Avenue and Access 1								
NBTR	C	B	-	-	-	-	-	-
WBR			A	0.37	22.8	A	0.10	13.2
Medhurst Drive and Access 2								
EBTL	B	B	A	0.06	8	A	0.07	8.2
WBTR			-	-	-	-	-	-
SBLR			A	0.15	11.8	A	0.15	11.8
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, T = Through, R = Right-turn								

It is expected that, at the intersection of Woodroffe Avenue and West Hunt Club Road, all approaches will operate under capacity with a LOS of D or better with the exception of the eastbound through, northbound through, and southbound left movement during the AM peak, and the southbound through movement during the PM peak hour which are expected to operate at an LOS of E.



It is expected that, at the intersection of Woodroffe Avenue and Medhurst Drive/Knoxdale Road, all approaches will operate under capacity with a LOS of D or better, with the exception of the northbound through lane during the AM peak hour that operates at an LOS of E.

It is expected that, at the intersection of Woodroffe Avenue and Meadowlands Drive/Tallwood Drive, all approaches will operate under capacity with a LOS of D or better with the exception of the northbound through movement during the AM peak and, the southbound through and the southbound left movement during the PM peak hour which are expected to operate at an LOS of E.

Both accesses are expected to operate at an LOS of A with a v/c of 0.37 or better.

It is expected that with the additional development generated traffic generated by the proposed development, and the background growth to the existing volumes, that the proposed development will have a minimal impact to the road network from the existing 2021 to the 2027 horizon year. All approaches are expected to continue to operate well and under capacity with the exception of the movements which are currently found to be above capacity. As expected, these movements are shown to be operating with slightly higher V/C ratios in the projected 2027 horizon year.

### 18.2.2 Intersection Pedestrian Level of Service (PLOS)

The PLOS for the study intersection was determined in accordance with The City of Ottawa's MMLOS Guidelines. The Pedestrian Exposure at Signalized Intersection (PETS), average delay to pedestrians, and corresponding levels of service at the signalized intersection are summarized in Table 18.6. Based on Exhibit 22 of the City of Ottawa MMLOS Guidelines, the MMLOS Target for all approaches of all intersections is C

Table 18.6 Signalized Intersection Pedestrian Level of Service

Approach	PETS Evaluation		Pedestrian Delay Evaluation		Critical PLOS
	Total Points	LOS	Delay (sec)	LOS	
Woodroffe Avenue and Meadowlands Drive/Tallwood Dr					
Northbound (E-W)	-18	F	46	E	F
Southbound (E-W)	-18	F	46	E	F
Eastbound (N-S)	3	F	37	D	F
Westbound (N-S)	3	F	37	D	F
Woodroffe Avenue and Medhurst Drive/Knoxdale Road					
Northbound (E-W)	18	F	43	E	F
Southbound (E-W)	21	F	43	E	F
Eastbound (N-S)	22	F	35	D	F
Westbound (N-S)	22	F	35	D	F
Woodroffe Avenue and West Hunt Club					
Northbound (E-W)	-30	F	41	E	F
Southbound (E-W)	-30	F	41	E	F
Eastbound (N-S)	3	F	35	D	F
Westbound (N-S)	3	F	35	D	F

Upon review of Exhibit 5 to 7 of the City of Ottawa's MMLOS Guidelines, all approaches of all signalized intersections result in a PLOS of F due to the PETS Evaluation Points, as such all approaches of all intersections do not meet the target.

### 18.2.3 Intersection Bicycle Level of Service (BLOS)

The Bicycle Level of Service (BLOS) for the study area intersections was determined in accordance with the City of Ottawa's Multi-Modal level of Service (MMLOS) Guidelines. Based on Exhibit 22 of the City of Ottawa MMLOS Guidelines, the MMLOS Target for all approaches of Woodroffe Avenue and West Hunt Club Road are C, for the approaches of Medhurst Drive, Knoxdale Road, Meadowlands Drive, and Tallwood Drive are all D. Table 18.7 illustrates the BLOS.

Table 18.7 Signalized Intersection Bicycle Level of Service

Approach	Bike Lane Facility	Right-Turn Lane Distance (m)	Lanes Crossed to Turn Left	Speed (km/h)	LOS
Woodroffe Avenue and Meadowlands Drive/Tallwood Dr					
Northbound (E-W)	Bike Lane	N/a	4	70	F
Southbound (E-W)	Bike Lane	N/a	4	70	F
Eastbound (N-S)	Mixed Traffic	35	1	50	D
Westbound (N-S)	Mixed Traffic	80	1	50	F
Woodroffe Avenue and Medhurst Drive/Knoxdale Road					
Northbound (E-W)	Bike Lane	N/a	4	70	F
Southbound (E-W)	Bike Lane	N/a	4	70	F
Eastbound (N-S)	Mixed Traffic	75	1	50	F
Westbound (N-S)	Mixed Traffic	N/a	1	50	D
Woodroffe Avenue and West Hunt Club					
Northbound (E-W)	Bike Lane	N/a	3	70	F
Southbound (E-W)	Bike Lane	N/a	3	70	F
Eastbound (N-S)	Bike Lane	N/a	4	90	F
Westbound (N-S)	Bike Lane	N/a	5	90	F

All approaches result in a BLOS of F with the exceptions of the westbound approach at the intersection of Woodroffe Avenue and Medhurst Drive/Knoxdale Road which has a BLOS of D, and the eastbound approach at the intersection of Woodroffe Avenue and Meadowlands Drive/Tallwood Drive which has a BLOS of D. As such only the eastbound approach at the intersection of Woodroffe Avenue and Meadowlands Drive/Tallwood Drive and the westbound approach at the intersection of Woodroffe Avenue and Medhurst Drive/Knoxdale Road meet the MMLOS target.

### 18.2.4 Intersection Transit Level of Service (TLOS)

In order to evaluate Transit Level of Service at the intersection within the study area, average delays at approaches were determined based on the intersection analysis completed as part of this investigation. Based on Exhibit 22 of the City of Ottawa MMLOS Guidelines, the MMLOS Target for all approaches of Woodroffe Avenue are C, where all other approaches have a target of D. Detailed analysis reports are presented in Appendix D.

Upon Review of Exhibit 16 of the City of Ottawa's MMLOS Guidelines, all signalized intersections operate with a TLOS F, due to high cycle timings and delays. As such, all approaches at all signalized intersections do not meet the MMLOS target.

### 18.2.5 Intersection Truck Level of Service (tkLOS)

The Truck level of Service (tkLOS) for the study are intersections was determined in accordance with the City of Ottawa's MMLOS Guidelines. The effective radii, receiving lane parameters and corresponding levels of service at the signalized intersection of the study area are summarized in Table 18.8. Based on Exhibit 22 of the City of Ottawa MMLOS Guidelines, the MMLOS Target for all approaches of Woodroffe Avenue and West Hunt Club Road are E, for the approaches of Medhurst Drive, Knoxdale Road, Meadowlands Drive, and Tallwood Drive no MMLOS targets are set for Truck LOS.

Table 18.8 Signalized Intersection Truck Level of Service

Approach	Effective corner Radius (m)	Number of Receiving Lanes	LOS
Woodroffe Avenue and Meadowlands Drive/Tallwood Dr			
Northbound (E-W)	20	2	A
Southbound (E-W)	20	2	A
Eastbound (N-S)	20	3	A
Westbound (N-S)	12	3	B
Woodroffe Avenue and Medhurst Drive/Knoxdale Road			
Northbound (E-W)	14	1	E
Southbound (E-W)	25	1	C
Eastbound (N-S)	18	3	A
Westbound (N-S)	10	3	B
Woodroffe Avenue and West Hunt Club			
Northbound (E-W)	27	2	A
Southbound (E-W)	35	2	A
Eastbound (N-S)	25	3	A
Westbound (N-S)	25	3	A

Upon review of Exhibit 21 of the City of Ottawa's MMLOS Guidelines the intersection of Woodroffe Avenue and Meadowlands Drive/Tallwood Drive has a tkLOS of A, the intersection of Woodroffe Avenue and Medhurst Drive/Knoxdale Road has a tkLOS of E and the intersection of Woodroffe Avenue and West Hunt Club has a tkLOS of A. As such all approaches of all signalized intersections meet the MMLSO Targets for trucks.

## 19.0 CONSTRUCTION TRAFFIC MANAGEMENT

Based on City of Ottawa comments from the Traffic Management Unit in regards to general conditions for work on Woodroffe Avenue and Medhurst Drive are as followed:

General conditions for work on Woodroffe and Medhurst Drive are as follows. These conditions assume no encroachment within the City right-of-way is required given the space on the development site:

a. Woodroffe Avenue:

i. There is an ongoing City Capital Resurfacing Project on Woodroffe (Norce to David) and any work zone impacts require coordination with the City Project Manager Tony Pezoulas (tony.pezoulas@ottawa.ca)

ii. If the transit lane is to be utilized during construction, coordinate with OC Transpo Anise Samimi (Anise.Samimi@ottawa.ca).

iii. Woodroffe may be reduced to two lanes during the weekday off-peak period (9:30am to 3:00pm) or weekends. If the roadway must be reduced to a single lane of traffic, no lane reductions will be permitted weekdays between 7:00 AM and 6:00 PM or weekends between 10:00AM and 6:00 PM.

iv. If the contractor chooses to undertake evening/night work, the contractor is to apply for an exemption to the City Noise Bylaw if required. Note: A Noise Bylaw exemption is not required for work conducted Monday through Saturday between 7:00AM and 10:00PM and Sunday between 9:00AM and 10:00PM.

b. Medhurst Drive:

i. Maintain a minimum of one lane per direction (minimum 3.5m width) weekdays during the AM (7:00am to 9:00am) and PM (3:0pm to 6:00pm) peak periods. Maintain a minimum of one lane at all other times.

ii. If the signal display is to be blocked by equipment, lanes are skewed through the intersection or traffic control persons are required within 30m of a signalized intersection then point duty police are required. Contact the Ottawa Police Service Paid Duty office at (613-236-1222 Ext. 2476) a minimum of 5 days prior to closure to retain the service of City of Ottawa Point Duty Police.

## 20.0 SUMMARY AND RECOMMENDATIONS

This TIA Strategy Report evaluated the proposed development and its expected impact on the surrounding transportation network. The proposed Development is located at 1545 Woodroffe Drive, involving a gas station with 12 pumps, a convenience store, retail area, a single bay automated car wash, and a restaurant with a drive through. The proposed development will be making use of the existing driveway onto Medhurst Drive, closing the two existing driveways, while adding a new driveway onto Woodroffe Avenue. The buildout year is expected to be 2022.

The proposed development is expected to generate 405 person trips during the AM Peak hour with 289 trips being pass-by and 129 being newly generated trips. During the PM peak hour the proposed development is



expected to generate 281 trips with 167 of the trips being pass-by and 114 being newly generated person trips. As such, this TIA report is exempted from Modules 4.5 and 4.8 of the City of Ottawa TIA Guidelines.

It is expected the proposed development will provide adequate facilities to meet the City of Ottawa's Complete Streets design philosophy, meeting the majority of the basic and required TDM measures in bicycle, walking, transit, and parking. The proposed development is expected to exceed the by-law requirements and no spillover parking is expected. Along the corridor Transit level of service is relatively low, however as the development is not expected to generate large volumes of transit mode share trips, the impact on transit due to the development is expected to be minimal.

Overall, all the roadways within the project study area are operating at acceptable levels of service; however, consideration should be given to monitoring operations of the northbound through movements at the intersections of Woodroffe Avenue and West Hunt Club Road as well as Woodroffe Avenue and Meadowlands Drive/Tallwood Drive as they are shown to operate at a LOS of E with a v/c of 1.00 during the 2027 total traffic scenario. It is expected that the proposed development will have little impact on the surrounding transportation network.

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APPENDIX A – TIA STEP 1 SCREENING FORM

## City of Ottawa 2017 TIA Guidelines Screening Form

### 1. Description of Proposed Development

Municipal Address	1545 Woodroffe Avenue
Description of Location	<b>Gas Station with Convenience Store and Fast Food Restaurant (drive-through)</b>
Land Use Classification	<b>Gas Station with Convenience Market (945) and Fast Food Restaurant with Drive-through window (934)</b>
Development Size (units)	N/a
Development Size (m <sup>2</sup> )	Convenience Market (333.6m <sup>2</sup> ) Fast Food Restaurant (111.4m <sup>2</sup> )
Number of Accesses and Locations	2 accesses total; 1 onto Woodroffe Avenue, 1 onto Medhurst Drive
Phase of Development	Planning
Buildout Year	TBD

If available, **please attach a sketch of the development or site plan** to this form.

### 2. Trip Generation Trigger

Considering the Development's Land Use type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

Land Use Type	Minimum Development Size
Single-family homes	40 units
Townhomes or apartments	90 units
Office	3,500 m <sup>2</sup>
Industrial	5,000 m <sup>2</sup>
Fast-food restaurant or coffee shop	100 m <sup>2</sup>
Destination retail	1,000 m <sup>2</sup>
Gas station or convenience market	75 m <sup>2</sup>

\* If the development has a land use *type other than what is presented in the table above*, estimates of person-trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.



If the proposed development size is greater than the sizes **identified** above, **the Trip Generation Trigger is satisfied.**

### 3. Location Triggers

	Yes	No
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?	X	
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*		X

*\*DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6). See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA).*

**If any of the above questions were answered with 'Yes,' the Location Trigger is satisfied.**

### 4. Safety Triggers

	Yes	No
Are posted speed limits on a boundary street are 80 km/hr or greater?		X
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	X	
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	X	
Is the proposed driveway within auxiliary lanes of an intersection?		X
Does the proposed driveway make use of an existing median break that serves an existing site?		X
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	X	
Does the development include a drive-thru facility?	X	

**If any of the above questions were answered with 'Yes,' the Safety Trigger is satisfied.**

### 5. Summary

	Yes	No
Does the development satisfy the Trip Generation Trigger?	X	
Does the development satisfy the Location Trigger?	X	

**Transportation Impact Assessment** Screening Form

Does the development satisfy the Safety Trigger?	X	
--------------------------------------------------	---	--

**If none of the triggers are satisfied, the TIA Study is complete.** If one or more of the triggers is satisfied, **the TIA Study must continue into the next stage** (Screening and Scoping).

APPENDIX B – SITE PLAN



## APPENDIX C – TRAFFIC DATA



## Demographic Characteristics

Population	77,720	Actively Travelled	61,960
Employed Population	34,650	Number of Vehicles	41,580
Households	32,990	Area (km <sup>2</sup> )	38.8

Occupation Status (age 5+)	Male	Female	Total
Full Time Employed	15,970	14,080	30,050
Part Time Employed	1,660	2,940	4,600
Student	9,510	8,160	17,680
Retiree	6,960	9,020	15,980
Unemployed	1,340	1,130	2,470
Homemaker	50	1,980	2,030
Other	470	810	1,280
<b>Total:</b>	<b>35,960</b>	<b>38,120</b>	<b>74,080</b>

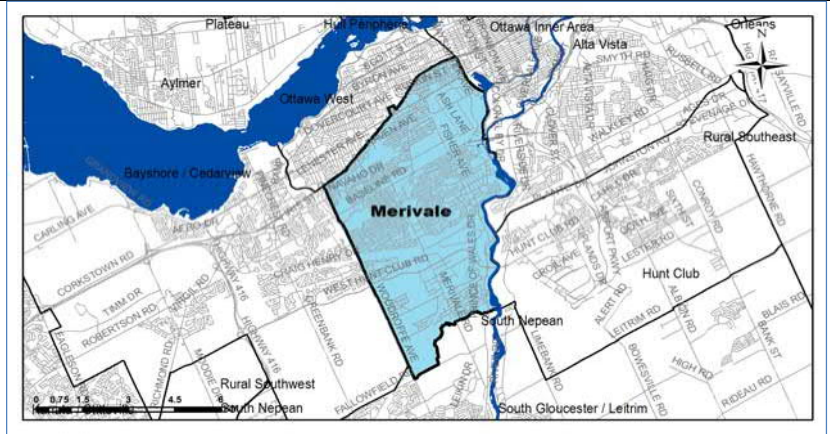
Traveller Characteristics	Male	Female	Total
Transit Pass Holders	7,770	8,770	16,540

Licensed Drivers	27,680	27,260	54,940
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Telecommuters	140	150	290
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Trips made by residents	98,530	103,670	202,200
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Selected Indicators	
Daily Trips per Person (age 5+)	2.73
Vehicles per Person	0.53
Number of Persons per Household	2.36
Daily Trips per Household	6.13
Vehicles per Household	1.26
Workers per Household	1.05
Population Density (Pop/km <sup>2</sup> )	2000

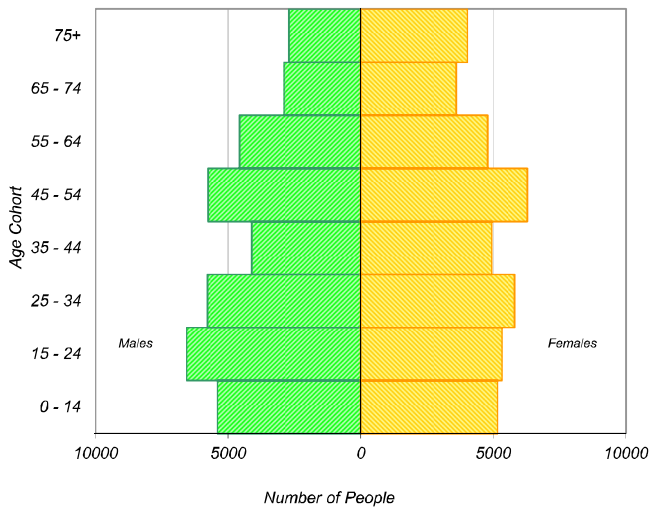


Household Size		
1 person	10,050	30%
2 persons	11,680	35%
3 persons	5,060	15%
4 persons	3,890	12%
5+ persons	2,310	7%
<b>Total:</b>	<b>32,990</b>	<b>100%</b>

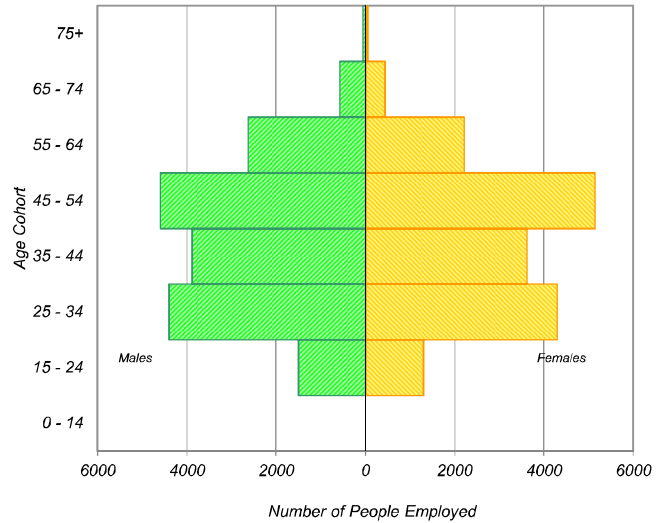
Households by Vehicle Availability		
0 vehicles	5,150	16%
1 vehicle	17,220	52%
2 vehicles	8,490	26%
3 vehicles	1,580	5%
4+ vehicles	560	2%
<b>Total:</b>	<b>32,990</b>	<b>100%</b>

Households by Dwelling Type		
Single-detached	13,910	42%
Semi-detached	3,270	10%
Townhouse	4,320	13%
Apartment/Condo	11,490	35%
<b>Total:</b>	<b>32,990</b>	<b>100%</b>

Population



Employed Population

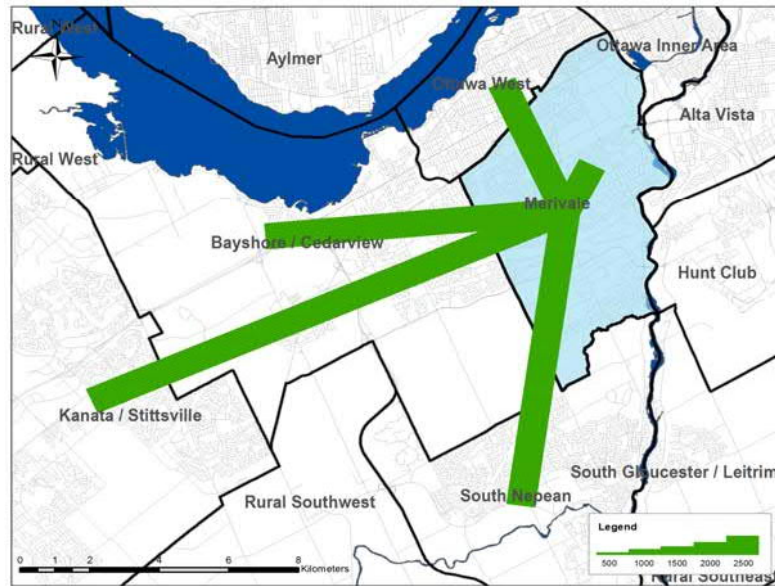


\* In 2005 data was only collected for household members aged 11+ therefore these results cannot be compared to the 2011 data.

## Travel Patterns

### Top Five Origins of Trips to Merivale

#### AM Peak Period



### Summary of Trips to and from Merivale

#### AM Peak Period (6:30 - 8:59)

Districts	Destinations of Trips From		Origins of Trips To	
	District	% Total	District	% Total
Ottawa Centre	4,710	11%	600	1%
Ottawa Inner Area	4,710	11%	3,260	7%
Ottawa East	780	2%	1,610	3%
Beacon Hill	580	1%	540	1%
Alta Vista	3,690	9%	3,010	6%
Hunt Club	960	2%	3,130	6%
Merivale	13,980	34%	13,980	28%
Ottawa West	4,960	12%	3,340	7%
Bayshore / Cedarview	2,850	7%	4,710	9%
Orléans	460	1%	1,940	4%
Rural East	10	0%	340	1%
Rural Southeast	10	0%	960	2%
South Gloucester / Leirtrim	340	1%	770	2%
South Nepean	790	2%	4,310	9%
Rural Southwest	200	0%	840	2%
Kanata / Stittsville	1,200	3%	3,410	7%
Rural West	70	0%	720	1%
Île de Hull	400	1%	130	0%
Hull Périphérie	180	0%	260	1%
Plateau	0	0%	190	0%
Aylmer	70	0%	520	1%
Rural Northwest	10	0%	250	1%
Pointe Gatineau	40	0%	320	1%
Gatineau Est	30	0%	310	1%
Rural Northeast	30	0%	30	0%
Buckingham / Masson-Angers	0	0%	100	0%
<b>Ontario Sub-Total:</b>	<b>40,300</b>	<b>98%</b>	<b>47,470</b>	<b>96%</b>
<b>Québec Sub-Total:</b>	<b>760</b>	<b>2%</b>	<b>2,110</b>	<b>4%</b>
<b>Total:</b>	<b>41,060</b>	<b>100%</b>	<b>49,580</b>	<b>100%</b>

### Trips by Trip Purpose

24 Hours	From District		To District		Within District	
Work or related	26,740	17%	34,050	22%	8,200	9%
School	8,520	6%	15,360	10%	6,130	7%
Shopping	12,310	8%	18,860	12%	19,990	23%
Leisure	13,070	9%	13,870	9%	9,290	11%
Medical	3,690	2%	6,540	4%	2,460	3%
Pick-up / drive passenger	9,730	6%	9,810	6%	5,080	6%
Return Home	73,660	48%	48,810	32%	32,900	37%
Other	5,540	4%	6,050	4%	3,690	4%
<b>Total:</b>	<b>153,260</b>	<b>100%</b>	<b>153,350</b>	<b>100%</b>	<b>87,740</b>	<b>100%</b>

AM Peak (06:30 - 08:59)	From District		To District		Within District	
Work or related	16,720	62%	20,310	57%	4,120	29%
School	5,210	19%	8,320	23%	4,760	34%
Shopping	360	1%	520	1%	610	4%
Leisure	470	2%	880	2%	700	5%
Medical	620	2%	1,290	4%	300	2%
Pick-up / drive passenger	1,790	7%	2,450	7%	1,700	12%
Return Home	980	4%	1,110	3%	950	7%
Other	930	3%	740	2%	830	6%
<b>Total:</b>	<b>27,080</b>	<b>100%</b>	<b>35,620</b>	<b>100%</b>	<b>13,970</b>	<b>100%</b>

PM Peak (15:30 - 17:59)	From District		To District		Within District	
Work or related	1,110	3%	1,110	4%	310	2%
School	290	1%	750	2%	220	1%
Shopping	3,540	9%	3,240	10%	3,250	18%
Leisure	3,200	8%	2,840	9%	2,140	12%
Medical	160	0%	530	2%	310	2%
Pick-up / drive passenger	3,430	9%	2,690	9%	1,060	6%
Return Home	27,480	68%	18,570	59%	9,960	56%
Other	940	2%	1,530	5%	610	3%
<b>Total:</b>	<b>40,150</b>	<b>100%</b>	<b>31,260</b>	<b>100%</b>	<b>17,860</b>	<b>100%</b>

Peak Period (%)	Total:	% of 24 Hours	Within District (%)
24 Hours	394,350		22%
AM Peak Period	76,670	19%	18%
PM Peak Period	89,270	23%	20%

### Trips by Primary Travel Mode

24 Hours	From District		To District		Within District	
Auto Driver	94,090	61%	94,010	61%	47,940	55%
Auto Passenger	22,640	15%	22,750	15%	13,260	15%
Transit	28,190	18%	27,930	18%	6,370	7%
Bicycle	2,400	2%	2,440	2%	1,340	2%
Walk	2,800	2%	2,790	2%	15,100	17%
Other	3,150	2%	3,420	2%	3,720	4%
<b>Total:</b>	<b>153,270</b>	<b>100%</b>	<b>153,340</b>	<b>100%</b>	<b>87,730</b>	<b>100%</b>

AM Peak (06:30 - 08:59)	From District		To District		Within District	
Auto Driver	14,480	53%	21,440	60%	6,050	43%
Auto Passenger	2,940	11%	4,180	12%	2,030	15%
Transit	6,960	26%	7,770	22%	1,500	11%
Bicycle	840	3%	660	2%	430	3%
Walk	600	2%	500	1%	2,380	17%
Other	1,270	5%	1,060	3%	1,580	11%
<b>Total:</b>	<b>27,090</b>	<b>100%</b>	<b>35,610</b>	<b>100%</b>	<b>13,970</b>	<b>100%</b>

PM Peak (15:30 - 17:59)	From District		To District		Within District	
Auto Driver	25,650	64%	18,310	59%	9,270	52%
Auto Passenger	5,440	14%	4,410	14%	2,650	15%
Transit	6,940	17%	6,070	19%	1,520	9%
Bicycle	590	1%	790	3%	310	2%
Walk	800	2%	890	3%	3,190	18%
Other	710	2%	790	3%	930	5%
<b>Total:</b>	<b>40,130</b>	<b>100%</b>	<b>31,260</b>	<b>100%</b>	<b>17,870</b>	<b>100%</b>

Avg Vehicle Occupancy	From District		To District		Within District	
24 Hours	1.24		1.24		1.28	
AM Peak Period	1.20		1.19		1.34	
PM Peak Period	1.21		1.24		1.29	

Transit Modal Split	From District		To District		Within District	
24 Hours	19%		19%		9%	
AM Peak Period	29%		23%		16%	
PM Peak Period	18%		21%		11%	

## Turning Movement Count - Study Results

### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

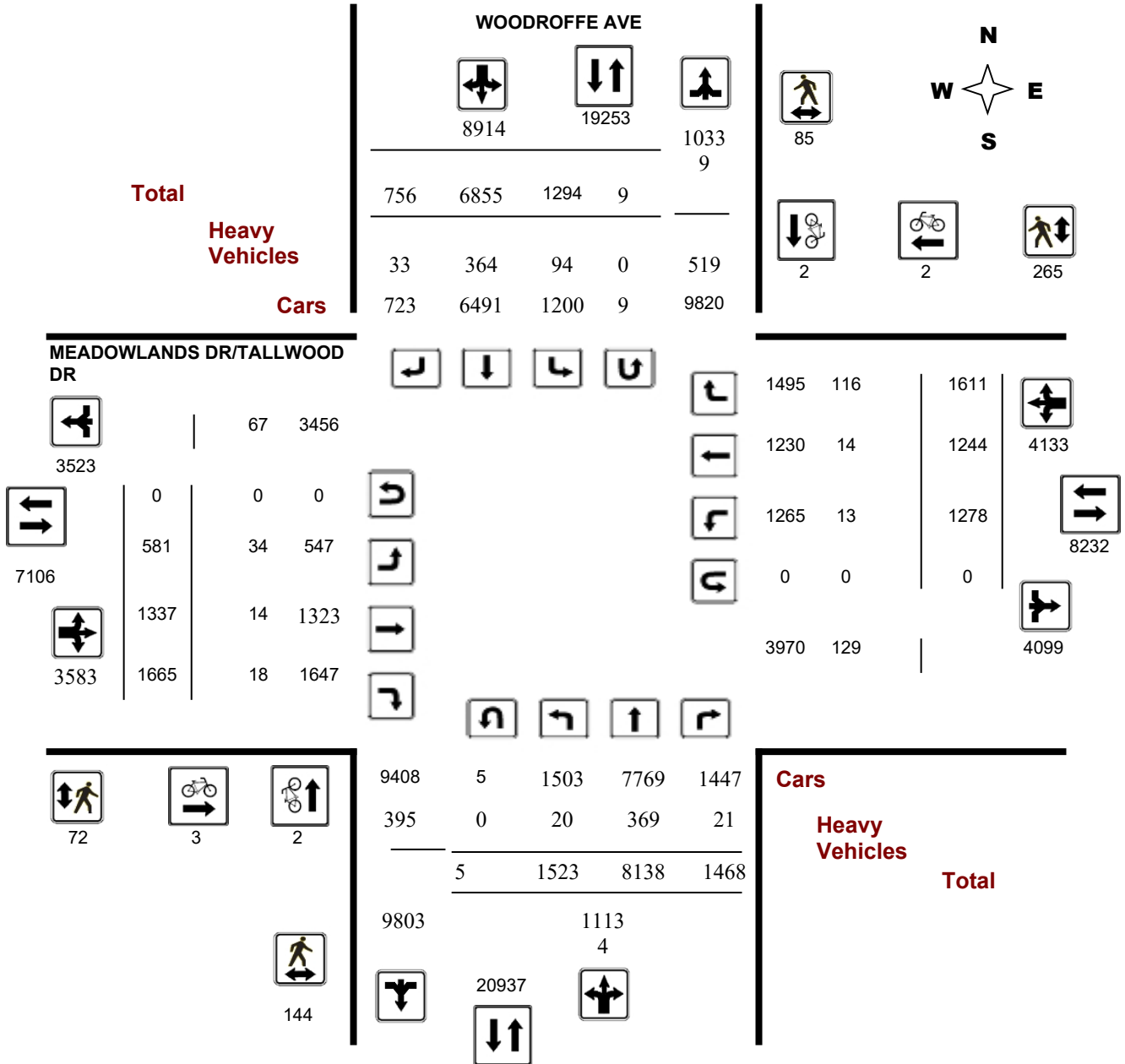
**Survey Date:** Wednesday, March 23, 2016

**WO No:** 35820

**Start Time:** 07:00

**Device:** Miovision

### Full Study Diagram



## Turning Movement Count - Study Results

### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

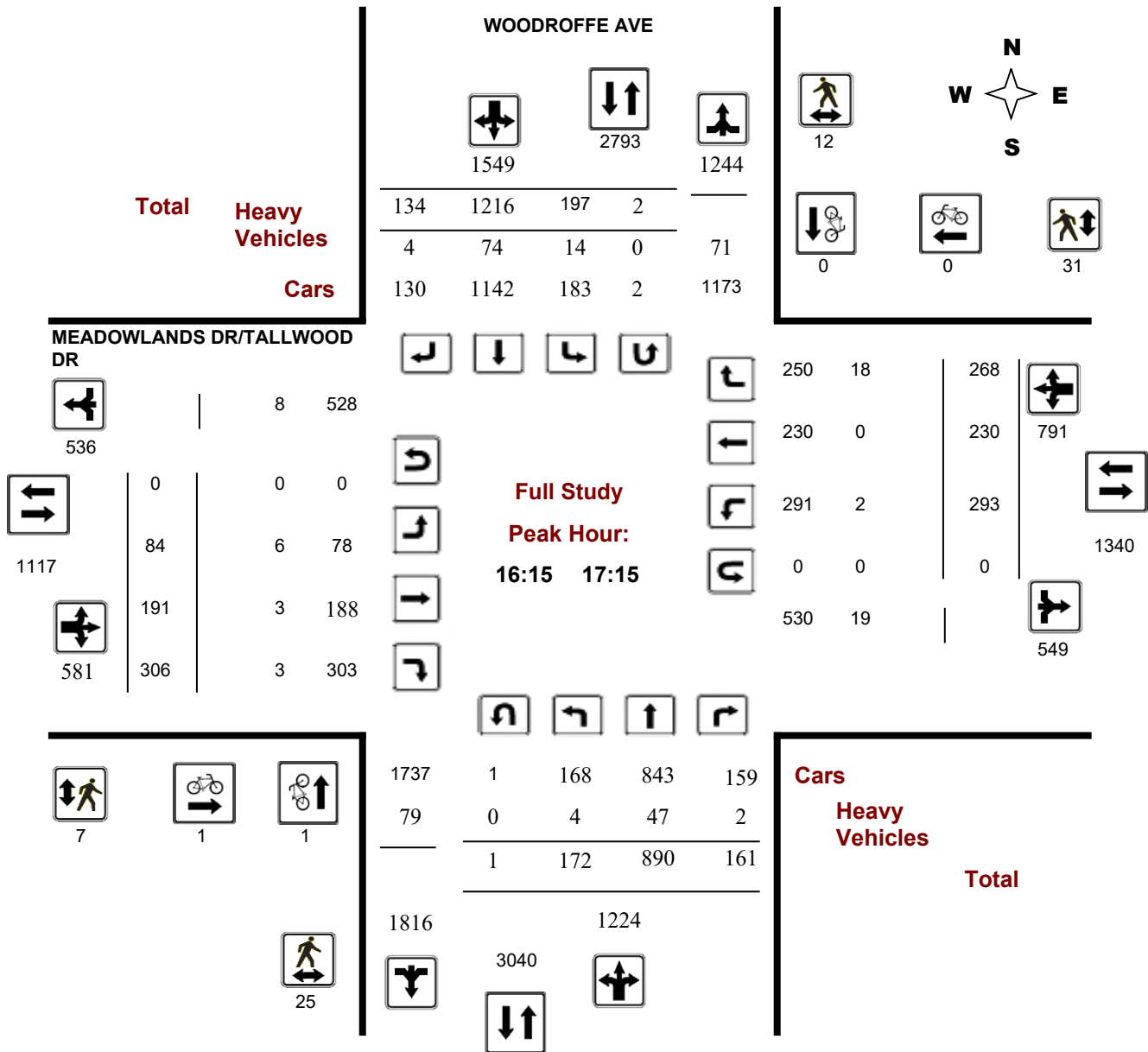
**Survey Date:** Wednesday, March 23, 2016

**WO No:** 35820

**Start Time:** 07:00

**Device:** Miovision

### Full Study Peak Hour Diagram





# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

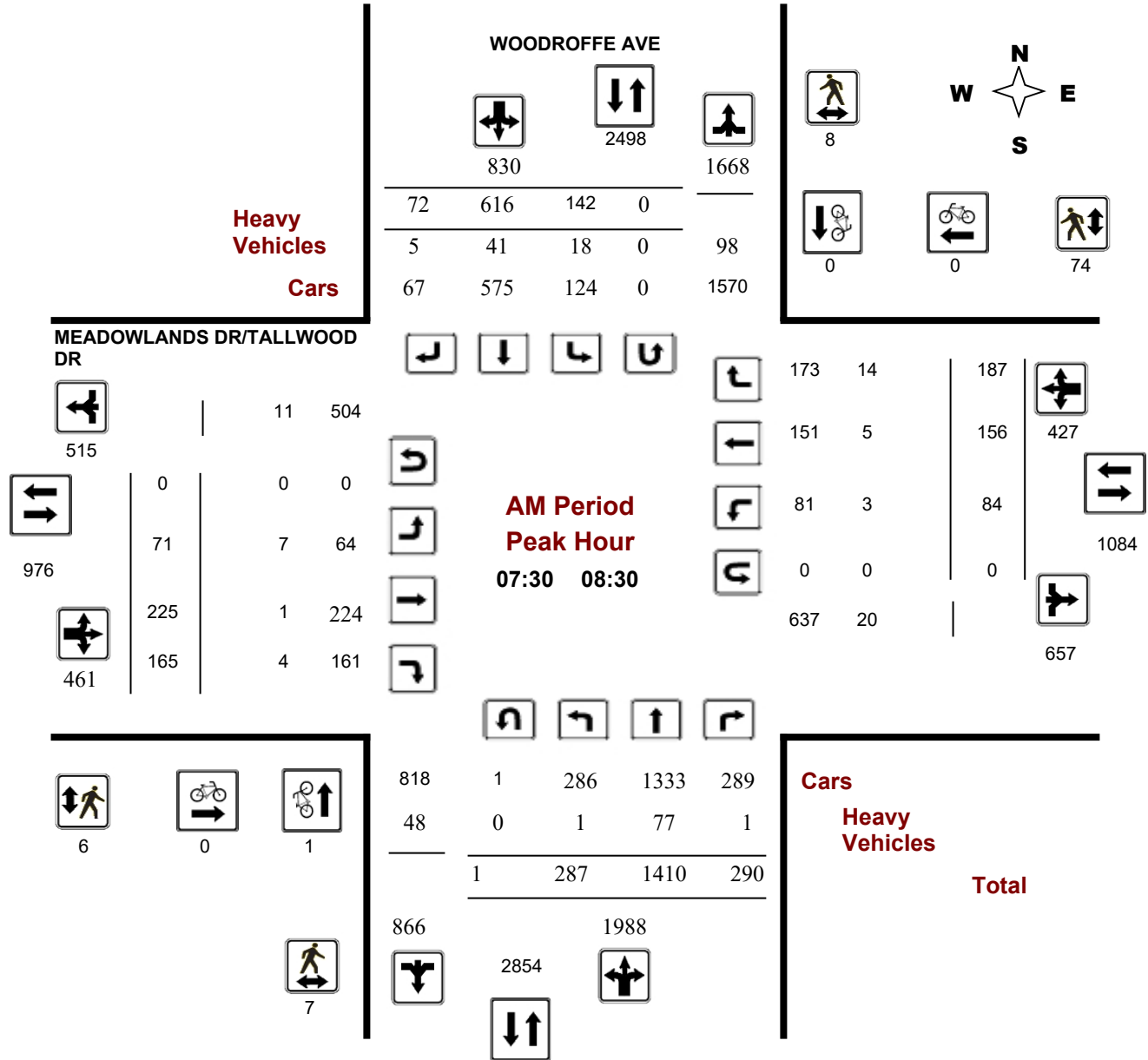
### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

**Survey Date:** Wednesday, March 23, 2016

**Start Time:** 07:00

**WO No:** 35820

**Device:** Miovision





## Turning Movement Count - Peak Hour Diagram

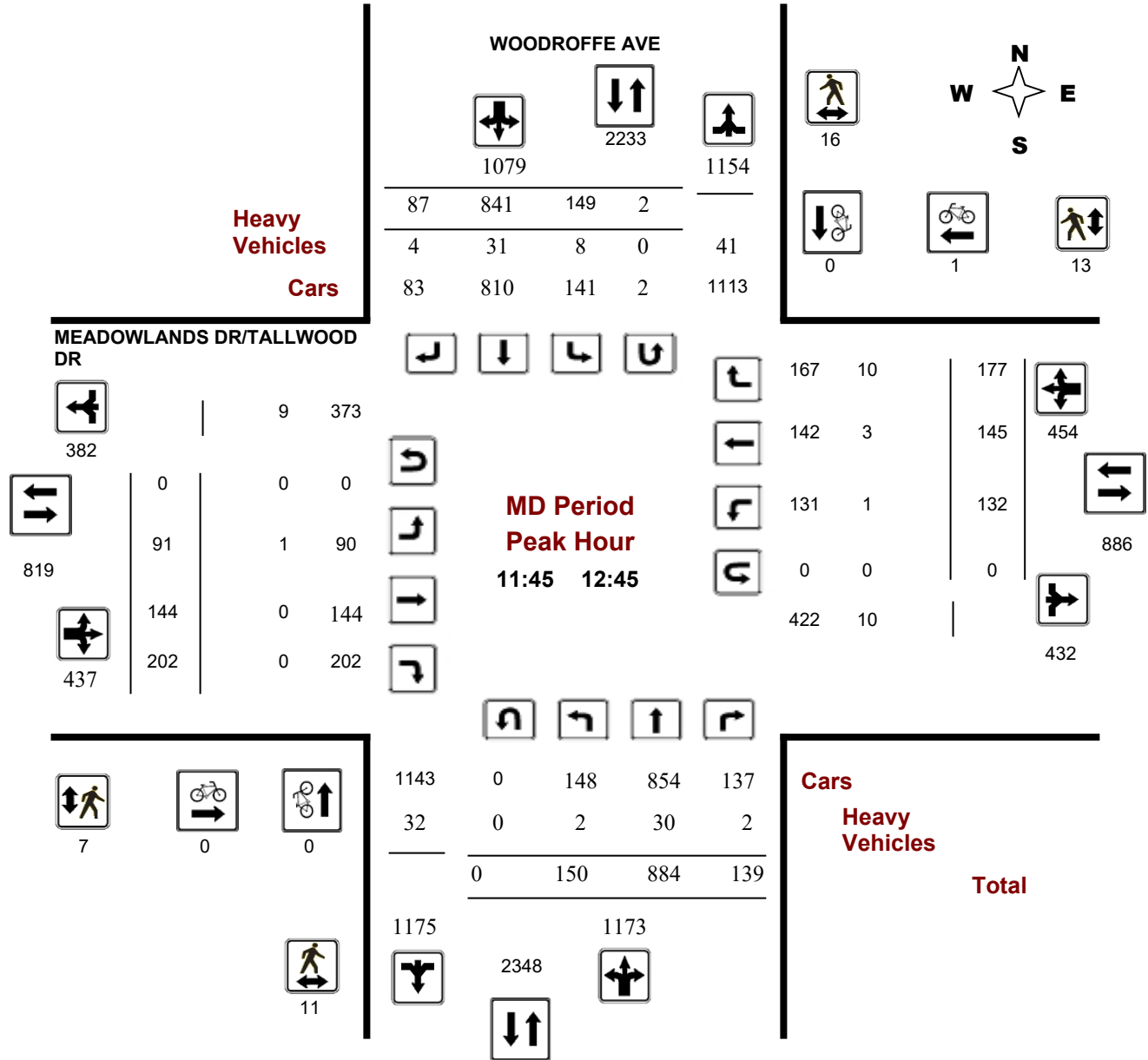
### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

**Survey Date:** Wednesday, March 23, 2016

**Start Time:** 07:00

**WO No:** 35820

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

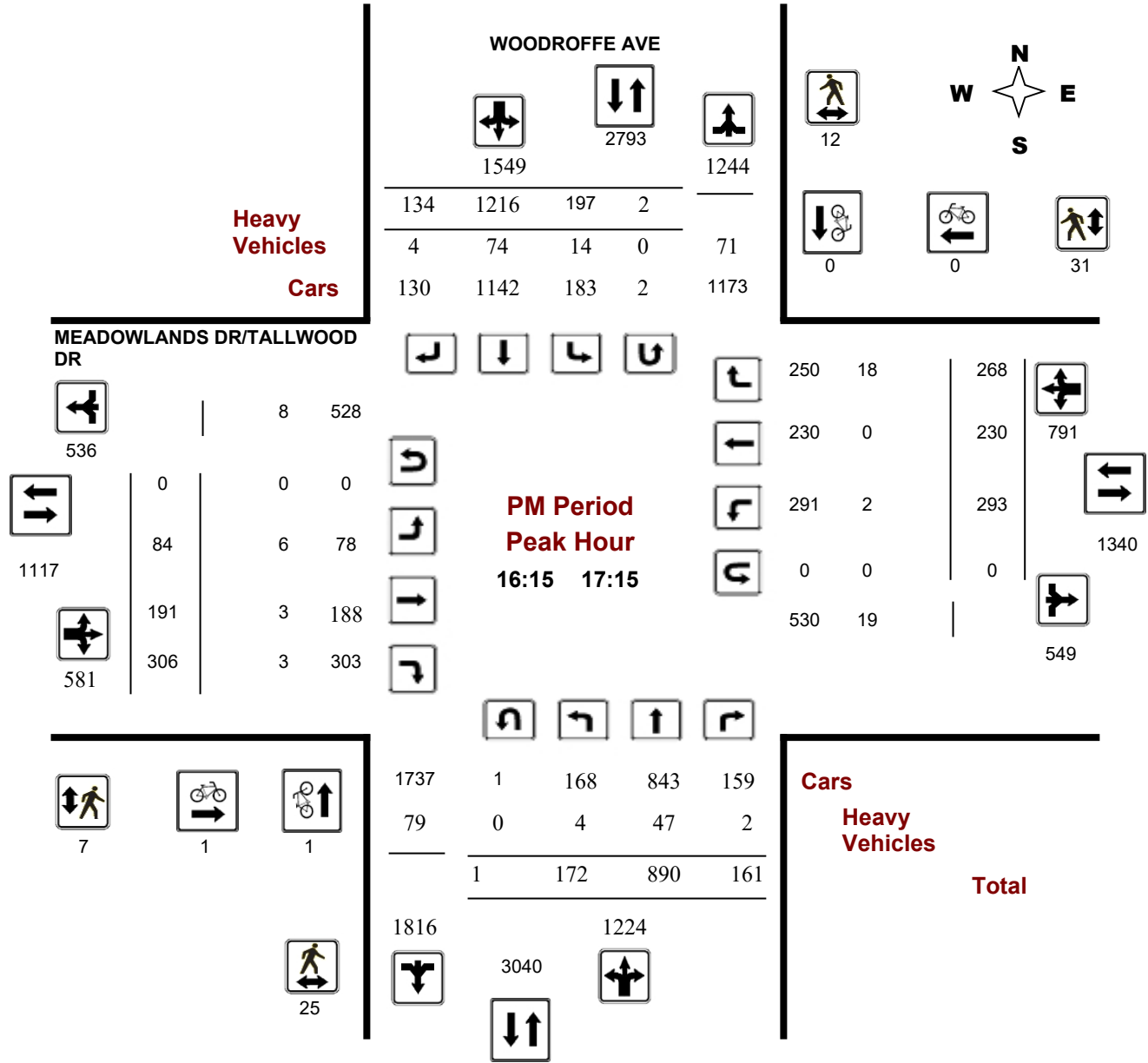
### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

**Survey Date:** Wednesday, March 23, 2016

**Start Time:** 07:00

**WO No:** 35820

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

**Survey Date:** Wednesday, March 23, 2016

**WO No:** 35820

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Wednesday, March 23, 2016

**Total Observed U-Turns**

**AADT Factor**

Northbound: 5      Southbound: 9  
 Eastbound: 0      Westbound: 0

1.00

**WOODROFFE AVE**

**MEADOWLANDS DR/TALLWOOD DR**

Period	WOODROFFE AVE Northbound					WOODROFFE AVE Southbound					MEADOWLANDS DR/TALLWOOD DR Eastbound					MEADOWLANDS DR/TALLWOOD DR Westbound					Grand Total
	LT	ST	RT	NB TOT	STR TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	STR TOT	LT	ST	RT	WB TOT	STR TOT	
07:00 08:00	236	1451	237	1924	2600	125	484	67	676	2600	64	163	126	353	668	61	105	149	315	668	3268
08:00 09:00	281	1247	271	1799	2660	142	645	74	861	2660	59	223	195	477	913	105	153	178	436	913	3573
09:00 10:00	184	1035	180	1399	2208	143	603	63	809	2208	69	131	140	340	676	76	105	155	336	676	2884
11:30 12:30	136	907	135	1178	2199	154	789	78	1021	2199	84	155	200	439	886	122	145	180	447	886	3085
12:30 13:30	190	815	152	1157	2188	165	776	90	1031	2188	74	118	171	363	837	119	144	211	474	837	3025
15:00 16:00	152	872	158	1182	2715	195	1213	125	1533	2715	82	182	302	566	1220	234	170	250	654	1220	3935
16:00 17:00	184	881	175	1240	2816	166	1284	126	1576	2816	80	197	295	572	1317	279	230	236	745	1317	4133
17:00 18:00	160	930	160	1250	2648	204	1061	133	1398	2648	69	168	236	473	1199	282	192	252	726	1199	3847
<b>Sub Total</b>	1523	8138	1468	11129	20034	1294	6855	756	8905	20034	581	1337	1665	3583	7716	1278	1244	1611	4133	7716	27750
<b>U Turns</b>	5			5	14	9			9	14	0			0	0				0	0	14
<b>Total</b>	1528	8138	1468	11134	20048	1303	6855	756	8914	20048	581	1337	1665	3583	7716	1278	1244	1611	4133	7716	27764
<b>EQ 12Hr</b>	2124	11312	2041	15477	27867	1811	9528	1051	12390	27867	808	1858	2314	4980	10724	1776	1729	2239	5744	10724	38591
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																			<b>1.39</b>		
<b>AVG 12Hr</b>	2124	11312	2041	15477	27867	1811	9528	1051	12390	27867	808	1858	2314	4980	10724	1776	1729	2239	5744	10724	38591
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																			<b>1.00</b>		
<b>AVG 24Hr</b>	2782	14819	2674	20275	36506	2372	12482	1377	16231	36506	1058	2434	3031	6523	14048	2327	2265	2933	7525	14048	50554
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																			<b>1.31</b>		

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

**Survey Date:** Wednesday, March 23, 2016

**WO No:** 35820

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute Increments

#### WOODROFFE AVE

#### MEADOWLANDS DR/TALLWOOD D

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	51	341	37	429	29	96	13	138	567	8	25	26	59	14	12	27	53	112	679
07:15 07:30	52	370	57	479	33	107	14	154	633	16	28	29	73	12	20	29	61	134	767
07:30 07:45	58	396	67	521	23	134	14	171	692	20	44	42	106	17	38	45	100	206	898
07:45 08:00	75	344	76	495	40	147	26	213	708	20	66	29	115	18	35	48	101	216	924
08:00 08:15	80	330	87	497	44	174	12	230	727	16	60	46	122	30	42	47	119	241	968
08:15 08:30	75	340	60	475	35	161	20	216	691	15	55	48	118	19	41	47	107	225	916
08:30 08:45	65	321	73	459	25	157	16	198	657	10	61	49	120	22	35	41	98	218	875
08:45 09:00	63	256	51	370	38	153	26	217	587	18	47	52	117	34	35	43	112	229	816
09:00 09:15	59	288	53	400	42	143	17	202	602	20	31	49	100	20	26	40	86	186	788
09:15 09:30	39	266	41	346	44	155	15	214	560	14	39	31	84	20	24	42	86	170	730
09:30 09:45	38	231	37	306	27	155	16	198	504	20	27	35	82	16	39	33	88	170	674
09:45 10:00	48	250	49	347	30	150	15	195	542	15	34	25	74	20	16	40	76	150	692
11:30 11:45	29	263	32	324	44	157	22	223	547	13	44	50	107	24	31	47	102	209	756
11:45 12:00	40	220	36	296	35	206	14	255	551	22	40	57	119	25	40	43	108	227	778
12:00 12:15	32	204	31	267	45	227	17	289	556	27	31	53	111	31	46	43	120	231	787
12:15 12:30	35	220	36	291	33	199	25	257	548	22	40	40	102	42	28	47	117	219	767
12:30 12:45	43	240	36	319	38	209	31	278	597	20	33	52	105	34	31	44	109	214	811
12:45 13:00	54	194	39	287	45	199	24	268	555	15	35	39	89	32	41	56	129	218	773
13:00 13:15	54	198	37	289	42	200	19	261	550	19	28	42	89	30	32	52	114	203	753
13:15 13:30	39	183	40	262	42	168	16	226	488	20	22	38	80	23	40	59	122	202	690
15:00 15:15	41	242	42	325	53	311	28	392	717	20	45	90	155	67	41	52	160	315	1032
15:15 15:30	38	203	46	287	46	293	31	370	657	21	43	83	147	51	34	71	156	303	960
15:30 15:45	37	222	46	305	46	303	32	381	686	23	58	67	148	62	39	52	153	301	987
15:45 16:00	36	205	24	265	52	306	34	392	657	18	36	62	116	54	56	75	185	301	958
16:00 16:15	49	218	46	313	29	321	27	377	690	21	46	65	132	57	60	47	164	296	986
16:15 16:30	43	214	49	306	43	327	34	404	710	24	54	91	169	70	61	52	183	352	1062
16:30 16:45	44	237	34	315	41	324	34	399	714	18	57	84	159	83	59	68	210	369	1083
16:45 17:00	49	212	46	307	54	312	31	397	704	17	40	55	112	69	50	69	188	300	1004
17:00 17:15	37	227	32	296	61	253	35	349	645	25	40	76	141	71	60	79	210	351	996
17:15 17:30	40	229	51	320	46	274	27	347	667	10	41	62	113	66	42	54	162	275	942
17:30 17:45	48	247	40	335	45	269	31	345	680	17	49	55	121	85	53	67	205	326	1006
17:45 18:00	37	227	37	301	53	265	40	358	659	17	38	43	98	60	37	52	149	247	906
<b>Total:</b>	<b>1528</b>	<b>8138</b>	<b>1468</b>	<b>1113</b>	<b>1303</b>	<b>6855</b>	<b>756</b>	<b>8914</b>	<b>20048</b>	<b>581</b>	<b>1337</b>	<b>1665</b>	<b>3583</b>	<b>1278</b>	<b>1244</b>	<b>1611</b>	<b>4133</b>	<b>20048</b>	<b>27,764</b>

Note: U-Turns are included in Totals.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

**Survey Date:** Wednesday, March 23, 2016

**WO No:** 35820

**Start Time:** 07:00

**Device:** Miovision

### Full Study Cyclist Volume

#### WOODROFFE AVE

#### MEADOWLANDS DR/TALLWOOD DR

Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	1	0	1	1
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	1	0	1	0	0	0	1
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	1	0	1	1
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	1	1	1
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	1	1	0	0	0	1
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	1	1	1
16:15 16:30	0	0	0	1	0	1	1
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	1	0	1	0	0	0	1
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	1	1	0	0	0	1
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
Total	2	2	4	3	2	5	9





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

**Survey Date:** Wednesday, March 23, 2016

**WO No:** 35820

**Start Time:** 07:00

**Device:** Miovision

### Full Study Pedestrian Volume

#### WOODROFFE AVE

#### MEADOWLANDS DR/TALLWOOD D

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	2	1	3	1	2	3	6
07:15 07:30	1	3	4	2	10	12	16
07:30 07:45	2	1	3	1	27	28	31
07:45 08:00	1	2	3	3	20	23	26
08:00 08:15	2	1	3	0	11	11	14
08:15 08:30	2	4	6	2	16	18	24
08:30 08:45	5	6	11	4	12	16	27
08:45 09:00	4	1	5	2	4	6	11
09:00 09:15	3	0	3	0	4	4	7
09:15 09:30	1	0	1	0	2	2	3
09:30 09:45	1	0	1	0	3	3	4
09:45 10:00	4	3	7	2	4	6	13
11:30 11:45	5	0	5	0	5	5	10
11:45 12:00	1	3	4	1	1	2	6
12:00 12:15	3	7	10	0	9	9	19
12:15 12:30	4	2	6	2	0	2	8
12:30 12:45	3	4	7	4	3	7	14
12:45 13:00	1	2	3	2	1	3	6
13:00 13:15	4	1	5	2	7	9	14
13:15 13:30	2	4	6	0	4	4	10
15:00 15:15	13	5	18	6	14	20	38
15:15 15:30	13	2	15	14	8	22	37
15:30 15:45	5	3	8	2	4	6	14
15:45 16:00	14	4	18	4	6	10	28
16:00 16:15	11	5	16	8	23	31	47
16:15 16:30	5	6	11	2	8	10	21
16:30 16:45	6	2	8	2	14	16	24
16:45 17:00	9	2	11	1	6	7	18
17:00 17:15	5	2	7	2	3	5	12
17:15 17:30	4	2	6	1	11	12	18
17:30 17:45	7	5	12	2	17	19	31
17:45 18:00	1	2	3	0	6	6	9
<b>Total</b> .....	144	85	229	72	265	337	566



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

**Survey Date:** Wednesday, March 23, 2016

**WO No:** 35820

**Start Time:** 07:00

**Device:** Miovision

### Full Study Heavy Vehicles

#### WOODROFFE AVE

#### MEADOWLANDS DR/TALLWOOD D

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00 07:15	2	19	0	21	3	9	3	15	36	1	0	0	1	0	0	4	4	5	41
07:15 07:30	0	23	3	26	6	8	1	15	41	2	1	1	4	0	0	5	5	9	50
07:30 07:45	0	17	1	18	6	12	1	19	37	3	1	1	5	1	3	5	9	14	51
07:45 08:00	0	26	0	26	5	12	1	18	44	1	0	0	1	1	0	3	4	5	49
08:00 08:15	0	18	0	18	5	11	1	17	35	2	0	2	4	1	1	2	4	8	43
08:15 08:30	1	16	0	17	2	6	2	10	27	1	0	1	2	0	1	4	5	7	34
08:30 08:45	3	16	2	21	3	5	1	9	30	1	4	1	6	0	0	3	3	9	39
08:45 09:00	1	14	2	17	3	9	2	14	31	2	0	0	2	0	1	3	4	6	37
09:00 09:15	0	11	1	12	3	9	0	12	24	1	0	2	3	0	0	2	2	5	29
09:15 09:30	0	13	0	13	2	8	0	10	23	1	0	0	1	1	0	3	4	5	28
09:30 09:45	0	3	1	4	3	12	0	15	19	1	0	1	2	1	1	3	5	7	26
09:45 10:00	1	10	1	12	1	5	2	8	20	0	0	1	1	1	0	3	4	5	25
11:30 11:45	0	12	0	12	3	5	0	8	20	0	0	0	0	0	0	2	2	2	22
11:45 12:00	0	10	2	12	2	11	0	13	25	0	0	0	0	0	0	3	3	3	28
12:00 12:15	1	6	0	7	2	8	1	11	18	1	0	0	1	0	2	1	3	4	22
12:15 12:30	1	7	0	8	2	6	2	10	18	0	0	0	0	0	1	4	5	5	23
12:30 12:45	0	7	0	7	2	6	1	9	16	0	0	0	0	1	0	2	3	3	19
12:45 13:00	0	5	0	5	2	7	0	9	14	2	0	0	2	0	0	3	3	5	19
13:00 13:15	3	7	1	11	2	9	0	11	22	1	0	1	2	0	0	3	3	5	27
13:15 13:30	0	11	0	11	3	11	1	15	26	0	0	0	0	0	0	3	3	3	29
15:00 15:15	1	7	1	9	4	11	1	16	25	1	1	2	4	0	0	8	8	12	37
15:15 15:30	1	9	0	10	3	12	2	17	27	1	0	0	1	1	2	10	13	14	41
15:30 15:45	0	7	3	10	3	19	2	24	34	2	2	0	4	1	0	1	2	6	40
15:45 16:00	0	8	0	8	3	17	1	21	29	1	2	1	4	0	1	6	7	11	40
16:00 16:15	0	16	0	16	0	18	1	19	35	1	0	1	2	0	1	2	3	5	40
16:15 16:30	2	16	0	18	3	19	1	23	41	1	0	2	3	1	0	5	6	9	50
16:30 16:45	0	13	0	13	5	24	1	30	43	1	0	0	1	1	0	3	4	5	48
16:45 17:00	2	12	2	16	3	11	1	15	31	2	0	0	2	0	0	6	6	8	39
17:00 17:15	0	6	0	6	3	20	1	24	30	2	3	1	6	0	0	4	4	10	40
17:15 17:30	0	12	0	12	5	16	1	22	34	0	0	0	0	1	0	2	3	3	37
17:30 17:45	1	6	1	8	1	12	1	14	22	1	0	0	1	0	0	6	6	7	29
17:45 18:00	0	6	0	6	1	16	1	18	24	1	0	0	1	1	0	2	3	4	28
Total: None	20	369	21	410	94	364	33	491	901	34	14	18	66	13	14	116	143	209	1,110



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### MEADOWLANDS DR/TALLWOOD DR @ WOODROFFE AVE

**Survey Date:** Wednesday, March 23, 2016

**WO No:** 35820

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute U-Turn Total

WOODROFFE AVE                      MEADOWLANDS DR/TALLWOOD D

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	1	0	0	0	1
08:30	08:45	1	0	0	0	1
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	1	0	0	1
11:45	12:00	0	1	0	0	1
12:00	12:15	0	0	0	0	0
12:15	12:30	0	1	0	0	1
12:30	12:45	0	0	0	0	0
12:45	13:00	0	2	0	0	2
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	1	0	0	1
15:30	15:45	0	0	0	0	0
15:45	16:00	0	1	0	0	1
16:00	16:15	1	0	0	0	1
16:15	16:30	0	1	0	0	1
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	1	1	0	0	2
17:15	17:30	0	0	0	0	0
17:30	17:45	1	0	0	0	1
17:45	18:00	0	0	0	0	0
Total		5	9	0	0	14

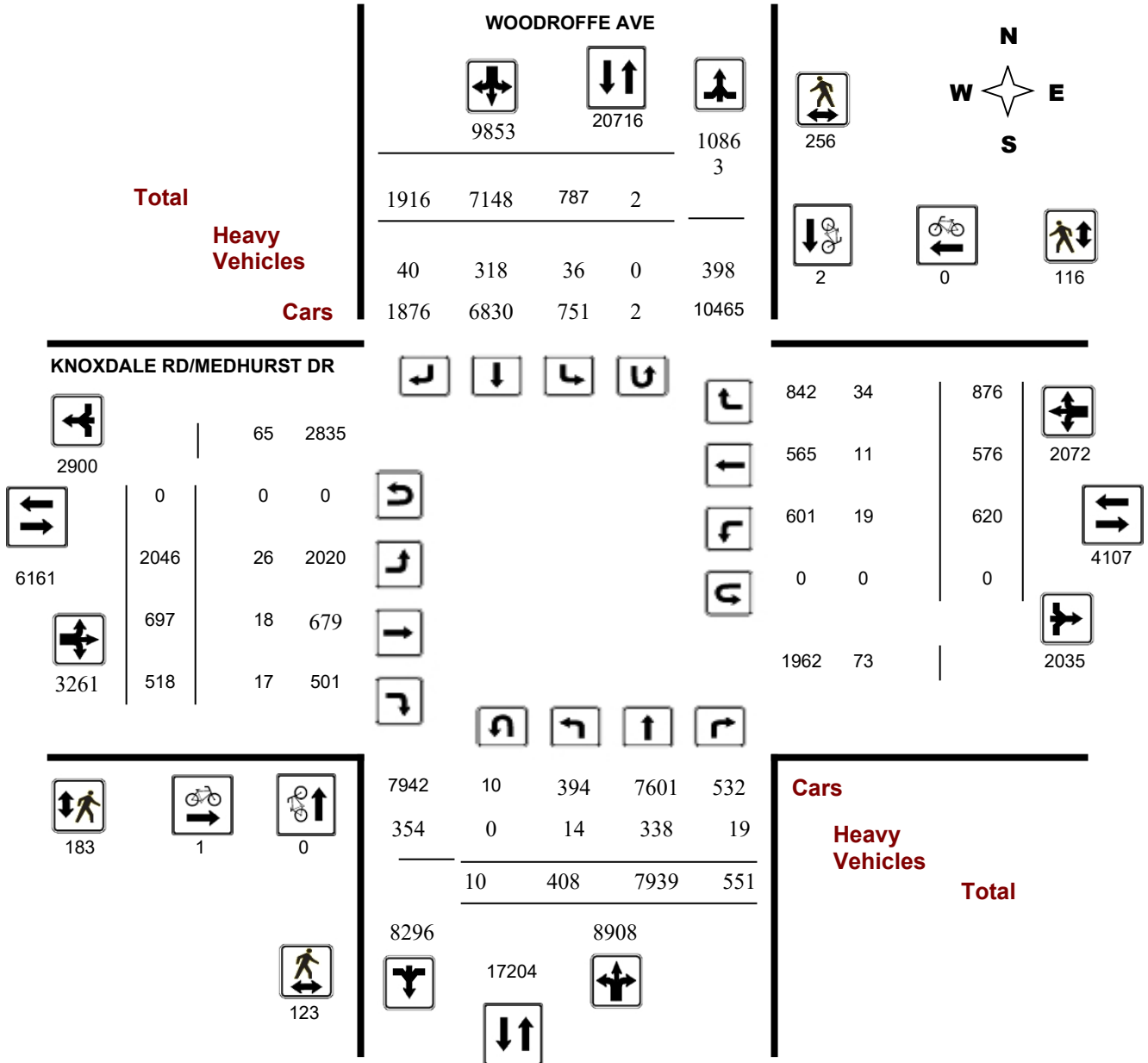
**Survey Date:** Tuesday, January 16, 2018

**WO No:** 37418

**Start Time:** 07:00

**Device:** Miovision

### Full Study Diagram



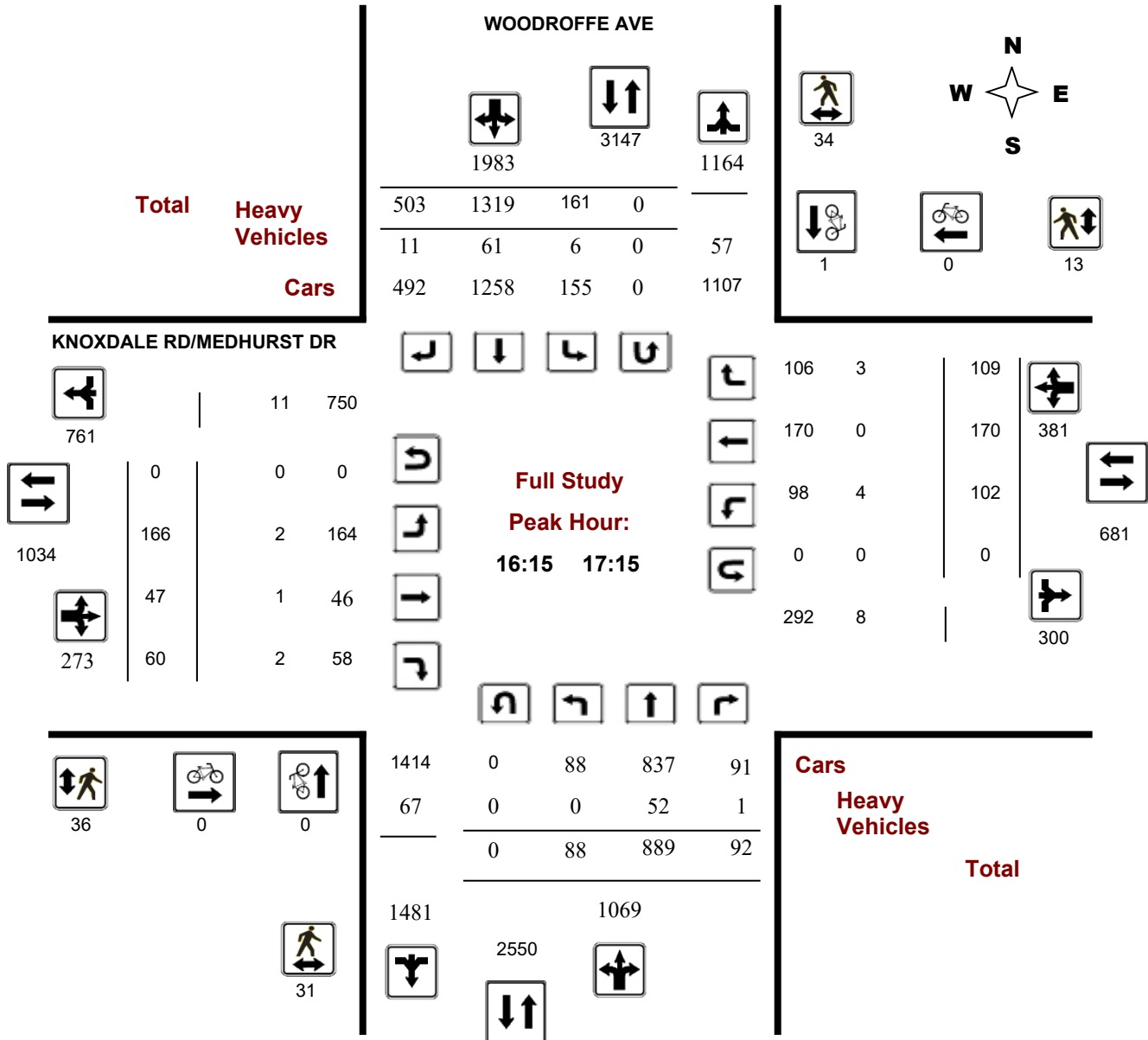
**Survey Date:** Tuesday, January 16, 2018

**WO No:** 37418

**Start Time:** 07:00

**Device:** Miovision

### Full Study Peak Hour Diagram













# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WOODROFFE AVE @ KNOXDALE RD/MEDHURST DR

**Survey Date:** Tuesday, January 16, 2018

**WO No:** 37418

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Tuesday, January 16, 2018

**Total Observed U-Turns**

**AADT Factor**

Northbound: 10      Southbound: 2  
 Eastbound: 0      Westbound: 0

1.10

#### WOODROFFE AVE

#### KNOXDALE RD/MEDHURST DR

Period	WOODROFFE AVE Northbound					WOODROFFE AVE Southbound					KNOXDALE RD/MEDHURST DR Eastbound					KNOXDALE RD/MEDHURST DR Westbound					Grand Total
	LT	ST	RT	NB TOT	STR TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	STR TOT	LT	ST	RT	WB TOT	STR TOT	
07:00 08:00	23	1138	39	1200	1838	49	526	63	638	1838	339	135	88	562	798	73	35	128	236	798	2636
08:00 09:00	28	1140	63	1231	2084	46	681	126	853	2084	440	226	99	765	1076	100	47	164	311	1076	3160
09:00 10:00	30	1200	50	1280	2022	64	580	98	742	2022	376	81	57	514	713	69	28	102	199	713	2735
11:30 12:30	44	1033	86	1163	2276	90	846	177	1113	2276	158	49	47	254	435	52	44	85	181	435	2711
12:30 13:30	49	788	54	891	1876	95	735	155	985	1876	158	41	43	242	443	65	38	98	201	443	2319
15:00 16:00	68	899	77	1044	2790	135	1294	317	1746	2790	191	50	68	309	551	76	76	90	242	551	3341
16:00 17:00	85	858	84	1027	2965	147	1302	489	1938	2965	174	50	56	280	644	96	168	100	364	644	3609
17:00 18:00	81	883	98	1062	2898	161	1184	491	1836	2898	210	65	60	335	673	89	140	109	338	673	3571
<b>Sub Total</b>	408	7939	551	8898	18749	787	7148	1916	9851	18749	2046	697	518	3261	5333	620	576	876	2072	5333	24082
<b>U Turns</b>	10			10	12	2			2	12	0			0	0				0	0	12
<b>Total</b>	418	7939	551	8908	18761	789	7148	1916	9853	18761	2046	697	518	3261	5333	620	576	876	2072	5333	24094
<b>EQ 12Hr</b>	581	11035	766	12382	26078	1097	9936	2663	13696	26078	2844	969	720	4533	7414	862	801	1218	2881	7414	33492
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																			<b>1.39</b>		
<b>AVG 12Hr</b>	639	12139	843	13621	28687	1207	10930	2929	15066	28687	3128	1066	792	4986	8155	948	881	1340	3169	8155	36842
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																			<b>1.10</b>		
<b>AVG 24Hr</b>	837	15902	1104	17843	37579	1581	14318	3837	19736	37579	4098	1396	1038	6532	10683	1242	1154	1755	4151	10683	48262
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																			<b>1.31</b>		

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WOODROFFE AVE @ KNOXDALE RD/MEDHURST DR

**Survey Date:** Tuesday, January 16, 2018

**WO No:** 37418

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute Increments

#### WOODROFFE AVE

#### KNOXDALE RD/MEDHURST DR

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	4	275	6	285	4	107	15	126	411	60	9	11	80	12	10	31	53	133	544
07:15 07:30	6	302	14	322	15	118	19	152	474	96	19	24	139	14	8	35	57	196	670
07:30 07:45	5	318	12	335	14	135	15	164	499	83	42	17	142	23	7	29	59	201	700
07:45 08:00	8	243	7	258	16	166	14	196	454	100	65	36	201	24	10	33	67	268	722
08:00 08:15	6	284	14	304	9	153	25	187	491	107	59	27	193	24	13	37	74	267	758
08:15 08:30	4	267	13	284	12	186	33	231	515	95	58	25	178	23	16	49	88	266	781
08:30 08:45	5	292	18	315	14	178	30	222	537	131	57	25	213	24	10	41	75	288	825
08:45 09:00	14	297	18	329	11	164	38	213	542	107	52	22	181	29	8	37	74	255	797
09:00 09:15	8	284	12	304	15	143	27	185	489	132	36	17	185	20	7	25	52	237	726
09:15 09:30	9	261	14	284	13	142	21	176	460	100	17	18	135	22	11	33	66	201	661
09:30 09:45	7	333	10	350	22	150	29	201	551	71	10	11	92	16	6	24	46	138	689
09:45 10:00	7	322	14	343	14	145	21	180	523	73	18	11	102	11	4	20	35	137	660
11:30 11:45	6	271	11	288	16	174	30	220	508	37	16	11	64	13	11	30	54	118	626
11:45 12:00	13	247	33	293	23	203	51	277	570	33	8	8	49	8	10	11	29	78	648
12:00 12:15	15	272	24	311	23	236	41	300	611	40	9	17	66	9	13	18	40	106	717
12:15 12:30	14	243	18	275	28	233	55	316	591	48	16	11	75	22	10	26	58	133	724
12:30 12:45	16	205	14	235	26	188	41	255	490	33	11	12	56	14	10	23	47	103	593
12:45 13:00	9	203	14	226	24	173	35	232	458	43	10	14	67	23	11	25	59	126	584
13:00 13:15	10	187	15	212	18	194	41	253	465	47	7	4	58	15	4	28	47	105	570
13:15 13:30	14	193	11	218	28	180	38	246	464	35	13	13	61	13	13	22	48	109	573
15:00 15:15	21	208	23	252	34	277	58	369	621	49	15	16	80	12	19	22	53	133	754
15:15 15:30	25	229	16	270	32	322	74	428	698	44	15	18	77	20	11	20	51	128	826
15:30 15:45	13	214	23	250	35	304	97	436	686	53	10	17	80	31	25	24	80	160	846
15:45 16:00	12	248	15	275	34	391	88	513	788	45	10	17	72	13	21	24	58	130	918
16:00 16:15	19	203	19	241	36	314	122	472	713	58	13	12	83	17	41	24	82	165	878
16:15 16:30	13	229	20	262	31	356	111	498	760	32	6	13	51	31	50	28	109	160	920
16:30 16:45	32	211	20	263	41	314	127	482	745	46	16	12	74	26	43	23	92	166	911
16:45 17:00	21	215	25	261	40	318	129	487	748	38	15	19	72	22	34	25	81	153	901
17:00 17:15	22	234	27	283	49	331	136	516	799	50	10	16	76	23	43	33	99	175	974
17:15 17:30	24	210	29	263	39	295	141	475	738	59	15	13	87	27	40	19	86	173	911
17:30 17:45	15	221	20	256	32	307	109	448	704	50	18	15	83	21	29	24	74	157	861
17:45 18:00	21	218	22	261	41	251	105	397	658	51	22	16	89	18	28	33	79	168	826
<b>Total:</b>	<b>418</b>	<b>7939</b>	<b>551</b>	<b>8908</b>	<b>789</b>	<b>7148</b>	<b>1916</b>	<b>9853</b>	<b>18761</b>	<b>2046</b>	<b>697</b>	<b>518</b>	<b>3261</b>	<b>620</b>	<b>576</b>	<b>876</b>	<b>2072</b>	<b>18761</b>	<b>24,094</b>

Note: U-Turns are included in Totals.





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WOODROFFE AVE @ KNOXDALE RD/MEDHURST DR

**Survey Date:** Tuesday, January 16, 2018

**WO No:** 37418

**Start Time:** 07:00

**Device:** Miovision

### Full Study Cyclist Volume

#### WOODROFFE AVE

#### KNOXDALE RD/MEDHURST DR

Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	1	1	0	0	0	1
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	1	0	1	1
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0
16:15	16:30	0	1	1	0	0	0	1
16:30	16:45	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0
Total		0	2	2	1	0	1	3



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WOODROFFE AVE @ KNOXDALE RD/MEDHURST DR

**Survey Date:** Tuesday, January 16, 2018

**WO No:** 37418

**Start Time:** 07:00

**Device:** Miovision

### Full Study Pedestrian Volume

#### WOODROFFE AVE

#### KNOXDALE RD/MEDHURST DR

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	1	3	4	0	4	4	8
07:15 07:30	3	5	8	2	3	5	13
07:30 07:45	4	6	10	4	7	11	21
07:45 08:00	1	3	4	6	2	8	12
08:00 08:15	2	11	13	3	8	11	24
08:15 08:30	0	14	14	1	3	4	18
08:30 08:45	4	3	7	3	6	9	16
08:45 09:00	2	7	9	5	5	10	19
09:00 09:15	3	5	8	5	1	6	14
09:15 09:30	2	7	9	3	4	7	16
09:30 09:45	0	8	8	0	2	2	10
09:45 10:00	0	3	3	2	3	5	8
11:30 11:45	0	7	7	3	0	3	10
11:45 12:00	0	4	4	8	1	9	13
12:00 12:15	1	12	13	2	5	7	20
12:15 12:30	4	10	14	5	5	10	24
12:30 12:45	7	9	16	3	5	8	24
12:45 13:00	1	4	5	6	3	9	14
13:00 13:15	2	3	5	2	3	5	10
13:15 13:30	3	8	11	6	1	7	18
15:00 15:15	5	13	18	7	1	8	26
15:15 15:30	6	10	16	7	5	12	28
15:30 15:45	7	16	23	19	4	23	46
15:45 16:00	10	17	27	16	7	23	50
16:00 16:15	9	10	19	8	7	15	34
16:15 16:30	11	10	21	8	6	14	35
16:30 16:45	5	9	14	3	3	6	20
16:45 17:00	13	10	23	12	2	14	37
17:00 17:15	2	5	7	13	2	15	22
17:15 17:30	3	13	16	6	1	7	23
17:30 17:45	7	4	11	7	5	12	23
17:45 18:00	5	7	12	8	2	10	22
<b>Total</b> .....	123	256	379	183	116	299	678



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WOODROFFE AVE @ KNOXDALE RD/MEDHURST DR

**Survey Date:** Tuesday, January 16, 2018

**WO No:** 37418

**Start Time:** 07:00

**Device:** Miovision

### Full Study Heavy Vehicles

#### WOODROFFE AVE

#### KNOXDALE RD/MEDHURST DR

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00 07:15	1	15	1	17	0	8	0	8	25	1	0	0	1	0	0	1	1	2	27
07:15 07:30	2	15	1	18	3	9	0	12	30	3	0	1	4	1	0	1	2	6	36
07:30 07:45	0	17	1	18	1	4	0	5	23	2	0	0	2	1	0	2	3	5	28
07:45 08:00	1	11	0	12	1	15	0	16	28	1	0	0	1	0	0	0	0	1	29
08:00 08:15	0	23	0	23	1	12	2	15	38	3	0	1	4	0	1	2	3	7	45
08:15 08:30	1	17	1	19	2	13	0	15	34	1	2	0	3	0	1	2	3	6	40
08:30 08:45	0	10	1	11	1	11	0	12	23	2	1	0	3	0	1	3	4	7	30
08:45 09:00	1	16	3	20	1	6	0	7	27	1	0	0	1	1	0	2	3	4	31
09:00 09:15	0	14	2	16	2	13	0	15	31	1	1	0	2	2	0	0	2	4	35
09:15 09:30	1	8	1	10	1	7	1	9	19	3	0	0	3	0	2	3	5	8	27
09:30 09:45	0	9	1	10	1	5	2	8	18	0	0	0	0	0	0	0	0	0	18
09:45 10:00	2	8	0	10	0	10	0	10	20	0	1	0	1	0	1	2	3	4	24
11:30 11:45	0	3	0	3	1	6	0	7	10	0	1	0	1	1	1	1	3	4	14
11:45 12:00	0	5	2	7	1	9	1	11	18	0	0	1	1	0	3	1	4	5	23
12:00 12:15	0	14	0	14	0	8	0	8	22	1	2	0	3	0	0	0	0	3	25
12:15 12:30	1	7	1	9	2	5	1	8	17	1	0	2	3	1	0	1	2	5	22
12:30 12:45	0	5	0	5	0	8	0	8	13	0	0	0	0	1	0	0	1	1	14
12:45 13:00	1	8	0	9	0	6	1	7	16	0	3	0	3	1	0	2	3	6	22
13:00 13:15	0	8	0	8	1	6	1	8	16	1	1	1	3	1	0	0	1	4	20
13:15 13:30	1	8	1	10	1	6	2	9	19	1	0	2	3	1	0	1	2	5	24
15:00 15:15	1	8	0	9	1	8	1	10	19	0	0	2	2	0	0	1	1	3	22
15:15 15:30	1	7	0	8	3	6	1	10	18	0	1	2	3	2	0	1	3	6	24
15:30 15:45	0	6	0	6	1	11	1	13	19	1	0	0	1	0	0	1	1	2	21
15:45 16:00	0	16	1	17	1	17	3	21	38	1	0	1	2	0	1	2	3	5	43
16:00 16:15	0	6	1	7	1	12	5	18	25	0	1	0	1	1	0	1	2	3	28
16:15 16:30	0	21	1	22	3	16	2	21	43	1	1	1	3	4	0	1	5	8	51
16:30 16:45	0	6	0	6	1	12	4	17	23	0	0	0	0	0	0	1	1	1	24
16:45 17:00	0	13	0	13	0	21	2	23	36	1	0	1	2	0	0	1	1	3	39
17:00 17:15	0	12	0	12	2	12	3	17	29	0	0	0	0	0	0	0	0	0	29
17:15 17:30	0	6	0	6	0	8	4	12	18	0	2	1	3	0	0	0	0	3	21
17:30 17:45	0	9	0	9	2	17	2	21	30	0	1	0	1	0	0	1	1	2	32
17:45 18:00	0	7	0	7	1	11	1	13	20	0	0	1	1	1	0	0	1	2	22
Total: None	14	338	19	371	36	318	40	394	765	26	18	17	61	19	11	34	64	125	890



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WOODROFFE AVE @ KNOXDALE RD/MEDHURST DR

**Survey Date:** Tuesday, January 16, 2018

**WO No:** 37418

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute U-Turn Total

#### WOODROFFE AVE

#### KNOXDALE RD/MEDHURST DR

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	1	0	0	0	1
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	1	0	0	0	1
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	1	0	0	0	1
12:00	12:15	1	0	0	0	1
12:15	12:30	2	0	0	0	2
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	1	0	0	1
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	1	0	0	0	1
15:30	15:45	1	0	0	0	1
15:45	16:00	1	0	0	0	1
16:00	16:15	0	1	0	0	1
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	1	0	0	0	1
Total		10	2	0	0	12

## Turning Movement Count - Study Results

### WEST HUNT CLUB RD @ WOODROFFE AVE

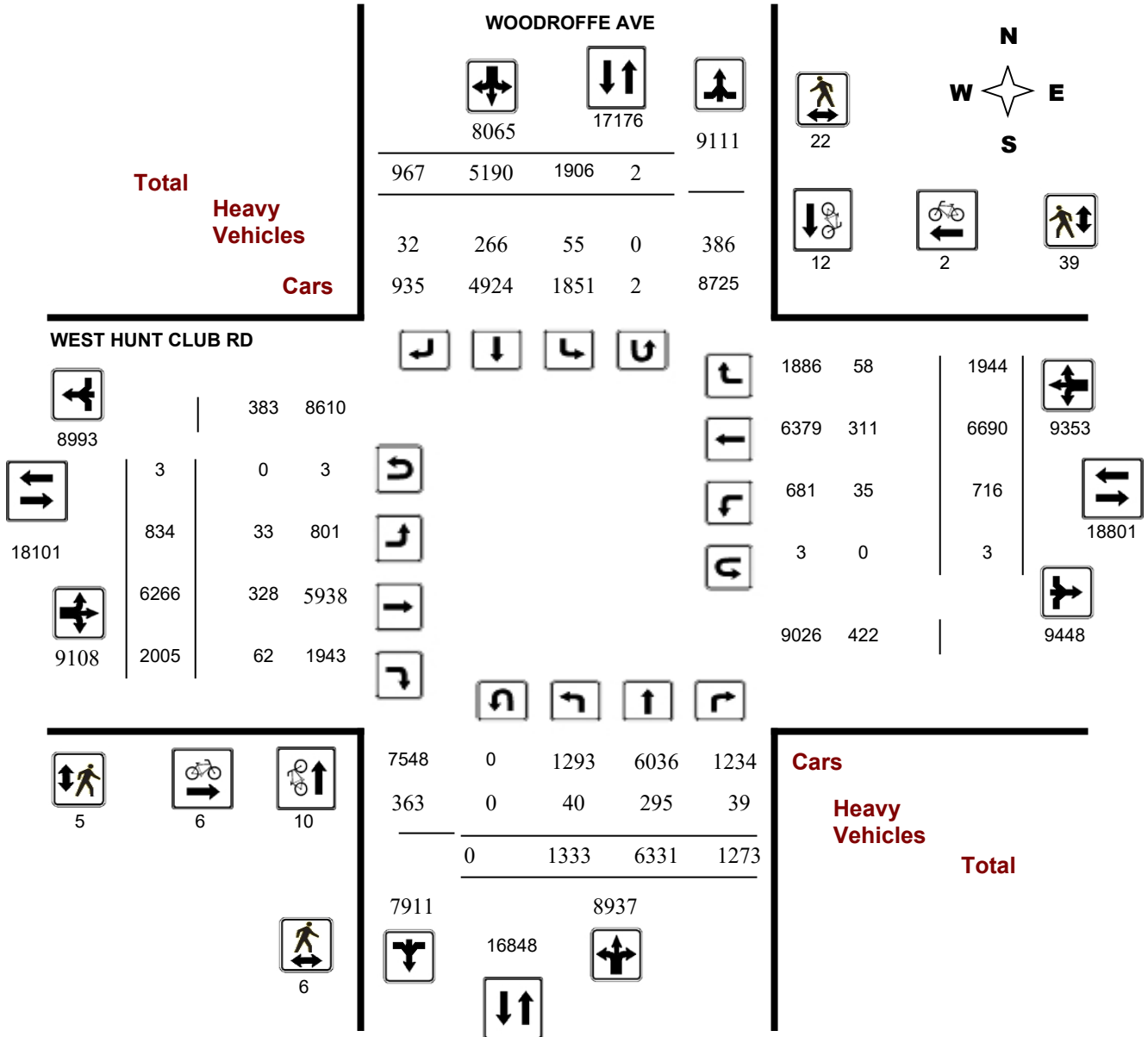
**Survey Date:** Tuesday, October 22, 2019

**WO No:** 38916

**Start Time:** 07:00

**Device:** Miovision

### Full Study Diagram



## Turning Movement Count - Study Results WEST HUNT CLUB RD @ WOODROFFE AVE

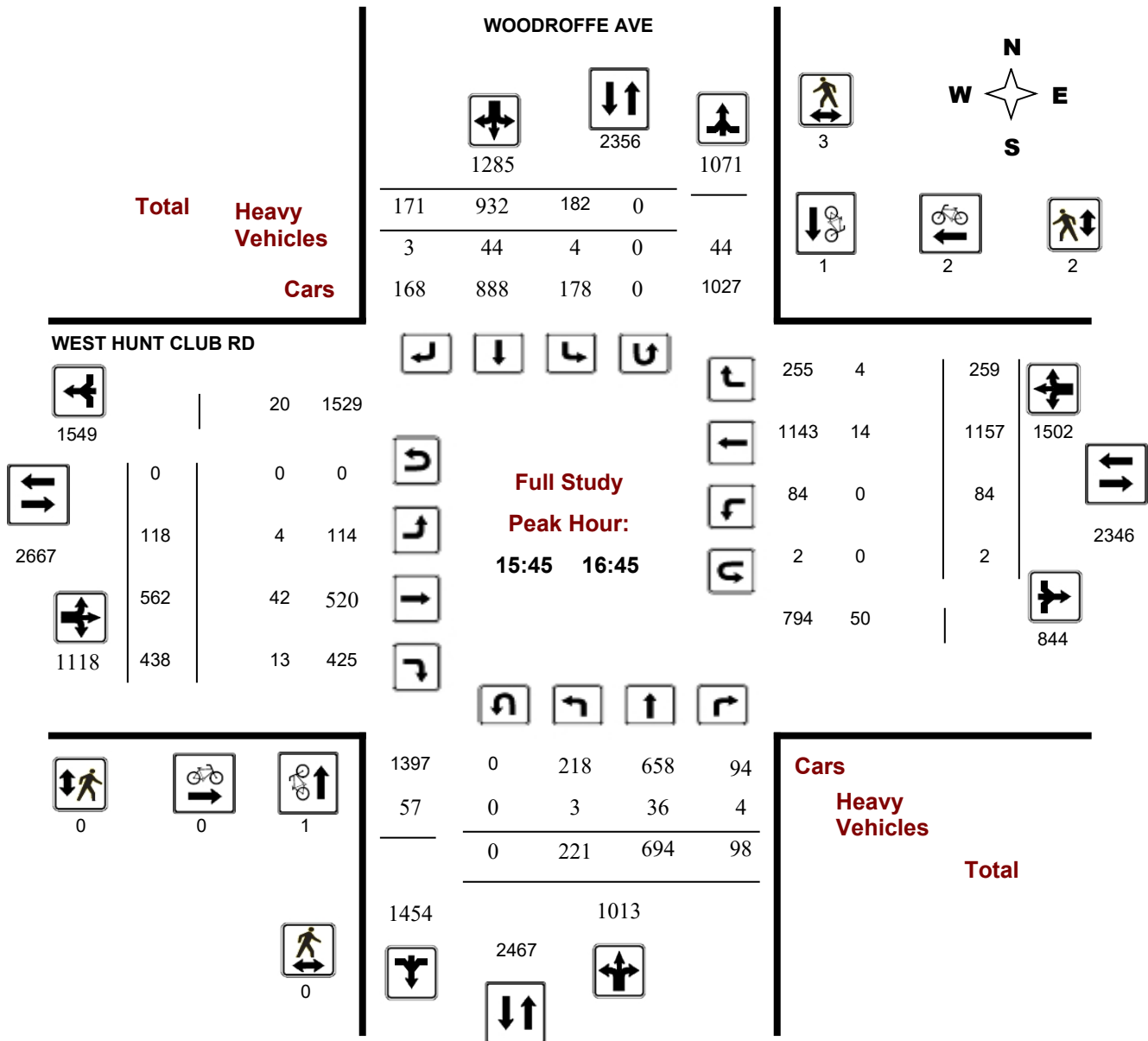
**Survey Date:** Tuesday, October 22, 2019

**WO No:** 38916

**Start Time:** 07:00

**Device:** Miovision

### Full Study Peak Hour Diagram





## Turning Movement Count - Peak Hour Diagram

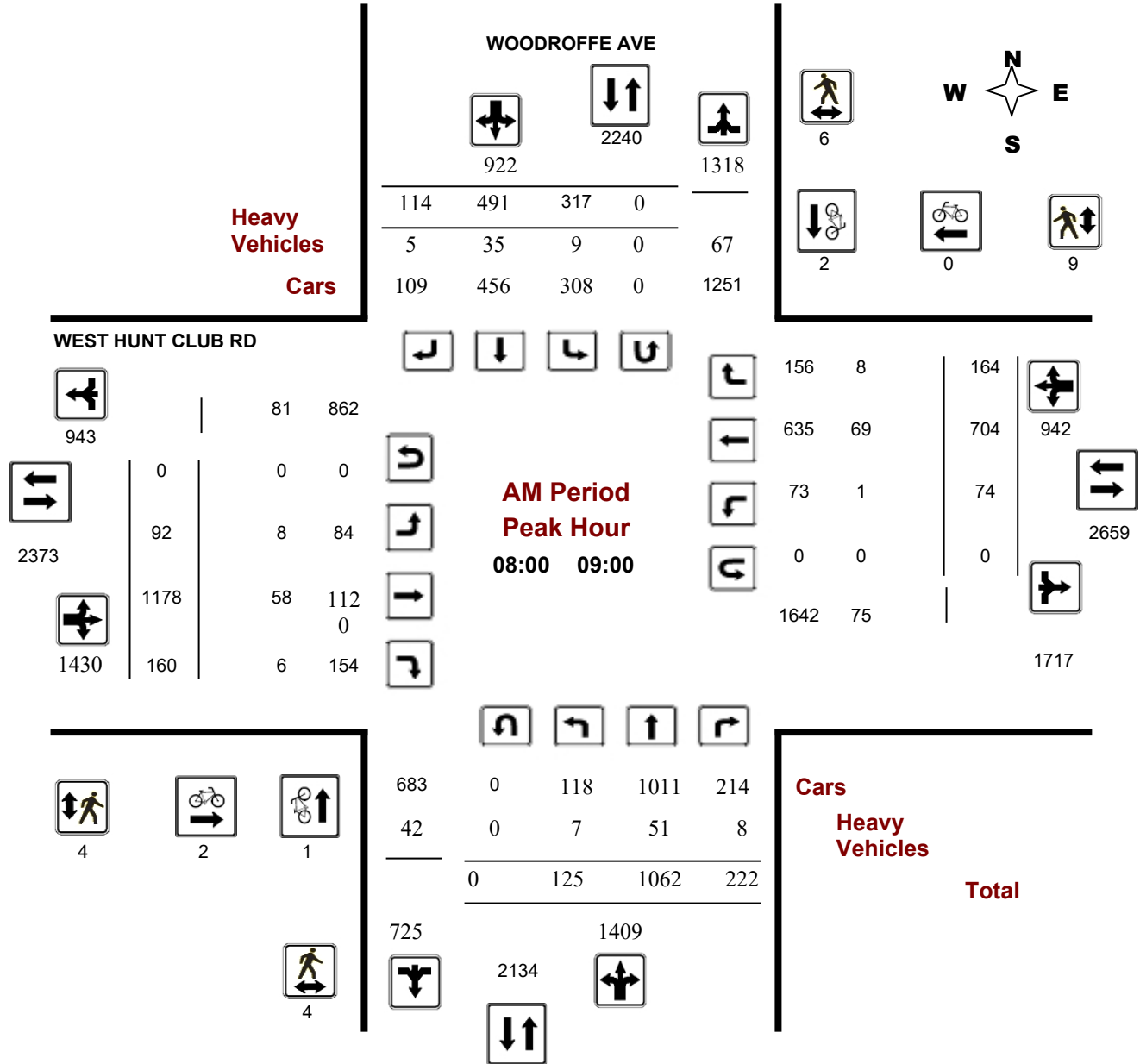
### WEST HUNT CLUB RD @ WOODROFFE AVE

**Survey Date:** Tuesday, October 22, 2019

**Start Time:** 07:00

**WO No:** 38916

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

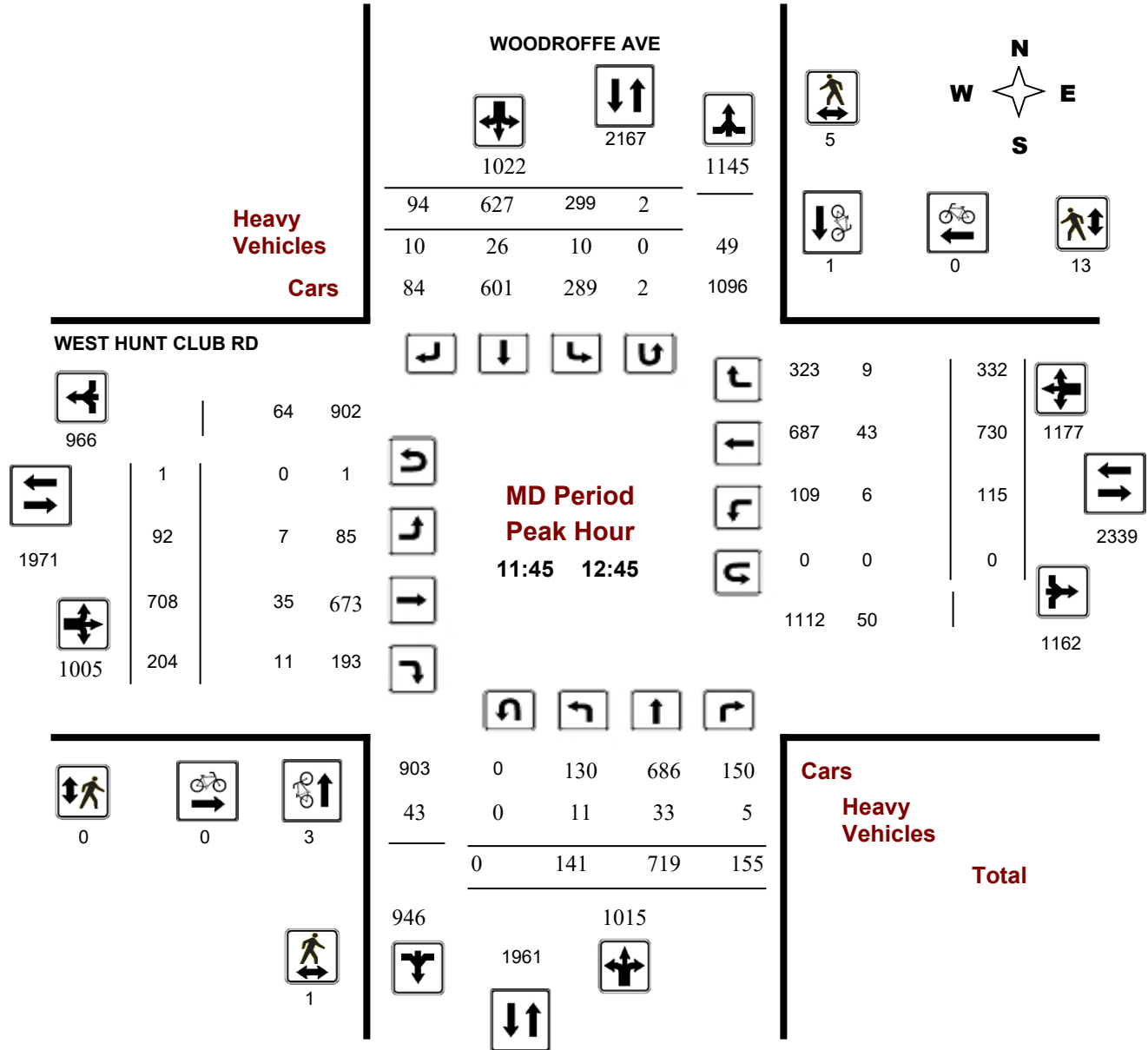
### WEST HUNT CLUB RD @ WOODROFFE AVE

**Survey Date:** Tuesday, October 22, 2019

**Start Time:** 07:00

**WO No:** 38916

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

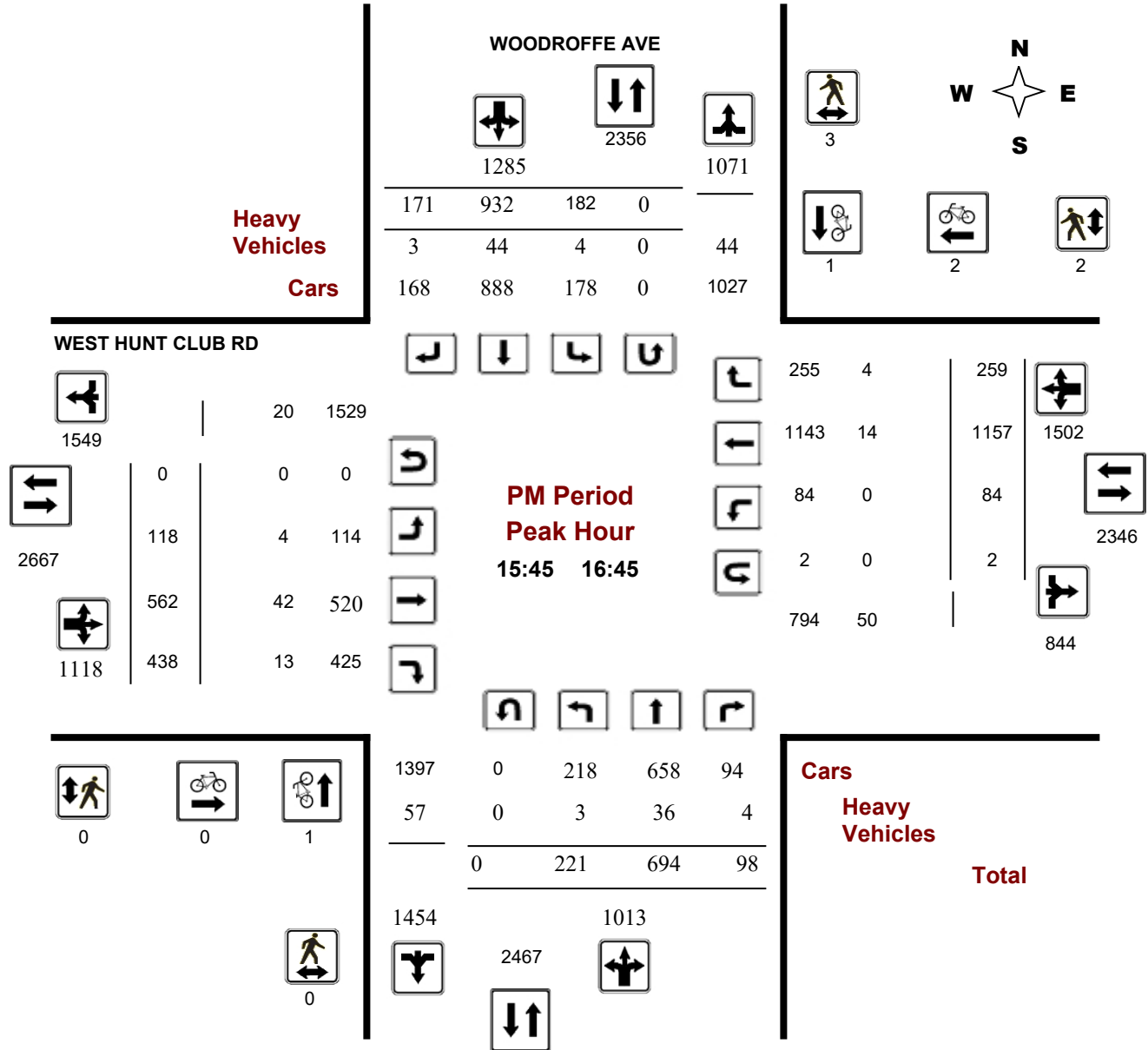
### WEST HUNT CLUB RD @ WOODROFFE AVE

**Survey Date:** Tuesday, October 22, 2019

**Start Time:** 07:00

**WO No:** 38916

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results WEST HUNT CLUB RD @ WOODROFFE AVE

**Survey Date:** Tuesday, October 22, 2019

**WO No:** 38916

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Tuesday, October 22, 2019

**Total Observed U-Turns**

**AADT Factor**

Northbound: 0      Southbound: 2  
Eastbound: 3      Westbound: 3

1.25

**WOODROFFE AVE**

**WEST HUNT CLUB RD**

Period	Northbound					Southbound					Eastbound					Westbound					Grand Total
	LT	ST	RT	NB TOT	STR TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	STR TOT	LT	ST	RT	WB TOT	STR TOT	
07:00 08:00	124	1037	251	1412	2040	210	336	82	628	2040	69	1136	121	1326	2108	53	569	160	782	2108	4148
08:00 09:00	125	1062	222	1409	2331	317	491	114	922	2331	92	1178	160	1430	2372	74	704	164	942	2372	4703
09:00 10:00	128	808	130	1066	1833	251	419	97	767	1833	131	959	179	1269	2172	77	630	196	903	2172	4005
11:30 12:30	153	712	155	1020	2050	297	640	93	1030	2050	89	660	205	954	2140	128	715	343	1186	2140	4190
12:30 13:30	153	617	143	913	1880	316	541	110	967	1880	98	718	150	966	2104	104	754	280	1138	2104	3984
15:00 16:00	212	701	128	1041	2291	203	872	175	1250	2291	97	590	302	989	2526	83	1179	275	1537	2526	4817
16:00 17:00	222	730	103	1055	2364	165	977	167	1309	2364	121	540	443	1104	2537	72	1097	264	1433	2537	4901
17:00 18:00	216	664	141	1021	2211	147	914	129	1190	2211	137	485	445	1067	2496	125	1042	262	1429	2496	4707
<b>Sub Total</b>	1333	6331	1273	8937	17000	1906	5190	967	8063	17000	834	6266	2005	9105	18455	716	6690	1944	9350	18455	35455
<b>U Turns</b>				0	2				2	2				3	3				3	6	8
<b>Total</b>	1333	6331	1273	8937	17002	1906	5190	967	8065	17002	834	6266	2005	9108	18461	716	6690	1944	9353	18461	35463
<b>EQ 12Hr</b>	1853	8800	1769	12422	23633	2649	7214	1344	11210	23633	1159	8710	2787	12660	25661	995	9299	2702	13001	25661	49294
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																	<b>1.39</b>				
<b>AVG 12Hr</b>	1668	7920	1593	11180	21270	2384	6493	1210	10089	21270	1043	7839	2508	11394	23095	896	8369	2432	11701	23095	44365
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																	<b>0.9</b>				
<b>AVG 24Hr</b>	2185	10375	2086	14646	27863	3124	8505	1585	13217	27863	1367	10269	3286	14926	30254	1173	10964	3186	15328	30254	58117
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																	<b>1.31</b>				
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																					



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WEST HUNT CLUB RD @ WOODROFFE AVE

**Survey Date:** Tuesday, October 22, 2019

**WO No:** 38916

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute Increments

#### WOODROFFE AVE

#### WEST HUNT CLUB RD

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	33	239	35	307	57	78	17	152	865	17	310	31	358	11	103	30	144	865	961
07:15 07:30	26	293	45	364	44	79	18	141	983	22	270	30	322	11	136	43	190	983	1017
07:30 07:45	28	255	86	369	51	87	26	164	981	20	297	24	341	12	165	50	227	981	1101
07:45 08:00	37	250	85	372	58	92	21	171	987	10	259	36	305	19	165	37	221	987	1069
08:00 08:15	21	294	64	379	66	121	24	211	1103	15	286	24	325	18	165	41	224	1103	1139
08:15 08:30	33	290	69	392	81	122	29	232	1146	19	270	28	317	23	176	40	239	1146	1180
08:30 08:45	37	241	47	325	87	114	31	232	1059	33	318	55	406	17	190	42	249	1059	1212
08:45 09:00	34	237	42	313	83	134	30	247	1066	25	304	53	382	16	173	41	230	1066	1172
09:00 09:15	34	210	34	278	57	107	24	188	928	31	267	48	346	25	176	41	242	928	1054
09:15 09:30	23	231	29	283	62	91	33	186	935	30	274	42	346	18	171	54	243	935	1058
09:30 09:45	43	197	37	277	72	121	21	214	951	32	211	49	292	15	132	46	194	951	977
09:45 10:00	28	170	30	228	60	100	19	179	829	38	207	40	287	19	151	55	225	829	919
11:30 11:45	41	162	35	238	77	139	31	247	964	28	159	41	228	33	170	76	279	964	992
11:45 12:00	43	169	39	251	78	161	20	261	1053	11	169	53	233	33	194	112	339	1053	1084
12:00 12:15	40	214	49	303	80	177	16	273	1162	20	171	62	253	31	166	82	279	1162	1108
12:15 12:30	29	167	32	228	62	163	26	251	992	30	161	49	241	31	185	73	289	992	1009
12:30 12:45	29	169	35	233	79	126	32	237	921	31	207	40	278	20	185	65	270	921	1018
12:45 13:00	38	152	28	218	70	120	28	218	883	24	178	46	248	31	197	74	302	883	986
13:00 13:15	44	129	36	209	81	151	27	259	909	23	179	34	236	28	191	76	295	909	999
13:15 13:30	42	167	44	253	86	144	23	253	957	20	154	30	204	25	181	65	271	957	981
15:00 15:15	53	173	42	268	57	198	51	306	1120	22	162	59	243	23	278	71	372	1120	1189
15:15 15:30	50	183	37	270	61	226	44	331	1198	21	155	79	255	20	293	68	381	1198	1237
15:30 15:45	55	174	27	256	37	223	37	297	1137	30	131	80	241	15	295	62	372	1137	1166
15:45 16:00	54	171	22	247	48	225	43	316	1166	24	142	84	250	25	313	74	414	1166	1227
16:00 16:15	58	172	21	251	49	215	43	307	1177	32	128	102	262	26	300	72	398	1177	1218
16:15 16:30	57	183	29	269	38	252	38	328	1257	30	153	131	314	21	260	43	324	1257	1235
16:30 16:45	52	168	26	246	47	240	47	334	1223	32	139	121	292	12	284	70	366	1223	1238
16:45 17:00	55	207	27	289	31	270	39	340	1314	27	120	89	236	13	253	79	345	1314	1210
17:00 17:15	46	165	22	233	36	254	43	333	1195	35	127	107	269	19	261	49	329	1195	1164
17:15 17:30	55	185	32	272	37	222	30	289	1224	38	119	115	272	30	274	73	377	1224	1210
17:30 17:45	56	150	36	242	36	220	27	283	1152	26	118	112	256	42	254	77	373	1152	1154
17:45 18:00	59	164	51	274	38	218	29	285	1187	38	121	111	270	34	253	63	350	1187	1179
<b>Total:</b>	<b>1333</b>	<b>6331</b>	<b>1273</b>	<b>8937</b>	<b>1906</b>	<b>5190</b>	<b>967</b>	<b>8065</b>	<b>34024</b>	<b>834</b>	<b>6266</b>	<b>2005</b>	<b>9108</b>	<b>716</b>	<b>6690</b>	<b>1944</b>	<b>9353</b>	<b>34024</b>	<b>35,463</b>

Note: U-Turns are included in Totals.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WEST HUNT CLUB RD @ WOODROFFE AVE

**Survey Date:** Tuesday, October 22, 2019

**WO No:** 38916

**Start Time:** 07:00

**Device:** Miovision

### Full Study Cyclist Volume

#### WOODROFFE AVE

#### WEST HUNT CLUB RD

Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	1	0	1	0	0	0	1
07:45 08:00	1	0	1	1	0	1	2
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	1	0	1	0	0	0	1
08:30 08:45	0	1	1	2	0	2	3
08:45 09:00	0	1	1	0	0	0	1
09:00 09:15	0	0	0	1	0	1	1
09:15 09:30	2	2	4	1	0	1	5
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	1	0	1	1
11:30 11:45	0	1	1	0	0	0	1
11:45 12:00	1	1	2	0	0	0	2
12:00 12:15	1	0	1	0	0	0	1
12:15 12:30	1	0	1	0	0	0	1
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	1	1	0	0	0	1
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	1	0	1	0	0	0	1
15:15 15:30	0	2	2	0	0	0	2
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	1	1	1
16:15 16:30	0	1	1	0	1	1	2
16:30 16:45	1	0	1	0	0	0	1
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	1	1	0	0	0	1
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	1	1	0	0	0	1
<b>Total</b>	<b>10</b>	<b>12</b>	<b>22</b>	<b>6</b>	<b>2</b>	<b>8</b>	<b>30</b>





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WEST HUNT CLUB RD @ WOODROFFE AVE

**Survey Date:** Tuesday, October 22, 2019

**WO No:** 38916

**Start Time:** 07:00

**Device:** Miovision

### Full Study Pedestrian Volume

#### WOODROFFE AVE

#### WEST HUNT CLUB RD

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	3	3	0	0	0	3
08:00 08:15	1	0	1	1	1	2	3
08:15 08:30	0	0	0	0	1	1	1
08:30 08:45	0	2	2	0	3	3	5
08:45 09:00	3	4	7	3	4	7	14
09:00 09:15	0	0	0	0	2	2	2
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	1	0	1	1	0	1	2
11:30 11:45	0	2	2	0	0	0	2
11:45 12:00	0	1	1	0	7	7	8
12:00 12:15	0	1	1	0	5	5	6
12:15 12:30	1	2	3	0	1	1	4
12:30 12:45	0	1	1	0	0	0	1
12:45 13:00	0	0	0	0	1	1	1
13:00 13:15	0	0	0	0	2	2	2
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	1	1	0	1	1	2
15:15 15:30	0	0	0	0	7	7	7
15:30 15:45	0	2	2	0	1	1	3
15:45 16:00	0	1	1	0	0	0	1
16:00 16:15	0	1	1	0	1	1	2
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	1	1	0	1	1	2
16:45 17:00	0	0	0	0	1	1	1
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
<b>Total .....</b>	<b>6</b>	<b>22</b>	<b>28</b>	<b>5</b>	<b>39</b>	<b>44</b>	<b>72</b>



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WEST HUNT CLUB RD @ WOODROFFE AVE

**Survey Date:** Tuesday, October 22, 2019

**WO No:** 38916

**Start Time:** 07:00

**Device:** Miovision

### Full Study Heavy Vehicles

#### WOODROFFE AVE

#### WEST HUNT CLUB RD

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total	
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT				
07:00	07:15	3	12	0	26	1	7	0	25	51	4	11	1	29	3	10	1	26	55	53
07:15	07:30	1	23	0	42	0	10	0	39	81	1	7	1	19	7	9	5	28	47	64
07:30	07:45	1	16	0	27	0	7	1	28	55	0	6	0	26	3	18	4	31	57	56
07:45	08:00	1	15	0	27	0	7	0	27	54	1	15	1	27	3	9	4	31	58	56
08:00	08:15	1	13	1	27	3	12	2	32	59	1	14	0	34	0	16	1	35	69	64
08:15	08:30	0	13	1	24	2	7	0	28	52	2	9	2	31	1	18	4	35	66	59
08:30	08:45	4	9	1	25	3	9	1	26	51	3	18	2	48	0	20	1	43	91	71
08:45	09:00	2	16	5	32	1	7	2	30	62	2	17	2	40	0	15	2	40	80	71
09:00	09:15	1	11	3	25	5	5	0	23	48	0	15	3	31	2	12	2	39	70	59
09:15	09:30	0	8	0	20	3	8	3	25	45	1	16	4	42	0	18	2	39	81	63
09:30	09:45	1	8	0	15	3	3	0	23	38	2	13	2	27	1	9	7	33	60	49
09:45	10:00	2	6	0	18	0	6	0	13	31	0	11	3	26	1	10	1	23	49	40
11:30	11:45	1	5	2	19	3	6	1	17	36	0	9	4	23	1	8	2	25	48	42
11:45	12:00	4	9	1	24	0	8	3	24	48	1	8	1	28	1	11	3	24	52	50
12:00	12:15	1	13	1	28	2	8	1	27	55	1	9	3	28	2	13	2	29	57	56
12:15	12:30	5	5	2	24	3	6	2	23	47	4	5	5	31	1	10	3	24	55	51
12:30	12:45	1	6	1	16	5	4	4	21	37	1	13	2	30	2	9	1	31	61	49
12:45	13:00	1	6	0	15	6	5	2	21	36	1	9	2	27	1	12	1	29	56	46
13:00	13:15	1	7	3	18	2	5	1	20	38	1	14	1	29	1	11	4	35	64	51
13:15	13:30	2	5	0	12	3	3	2	15	27	1	12	0	29	2	12	1	30	59	43
15:00	15:15	2	6	0	16	0	6	1	14	30	0	8	0	24	2	13	1	24	48	39
15:15	15:30	1	7	1	19	3	6	0	16	35	0	3	3	14	1	7	0	15	29	32
15:30	15:45	0	4	3	25	1	16	0	21	46	0	11	2	20	0	7	0	22	42	44
15:45	16:00	1	8	0	16	1	7	0	18	34	1	9	0	14	0	3	1	14	28	31
16:00	16:15	1	7	0	24	0	13	1	22	46	0	10	3	19	0	4	1	15	34	40
16:15	16:30	1	11	4	34	1	12	0	26	60	1	11	6	20	0	1	1	18	38	49
16:30	16:45	0	10	0	26	2	12	2	29	55	2	12	4	26	0	6	1	21	47	51
16:45	17:00	0	12	0	27	1	14	0	27	54	0	3	1	9	0	5	0	9	18	36
17:00	17:15	0	5	0	11	0	5	0	12	23	2	9	1	18	0	6	0	15	33	28
17:15	17:30	0	10	5	37	0	21	0	32	69	0	6	1	9	0	2	1	14	23	46
17:30	17:45	1	4	1	16	1	8	2	15	31	0	10	2	16	0	1	0	13	29	30
17:45	18:00	0	5	4	22	0	13	1	20	42	0	5	0	12	0	6	1	16	28	35
Total:	None	40	295	39	737	55	266	32	739	1476	33	328	62	806	35	311	58	826	1632	1,554



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### WEST HUNT CLUB RD @ WOODROFFE AVE

**Survey Date:** Tuesday, October 22, 2019

**WO No:** 38916

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute U-Turn Total

#### WOODROFFE AVE

#### WEST HUNT CLUB RD

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	1	1
09:45	10:00	0	0	2	0	2
11:30	11:45	0	0	0	0	0
11:45	12:00	0	2	0	0	2
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	1	0	1
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	2	2
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	2	3	3	8

# Traffic Signal Timing

City of Ottawa, Transportation Services Department

## Traffic Signal Operations Unit

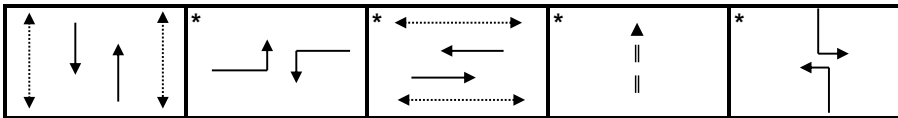
<b>Intersection:</b>	<i>Main:</i> Woodroffe	<i>Side:</i> Meadowlands / Tallwood
<b>Controller:</b>	<b>ATC 3</b>	<b>TSD: 5407</b>
<b>Author:</b>	Dylan Fewer	<b>Date:</b> 26-Mar-2021

### Existing Timing Plans†

	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
<b>Cycle</b>	130	125	130	110	125			
<b>Offset</b>	101	62	12	X	53			
NB Thru	56	47	49	33	47	7	14	3.7+2.3
SB Thru	56	47	49	33	47	7	14	3.7+2.3
EB Left (fp)	14	18	20	19	18	-	-	3.0+4.4
WB Left (fp)	14	18	20	19	18	-	-	3.0+4.4
EB Thru	40	40	40	40	40	7	25	3.0+4.4
WB Thru	40	40	40	40	40	7	25	3.0+4.4
NB Bus	6	6	6	6	6	-	-	0.0+2.0
NB Left (fp)	14	14	15	12	14	-	-	3.7+2.3
SB Left (fp)	14	14	15	12	14	-	-	3.7+2.3

### Phasing Sequence‡

Plan: All



- Notes:**
- 1) In plan 3, the SB Left Turn has a min recall of 5s green
  - 2) For plans 1,2,3 & 5, if the EW pedestrian phase is not actuated, the EW thru phases will force off after 22s
  - 3) For plans 1,3 & 5, all unused time will be allocated to the NS Left Turn phases (no fixed force off)

### Schedule

Weekday		Saturday		Sunday	
Time	Plan	Time	Plan	Time	Plan
0:15	4	0:15	4	0:15	4
6:30	1	8:00	2	8:00	2
9:30	2	10:00	5	22:00	4
15:00	3	22:00	2		
18:30	2	23:00	4		
23:30	4				

### Notes

- †: Time for each direction includes amber and all red intervals  
‡: Start of first phase should be used as reference point for offset  
Asterisk (\*) Indicates actuated phase  
(fp): Fully Protected Left Turn  
◄.....► Pedestrian signal  
==► Transit signal  
Cost is \$59.96 (\$53.06 + HST)

# Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

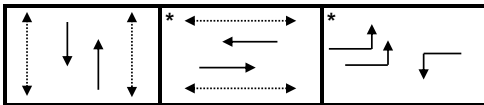
<b>Intersection:</b>	<i>Main:</i> Woodroffe	<i>Side:</i> Knoxdale / Medhurst
<b>Controller:</b>	ATC 3	<b>TSD:</b> 5068
<b>Author:</b>	Dylan Fewer	<b>Date:</b> 26-Mar-2021

## Existing Timing Plans†

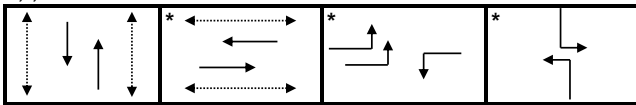
	Plan					Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	Walk	DW	A+R
<b>Cycle</b>	130	125	130	95	125			
<b>Offset</b>	63	120	44	X	120			
NB Thru	56	50	50	38	50	7	17	3.7+2.4
SB Thru	56	50	60	38	50	7	17	3.7+2.4
EB Thru	44	44	42	42	44	7	27	3.0+4.2
WB Thru	44	44	42	42	44	7	27	3.0+4.2
EB Left (fp)	18	17	15	15	17	-	-	3.0+4.2
WB Left (fp)	18	17	15	15	17	-	-	3.0+4.2
NB Left	12	14	13	-	14	-	-	3.7+2.4
SB Left	12	14	23	-	14	-	-	3.7+2.4

## Phasing Sequence‡

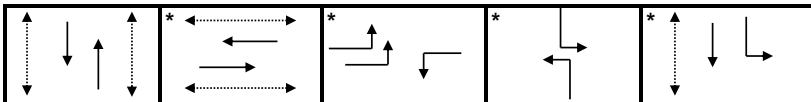
Plan: 4



Plan: 1,2,5



Plan: 3



- Notes:** 1) For plans 3 & 4, if the EW pedestrian phase is not actuated, the EW Thru phases will be forced off 7s early  
 2) For plans 1,2 & 5, if the EW pedestrian phase is not actuated, the EW Thru phases will be forced off 12s early

## Schedule

Weekday		Weekend	
Time	Plan	Time	Plan
0:15	4	0:15	4
6:30	1	7:00	2
9:30	2	8:30	5
15:00	3	18:30	2
18:30	2	22:30	4
23:30	4		

## Notes

- †: Time for each direction includes amber and all red intervals  
 ‡: Start of first phase should be used as reference point for offset  
 Asterisk (\*) Indicates actuated phase  
 (fp): Fully Protected Left Turn  
 ◀.....▶ Pedestrian signal

Cost is \$59.96 (\$53.06 + HST)

# Traffic Signal Timing

City of Ottawa, Transportation Services Department

## Traffic Signal Operations Unit

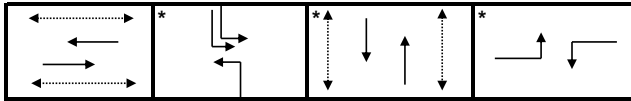
<b>Intersection:</b>	<u>Main:</u> West Hunt Club	<b>Side:</b>	<u>Woodroffe</u>
<b>Controller:</b>	<u>ATC 3</u>	<b>TSD:</b>	<u>6139</u>
<b>Author:</b>	<u>Dylan Fewer</u>	<b>Date:</b>	<u>25-Mar-2021</u>

### Existing Timing Plans†

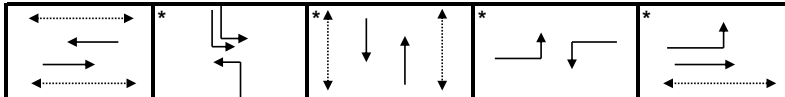
	Plan						Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	Weekend 5	AM Heavy 6	Walk	DW	A+R
<b>Cycle</b>	130	125	130	110	125	130			
<b>Offset</b>	96	14	63	0	14	96			
<b>EB Thru</b>	51	43	45	42	42	45	7	28	4.6+2.5
<b>WB Thru</b>	49	43	52	42	42	43	7	28	4.6+2.5
<b>NB Left (fp)</b>	18	23	21	18	23	17	-	-	3.7+2.9
<b>SB Left (fp)</b>	18	23	21	18	23	17	-	-	3.7+2.9
<b>NB Thru</b>	42	36	40	35	37	50	7	20	3.7+2.9
<b>SB Thru</b>	42	36	40	35	37	50	7	20	3.7+2.9
<b>EB Left (fp)</b>	21	23	17	15	23	20	-	-	4.6+2.4
<b>WB Left (fp)</b>	19	23	24	15	23	18	-	-	4.6+2.4

### Phasing Sequence‡

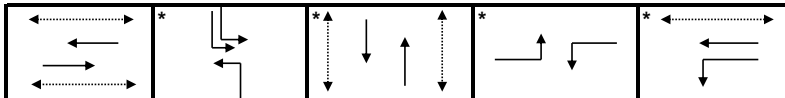
**Plan: 2,4,5**



**Plan: 1,6**



**Plan: 3**



- Notes:** 1) In plan 4, if the NS pedestrian phase is not actuated, the NS Thru phases will force off 8 seconds early  
 2) In all plans, the NS phases have a min recall of 10 seconds green  
 3) In plans, 1,3,4,6, all unused time will be allocated to the coordinated phases (no fixed force off)

### Schedule

Weekday		Weekend	
Time	Plan	Time	Plan
0:15	4	0:15	4
6:30	1	7:00	2
7:15	6	8:30	5
8:30	1	18:30	2
9:30	2	22:30	4
15:00	3		
18:30	2		
22:30	4		

### Notes

- †: Time for each direction includes amber and all red intervals  
 ‡: Start of first phase should be used as reference point for offset  
 Asterisk (\*) Indicates actuated phase  
 (fp): Fully Protected Left Turn  
 ◄-----► Pedestrian signal

Cost is \$59.96 (\$53.06 + HST)



## APPENDIX D – SYNCHRO 10 OUTPUT REPORTS

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2021 Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↘	↘	↗↗	↘	↘	↗↗	↘	↗↗	↗↗	↘
Traffic Volume (vph)	95	1214	165	76	725	169	129	1094	229	327	506	117
Future Volume (vph)	95	1214	165	76	725	169	129	1094	229	327	506	117
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	70.0		25.0	70.0		30.0	60.0		90.0	80.0		40.0
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (m)	30.0			50.0			40.0			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1555	3257	1471	1693	3081	1457	1613	3257	1471	3221	3167	1457
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1551	3257	1446	1692	3081	1430	1609	3257	1434	3208	3167	1429
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			144			144			185			149
Link Speed (k/h)		80			80			60				60
Link Distance (m)		1105.6			937.9			1033.7				620.6
Travel Time (s)		49.8			42.2			62.0				37.2
Confl. Peds. (#/hr)	6		4	4		6	4		9	9		4
Confl. Bikes (#/hr)			1						1			2
Peak Hour Factor	0.88	0.88	0.88	0.95	0.95	0.95	0.90	0.90	0.90	0.88	0.88	0.88
Heavy Vehicles (%)	10%	5%	4%	1%	11%	5%	6%	5%	4%	3%	8%	5%
Adj. Flow (vph)	108	1380	188	80	763	178	143	1216	254	372	575	133
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	1380	188	80	763	178	143	1216	254	372	575	133
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2021 Existing Conditions  
AM Peak Hour

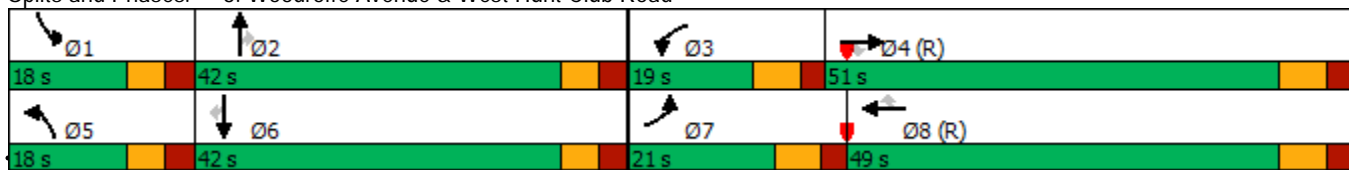


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.0	42.1	42.1	12.0	42.1	42.1	11.6	33.6	33.6	11.6	33.6	33.6
Total Split (s)	21.0	51.0	51.0	19.0	49.0	49.0	18.0	42.0	42.0	18.0	42.0	42.0
Total Split (%)	16.2%	39.2%	39.2%	14.6%	37.7%	37.7%	13.8%	32.3%	32.3%	13.8%	32.3%	32.3%
Maximum Green (s)	14.0	43.9	43.9	12.0	41.9	41.9	11.4	35.4	35.4	11.4	35.4	35.4
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	2.5	2.5	2.4	2.5	2.5	2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.1	7.1	7.0	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		4	4		6	6		4	4		9	9
Act Effct Green (s)	12.6	48.3	48.3	10.4	43.3	43.3	11.4	35.4	35.4	11.4	35.4	35.4
Actuated g/C Ratio	0.10	0.37	0.37	0.08	0.33	0.33	0.09	0.27	0.27	0.09	0.27	0.27
v/c Ratio	0.72	1.14	0.30	0.59	0.74	0.31	1.01	1.37	0.48	1.32	0.67	0.27
Control Delay	82.6	112.0	10.1	75.1	44.1	9.7	137.7	211.7	14.8	201.6	60.7	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.6	112.0	10.1	75.1	44.1	9.7	137.7	211.7	14.8	201.6	60.7	20.3
LOS	F	F	B	E	D	A	F	F	B	F	E	C
Approach Delay		98.6			40.5			174.2			104.3	
Approach LOS		F			D			F			F	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 96 (74%), Referenced to phase 4:EBT and 8:WBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.37  
 Intersection Signal Delay: 111.4  
 Intersection LOS: F  
 Intersection Capacity Utilization 104.4%  
 ICU Level of Service G  
 Analysis Period (min) 15



























Splits and Phases: 3: Woodroffe Avenue & West Hunt Club Road



Baseline

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2021 Existing Conditions  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 							 			 	
Traffic Volume (vph)	460	236	104	105	49	171	30	1192	66	48	712	132
Future Volume (vph)	460	236	104	105	49	171	30	1192	66	48	712	132
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0		30.0	30.0		0.0	60.0		20.0	65.0		65.0
Storage Lanes	2		1	1		0	1		1	1		1
Taper Length (m)	30.0			45.0			50.0			50.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.95		0.98	0.99	0.96		0.99		0.92	0.99		0.94
Frt			0.850		0.884				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	1782	1515	1693	1436	0	1598	3226	1404	1527	3196	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3090	1782	1483	1682	1436	0	1579	3226	1290	1510	3196	1417
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138		104				147			147
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		1079.0			625.4			620.6			978.5	
Travel Time (s)		97.1			56.3			37.2			58.7	
Confl. Peds. (#/hr)	37		8	8		37	13		23	23		13
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.94	0.94	0.94	0.92	0.92	0.92
Heavy Vehicles (%)	2%	1%	1%	1%	7%	6%	7%	6%	9%	12%	7%	2%
Adj. Flow (vph)	511	262	116	119	56	194	32	1268	70	52	774	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	511	262	116	119	250	0	32	1268	70	52	774	143
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2021 Existing Conditions  
AM Peak Hour

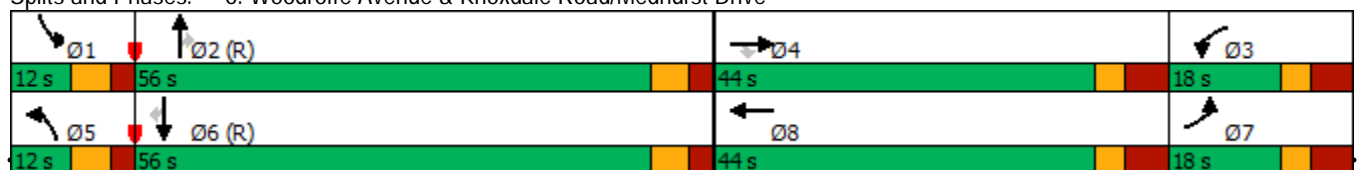


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.2	41.2	41.2	12.2	41.2		11.1	30.1	30.1	11.1	30.1	30.1
Total Split (s)	18.0	44.0	44.0	18.0	44.0		12.0	56.0	56.0	12.0	56.0	56.0
Total Split (%)	13.8%	33.8%	33.8%	13.8%	33.8%		9.2%	43.1%	43.1%	9.2%	43.1%	43.1%
Maximum Green (s)	10.8	36.8	36.8	10.8	36.8		5.9	49.9	49.9	5.9	49.9	49.9
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2	4.2	4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		30	30		8			13	13		20	20
Act Effct Green (s)	26.6	27.9	27.9	19.7	21.0		5.8	52.3	52.3	5.9	54.7	54.7
Actuated g/C Ratio	0.20	0.21	0.21	0.15	0.16		0.04	0.40	0.40	0.05	0.42	0.42
v/c Ratio	0.77	0.68	0.27	0.46	0.79		0.45	0.98	0.12	0.75	0.58	0.21
Control Delay	57.8	55.5	5.3	59.8	46.5		91.1	18.3	0.0	115.1	31.9	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.8	55.5	5.3	59.8	46.5		91.1	18.3	0.0	115.1	31.9	4.6
LOS	E	E	A	E	D		F	B	A	F	C	A
Approach Delay		50.3			50.8			19.1			32.3	
Approach LOS		D			D			B			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 63 (48%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 33.6  
 Intersection LOS: C  
 Intersection Capacity Utilization 97.9%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive



Baseline

Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive

2021 Existing Conditions  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	242	178	90	168	201	310	1519	312	153	664	78
Future Volume (vph)	76	242	178	90	168	201	310	1519	312	153	664	78
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		25.0	50.0		25.0	80.0		70.0	65.0		60.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			30.0			60.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	0.99		0.98	0.99		0.75	0.97		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1541	1800	1500	3190	1748	1417	3317	3226	1530	1487	3196	1430
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1528	1800	1468	3155	1748	1385	3296	3226	1144	1449	3196	1398
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138			162			185			156
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		451.4			534.0			978.5			485.6	
Travel Time (s)		40.6			48.1			58.7			29.1	
Confl. Peds. (#/hr)	9		8	8		9	6		80	80		6
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.94	0.94	0.94	0.90	0.90	0.90	0.95	0.95	0.95	0.90	0.90	0.90
Heavy Vehicles (%)	11%	0%	2%	4%	3%	8%	0%	6%	0%	15%	7%	7%
Adj. Flow (vph)	81	257	189	100	187	223	326	1599	328	170	738	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	257	189	100	187	223	326	1599	328	170	738	87
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive

2021 Existing Conditions  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	22.0	22.0	5.0	22.0	22.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	10.3	56.0	56.0	10.3	56.0	56.0
Total Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	14.0	56.0	56.0	14.0	56.0	56.0
Total Split (%)	11.3%	32.3%	32.3%	11.3%	32.3%	32.3%	11.3%	45.1%	45.1%	11.3%	45.1%	45.1%
Maximum Green (s)	6.6	32.0	32.0	6.6	32.0	32.0	8.7	50.0	50.0	8.7	50.0	50.0
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	4.4	4.4	4.4	4.4	4.4	4.4	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	8.1	8.1	7.4	8.1	8.1	5.3	6.0	6.0	5.3	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		8	8		9	9		6	6		60	60
Act Effct Green (s)	6.6	25.0	25.0	6.6	25.0	25.0	15.7	50.0	50.0	15.7	50.0	50.0
Actuated g/C Ratio	0.05	0.20	0.20	0.05	0.20	0.20	0.13	0.40	0.40	0.13	0.40	0.40
v/c Ratio	1.00	0.71	0.47	0.59	0.53	0.55	0.78	1.23	0.57	0.90	0.57	0.13
Control Delay	158.7	57.1	16.6	72.2	49.6	18.0	66.3	144.4	16.3	98.3	31.0	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	158.7	57.1	16.6	72.2	49.6	18.0	66.3	144.4	16.3	98.3	31.0	0.4
LOS	F	E	B	E	D	B	E	F	B	F	C	A
Approach Delay		58.2			40.2			114.5			39.8	
Approach LOS		E			D			F			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 124.1  
 Actuated Cycle Length: 124.1  
 Offset: 101 (81%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.23  
 Intersection Signal Delay: 81.4  
 Intersection LOS: F  
 Intersection Capacity Utilization 100.5%  
 ICU Level of Service G  
 Analysis Period (min) 15

Splits and Phases: 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive



Baseline



Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2021 Existing Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	579	451	89	1192	267	228	715	101	188	960	176
Future Volume (vph)	122	579	451	89	1192	267	228	715	101	188	960	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		25.0	70.0		30.0	60.0		90.0	80.0		40.0
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (m)	30.0			50.0			40.0			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.98			0.98	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3343	1568	1805	3574	1583	1787	3438	1553	3433	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1735	3343	1568	1805	3574	1557	1787	3438	1529	3427	3438	1563
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			238			144			149			149
Link Speed (k/h)		80			80			60				60
Link Distance (m)		1105.6			937.9			1033.7				620.6
Travel Time (s)		49.8			42.2			62.0				37.2
Confl. Peds. (#/hr)	3						3		2	2		
Confl. Bikes (#/hr)							2		1			1
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.94	0.94	0.94	0.96	0.96	0.96
Heavy Vehicles (%)	4%	8%	3%	0%	1%	2%	1%	5%	4%	2%	5%	2%
Adj. Flow (vph)	137	651	507	98	1310	293	243	761	107	196	1000	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	137	651	507	98	1310	293	243	761	107	196	1000	183
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2021 Existing Conditions  
PM Peak Hour

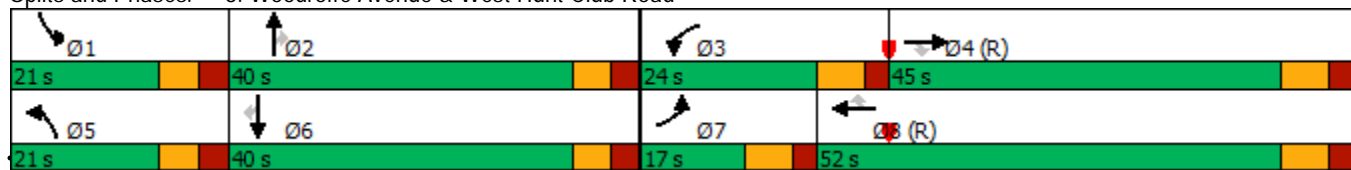


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.0	42.1	42.1	12.0	42.1	42.1	11.6	33.6	33.6	11.6	33.6	33.6
Total Split (s)	17.0	45.0	45.0	24.0	52.0	52.0	21.0	40.0	40.0	21.0	40.0	40.0
Total Split (%)	13.1%	34.6%	34.6%	18.5%	40.0%	40.0%	16.2%	30.8%	30.8%	16.2%	30.8%	30.8%
Maximum Green (s)	10.0	37.9	37.9	17.0	44.9	44.9	14.4	33.4	33.4	14.4	33.4	33.4
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	2.5	2.5	2.4	2.5	2.5	2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.1	7.1	7.0	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		3	3		0	0		2	2
Act Effct Green (s)	10.0	42.5	42.5	12.4	44.9	44.9	14.4	35.4	35.4	12.4	33.4	33.4
Actuated g/C Ratio	0.08	0.33	0.33	0.10	0.35	0.35	0.11	0.27	0.27	0.10	0.26	0.26
v/c Ratio	1.03	0.60	0.75	0.57	1.06	0.46	1.23	0.81	0.20	0.60	1.13	0.36
Control Delay	144.1	39.9	28.8	68.7	84.6	18.9	188.1	52.5	2.8	31.3	111.4	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	144.1	39.9	28.8	68.7	84.6	18.9	188.1	52.5	2.8	31.3	111.4	21.9
LOS	F	D	C	E	F	B	F	D	A	C	F	C
Approach Delay		46.6			72.4			77.4			88.1	
Approach LOS		D			E			E			F	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 63 (48%), Referenced to phase 4:EBT and 8:WBT, Start of Green  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.23  
 Intersection Signal Delay: 71.3  
 Intersection LOS: E  
 Intersection Capacity Utilization 101.6%  
 ICU Level of Service G  
 Analysis Period (min) 15
































Splits and Phases: 3: Woodroffe Avenue & West Hunt Club Road



Baseline

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2021 Existing Conditions  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 	 			 		 	 	 
Traffic Volume (vph)	174	49	63	107	178	114	92	930	96	168	1379	526
Future Volume (vph)	174	49	63	107	178	114	92	930	96	168	1379	526
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		30.0	30.0		0.0	60.0		20.0	65.0		65.0
Storage Lanes	2		1	1		0	1		1	1		1
Taper Length (m)	30.0			45.0			50.0			50.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.96		0.95	0.97	0.98		0.99		0.94	0.99		0.88
Fr <sub>t</sub>			0.850		0.942				0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1863	1568	1736	1733	0	1805	3406	1599	1736	3438	1583
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3317	1863	1493	1676	1733	0	1780	3406	1508	1719	3438	1391
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		24				198			313
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		1079.0			625.4			620.6			978.5	
Travel Time (s)		97.1			56.3			37.2			58.7	
Confl. Peds. (#/hr)	36		32	32		36	38		14	14		38
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.90	0.90	0.90	0.87	0.87	0.87	0.94	0.94	0.94	0.96	0.96	0.96
Heavy Vehicles (%)	1%	2%	3%	4%	0%	3%	0%	6%	1%	4%	5%	2%
Adj. Flow (vph)	193	54	70	123	205	131	98	989	102	175	1436	548
Shared Lane Traffic (%)												
Lane Group Flow (vph)	193	54	70	123	336	0	98	989	102	175	1436	548
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2021 Existing Conditions  
PM Peak Hour

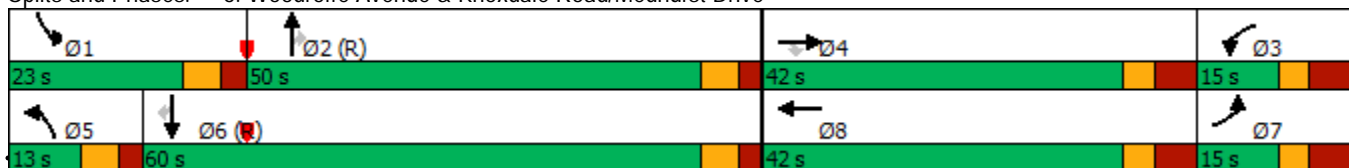


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.2	41.2	41.2	12.2	41.2		11.1	30.1	30.1	11.1	30.1	30.1
Total Split (s)	15.0	42.0	42.0	15.0	42.0		13.0	50.0	50.0	23.0	60.0	60.0
Total Split (%)	11.5%	32.3%	32.3%	11.5%	32.3%		10.0%	38.5%	38.5%	17.7%	46.2%	46.2%
Maximum Green (s)	7.8	34.8	34.8	7.8	34.8		6.9	43.9	43.9	16.9	53.9	53.9
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2	4.2	4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		30	30		25			35	35		14	14
Act Effct Green (s)	9.7	25.2	25.2	17.9	29.5		9.1	48.3	48.3	15.9	55.1	55.1
Actuated g/C Ratio	0.07	0.19	0.19	0.14	0.23		0.07	0.37	0.37	0.12	0.42	0.42
v/c Ratio	0.75	0.15	0.16	0.52	0.82		0.78	0.78	0.15	0.83	0.99	0.71
Control Delay	77.2	40.4	0.8	63.7	59.8		106.9	23.4	0.6	85.2	58.0	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.2	40.4	0.8	63.7	59.8		106.9	23.4	0.6	85.2	58.0	18.6
LOS	E	D	A	E	E		F	C	A	F	E	B
Approach Delay		54.1			60.8			28.3			50.2	
Approach LOS		D			E			C			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 44 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 135  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.99  
 Intersection Signal Delay: 45.4  
 Intersection LOS: D  
 Intersection Capacity Utilization 95.4%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive



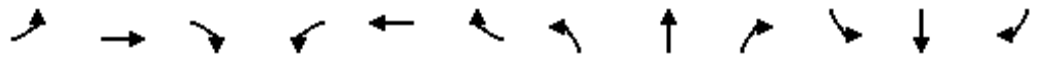
Baseline

Lanes, Volumes, Timings

2021 Existing Conditions

9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	206	330	316	248	289	186	959	173	214	1310	144
Future Volume (vph)	90	206	330	316	248	289	186	959	173	214	1310	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	50.0		25.0	80.0		70.0	65.0		60.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			30.0			60.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.96	0.96		0.97	1.00		0.88	0.98		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	1863	1599	3467	1900	1509	3433	3406	1599	1671	3406	1568
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1654	1863	1529	3337	1900	1469	3424	3406	1413	1630	3406	1533
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			167			188			156			156
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		451.4			534.0			978.5			485.6	
Travel Time (s)		40.6			48.1			58.7			29.1	
Confl. Peds. (#/hr)	13		27	27		13	6		33	33		6
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	0.86	0.86	0.86	0.94	0.94	0.94	0.97	0.97	0.97	0.96	0.96	0.96
Heavy Vehicles (%)	8%	2%	1%	1%	0%	7%	2%	6%	1%	8%	6%	3%
Adj. Flow (vph)	105	240	384	336	264	307	192	989	178	223	1365	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	105	240	384	336	264	307	192	989	178	223	1365	150
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2022 Background Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	990	134	62	599	138	105	892	186	265	415	96
Future Volume (vph)	78	990	134	62	599	138	105	892	186	265	415	96
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	70.0		25.0	70.0		30.0	60.0		90.0	80.0		40.0
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (m)	30.0			50.0			40.0			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	1.00		0.97	0.99		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	3196	1457	1676	3000	1443	1598	3226	1457	3190	3109	1443
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1522	3196	1432	1675	3000	1417	1593	3226	1420	3170	3109	1415
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			144			144			149			149
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		1105.6			937.9			1033.7			620.6	
Travel Time (s)		49.8			42.2			62.0			37.2	
Confl. Peds. (#/hr)	6		4	4		6	4		9	9		4
Confl. Bikes (#/hr)			1						1			2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	7%	5%	2%	14%	6%	7%	6%	5%	4%	10%	6%
Adj. Flow (vph)	78	990	134	62	599	138	105	892	186	265	415	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	990	134	62	599	138	105	892	186	265	415	96
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2022 Background Conditions  
AM Peak Hour

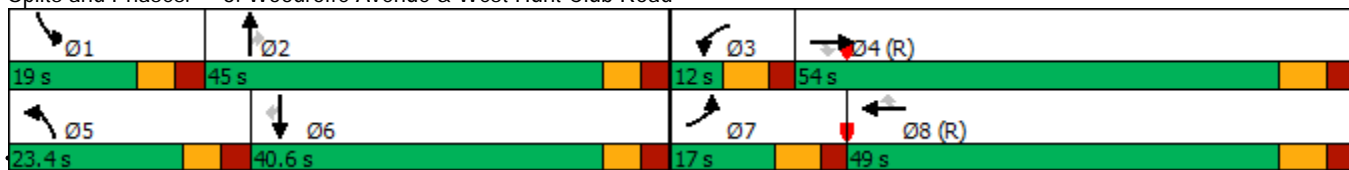


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.0	42.1	42.1	12.0	42.1	42.1	11.6	33.6	33.6	11.6	33.6	33.6
Total Split (s)	17.0	54.0	54.0	12.0	49.0	49.0	23.4	45.0	45.0	19.0	40.6	40.6
Total Split (%)	13.1%	41.5%	41.5%	9.2%	37.7%	37.7%	18.0%	34.6%	34.6%	14.6%	31.2%	31.2%
Maximum Green (s)	10.0	46.9	46.9	5.0	41.9	41.9	16.8	38.4	38.4	12.4	34.0	34.0
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	2.5	2.5	2.4	2.5	2.5	2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.1	7.1	7.0	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		4	4		6	6		4	4		9	9
Act Effct Green (s)	9.5	46.9	46.9	5.0	42.4	42.4	13.3	38.4	38.4	12.4	37.5	37.5
Actuated g/C Ratio	0.07	0.36	0.36	0.04	0.33	0.33	0.10	0.30	0.30	0.10	0.29	0.29
v/c Ratio	0.70	0.86	0.22	0.97	0.61	0.25	0.64	0.94	0.35	0.87	0.46	0.19
Control Delay	90.3	47.3	4.6	165.6	40.3	5.6	73.5	62.2	10.9	77.9	48.8	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.3	47.3	4.6	165.6	40.3	5.6	73.5	62.2	10.9	77.9	48.8	17.9
LOS	F	D	A	F	D	A	E	E	B	E	D	B
Approach Delay		45.3			44.0			55.2			54.9	
Approach LOS		D			D			E			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 96 (74%), Referenced to phase 4:EBT and 8:WBT, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.97  
 Intersection Signal Delay: 49.9  
 Intersection LOS: D  
 Intersection Capacity Utilization 90.5%  
 ICU Level of Service E  
 Analysis Period (min) 15


































Splits and Phases: 3: Woodroffe Avenue & West Hunt Club Road



Baseline

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2022 Background Conditions  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 	 		 	 	 	 	 	 
Traffic Volume (vph)	372	191	84	84	40	140	25	975	54	40	583	107
Future Volume (vph)	372	191	84	84	40	140	25	975	54	40	583	107
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0		30.0	30.0		0.0	60.0		20.0	65.0		65.0
Storage Lanes	2		1	1		0	1		1	1		1
Taper Length (m)	30.0			45.0			50.0			50.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.94		0.98	0.99	0.96		0.98		0.92	0.98		0.94
Frt			0.850		0.883				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	1765	1515	1693	1418	0	1569	3167	1378	1487	3167	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3073	1765	1483	1681	1418	0	1544	3167	1267	1463	3167	1417
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138		123				147			147
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		1079.0			625.4			620.6			978.5	
Travel Time (s)		97.1			56.3			37.2			58.7	
Confl. Peds. (#/hr)	37		8	8		37	13		23	23		13
Confl. Bikes (#/hr)												1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	1%	1%	9%	7%	9%	8%	11%	15%	8%	2%
Adj. Flow (vph)	372	191	84	84	40	140	25	975	54	40	583	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	372	191	84	84	180	0	25	975	54	40	583	107
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive

2022 Background Conditions

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	194	144	74	137	165	250	1241	252	127	544	64
Future Volume (vph)	64	194	144	74	137	165	250	1241	252	127	544	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		25.0	50.0		25.0	80.0		70.0	65.0		60.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			30.0			60.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	0.99		0.98	0.99		0.74	0.96		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1500	1782	1485	3159	1731	1391	3317	3196	1530	1449	3138	1404
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1487	1782	1454	3122	1731	1360	3290	3196	1139	1387	3138	1372
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138			161			183			156
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		451.4			534.0			978.5			485.6	
Travel Time (s)		40.6			48.1			58.7			29.1	
Confl. Peds. (#/hr)	9		8	8		9	6		81	81		6
Confl. Bikes (#/hr)									1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	1%	3%	5%	4%	10%	0%	7%	0%	18%	9%	9%
Adj. Flow (vph)	64	194	144	74	137	165	250	1241	252	127	544	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	194	144	74	137	165	250	1241	252	127	544	64
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive

2022 Background Conditions  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	22.0	22.0	5.0	22.0	22.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	10.3	56.0	56.0	10.3	56.0	56.0
Total Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	13.0	56.0	56.0	14.0	57.0	57.0
Total Split (%)	11.3%	32.3%	32.3%	11.3%	32.3%	32.3%	10.5%	45.1%	45.1%	11.3%	45.9%	45.9%
Maximum Green (s)	6.6	32.0	32.0	6.6	32.0	32.0	7.7	50.0	50.0	8.7	51.0	51.0
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	4.4	4.4	4.4	4.4	4.4	4.4	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	8.1	8.1	7.4	8.1	8.1	5.3	6.0	6.0	5.3	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		8	8		9	9		6	6		60	60
Act Effct Green (s)	6.6	26.8	26.8	6.5	24.0	24.0	15.7	50.0	50.0	16.7	51.0	51.0
Actuated g/C Ratio	0.05	0.22	0.22	0.05	0.19	0.19	0.13	0.40	0.40	0.13	0.41	0.41
v/c Ratio	0.81	0.51	0.34	0.45	0.41	0.42	0.60	0.96	0.44	0.65	0.42	0.10
Control Delay	116.4	48.6	9.5	66.0	47.1	9.8	58.1	54.4	10.4	67.9	27.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.4	48.6	9.5	66.0	47.1	9.8	58.1	54.4	10.4	67.9	27.3	0.3
LOS	F	D	A	E	D	A	E	D	B	E	C	A
Approach Delay		45.4			34.4			48.6			32.0	
Approach LOS		D			C			D			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 124.1  
 Actuated Cycle Length: 124.1  
 Offset: 101 (81%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 125  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 42.8  
 Intersection LOS: D  
 Intersection Capacity Utilization 90.6%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive



Baseline

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2022 Background Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	475	366	71	963	216	184	584	82	152	783	143
Future Volume (vph)	99	475	366	71	963	216	184	584	82	152	783	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		25.0	70.0		30.0	60.0		90.0	80.0		40.0
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (m)	30.0			50.0			40.0			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.98			0.98	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3282	1553	1805	3539	1583	1770	3374	1538	3400	3406	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1734	3282	1553	1805	3539	1557	1770	3374	1514	3392	3406	1563
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			240			200			149			204
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		1105.6			937.9			1033.7			620.6	
Travel Time (s)		49.8			42.2			62.0			37.2	
Confl. Peds. (#/hr)	3						3		2	2		
Confl. Bikes (#/hr)							2		1			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	10%	4%	0%	2%	2%	2%	7%	5%	3%	6%	2%
Adj. Flow (vph)	99	475	366	71	963	216	184	584	82	152	783	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	99	475	366	71	963	216	184	584	82	152	783	143
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2022 Background Conditions  
PM Peak Hour

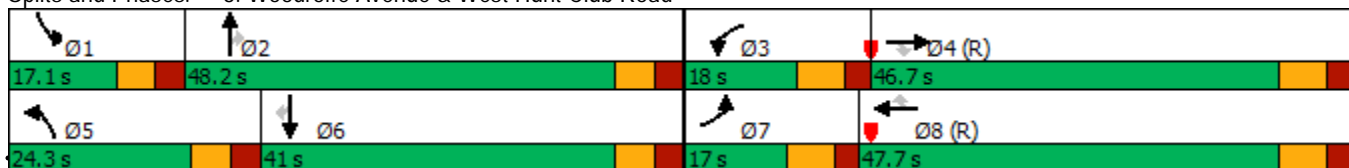


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.0	42.1	42.1	12.0	42.1	42.1	11.6	33.6	33.6	11.6	33.6	33.6
Total Split (s)	17.0	46.7	46.7	18.0	47.7	47.7	24.3	48.2	48.2	17.1	41.0	41.0
Total Split (%)	13.1%	35.9%	35.9%	13.8%	36.7%	36.7%	18.7%	37.1%	37.1%	13.2%	31.5%	31.5%
Maximum Green (s)	10.0	39.6	39.6	11.0	40.6	40.6	17.7	41.6	41.6	10.5	34.4	34.4
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	2.5	2.5	2.4	2.5	2.5	2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.1	7.1	7.0	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		3	3		0	0		2	2
Act Effct Green (s)	10.0	46.3	46.3	9.5	43.2	43.2	16.5	39.6	39.6	9.9	33.0	33.0
Actuated g/C Ratio	0.08	0.36	0.36	0.07	0.33	0.33	0.13	0.30	0.30	0.08	0.25	0.25
v/c Ratio	0.74	0.41	0.52	0.54	0.82	0.33	0.82	0.57	0.15	0.59	0.91	0.26
Control Delay	90.4	34.8	15.2	72.9	47.3	7.1	82.9	40.1	0.5	39.6	68.7	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.4	34.8	15.2	72.9	47.3	7.1	82.9	40.1	0.5	39.6	68.7	15.9
LOS	F	C	B	E	D	A	F	D	A	D	E	B
Approach Delay		33.1			41.8			45.6			57.6	
Approach LOS		C			D			D			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 63 (48%), Referenced to phase 4:EBT and 8:WBT, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 44.7  
 Intersection LOS: D  
 Intersection Capacity Utilization 89.2%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 3: Woodroffe Avenue & West Hunt Club Road




































Baseline



Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2022 Background Conditions  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 	 		 	 	 	 	 	 
Traffic Volume (vph)	140	40	51	87	143	92	74	760	78	137	1124	426
Future Volume (vph)	140	40	51	87	143	92	74	760	78	137	1124	426
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		30.0	30.0		0.0	60.0		20.0	65.0		65.0
Storage Lanes	2		1	1		0	1		1	1		1
Taper Length (m)	30.0			45.0			50.0			50.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.95		0.95	0.96	0.98		0.98		0.94	0.99		0.88
Frt			0.850		0.941				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1845	1553	1719	1724	0	1805	3343	1599	1719	3406	1568
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3263	1845	1477	1657	1724	0	1766	3343	1508	1696	3406	1377
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138		25				147			298
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		1079.0			625.4			620.6			978.5	
Travel Time (s)		97.1			56.3			37.2			58.7	
Confl. Peds. (#/hr)	36		33	33		36	38		14	14		38
Confl. Bikes (#/hr)												1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	3%	4%	5%	0%	4%	0%	8%	1%	5%	6%	3%
Adj. Flow (vph)	140	40	51	87	143	92	74	760	78	137	1124	426
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	40	51	87	235	0	74	760	78	137	1124	426
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2022 Background Conditions  
PM Peak Hour

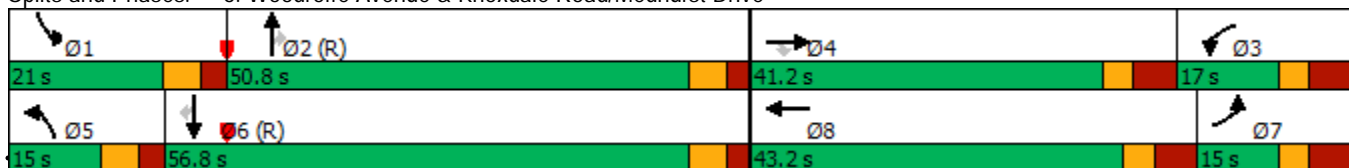


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.2	41.2	41.2	12.2	41.2		11.1	30.1	30.1	11.1	30.1	30.1
Total Split (s)	15.0	41.2	41.2	17.0	43.2		15.0	50.8	50.8	21.0	56.8	56.8
Total Split (%)	11.5%	31.7%	31.7%	13.1%	33.2%		11.5%	39.1%	39.1%	16.2%	43.7%	43.7%
Maximum Green (s)	7.8	34.0	34.0	9.8	36.0		8.9	44.7	44.7	14.9	50.7	50.7
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2	4.2	4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		30	30		25			35	35		14	14
Act Effct Green (s)	9.4	25.2	25.2	14.7	26.7		8.5	53.6	53.6	13.7	61.4	61.4
Actuated g/C Ratio	0.07	0.19	0.19	0.11	0.21		0.07	0.41	0.41	0.11	0.47	0.47
v/c Ratio	0.57	0.11	0.13	0.45	0.63		0.63	0.55	0.11	0.76	0.70	0.53
Control Delay	67.7	39.4	0.7	64.7	48.2		109.7	17.3	1.1	81.9	33.0	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.7	39.4	0.7	64.7	48.2		109.7	17.3	1.1	81.9	33.0	11.2
LOS	E	D	A	E	D		F	B	A	F	C	B
Approach Delay		48.0			52.6			23.4			31.5	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 44 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 105  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 32.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 85.7%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive



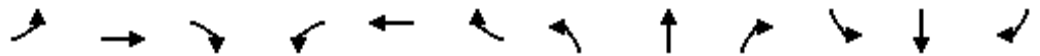
Baseline

Lanes, Volumes, Timings

2022 Background Conditions

9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	166	266	255	200	237	151	783	140	176	1072	117
Future Volume (vph)	74	166	266	255	200	237	151	783	140	176	1072	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	50.0		25.0	80.0		70.0	65.0		60.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			30.0			60.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.96	0.96		0.97	0.99		0.88	0.97		0.97
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	1863	1599	3467	1900	1482	3400	3374	1583	1641	3343	1553
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1622	1863	1529	3323	1900	1442	3382	3374	1394	1585	3343	1513
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			179			191			156			156
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		451.4			534.0			978.5			485.6	
Travel Time (s)		40.6			48.1			58.7			29.1	
Confl. Peds. (#/hr)	13		27	27		13	8		34	34		8
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	2%	1%	1%	0%	9%	3%	7%	2%	10%	8%	4%
Adj. Flow (vph)	74	166	266	255	200	237	151	783	140	176	1072	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	166	266	255	200	237	151	783	140	176	1072	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive

2022 Background Conditions  
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	22.0	22.0	5.0	22.0	22.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	10.3	49.0	49.0	10.3	49.0	49.0
Total Split (s)	20.0	40.1	40.1	20.0	40.1	40.1	15.0	49.0	49.0	15.0	49.0	49.0
Total Split (%)	16.1%	32.3%	32.3%	16.1%	32.3%	32.3%	12.1%	39.5%	39.5%	12.1%	39.5%	39.5%
Maximum Green (s)	12.6	32.0	32.0	12.6	32.0	32.0	9.7	43.0	43.0	9.7	43.0	43.0
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	4.4	4.4	4.4	4.4	4.4	4.4	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	8.1	8.1	7.4	8.1	8.1	5.3	6.0	6.0	5.3	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		25	25		30	30		8	8		13	13
Act Effct Green (s)	10.4	28.0	28.0	12.2	32.6	32.6	9.3	43.0	43.0	14.1	47.8	47.8
Actuated g/C Ratio	0.08	0.23	0.23	0.10	0.26	0.26	0.07	0.35	0.35	0.11	0.39	0.39
v/c Ratio	0.54	0.40	0.55	0.75	0.40	0.46	0.59	0.67	0.24	0.95	0.83	0.17
Control Delay	68.7	42.9	18.0	68.6	41.1	12.0	65.6	37.9	4.3	108.6	42.5	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.7	42.9	18.0	68.6	41.1	12.0	65.6	37.9	4.3	108.6	42.5	2.2
LOS	E	D	B	E	D	B	E	D	A	F	D	A
Approach Delay		33.6			41.3			37.4			47.5	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 124.1  
 Actuated Cycle Length: 124.1  
 Offset: 12 (10%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 41.4  
 Intersection LOS: D  
 Intersection Capacity Utilization 86.8%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive



Baseline

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2027 Background Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	1067	144	66	645	148	113	961	200	286	447	103
Future Volume (vph)	84	1067	144	66	645	148	113	961	200	286	447	103
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	70.0		25.0	70.0		30.0	60.0		90.0	80.0		40.0
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (m)	30.0			50.0			40.0			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	1.00		0.97	0.99		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	3196	1457	1676	3000	1443	1598	3226	1457	3190	3109	1443
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1522	3196	1431	1674	3000	1415	1592	3226	1418	3170	3109	1413
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			144			144			149			149
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		1105.6			937.9			1033.7			620.6	
Travel Time (s)		49.8			42.2			62.0			37.2	
Confl. Peds. (#/hr)	7		5	5		7	5		10	10		5
Confl. Bikes (#/hr)			1						1			2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	7%	5%	2%	14%	6%	7%	6%	5%	4%	10%	6%
Adj. Flow (vph)	84	1067	144	66	645	148	113	961	200	286	447	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	1067	144	66	645	148	113	961	200	286	447	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2027 Background Conditions  
AM Peak Hour

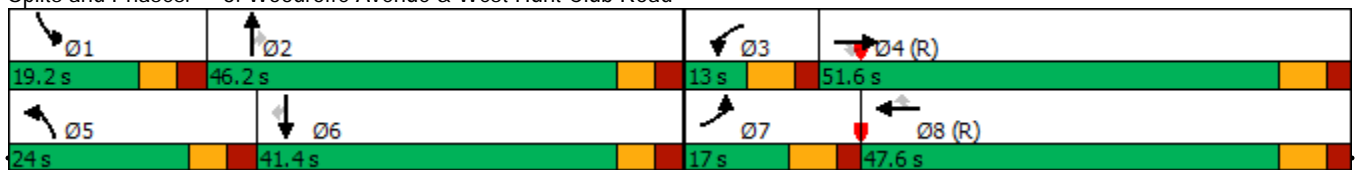


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.0	42.1	42.1	12.0	42.1	42.1	11.6	33.6	33.6	11.6	33.6	33.6
Total Split (s)	17.0	51.6	51.6	13.0	47.6	47.6	24.0	46.2	46.2	19.2	41.4	41.4
Total Split (%)	13.1%	39.7%	39.7%	10.0%	36.6%	36.6%	18.5%	35.5%	35.5%	14.8%	31.8%	31.8%
Maximum Green (s)	10.0	44.5	44.5	6.0	40.5	40.5	17.4	39.6	39.6	12.6	34.8	34.8
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	2.5	2.5	2.4	2.5	2.5	2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.1	7.1	7.0	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		4	4		6	6		4	4		9	9
Act Effct Green (s)	9.6	44.5	44.5	6.0	40.9	40.9	13.9	39.6	39.6	12.6	38.3	38.3
Actuated g/C Ratio	0.07	0.34	0.34	0.05	0.31	0.31	0.11	0.30	0.30	0.10	0.29	0.29
v/c Ratio	0.75	0.98	0.25	0.86	0.68	0.27	0.66	0.98	0.37	0.93	0.49	0.20
Control Delay	95.6	64.2	5.7	129.4	43.4	6.9	74.0	68.8	12.3	83.9	50.1	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.6	64.2	5.7	129.4	43.4	6.9	74.0	68.8	12.3	83.9	50.1	18.5
LOS	F	E	A	F	D	A	E	E	B	F	D	B
Approach Delay		59.7			43.7			60.4			57.8	
Approach LOS		E			D			E			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 96 (74%), Referenced to phase 4:EBT and 8:WBT, Start of Green  
 Natural Cycle: 120  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 56.3  
 Intersection LOS: E  
 Intersection Capacity Utilization 94.7%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Woodroffe Avenue & West Hunt Club Road


























Baseline

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2027 Background Conditions

AM Peak Hour

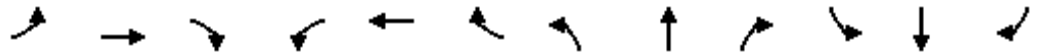
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	401	206	90	91	43	151	27	1050	58	43	628	115
Future Volume (vph)	401	206	90	91	43	151	27	1050	58	43	628	115
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0		30.0	30.0		0.0	60.0		20.0	65.0		65.0
Storage Lanes	2		1	1		0	1		1	1		1
Taper Length (m)	30.0			45.0			50.0			50.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.94		0.98	0.99	0.96		0.98		0.91	0.98		0.94
Frt			0.850		0.883				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	1765	1515	1693	1414	0	1569	3167	1378	1487	3167	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3062	1765	1481	1680	1414	0	1544	3167	1259	1464	3167	1413
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138		102				147			147
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		1079.0			625.4			620.6			978.5	
Travel Time (s)		97.1			56.3			37.2			58.7	
Confl. Peds. (#/hr)	40		9	9		40	14		25	25		14
Confl. Bikes (#/hr)												1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	1%	1%	9%	7%	9%	8%	11%	15%	8%	2%
Adj. Flow (vph)	401	206	90	91	43	151	27	1050	58	43	628	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	401	206	90	91	194	0	27	1050	58	43	628	115
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2027 Background Conditions

AM Peak Hour

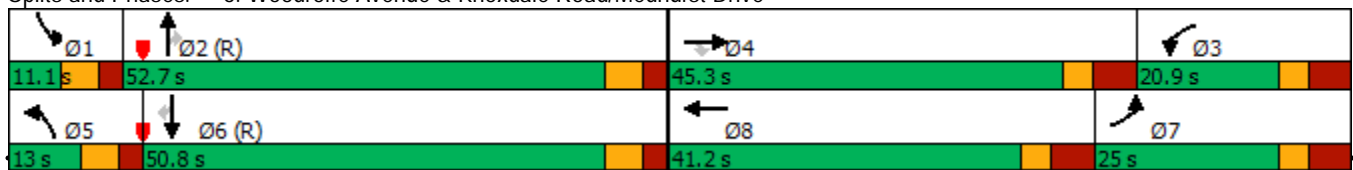


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.2	41.2	41.2	12.2	41.2		11.1	30.1	30.1	11.1	30.1	30.1
Total Split (s)	25.0	45.3	45.3	20.9	41.2		13.0	52.7	52.7	11.1	50.8	50.8
Total Split (%)	19.2%	34.8%	34.8%	16.1%	31.7%		10.0%	40.5%	40.5%	8.5%	39.1%	39.1%
Maximum Green (s)	17.8	38.1	38.1	13.7	34.0		6.9	46.6	46.6	5.0	44.7	44.7
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2	4.2	4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		30	30		8			13	13		20	20
Act Effct Green (s)	23.4	26.6	26.6	15.0	18.1		7.1	56.6	56.6	7.7	59.6	59.6
Actuated g/C Ratio	0.18	0.20	0.20	0.12	0.14		0.05	0.44	0.44	0.06	0.46	0.46
v/c Ratio	0.69	0.57	0.22	0.47	0.68		0.32	0.76	0.09	0.49	0.43	0.16
Control Delay	56.2	51.4	2.5	62.2	35.8		87.9	13.6	0.2	77.5	28.2	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.2	51.4	2.5	62.2	35.8		87.9	13.6	0.2	77.5	28.2	2.5
LOS	E	D	A	E	D		F	B	A	E	C	A
Approach Delay		47.8			44.2			14.7			27.2	
Approach LOS		D			D			B			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 63 (48%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 28.9  
 Intersection LOS: C  
 Intersection Capacity Utilization 91.7%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive



Baseline

Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive

2027 Background Conditions  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	211	155	79	147	178	269	1337	271	137	586	69
Future Volume (vph)	68	211	155	79	147	178	269	1337	271	137	586	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		25.0	50.0		25.0	80.0		70.0	65.0		60.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			30.0			60.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	0.99		0.98	0.99		0.73	0.96		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1500	1782	1485	3159	1731	1391	3317	3196	1530	1449	3138	1404
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1487	1782	1454	3123	1731	1360	3291	3196	1113	1395	3138	1372
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138			138			190			156
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		451.4			534.0			978.5			485.6	
Travel Time (s)		40.6			48.1			58.7			29.1	
Confl. Peds. (#/hr)	9		8	8		9	6		87	81		6
Confl. Bikes (#/hr)									1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	1%	3%	5%	4%	10%	0%	7%	0%	18%	9%	9%
Adj. Flow (vph)	68	211	155	79	147	178	269	1337	271	137	586	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	211	155	79	147	178	269	1337	271	137	586	69
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2027 Background Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑	↗	↘↗	↑↑	↗
Traffic Volume (vph)	106	512	395	77	1038	232	198	629	89	164	843	154
Future Volume (vph)	106	512	395	77	1038	232	198	629	89	164	843	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		25.0	70.0		30.0	60.0		90.0	80.0		40.0
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (m)	30.0			50.0			40.0			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.98			0.98	1.00		0.99
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3282	1553	1805	3539	1583	1770	3374	1538	3400	3406	1583
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1734	3282	1553	1805	3539	1557	1770	3374	1514	3393	3406	1563
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			253			144			149			149
Link Speed (k/h)		80			80			60				60
Link Distance (m)		1105.6			937.9			1033.7				620.6
Travel Time (s)		49.8			42.2			62.0				37.2
Confl. Peds. (#/hr)	3						3		2	2		
Confl. Bikes (#/hr)							2		1			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	10%	4%	0%	2%	2%	2%	7%	5%	3%	6%	2%
Adj. Flow (vph)	106	512	395	77	1038	232	198	629	89	164	843	154
Shared Lane Traffic (%)												
Lane Group Flow (vph)	106	512	395	77	1038	232	198	629	89	164	843	154
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2027 Background Conditions  
PM Peak Hour

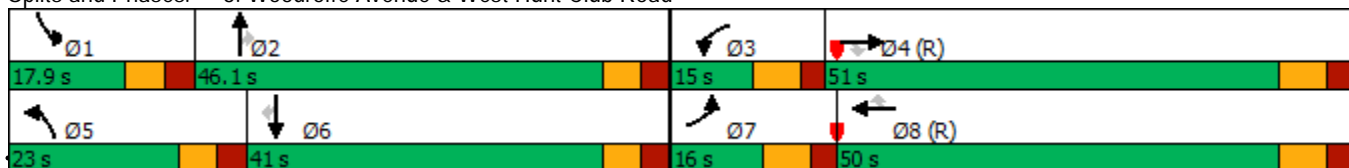


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.0	42.1	42.1	12.0	42.1	42.1	11.6	33.6	33.6	11.6	33.6	33.6
Total Split (s)	16.0	51.0	51.0	15.0	50.0	50.0	23.0	46.1	46.1	17.9	41.0	41.0
Total Split (%)	12.3%	39.2%	39.2%	11.5%	38.5%	38.5%	17.7%	35.5%	35.5%	13.8%	31.5%	31.5%
Maximum Green (s)	9.0	43.9	43.9	8.0	42.9	42.9	16.4	39.5	39.5	11.3	34.4	34.4
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	2.5	2.5	2.4	2.5	2.5	2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.1	7.1	7.0	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		3	3		0	0		2	2
Act Effct Green (s)	9.2	44.7	44.7	7.8	43.3	43.3	16.1	39.6	39.6	10.5	34.0	34.0
Actuated g/C Ratio	0.07	0.34	0.34	0.06	0.33	0.33	0.12	0.30	0.30	0.08	0.26	0.26
v/c Ratio	0.86	0.45	0.56	0.71	0.88	0.38	0.90	0.61	0.16	0.60	0.95	0.30
Control Delay	109.9	35.0	15.4	92.6	50.9	14.5	96.2	41.7	0.9	35.5	73.2	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.9	35.0	15.4	92.6	50.9	14.5	96.2	41.7	0.9	35.5	73.2	23.2
LOS	F	C	B	F	D	B	F	D	A	D	E	C
Approach Delay		35.2			47.0			49.5			61.3	
Approach LOS		D			D			D			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 63 (48%), Referenced to phase 4:EBT and 8:WBT, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 48.6  
 Intersection LOS: D  
 Intersection Capacity Utilization 92.1%  
 ICU Level of Service F  
 Analysis Period (min) 15



























Splits and Phases: 3: Woodroffe Avenue & West Hunt Club Road



Baseline

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

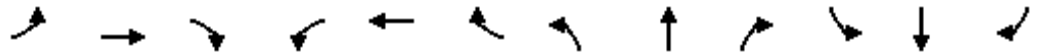
2027 Background Conditions  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 							 			 	
Traffic Volume (vph)	151	43	55	94	154	100	80	819	84	148	1211	459
Future Volume (vph)	151	43	55	94	154	100	80	819	84	148	1211	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		30.0	30.0		0.0	60.0		20.0	65.0		65.0
Storage Lanes	2		1	1		0	1		1	1		1
Taper Length (m)	30.0			45.0			50.0			50.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.95		0.95	0.96	0.98		0.98		0.94	0.99		0.87
Frt			0.850		0.941				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1845	1553	1719	1721	0	1805	3343	1599	1719	3406	1568
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3253	1845	1473	1654	1721	0	1768	3343	1503	1697	3406	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		25				198			302
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		1079.0			625.4			620.6			978.5	
Travel Time (s)		97.1			56.3			37.2			58.7	
Confl. Peds. (#/hr)	39		35	35		39	41		15	15		41
Confl. Bikes (#/hr)												1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	3%	4%	5%	0%	4%	0%	8%	1%	5%	6%	3%
Adj. Flow (vph)	151	43	55	94	154	100	80	819	84	148	1211	459
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	43	55	94	254	0	80	819	84	148	1211	459
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2027 Background Conditions

PM Peak Hour

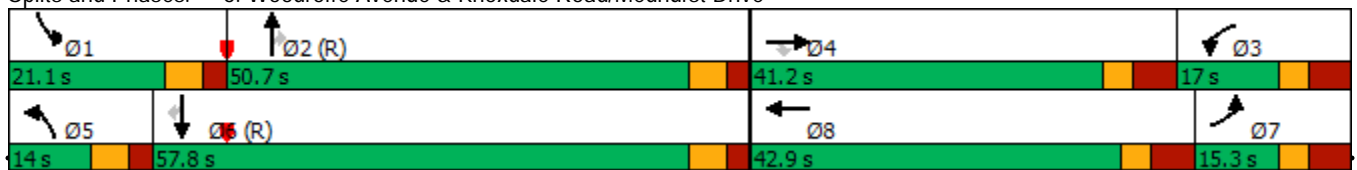


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.2	41.2	41.2	12.2	41.2		11.1	30.1	30.1	11.1	30.1	30.1
Total Split (s)	15.3	41.2	41.2	17.0	42.9		14.0	50.7	50.7	21.1	57.8	57.8
Total Split (%)	11.8%	31.7%	31.7%	13.1%	33.0%		10.8%	39.0%	39.0%	16.2%	44.5%	44.5%
Maximum Green (s)	8.1	34.0	34.0	9.8	35.7		7.9	44.6	44.6	15.0	51.7	51.7
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2	4.2	4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		30	30		25			35	35		14	14
Act Effct Green (s)	9.5	25.2	25.2	15.4	27.2		8.2	52.6	52.6	14.1	58.4	58.4
Actuated g/C Ratio	0.07	0.19	0.19	0.12	0.21		0.06	0.40	0.40	0.11	0.45	0.45
v/c Ratio	0.60	0.12	0.13	0.46	0.67		0.70	0.61	0.12	0.80	0.79	0.59
Control Delay	68.9	39.5	0.6	64.5	50.1		109.7	20.5	0.5	85.5	36.9	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.9	39.5	0.6	64.5	50.1		109.7	20.5	0.5	85.5	36.9	13.1
LOS	E	D	A	E	D		F	C	A	F	D	B
Approach Delay		48.7			54.0			26.0			34.9	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 44 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 35.3  
 Intersection LOS: D  
 Intersection Capacity Utilization 89.2%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive



Baseline

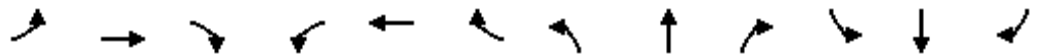


Lanes, Volumes, Timings

2027 Background Conditions

9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	179	287	274	215	255	163	843	151	189	1155	126
Future Volume (vph)	80	179	287	274	215	255	163	843	151	189	1155	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	50.0		25.0	80.0		70.0	65.0		60.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			30.0			60.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.96		0.97	1.00		0.87	0.97		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	1863	1599	3467	1900	1482	3400	3374	1583	1641	3343	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1621	1863	1526	3315	1900	1440	3384	3374	1380	1585	3343	1513
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			177			191			156			156
Link Speed (k/h)		40			40			60				60
Link Distance (m)		451.4			534.0			978.5				485.6
Travel Time (s)		40.6			48.1			58.7				29.1
Confl. Peds. (#/hr)	14		29	29		14	8		37	37		8
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	2%	1%	1%	0%	9%	3%	7%	2%	10%	8%	4%
Adj. Flow (vph)	80	179	287	274	215	255	163	843	151	189	1155	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	179	287	274	215	255	163	843	151	189	1155	126
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												

Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive

2027 Background Conditions  
 PM Peak Hour

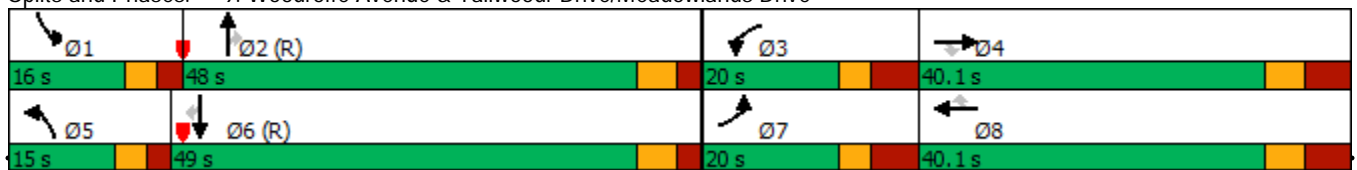


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	22.0	22.0	5.0	22.0	22.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	10.3	48.0	48.0	10.3	49.0	49.0
Total Split (s)	20.0	40.1	40.1	20.0	40.1	40.1	15.0	48.0	48.0	16.0	49.0	49.0
Total Split (%)	16.1%	32.3%	32.3%	16.1%	32.3%	32.3%	12.1%	38.7%	38.7%	12.9%	39.5%	39.5%
Maximum Green (s)	12.6	32.0	32.0	12.6	32.0	32.0	9.7	42.0	42.0	10.7	43.0	43.0
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	4.4	4.4	4.4	4.4	4.4	4.4	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	8.1	8.1	7.4	8.1	8.1	5.3	6.0	6.0	5.3	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		25	25		30	30		8	8		13	13
Act Effct Green (s)	10.6	28.0	28.0	12.4	32.6	32.6	9.4	42.0	42.0	14.9	47.5	47.5
Actuated g/C Ratio	0.09	0.23	0.23	0.10	0.26	0.26	0.08	0.34	0.34	0.12	0.38	0.38
v/c Ratio	0.58	0.43	0.60	0.79	0.43	0.49	0.63	0.74	0.26	0.96	0.90	0.19
Control Delay	70.4	43.6	20.9	71.8	41.8	14.3	67.1	40.9	5.3	109.3	47.9	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.4	43.6	20.9	71.8	41.8	14.3	67.1	40.9	5.3	109.3	47.9	2.8
LOS	E	D	C	E	D	B	E	D	A	F	D	A
Approach Delay		35.6			43.4			40.0			51.9	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 124.1  
 Actuated Cycle Length: 124.1  
 Offset: 12 (10%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 125  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 44.5  
 Intersection LOS: D  
 Intersection Capacity Utilization 90.2%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive



Baseline

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2022 Total Traffic Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	990	134	62	599	141	105	912	186	271	425	98
Future Volume (vph)	80	990	134	62	599	141	105	912	186	271	425	98
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	70.0		25.0	70.0		30.0	60.0		90.0	80.0		40.0
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (m)	30.0			50.0			40.0			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	1.00		0.97	0.99		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	3196	1457	1676	3000	1443	1598	3226	1457	3190	3109	1443
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1522	3196	1432	1675	3000	1417	1593	3226	1420	3170	3109	1415
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			144			144			149			149
Link Speed (k/h)		80			80			60				60
Link Distance (m)		1105.6			937.9			1033.7				620.6
Travel Time (s)		49.8			42.2			62.0				37.2
Confl. Peds. (#/hr)	6		4	4		6	4		9	9		4
Confl. Bikes (#/hr)			1						1			2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	7%	5%	2%	14%	6%	7%	6%	5%	4%	10%	6%
Adj. Flow (vph)	80	990	134	62	599	141	105	912	186	271	425	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	990	134	62	599	141	105	912	186	271	425	98
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												

Lanes, Volumes, Timings  
 3: Woodroffe Avenue & West Hunt Club Road

2022 Total Traffic Conditions  
 AM Peak Hour

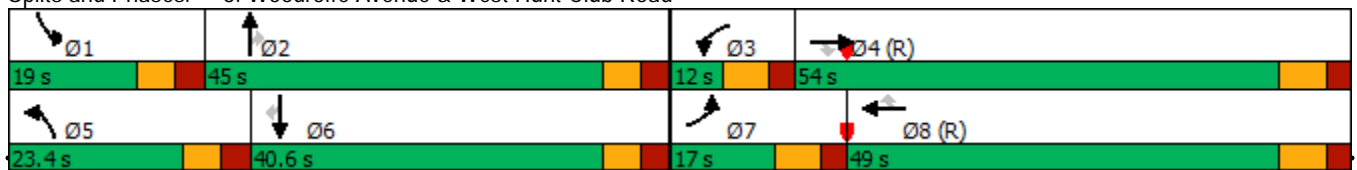


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.0	42.1	42.1	12.0	42.1	42.1	11.6	33.6	33.6	11.6	33.6	33.6
Total Split (s)	17.0	54.0	54.0	12.0	49.0	49.0	23.4	45.0	45.0	19.0	40.6	40.6
Total Split (%)	13.1%	41.5%	41.5%	9.2%	37.7%	37.7%	18.0%	34.6%	34.6%	14.6%	31.2%	31.2%
Maximum Green (s)	10.0	46.9	46.9	5.0	41.9	41.9	16.8	38.4	38.4	12.4	34.0	34.0
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	2.5	2.5	2.4	2.5	2.5	2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.1	7.1	7.0	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		4	4		6	6		4	4		9	9
Act Effct Green (s)	9.5	46.9	46.9	5.0	42.4	42.4	13.3	38.4	38.4	12.4	37.5	37.5
Actuated g/C Ratio	0.07	0.36	0.36	0.04	0.33	0.33	0.10	0.30	0.30	0.10	0.29	0.29
v/c Ratio	0.72	0.86	0.22	0.97	0.61	0.25	0.64	0.96	0.35	0.89	0.47	0.19
Control Delay	91.8	47.3	4.6	165.6	40.3	5.9	73.5	65.8	10.9	82.1	47.7	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.8	47.3	4.6	165.6	40.3	5.9	73.5	65.8	10.9	82.1	47.7	16.1
LOS	F	D	A	F	D	A	E	E	B	F	D	B
Approach Delay		45.5			43.9			58.0			55.5	
Approach LOS		D			D			E			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 96 (74%), Referenced to phase 4:EBT and 8:WBT, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.97  
 Intersection Signal Delay: 50.9  
 Intersection LOS: D  
 Intersection Capacity Utilization 91.4%  
 ICU Level of Service F  
 Analysis Period (min) 15



























Splits and Phases: 3: Woodroffe Avenue & West Hunt Club Road



Baseline

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2022 Total Traffic Conditions  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 							 			 	
Traffic Volume (vph)	380	201	80	139	50	133	24	1000	55	95	550	102
Future Volume (vph)	380	201	80	139	50	133	24	1000	55	95	550	102
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0		30.0	30.0		0.0	60.0		20.0	65.0		65.0
Storage Lanes	2		1	1		0	1		1	1		1
Taper Length (m)	30.0			45.0			50.0			50.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.95		0.98	0.99	0.96		0.98		0.92	0.98		0.94
Frt			0.850		0.891				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	1765	1515	1693	1433	0	1569	3167	1378	1487	3167	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3074	1765	1483	1681	1433	0	1543	3167	1267	1464	3167	1417
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138		100				147			147
Link Speed (k/h)		40			40			60				60
Link Distance (m)		1079.0			94.9			620.6				65.6
Travel Time (s)		97.1			8.5			37.2				3.9
Confl. Peds. (#/hr)	37		8	8		37	13		23	23		13
Confl. Bikes (#/hr)												1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	1%	1%	9%	7%	9%	8%	11%	15%	8%	2%
Adj. Flow (vph)	380	201	80	139	50	133	24	1000	55	95	550	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	380	201	80	139	183	0	24	1000	55	95	550	102
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2022 Total Traffic Conditions  
AM Peak Hour

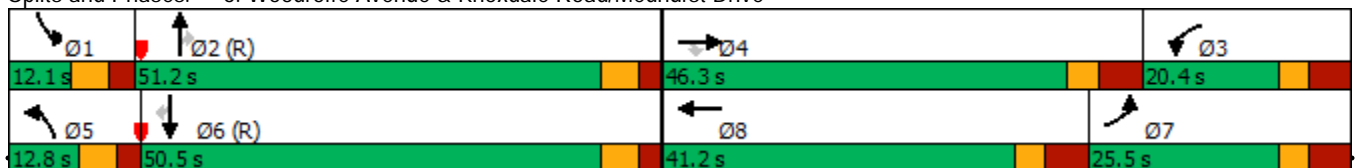


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.2	41.2	41.2	12.2	41.2		11.1	30.1	30.1	11.1	30.1	30.1
Total Split (s)	25.5	46.3	46.3	20.4	41.2		12.8	51.2	51.2	12.1	50.5	50.5
Total Split (%)	19.6%	35.6%	35.6%	15.7%	31.7%		9.8%	39.4%	39.4%	9.3%	38.8%	38.8%
Maximum Green (s)	18.3	39.1	39.1	13.2	34.0		6.7	45.1	45.1	6.0	44.4	44.4
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2	4.2	4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		30	30		8			13	13		20	20
Act Effct Green (s)	25.3	26.5	26.5	16.6	17.7		6.5	48.1	48.1	12.2	58.6	58.6
Actuated g/C Ratio	0.19	0.20	0.20	0.13	0.14		0.05	0.37	0.37	0.09	0.45	0.45
v/c Ratio	0.60	0.56	0.19	0.64	0.65		0.31	0.85	0.10	0.68	0.39	0.14
Control Delay	51.9	51.1	1.2	68.0	33.8		90.0	17.1	0.2	82.1	28.3	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.9	51.1	1.2	68.0	33.8		90.0	17.1	0.2	82.1	28.3	1.7
LOS	D	D	A	E	C		F	B	A	F	C	A
Approach Delay		45.5			48.5			17.8			31.5	
Approach LOS		D			D			B			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 63 (48%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 125  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 31.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 92.4%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive



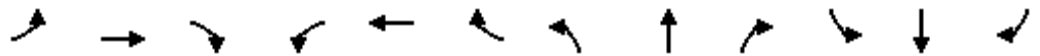
Baseline

Lanes, Volumes, Timings

2022 Total Traffic Conditions

9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	194	146	77	137	165	255	1267	257	127	556	64
Future Volume (vph)	64	194	146	77	137	165	255	1267	257	127	556	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		25.0	50.0		25.0	80.0		70.0	65.0		60.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			30.0			60.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	0.99		0.98	0.99		0.74	0.96		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1500	1782	1485	3159	1731	1391	3317	3196	1530	1449	3138	1404
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1487	1782	1454	3122	1731	1360	3290	3196	1139	1389	3138	1372
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138			160			183			156
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		451.4			534.0			913.2			485.6	
Travel Time (s)		40.6			48.1			54.8			29.1	
Confl. Peds. (#/hr)	9		8	8		9	6		81	81		6
Confl. Bikes (#/hr)									1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	1%	3%	5%	4%	10%	0%	7%	0%	18%	9%	9%
Adj. Flow (vph)	64	194	146	77	137	165	255	1267	257	127	556	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	194	146	77	137	165	255	1267	257	127	556	64
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive

2022 Total Traffic Conditions  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	22.0	22.0	5.0	22.0	22.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	10.3	56.0	56.0	10.3	56.0	56.0
Total Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	13.0	56.0	56.0	14.0	57.0	57.0
Total Split (%)	11.3%	32.3%	32.3%	11.3%	32.3%	32.3%	10.5%	45.1%	45.1%	11.3%	45.9%	45.9%
Maximum Green (s)	6.6	32.0	32.0	6.6	32.0	32.0	7.7	50.0	50.0	8.7	51.0	51.0
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	4.4	4.4	4.4	4.4	4.4	4.4	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	8.1	8.1	7.4	8.1	8.1	5.3	6.0	6.0	5.3	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		8	8		9	9		6	6		60	60
Act Effct Green (s)	6.6	26.8	26.8	6.5	24.0	24.0	15.7	50.0	50.0	16.7	51.0	51.0
Actuated g/C Ratio	0.05	0.22	0.22	0.05	0.19	0.19	0.13	0.40	0.40	0.13	0.41	0.41
v/c Ratio	0.81	0.51	0.35	0.47	0.41	0.42	0.61	0.98	0.45	0.65	0.43	0.10
Control Delay	116.4	48.6	9.8	66.6	47.1	10.0	58.4	58.6	10.8	67.9	27.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.4	48.6	9.8	66.6	47.1	10.0	58.4	58.6	10.8	67.9	27.5	0.3
LOS	F	D	A	E	D	A	E	E	B	E	C	A
Approach Delay		45.3			34.9			51.6			32.0	
Approach LOS		D			C			D			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 124.1  
 Actuated Cycle Length: 124.1  
 Offset: 101 (81%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 125  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 44.5  
 Intersection LOS: D  
 Intersection Capacity Utilization 91.4%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive



Baseline

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	119	1413	106	0	747
Future Vol, veh/h	0	119	1413	106	0	747
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	119	1413	106	0	747

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	760	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	349	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	349	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	349
HCM Lane V/C Ratio	-	-	0.341
HCM Control Delay (s)	-	-	20.6
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.5

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	80	229	251	18	20	71
Future Vol, veh/h	80	229	251	18	20	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	229	251	18	20	71

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	269	0	0	649	260
Stage 1	-	-	-	260	-
Stage 2	-	-	-	389	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1295	-	-	434	779
Stage 1	-	-	-	783	-
Stage 2	-	-	-	685	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1295	-	-	403	779
Mov Cap-2 Maneuver	-	-	-	403	-
Stage 1	-	-	-	727	-
Stage 2	-	-	-	685	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1295	-	-	-	646
HCM Lane V/C Ratio	0.062	-	-	-	0.141
HCM Control Delay (s)	8	0	-	-	11.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2022 Total Traffic Conditions  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	475	366	71	963	220	184	594	82	156	799	146
Future Volume (vph)	101	475	366	71	963	220	184	594	82	156	799	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		25.0	70.0		30.0	60.0		90.0	80.0		40.0
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (m)	30.0			50.0			40.0			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.98			0.98	1.00		0.99
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3282	1553	1805	3539	1583	1770	3374	1538	3400	3406	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1734	3282	1553	1805	3539	1557	1770	3374	1514	3393	3406	1563
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			240			200			149			204
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		1105.6			937.9			1033.7			620.6	
Travel Time (s)		49.8			42.2			62.0			37.2	
Confl. Peds. (#/hr)	3						3		2	2		
Confl. Bikes (#/hr)							2		1			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	10%	4%	0%	2%	2%	2%	7%	5%	3%	6%	2%
Adj. Flow (vph)	101	475	366	71	963	220	184	594	82	156	799	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	475	366	71	963	220	184	594	82	156	799	146
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 3: Woodroffe Avenue & West Hunt Club Road

2022 Total Traffic Conditions  
 PM Peak Hour

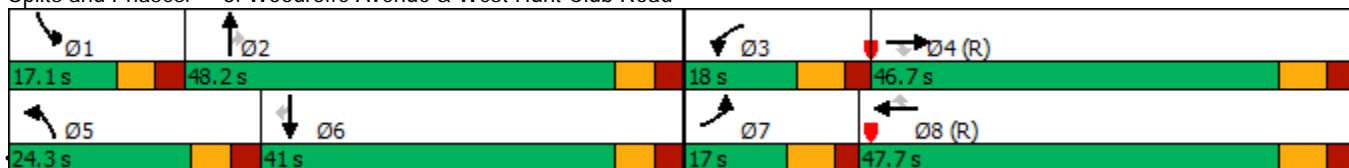


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.0	42.1	42.1	12.0	42.1	42.1	11.6	33.6	33.6	11.6	33.6	33.6
Total Split (s)	17.0	46.7	46.7	18.0	47.7	47.7	24.3	48.2	48.2	17.1	41.0	41.0
Total Split (%)	13.1%	35.9%	35.9%	13.8%	36.7%	36.7%	18.7%	37.1%	37.1%	13.2%	31.5%	31.5%
Maximum Green (s)	10.0	39.6	39.6	11.0	40.6	40.6	17.7	41.6	41.6	10.5	34.4	34.4
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	2.5	2.5	2.4	2.5	2.5	2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.1	7.1	7.0	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		3	3		0	0		2	2
Act Effct Green (s)	10.0	46.1	46.1	9.5	42.9	42.9	16.5	39.9	39.9	9.9	33.3	33.3
Actuated g/C Ratio	0.08	0.35	0.35	0.07	0.33	0.33	0.13	0.31	0.31	0.08	0.26	0.26
v/c Ratio	0.76	0.41	0.52	0.54	0.82	0.34	0.82	0.57	0.14	0.60	0.92	0.26
Control Delay	91.5	35.0	15.3	72.9	47.8	7.5	82.9	40.2	0.5	41.3	70.0	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.5	35.0	15.3	72.9	47.8	7.5	82.9	40.2	0.5	41.3	70.0	15.3
LOS	F	C	B	E	D	A	F	D	A	D	E	B
Approach Delay		33.4			42.2			45.5			58.7	
Approach LOS		C			D			D			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 63 (48%), Referenced to phase 4:EBT and 8:WBT, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 45.3  
 Intersection LOS: D  
 Intersection Capacity Utilization 89.8%  
 ICU Level of Service E  
 Analysis Period (min) 15



























Splits and Phases: 3: Woodroffe Avenue & West Hunt Club Road



Baseline

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2022 Total Traffic Conditions  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 							 			 	
Traffic Volume (vph)	142	43	50	142	168	90	72	778	79	205	1094	415
Future Volume (vph)	142	43	50	142	168	90	72	778	79	205	1094	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		30.0	30.0		0.0	60.0		20.0	65.0		65.0
Storage Lanes	2		1	1		0	1		1	1		1
Taper Length (m)	30.0			45.0			50.0			50.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.95		0.95	0.96	0.98		0.98		0.94	0.99		0.88
Frt			0.850		0.948				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1845	1553	1719	1744	0	1805	3343	1599	1719	3406	1568
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3268	1845	1477	1658	1744	0	1764	3343	1508	1697	3406	1377
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138		21				147			298
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		1079.0			75.2			620.6			62.9	
Travel Time (s)		97.1			6.8			37.2			3.8	
Confl. Peds. (#/hr)	36		33	33		36	38		14	14		38
Confl. Bikes (#/hr)												1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	3%	4%	5%	0%	4%	0%	8%	1%	5%	6%	3%
Adj. Flow (vph)	142	43	50	142	168	90	72	778	79	205	1094	415
Shared Lane Traffic (%)												
Lane Group Flow (vph)	142	43	50	142	258	0	72	778	79	205	1094	415
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2022 Total Traffic Conditions  
PM Peak Hour

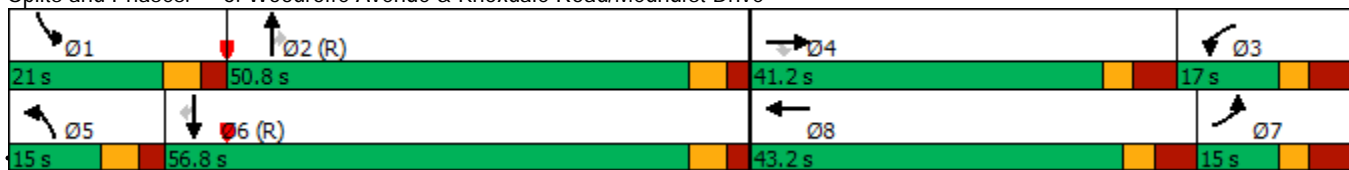


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.2	41.2	41.2	12.2	41.2		11.1	30.1	30.1	11.1	30.1	30.1
Total Split (s)	15.0	41.2	41.2	17.0	43.2		15.0	50.8	50.8	21.0	56.8	56.8
Total Split (%)	11.5%	31.7%	31.7%	13.1%	33.2%		11.5%	39.1%	39.1%	16.2%	43.7%	43.7%
Maximum Green (s)	7.8	34.0	34.0	9.8	36.0		8.9	44.7	44.7	14.9	50.7	50.7
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2	4.2	4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		30	30		25			35	35		14	14
Act Effct Green (s)	9.7	25.2	25.2	15.8	27.4		8.5	48.0	48.0	18.3	60.4	60.4
Actuated g/C Ratio	0.07	0.19	0.19	0.12	0.21		0.07	0.37	0.37	0.14	0.46	0.46
v/c Ratio	0.55	0.12	0.13	0.68	0.67		0.62	0.63	0.12	0.85	0.69	0.52
Control Delay	66.7	39.5	0.7	73.5	51.0		108.9	20.4	1.2	84.4	33.2	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.7	39.5	0.7	73.5	51.0		108.9	20.4	1.2	84.4	33.2	10.8
LOS	E	D	A	E	D		F	C	A	F	C	B
Approach Delay		47.7			59.0			25.6			33.9	
Approach LOS		D			E			C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 44 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 105  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 35.6  
 Intersection LOS: D  
 Intersection Capacity Utilization 86.7%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive



Baseline

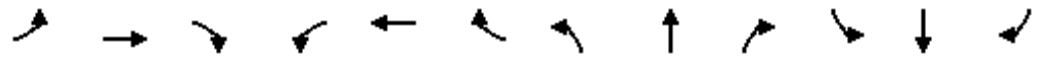


Lanes, Volumes, Timings

2022 Total Traffic Conditions

9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	166	266	259	200	237	154	797	143	176	1092	117
Future Volume (vph)	74	166	266	259	200	237	154	797	143	176	1092	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	50.0		25.0	80.0		70.0	65.0		60.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			30.0			60.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.96	0.96		0.97	0.99		0.88	0.97		0.97
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	1863	1599	3467	1900	1482	3400	3374	1583	1641	3343	1553
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1622	1863	1529	3323	1900	1442	3382	3374	1394	1586	3343	1513
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			178			191			156			156
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		451.4			534.0			915.6			485.6	
Travel Time (s)		40.6			48.1			54.9			29.1	
Confl. Peds. (#/hr)	13		27	27		13	8		34	34		8
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	2%	1%	1%	0%	9%	3%	7%	2%	10%	8%	4%
Adj. Flow (vph)	74	166	266	259	200	237	154	797	143	176	1092	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	166	266	259	200	237	154	797	143	176	1092	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive

2022 Total Traffic Conditions  
 PM Peak Hour

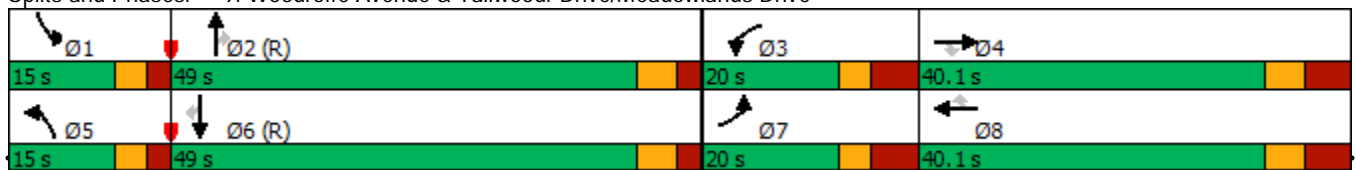


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	22.0	22.0	5.0	22.0	22.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	10.3	49.0	49.0	10.3	49.0	49.0
Total Split (s)	20.0	40.1	40.1	20.0	40.1	40.1	15.0	49.0	49.0	15.0	49.0	49.0
Total Split (%)	16.1%	32.3%	32.3%	16.1%	32.3%	32.3%	12.1%	39.5%	39.5%	12.1%	39.5%	39.5%
Maximum Green (s)	12.6	32.0	32.0	12.6	32.0	32.0	9.7	43.0	43.0	9.7	43.0	43.0
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	4.4	4.4	4.4	4.4	4.4	4.4	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	8.1	8.1	7.4	8.1	8.1	5.3	6.0	6.0	5.3	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		25	25		30	30		8	8		13	13
Act Effct Green (s)	10.4	28.0	28.0	12.2	32.7	32.7	9.3	43.0	43.0	14.1	47.7	47.7
Actuated g/C Ratio	0.08	0.23	0.23	0.10	0.26	0.26	0.07	0.35	0.35	0.11	0.38	0.38
v/c Ratio	0.54	0.40	0.55	0.76	0.40	0.46	0.60	0.68	0.24	0.95	0.85	0.17
Control Delay	68.7	42.9	18.2	69.2	41.1	12.0	65.9	38.3	4.5	109.1	43.5	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.7	42.9	18.2	69.2	41.1	12.0	65.9	38.3	4.5	109.1	43.5	2.2
LOS	E	D	B	E	D	B	E	D	A	F	D	A
Approach Delay		33.7			41.7			37.8			48.4	
Approach LOS		C			D			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 124.1  
 Actuated Cycle Length: 124.1  
 Offset: 12 (10%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 41.9  
 Intersection LOS: D  
 Intersection Capacity Utilization 87.6%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive



Baseline

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	81	204	314	14	11	86
Future Vol, veh/h	81	204	314	14	11	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	204	314	14	11	86

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	328	0	-	0	687 321
Stage 1	-	-	-	-	321 -
Stage 2	-	-	-	-	366 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1232	-	-	-	413 720
Stage 1	-	-	-	-	735 -
Stage 2	-	-	-	-	702 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1232	-	-	-	382 720
Mov Cap-2 Maneuver	-	-	-	-	382 -
Stage 1	-	-	-	-	681 -
Stage 2	-	-	-	-	702 -

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1232	-	-	-	654
HCM Lane V/C Ratio	0.066	-	-	-	0.148
HCM Control Delay (s)	8.1	0	-	-	11.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	46	967	43	0	1714
Future Vol, veh/h	0	46	967	43	0	1714
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	46	967	43	0	1714

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	505	0	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	512	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	512	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	512
HCM Lane V/C Ratio	-	-	0.09
HCM Control Delay (s)	-	-	12.7
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2027 Total Traffic Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑	↗	↘↗	↑↑	↗
Traffic Volume (vph)	86	1067	144	66	645	151	113	981	200	292	457	105
Future Volume (vph)	86	1067	144	66	645	151	113	981	200	292	457	105
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	70.0		25.0	70.0		30.0	60.0		90.0	80.0		40.0
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (m)	30.0			50.0			40.0			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	1.00		0.97	0.99		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1527	3196	1457	1676	3000	1443	1598	3226	1457	3190	3109	1443
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1522	3196	1431	1674	3000	1415	1592	3226	1418	3170	3109	1413
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			144			144			149			149
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		1105.6			937.9			1033.7			620.6	
Travel Time (s)		49.8			42.2			62.0			37.2	
Confl. Peds. (#/hr)	7		5	5		7	5		10	10		5
Confl. Bikes (#/hr)			1						1			2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	7%	5%	2%	14%	6%	7%	6%	5%	4%	10%	6%
Adj. Flow (vph)	86	1067	144	66	645	151	113	981	200	292	457	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	1067	144	66	645	151	113	981	200	292	457	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2027 Total Traffic Conditions  
AM Peak Hour

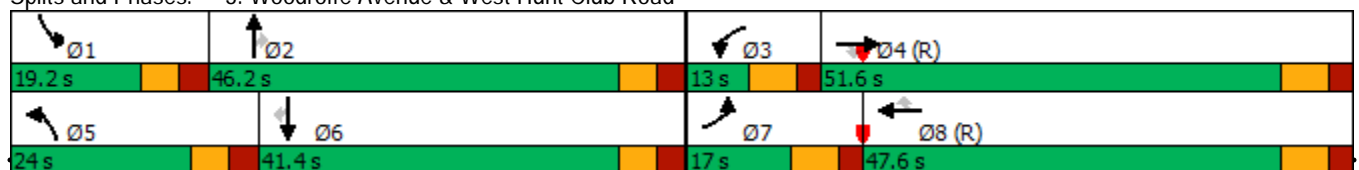


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.0	42.1	42.1	12.0	42.1	42.1	11.6	33.6	33.6	11.6	33.6	33.6
Total Split (s)	17.0	51.6	51.6	13.0	47.6	47.6	24.0	46.2	46.2	19.2	41.4	41.4
Total Split (%)	13.1%	39.7%	39.7%	10.0%	36.6%	36.6%	18.5%	35.5%	35.5%	14.8%	31.8%	31.8%
Maximum Green (s)	10.0	44.5	44.5	6.0	40.5	40.5	17.4	39.6	39.6	12.6	34.8	34.8
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	2.5	2.5	2.4	2.5	2.5	2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.1	7.1	7.0	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		4	4		6	6		4	4		9	9
Act Effct Green (s)	9.6	44.5	44.5	6.0	40.9	40.9	13.9	39.6	39.6	12.6	38.3	38.3
Actuated g/C Ratio	0.07	0.34	0.34	0.05	0.31	0.31	0.11	0.30	0.30	0.10	0.29	0.29
v/c Ratio	0.76	0.98	0.25	0.86	0.68	0.28	0.66	1.00	0.37	0.94	0.50	0.20
Control Delay	97.3	64.2	5.7	129.4	43.5	7.2	74.0	73.6	12.3	88.9	49.3	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.3	64.2	5.7	129.4	43.5	7.2	74.0	73.6	12.3	88.9	49.3	16.8
LOS	F	E	A	F	D	A	E	E	B	F	D	B
Approach Delay		59.9			43.7			64.2			58.9	
Approach LOS		E			D			E			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 96 (74%), Referenced to phase 4:EBT and 8:WBT, Start of Green  
 Natural Cycle: 120  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.00  
 Intersection Signal Delay: 57.7  
 Intersection LOS: E  
 Intersection Capacity Utilization 95.5%  
 ICU Level of Service F  
 Analysis Period (min) 15


































Splits and Phases: 3: Woodroffe Avenue & West Hunt Club Road



Baseline

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2027 Total Traffic Conditions  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 	 		 	 	 	 	 	 
Traffic Volume (vph)	409	216	86	146	53	144	26	1075	59	98	595	110
Future Volume (vph)	409	216	86	146	53	144	26	1075	59	98	595	110
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	40.0		30.0	30.0		0.0	60.0		20.0	65.0		65.0
Storage Lanes	2		1	1		0	1		1	1		1
Taper Length (m)	30.0			45.0			50.0			50.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.94		0.98	0.99	0.96		0.98		0.91	0.98		0.94
Frt			0.850		0.890				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	1765	1515	1693	1428	0	1569	3167	1378	1487	3167	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3063	1765	1481	1680	1428	0	1543	3167	1259	1464	3167	1413
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138		101				147			147
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		1079.0			77.4			620.6			69.2	
Travel Time (s)		97.1			7.0			37.2			4.2	
Confl. Peds. (#/hr)	40		9	9		40	14		25	25		14
Confl. Bikes (#/hr)												1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	1%	1%	9%	7%	9%	8%	11%	15%	8%	2%
Adj. Flow (vph)	409	216	86	146	53	144	26	1075	59	98	595	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	409	216	86	146	197	0	26	1075	59	98	595	110
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2027 Total Traffic Conditions  
AM Peak Hour

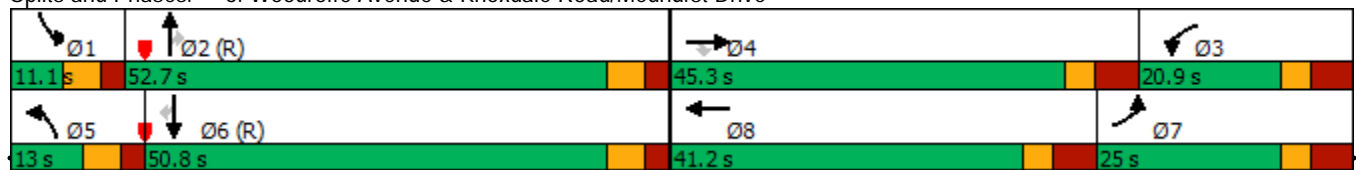


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.2	41.2	41.2	12.2	41.2		11.1	30.1	30.1	11.1	30.1	30.1
Total Split (s)	25.0	45.3	45.3	20.9	41.2		13.0	52.7	52.7	11.1	50.8	50.8
Total Split (%)	19.2%	34.8%	34.8%	16.1%	31.7%		10.0%	40.5%	40.5%	8.5%	39.1%	39.1%
Maximum Green (s)	17.8	38.1	38.1	13.7	34.0		6.9	46.6	46.6	5.0	44.7	44.7
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2	4.2	4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		30	30		8			13	13		20	20
Act Effct Green (s)	25.4	26.9	26.9	16.8	18.3		6.5	47.1	47.1	12.6	58.0	58.0
Actuated g/C Ratio	0.20	0.21	0.21	0.13	0.14		0.05	0.36	0.36	0.10	0.45	0.45
v/c Ratio	0.64	0.59	0.21	0.67	0.69		0.33	0.94	0.11	0.68	0.42	0.15
Control Delay	53.1	52.1	2.0	69.4	36.5		90.1	21.7	0.2	80.9	29.1	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	52.1	2.0	69.4	36.5		90.1	21.7	0.2	80.9	29.1	2.2
LOS	D	D	A	E	D		F	C	A	F	C	A
Approach Delay		46.6			50.5			22.1			31.7	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 63 (48%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 135  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 33.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 96.3%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive



Baseline

Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive

2027 Total Traffic Conditions  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	211	157	82	147	178	274	1363	276	137	598	69
Future Volume (vph)	68	211	157	82	147	178	274	1363	276	137	598	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		25.0	50.0		25.0	80.0		70.0	65.0		60.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			30.0			60.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	0.99		0.98	0.99		0.73	0.96		0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1500	1782	1485	3159	1731	1391	3317	3196	1530	1449	3138	1404
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1487	1782	1454	3123	1731	1360	3292	3196	1113	1397	3138	1372
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138			138			190			156
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		451.4			534.0			909.3			485.6	
Travel Time (s)		40.6			48.1			54.6			29.1	
Confl. Peds. (#/hr)	9		8	8		9	6		87	81		6
Confl. Bikes (#/hr)									1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	1%	3%	5%	4%	10%	0%	7%	0%	18%	9%	9%
Adj. Flow (vph)	68	211	157	82	147	178	274	1363	276	137	598	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	211	157	82	147	178	274	1363	276	137	598	69
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive

2027 Total Traffic Conditions  
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	22.0	22.0	5.0	22.0	22.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	10.3	56.0	56.0	10.3	56.0	56.0
Total Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	13.0	59.0	59.0	11.0	57.0	57.0
Total Split (%)	11.3%	32.3%	32.3%	11.3%	32.3%	32.3%	10.5%	47.5%	47.5%	8.9%	45.9%	45.9%
Maximum Green (s)	6.6	32.0	32.0	6.6	32.0	32.0	7.7	53.0	53.0	5.7	51.0	51.0
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	4.4	4.4	4.4	4.4	4.4	4.4	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	8.1	8.1	7.4	8.1	8.1	5.3	6.0	6.0	5.3	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		8	8		9	9		6	6		60	60
Act Effct Green (s)	6.6	26.9	26.9	6.5	24.1	24.1	15.6	53.0	53.0	13.6	51.0	51.0
Actuated g/C Ratio	0.05	0.22	0.22	0.05	0.19	0.19	0.13	0.43	0.43	0.11	0.41	0.41
v/c Ratio	0.86	0.55	0.37	0.49	0.44	0.47	0.66	1.00	0.47	0.87	0.46	0.11
Control Delay	126.3	49.7	11.5	67.7	47.7	15.9	60.3	59.9	10.8	97.9	28.1	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	126.3	49.7	11.5	67.7	47.7	15.9	60.3	59.9	10.8	97.9	28.1	0.3
LOS	F	D	B	E	D	B	E	E	B	F	C	A
Approach Delay		47.9			37.8			52.9			37.6	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 124.1  
 Actuated Cycle Length: 124.1  
 Offset: 101 (81%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 135  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.00  
 Intersection Signal Delay: 47.1  
 Intersection LOS: D  
 Intersection Capacity Utilization 94.8%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 9: Woodroffe Avenue & Tallwodd Drive/Meadowlands Drive



Baseline

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	80	251	272	18	20	71
Future Vol, veh/h	80	251	272	18	20	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	251	272	18	20	71

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	290	0	-	0	692 281
Stage 1	-	-	-	-	281 -
Stage 2	-	-	-	-	411 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1272	-	-	-	410 758
Stage 1	-	-	-	-	767 -
Stage 2	-	-	-	-	669 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1272	-	-	-	380 758
Mov Cap-2 Maneuver	-	-	-	-	380 -
Stage 1	-	-	-	-	711 -
Stage 2	-	-	-	-	669 -

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1272	-	-	-	622
HCM Lane V/C Ratio	0.063	-	-	-	0.146
HCM Control Delay (s)	8	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	119	1528	106	0	803
Future Vol, veh/h	0	119	1528	106	0	803
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	119	1528	106	0	803

























Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	817	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	-
Pot Cap-1 Maneuver	0	320	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	320	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	320
HCM Lane V/C Ratio	-	-	0.372
HCM Control Delay (s)	-	-	22.8
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.7

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2027 Total Traffic Conditions  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	512	395	77	1038	236	198	639	89	168	859	157
Future Volume (vph)	108	512	395	77	1038	236	198	639	89	168	859	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		25.0	70.0		30.0	60.0		90.0	80.0		40.0
Storage Lanes	1		1	1		1	1		1	2		1
Taper Length (m)	30.0			50.0			40.0			45.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00					0.98			0.98	1.00		0.99
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3282	1553	1805	3539	1583	1770	3374	1538	3400	3406	1583
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1734	3282	1553	1805	3539	1557	1770	3374	1514	3393	3406	1563
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			253			144			149			149
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		1105.6			937.9			1033.7			620.6	
Travel Time (s)		49.8			42.2			62.0			37.2	
Confl. Peds. (#/hr)	3						3		2	2		
Confl. Bikes (#/hr)							2		1			1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	10%	4%	0%	2%	2%	2%	7%	5%	3%	6%	2%
Adj. Flow (vph)	108	512	395	77	1038	236	198	639	89	168	859	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	512	395	77	1038	236	198	639	89	168	859	157
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
3: Woodroffe Avenue & West Hunt Club Road

2027 Total Traffic Conditions  
PM Peak Hour

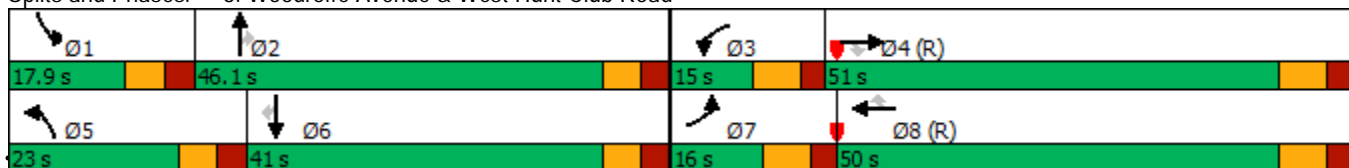


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.0	42.1	42.1	12.0	42.1	42.1	11.6	33.6	33.6	11.6	33.6	33.6
Total Split (s)	16.0	51.0	51.0	15.0	50.0	50.0	23.0	46.1	46.1	17.9	41.0	41.0
Total Split (%)	12.3%	39.2%	39.2%	11.5%	38.5%	38.5%	17.7%	35.5%	35.5%	13.8%	31.5%	31.5%
Maximum Green (s)	9.0	43.9	43.9	8.0	42.9	42.9	16.4	39.5	39.5	11.3	34.4	34.4
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	2.5	2.5	2.4	2.5	2.5	2.9	2.9	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.1	7.1	7.0	7.1	7.1	6.6	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		3	3		0	0		2	2
Act Effct Green (s)	9.3	44.4	44.4	7.8	43.0	43.0	16.1	39.9	39.9	10.6	34.3	34.3
Actuated g/C Ratio	0.07	0.34	0.34	0.06	0.33	0.33	0.12	0.31	0.31	0.08	0.26	0.26
v/c Ratio	0.87	0.46	0.57	0.71	0.89	0.39	0.90	0.62	0.16	0.61	0.96	0.30
Control Delay	111.2	35.1	15.5	92.6	51.8	14.8	96.2	41.7	0.9	37.5	74.8	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.2	35.1	15.5	92.6	51.8	14.8	96.2	41.7	0.9	37.5	74.8	22.4
LOS	F	D	B	F	D	B	F	D	A	D	E	C
Approach Delay		35.6			47.6			49.5			62.6	
Approach LOS		D			D			D			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 63 (48%), Referenced to phase 4:EBT and 8:WBT, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 49.2  
 Intersection LOS: D  
 Intersection Capacity Utilization 92.6%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Woodroffe Avenue & West Hunt Club Road




































Baseline



Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2027 Total Traffic Conditions  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 	 		 	 	 	 	 	 
Traffic Volume (vph)	153	46	54	149	179	98	78	837	85	218	1181	448
Future Volume (vph)	153	46	54	149	179	98	78	837	85	218	1181	448
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		30.0	30.0		0.0	60.0		20.0	65.0		65.0
Storage Lanes	2		1	1		0	1		1	1		1
Taper Length (m)	30.0			45.0			50.0			50.0		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.95		0.95	0.96	0.98		0.98		0.94	0.99		0.87
Frt			0.850		0.947				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1845	1553	1719	1739	0	1805	3343	1599	1719	3406	1568
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3259	1845	1473	1654	1739	0	1766	3343	1503	1697	3406	1365
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		21				198			302
Link Speed (k/h)		40		40			60		60		60	
Link Distance (m)		1079.0		65.2			620.6		69.6			
Travel Time (s)		97.1		5.9			37.2		4.2			
Confl. Peds. (#/hr)	39		35	35		39	41		15	15		41
Confl. Bikes (#/hr)												1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	3%	4%	5%	0%	4%	0%	8%	1%	5%	6%	3%
Adj. Flow (vph)	153	46	54	149	179	98	78	837	85	218	1181	448
Shared Lane Traffic (%)												
Lane Group Flow (vph)	153	46	54	149	277	0	78	837	85	218	1181	448
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2		7.2			7.2		7.2		7.2	
Link Offset(m)		0.0		0.0			0.0		0.0		0.0	
Crosswalk Width(m)		4.8		4.8			4.8		4.8		4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4		9.4			9.4		9.4		9.4	
Detector 2 Size(m)		0.6		0.6			0.6		0.6		0.6	
Detector 2 Type		Cl+Ex		Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive

2027 Total Traffic Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	12.0	12.0	5.0	12.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	12.2	41.2	41.2	12.2	41.2		11.1	30.1	30.1	11.1	30.1	30.1
Total Split (s)	15.3	41.2	41.2	17.0	42.9		14.0	50.7	50.7	21.1	57.8	57.8
Total Split (%)	11.8%	31.7%	31.7%	13.1%	33.0%		10.8%	39.0%	39.0%	16.2%	44.5%	44.5%
Maximum Green (s)	8.1	34.0	34.0	9.8	35.7		7.9	44.6	44.6	15.0	51.7	51.7
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.2	4.2	4.2	4.2	4.2		2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	7.2		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			17.0	17.0		17.0	17.0
Pedestrian Calls (#/hr)		30	30		25			35	35		14	14
Act Effct Green (s)	9.8	25.2	25.2	16.3	27.9		8.1	45.9	45.9	19.8	57.6	57.6
Actuated g/C Ratio	0.08	0.19	0.19	0.13	0.21		0.06	0.35	0.35	0.15	0.44	0.44
v/c Ratio	0.59	0.13	0.12	0.69	0.71		0.70	0.71	0.13	0.84	0.78	0.58
Control Delay	68.2	39.7	0.6	73.1	53.1		109.5	24.8	0.5	80.4	36.9	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	39.7	0.6	73.1	53.1		109.5	24.8	0.5	80.4	36.9	12.6
LOS	E	D	A	E	D		F	C	A	F	D	B
Approach Delay		48.6			60.1			29.4			36.1	
Approach LOS		D			E			C			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 44 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 115  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 38.0  
 Intersection LOS: D  
 Intersection Capacity Utilization 90.0%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 6: Woodroffe Avenue & Knoxdale Road/Medhurst Drive



Baseline

Lanes, Volumes, Timings

2027 Total Traffic Conditions

9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	179	292	278	215	255	166	858	154	189	1175	126
Future Volume (vph)	80	179	292	278	215	255	166	858	154	189	1175	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		25.0	50.0		25.0	80.0		70.0	65.0		60.0
Storage Lanes	1		1	2		1	2		1	1		1
Taper Length (m)	7.5			30.0			60.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.96		0.97	1.00		0.87	0.97		0.97
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1641	1863	1599	3467	1900	1482	3400	3374	1583	1641	3343	1553
Fl <sub>t</sub> Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1621	1863	1526	3315	1900	1440	3384	3374	1380	1586	3343	1513
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			176			191			156			156
Link Speed (k/h)		40			40			60			60	
Link Distance (m)		451.4			534.0			909.0			485.6	
Travel Time (s)		40.6			48.1			54.5			29.1	
Confl. Peds. (#/hr)	14		29	29		14	8		37	37		8
Confl. Bikes (#/hr)			1						1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	2%	1%	1%	0%	9%	3%	7%	2%	10%	8%	4%
Adj. Flow (vph)	80	179	292	278	215	255	166	858	154	189	1175	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	179	292	278	215	255	166	858	154	189	1175	126
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive

2027 Total Traffic Conditions  
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	22.0	22.0	5.0	22.0	22.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.0	40.1	40.1	14.0	40.1	40.1	10.3	48.0	48.0	10.3	49.0	49.0
Total Split (s)	20.0	40.1	40.1	20.0	40.1	40.1	15.0	48.0	48.0	16.0	49.0	49.0
Total Split (%)	16.1%	32.3%	32.3%	16.1%	32.3%	32.3%	12.1%	38.7%	38.7%	12.9%	39.5%	39.5%
Maximum Green (s)	12.6	32.0	32.0	12.6	32.0	32.0	9.7	42.0	42.0	10.7	43.0	43.0
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.7	3.7
All-Red Time (s)	4.4	4.4	4.4	4.4	4.4	4.4	2.3	2.3	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	8.1	8.1	7.4	8.1	8.1	5.3	6.0	6.0	5.3	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.0	25.0		25.0	25.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		25	25		30	30		8	8		13	13
Act Effct Green (s)	10.6	28.0	28.0	12.4	32.6	32.6	9.5	42.0	42.0	14.9	47.4	47.4
Actuated g/C Ratio	0.09	0.23	0.23	0.10	0.26	0.26	0.08	0.34	0.34	0.12	0.38	0.38
v/c Ratio	0.58	0.43	0.61	0.80	0.43	0.49	0.64	0.75	0.27	0.96	0.92	0.19
Control Delay	70.4	43.6	21.7	72.6	41.8	14.3	67.5	41.4	5.5	109.6	49.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.4	43.6	21.7	72.6	41.8	14.3	67.5	41.4	5.5	109.6	49.8	2.8
LOS	E	D	C	E	D	B	E	D	A	F	D	A
Approach Delay		35.9			43.9			40.4			53.4	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other  
 Cycle Length: 124.1  
 Actuated Cycle Length: 124.1  
 Offset: 12 (10%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 125  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 45.3  
 Intersection LOS: D  
 Intersection Capacity Utilization 91.0%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 9: Woodroffe Avenue & Tallwoodr Drive/Meadowlands Drive



Baseline

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	46	1045	43	0	1847
Future Vol, veh/h	0	46	1045	43	0	1847
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	46	1045	43	0	1847

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	544	0	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	483	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	483	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	483
HCM Lane V/C Ratio	-	-	0.095
HCM Control Delay (s)	-	-	13.2
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	81	226	340	14	11	86
Future Vol, veh/h	81	226	340	14	11	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	226	340	14	11	86

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	354	0	0	735	347
Stage 1	-	-	-	347	-
Stage 2	-	-	-	388	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1205	-	-	387	696
Stage 1	-	-	-	716	-
Stage 2	-	-	-	686	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1205	-	-	357	696
Mov Cap-2 Maneuver	-	-	-	357	-
Stage 1	-	-	-	661	-
Stage 2	-	-	-	686	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1205	-	-	-	628
HCM Lane V/C Ratio	0.067	-	-	-	0.154
HCM Control Delay (s)	8.2	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

## APPENDIX E –TDM CHECKLIST



## TDM-Supportive Development Design and Infrastructure Checklist: Non-Residential Developments (office, institutional, retail or industrial)

<b>Legend</b>	
<b>REQUIRED</b>	The Official Plan or Zoning By-law provides related guidance that must be followed
<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	The measure could maximize support for users of sustainable modes, and optimize development performance

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>1. WALKING &amp; CYCLING: ROUTES</b>		
<b>1.1 Building location &amp; access points</b>		
<b>BASIC</b>	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	<input type="checkbox"/> Building entrance located perpendicular to Medhurst Drive
<b>BASIC</b>	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	<input type="checkbox"/> Proposed development located close to the street and sidewalk
<b>BASIC</b>	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	<input type="checkbox"/> Doors and windows expected to provide visibility to sidewalks and parking area`
<b>1.2 Facilities for walking &amp; cycling</b>		
<b>REQUIRED</b>	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations (see <i>Official Plan policy 4.3.3</i> )	<input type="checkbox"/>  Major route sheltered bus stops on sidewalks at the proposed site.
<b>REQUIRED</b>	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible (see <i>Official Plan policy 4.3.12</i> )	<input type="checkbox"/>  Side walks connect directly to entrance of the building

<b>TDM-supportive design &amp; infrastructure measures: <i>Non-residential developments</i></b>		<b>Check if completed &amp; add descriptions, explanations or plan/drawing references</b>
<b>REQUIRED</b>	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks ( <i>see Official Plan policy 4.3.10</i> )	<input type="checkbox"/> Concrete sidewalks to be provided
<b>REQUIRED</b>	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps ( <i>see Official Plan policy 4.3.10</i> )	<input type="checkbox"/> Depressed curbs provided. Accessible parking spaces provided close to building entrances.
<b>REQUIRED</b>	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians ( <i>see Official Plan policy 4.3.11</i> )	<input type="checkbox"/>
<b>BASIC</b>	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input type="checkbox"/> Sidewalks lead to transit stops on Woodroffe Avenue and Medhurst Drive
<b>BASIC</b>	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input type="checkbox"/> Area is to be lit with street lights.
<b>BASIC</b>	1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	<input type="checkbox"/>
<b>1.3 Amenities for walking &amp; cycling</b>		
<b>BASIC</b>	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	<input type="checkbox"/> Lighting to be provided and landscaping to be done around sidewalks
<b>BASIC</b>	1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>2. WALKING &amp; CYCLING: END-OF-TRIP FACILITIES</b>		
<b>2.1 Bicycle parking</b>		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i> )	<input type="checkbox"/> Bicycle parking to be provided at the front of the building by the entrance
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i> )	<input type="checkbox"/> Bicycle parking not required under Zoning By-Law Section 111. Two (2) Post and Ring to be provided.
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i> )	<input type="checkbox"/>
BASIC	2.1.4 Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	<input type="checkbox"/> Approximately 0 commuter cyclist is expected during the AM and PM Peak hours
BETTER	2.1.5 Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	<input type="checkbox"/>
<b>2.2 Secure bicycle parking</b>		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i> )	<input type="checkbox"/>
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met)	<input type="checkbox"/>
<b>2.3 Shower &amp; change facilities</b>		
BASIC	2.3.1 Provide shower and change facilities for the use of active commuters	<input type="checkbox"/>
BETTER	2.3.2 In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	<input type="checkbox"/>
<b>2.4 Bicycle repair station</b>		
BETTER	2.4.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>3. TRANSIT</b>		
<b>3.1 Customer amenities</b>		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/> Existing transit stop is already equip with the mentioned
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	<input type="checkbox"/>
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/>
<b>4. RIDESHARING</b>		
<b>4.1 Pick-up &amp; drop-off facilities</b>		
BASIC	4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	<input type="checkbox"/>
<b>4.2 Carpool parking</b>		
BASIC	4.2.1 Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	<input type="checkbox"/>
BETTER	4.2.2 At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	<input type="checkbox"/>
<b>5. CARSHARING &amp; BIKESHARING</b>		
<b>5.1 Carshare parking spaces</b>		
BETTER	5.1.1 Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces ( <i>see Zoning By-law Section 94</i> )	<input type="checkbox"/>
<b>5.2 Bikeshare station location</b>		
BETTER	5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>6. PARKING</b>		
<b>6.1 Number of parking spaces</b>		
<b>REQUIRED</b>	6.1.1 Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	<input type="checkbox"/> No limit on parking supply as proposed development not located within 600m of rapid transit
<b>BASIC</b>	6.1.2 Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	<input type="checkbox"/>
<b>BASIC</b>	6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly ( <i>see Zoning By-law Section 104</i> )	<input type="checkbox"/>
<b>BETTER</b>	6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking ( <i>see Zoning By-law Section 111</i> )	<input type="checkbox"/>
<b>6.2 Separate long-term &amp; short-term parking areas</b>		
<b>BETTER</b>	6.2.1 Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	<input type="checkbox"/>
<b>7. OTHER</b>		
<b>7.1 On-site amenities to minimize off-site trips</b>		
<b>BETTER</b>	7.1.1 Provide on-site amenities to minimize mid-day or mid-commute errands	<input type="checkbox"/>

**TDM Measures Checklist:**  
*Non-Residential Developments (office, institutional, retail or industrial)*

<b>Legend</b>	
<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	The measure could maximize support for users of sustainable modes, and optimize development performance
★	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>1. TDM PROGRAM MANAGEMENT</b>		
<b>1.1 Program coordinator</b>		
<b>BASIC</b>	★ 1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input type="checkbox"/>
<b>1.2 Travel surveys</b>		
<b>BETTER</b>	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input type="checkbox"/>
<b>2. WALKING AND CYCLING</b>		
<b>2.1 Information on walking/cycling routes &amp; destinations</b>		
<b>BASIC</b>	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances	<input type="checkbox"/>
<b>2.2 Bicycle skills training</b>		
<i>Commuter travel</i>		
<b>BETTER</b>	★ 2.2.1 Offer on-site cycling courses for commuters, or subsidize off-site courses	<input type="checkbox"/>
<b>2.3 Valet bike parking</b>		
<i>Visitor travel</i>		
<b>BETTER</b>	2.3.1 Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	<input type="checkbox"/>

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>3. TRANSIT</b>		
<b>3.1 Transit information</b>		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances	<input type="checkbox"/>
BASIC	3.1.2 Provide online links to OC Transpo and STO information	<input type="checkbox"/>
BETTER	3.1.3 Provide real-time arrival information display at entrances	<input type="checkbox"/>
<b>3.2 Transit fare incentives</b>		
<i>Commuter travel</i>		
BETTER	3.2.1 Offer preloaded PRESTO cards to encourage commuters to use transit	<input type="checkbox"/>
BETTER ★	3.2.2 Subsidize or reimburse monthly transit pass purchases by employees	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.2.3 Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	<input type="checkbox"/>
<b>3.3 Enhanced public transit service</b>		
<i>Commuter travel</i>		
BETTER	3.3.1 Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.3.2 Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	<input type="checkbox"/>
<b>3.4 Private transit service</b>		
<i>Commuter travel</i>		
BETTER	3.4.1 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.4.2 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	<input type="checkbox"/>



TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>4. RIDESHARING</b>		
<b>4.1 Ridematching service</b>		
<i>Commuter travel</i>		
BASIC	★ 4.1.1 Provide a dedicated ridematching portal at OttawaRideMatch.com	<input type="checkbox"/>
<b>4.2 Carpool parking price incentives</b>		
<i>Commuter travel</i>		
BETTER	4.2.1 Provide discounts on parking costs for registered carpools	<input type="checkbox"/>
<b>4.3 Vanpool service</b>		
<i>Commuter travel</i>		
BETTER	4.3.1 Provide a vanpooling service for long-distance commuters	<input type="checkbox"/>
<b>5. CARSHARING &amp; BIKESHARING</b>		
<b>5.1 Bikeshare stations &amp; memberships</b>		
BETTER	5.1.1 Contract with provider to install on-site bikeshare station for use by commuters and visitors	<input type="checkbox"/>
<i>Commuter travel</i>		
BETTER	5.1.2 Provide employees with bikeshare memberships for local business travel	<input type="checkbox"/>
<b>5.2 Carshare vehicles &amp; memberships</b>		
<i>Commuter travel</i>		
BETTER	5.2.1 Contract with provider to install on-site carshare vehicles and promote their use by tenants	<input type="checkbox"/>
BETTER	5.2.2 Provide employees with carshare memberships for local business travel	<input type="checkbox"/>
<b>6. PARKING</b>		
<b>6.1 Priced parking</b>		
<i>Commuter travel</i>		
BASIC	★ 6.1.1 Charge for long-term parking (daily, weekly, monthly)	<input type="checkbox"/>
BASIC	6.1.2 Unbundle parking cost from lease rates at multi-tenant sites	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	6.1.3 Charge for short-term parking (hourly)	<input type="checkbox"/>

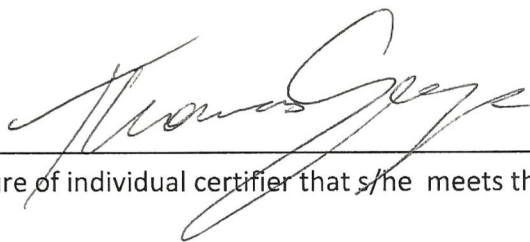
TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>7. TDM MARKETING &amp; COMMUNICATIONS</b>		
<b>7.1 Multimodal travel information</b>		
<i>Commuter travel</i>		
BASIC ★	7.1.1 Provide a multimodal travel option information package to new/relocating employees and students	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER ★	7.1.2 Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	<input type="checkbox"/>
<b>7.2 Personalized trip planning</b>		
<i>Commuter travel</i>		
BETTER ★	7.2.1 Offer personalized trip planning to new/relocating employees	<input type="checkbox"/>
<b>7.3 Promotions</b>		
<i>Commuter travel</i>		
BETTER	7.3.1 Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	<input type="checkbox"/>
<b>8. OTHER INCENTIVES &amp; AMENITIES</b>		
<b>8.1 Emergency ride home</b>		
<i>Commuter travel</i>		
BETTER ★	8.1.1 Provide emergency ride home service to non-driving commuters	<input type="checkbox"/>
<b>8.2 Alternative work arrangements</b>		
<i>Commuter travel</i>		
BASIC ★	8.2.1 Encourage flexible work hours	<input type="checkbox"/>
BETTER	8.2.2 Encourage compressed workweeks	<input type="checkbox"/>
BETTER ★	8.2.3 Encourage telework	<input type="checkbox"/>
<b>8.3 Local business travel options</b>		
<i>Commuter travel</i>		
BASIC ★	8.3.1 Provide local business travel options that minimize the need for employees to bring a personal car to work	<input type="checkbox"/>
<b>8.4 Commuter incentives</b>		
<i>Commuter travel</i>		
BETTER	8.4.1 Offer employees a taxable, mode-neutral commuting allowance	<input type="checkbox"/>
<b>8.5 On-site amenities</b>		
<i>Commuter travel</i>		
BETTER	8.5.1 Provide on-site amenities/services to minimize mid-day or mid-commute errands	<input type="checkbox"/>

APPENDIX F – CERTIFICATION FORM

Dated at OTTAWA this 26 day of AUGUST, 2021.  
(City)

Name : THOMAS GRYZ

Professional title: TRAFFIC / TRANSPORTATION ENGINEER



Signature of individual certifier that s/he meets the above criteria

**Office Contact Information (Please Print)**

Address: 115 WALGREEN ROAD, RR 3

City / Postal Code: CARP KOA 1L0

Telephone / Extension: 613-903-5772

E-Mail Address: t.gryz@mcintoshperry.com

**Stamp**

