PROPOSED COSTCO OFFICE EXPANSION,
415 WEST HUNT CLUB ROAD
CITY OF OTTAWA

TRANSPORTATION IMPACT ASSESSMENT REPORT

Presented to:

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June 20th, 2024

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1.0 INTRODUCTION

The 2017 City of Ottawa "*Transportation Impact Assessment Guidelines*" set out a multi-step pre-application process where the scope, assumptions, study area and methodology to conduct a transportation impact assessment (TIA) are detailed and each sequential stage approved. This report represents the first four steps (Step 1: Screening, Step 2: Scoping Step 3: Forecasting, and Step 4: Strategy) of the multi-step TIA process. Subsequent to the review of this report and incorporation of suggested refinements and resolution of comments and concerns raised by City of Ottawa staff, a final TIA document will be submitted for public review.

1.1 SUMMARY OF DEVELOPMENT

The Costco Wholesale Canada Ltd. Headquarters located at 415 West Hunt Club Road is proposing a 2-storey, 4,266.4 m^2 expansion of their offices. The planned office expansion would occur toward the south-east frontage of the existing building and provide for a relocated visitor entrance1. It is recognized that the building expansion will result in a reduction of 57 parking stalls between the building face and the Hunt Club Road right-of-way.

1.2 SCREENING RESULTS

The screening form was submitted with the forecasting report February 13th, 2023. The completed stamped and signed screening form can be found within Appendix "B".

The City of Ottawa's initial screening process is used to determine…:

(i) if the number of trips generated by the development makes it desirable to assess the development design and transportation system performance of one or more modes;

(ii) if the development's location makes it desirable to assess development design; or

(iii) if the development and/or boundary street conditions yield a high potential for safety concerns.

1.2.1 Screening: Trip Generation Triggers

The City of Ottawa TIA guidelines set the threshold for the trip generation trigger at 60 person-trips-or-more during the weekday peak hours. If the proposed development meets the trip threshold, both the Design Review and Network Impact components of the TIA need to be considered.

The threshold to meet a traffic generation warrant[2] for the office land use is established at 3,500 m^2. Since the proposed Costco expansion is approximately 4,266.4 m^2, **the trip generation trigger is satisfied.**

1 See Exhibit 2-2,
2 "*City of Ottawa Transportation Impact Assessment Guidelines*". Dillon Consulting, June 2017

1.2.2 Screening: Location Triggers

The development site is located within close proximity to Merivale Road corridor (which is classified as an Arterial Mainstreet). The parcel is zoned "AM - Arterial Mainstreet", which is considered a Design Priority Area; **therefore, the location trigger is also satisfied.**

1.2.3 Screening: Safety Triggers

The proposed development is located north of West Hunt Club Road, which has a posted speed limit of 80km/h; **therefore, the safety trigger is also satisfied.**

1.2.4 Screening: Conclusions

The screening results indicate that all triggers are satisfied, **therefore, the Traffic Impact Assessment (TIA) is required to address both the "Design Review" and "Network Impact" component.**

2.0 SCOPING

2.1 EXISTING AND PLANNED CONDITIONS

2.1.1 The Proposed Development

Exhibit 2-1 illustrates the general location of the existing Costco Headquarters building located in the north-west quadrant of the West Hunt Club Road / Roydon Place intersection and conceptually illustrates the general location of the proposed 2-storey office expansion.

Exhibit 2-1: Location of Proposed Development

The Costco Headquarters lands are currently zoned "*AM10 (1374)-Arterial Mainstreet*", which is acceptable zoning for proposed office expansion. The site currently contains a single-storey building housing the existing Costco Headquarters offices. It is recognized that the planned expansion must account for the ultimate right-of-way requirements for the West Hunt Club Road corridor and respect any required setbacks.

- The existing building is 96,466 ft^2 (8,962m^2);
- The planned expansion is approximately 45,923 ft^2 (4,266.4 m^2);
- The Costco HQ building when completed with the planned expansion would be 139,870 ft^2 (12,994.4 m^2);
- The planned expansion is envisioned to be developed within a single construction phase; and
- The estimated timing of occupancy is anticipated to occur in the Fall of 2024.

2.1.1.1 Parking

- The total existing supply of parking on the site surrounding the Costco HQ building (including the employee lot on the east side of Roydon Place and excluding visitor parking stalls) is currently 644 parking stalls;
- The planned expansion is anticipated to reduce the parking supply by 57 stalls, leaving a total of 587 stalls that would be available to accommodate Costco employees and spill-over retail patrons; and
- A total of 14 stalls are provided for visitor parking in the front of the HQ building,
- The total resulting parking supply is 604 stalls.

Exhibit 2-2 illustrates the proposed site plan (June, 2024) for the development and the anticipated parking supply subsequent to the planned building expansion. The full site plan illustrating the 2-storey office expansion can be found in Appendix "C".

2.1.1.2 Access Points

Vehicles can enter the parking facilities to the HQ development via:

- 2 full-movement intersections along Roydon Place;
- 1 right-in/right-out access at the Toyota Dealership on West Hunt Club Road; and
- 1 full-movement intersection at the Merivale Road/Pet Smart;

Pedestrians can enter the building:

- through the main entrance located on the south side of the HQ building facing West Hunt Club Road, which is served by an east-west sidewalk; or
- through the employee access located on the north side of the HQ building, which is connected to the parking lots located to the north and east of the HQ building; or
- by way of the north-south sidewalk is located to the west of the HQ building along the Toyota Access.

Cyclists: Bicycle parking facilities are located near the south main entrance to the HQ building. There are two connecting points to the HQ building onto West Hunt Club Road, which has cycling lanes.

Transit: The nearest Bus stops are:

- West Hunt Club/Roydon to the east: Bus stop 4400WB/4401EB-Routes 83, 96, 199 and
- Merivale/West Huntclub to the west: Bust stop 5877SB/6099NB-Routes 80, 83, 96, 186, 187, 680.

Once off the bus, transit users access the development the same way as pedestrians, using the sidewalks along West Hunt Club Road and/or the Toyota Access Road. (See Table 2-1 for transit frequency)

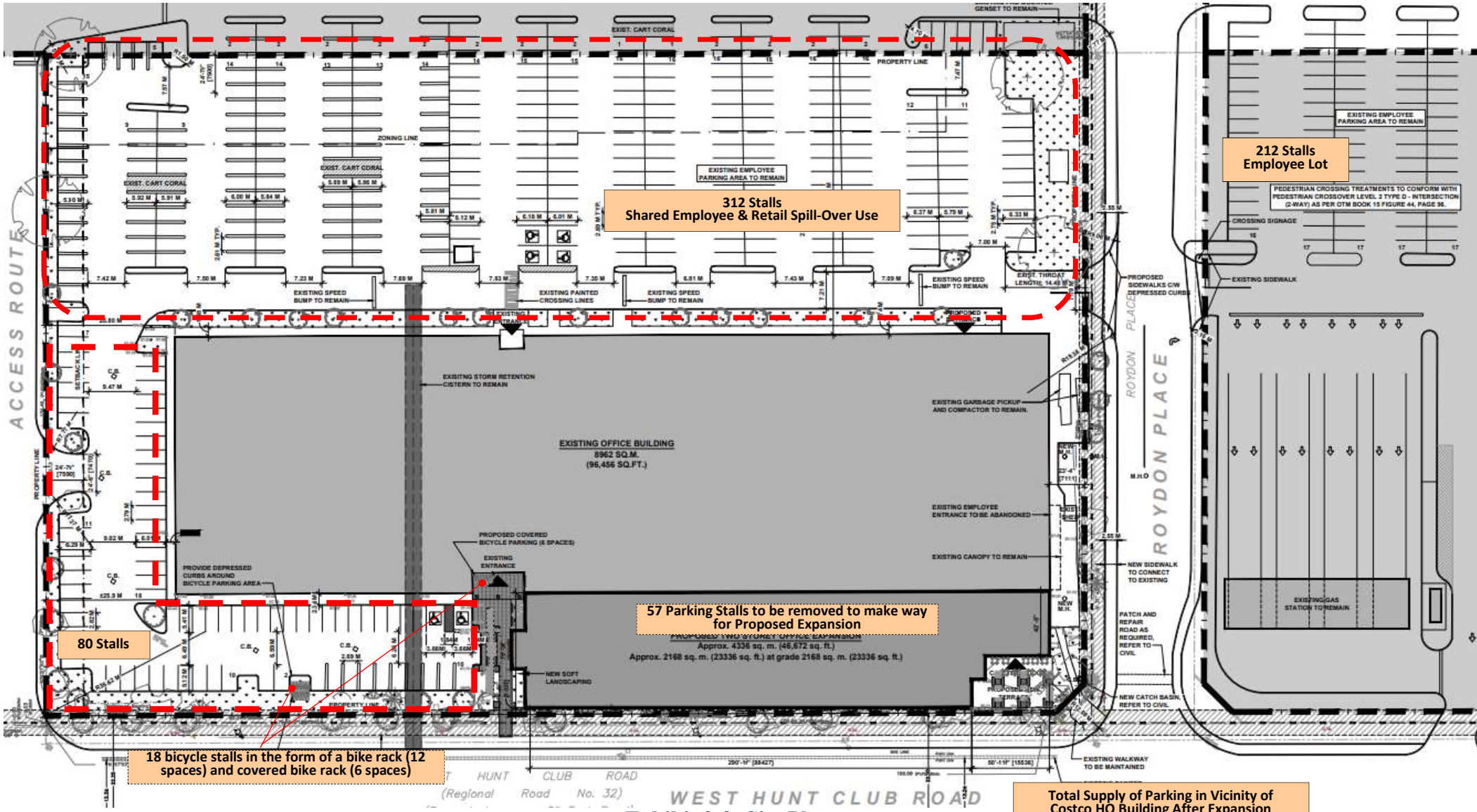


Exhibit 2-2: Site Plan (June, 2024)

2.1.2 Existing Conditions

2.1.2.1 Study Area Roadways

The City of Ottawa TMP was referenced along with a desktop review of aerial photography to document the existing roadways that would serve the proposed development and surrounding area. The municipal-owned roadways in the vicinity of the proposed development include the following:

West Hunt Club Road
- is an existing 3-lane westbound and 2-lane eastbound divided arterial roadway;
- posted speed limit of 80 km/h;
- a bike lane on both sides of the roadway;
- sidewalks are provided on each side;

Merivale Road
- is an existing 4-lane divided arterial roadway;
- posted speed limit of 60 km/h;
- sidewalks are provided on each side

Roydon Place
- is an existing 2-lane undivided collector roadway;
- unposted speed limit of 50 km/h;
- sidewalk is provided on the east side of the roadway for 1 block (between West Hunt Club Road and Costco Fuel Entrance Access).

2.1.2.2 Study Area Intersections

1. West Hunt Club Road and Merivale Road

This intersection is a 4-leg traffic signal-controlled public roadway intersection.

- The westbound and eastbound approaches have dedicated at-grade bike lanes.
- The westbound approach on West Hunt Club Road provides for 2 lanes of through traffic, 1 shared through-right turn lane, and a single left turn lane
- The eastbound approach along West Hunt Club Road provides for 1 lane of through traffic, 1 shared through-right turn lane and 2 left turn lanes.
- The northbound approach along Merivale Road provides for 2 lanes of through traffic and a single left turn lane, and a single right turn lane.
- The southbound approach along Merivale Road provides for 2 lanes of through traffic, 2 left turn lanes and a right turn lane.
- All four approaches provide for raised medians.
- Right turn channels are provided in each quadrant.
- The left turns on each leg are fully protected.
- The left turns on each leg are fully protected

Exhibit 2-2-3: West Hunt Club Road and Merivale Road Intersection

2. West Hunt Club Road and Toyota Access

Exhibit 2-4: West Hunt Club Road and Toyota Access Intersection

This intersection is a 3-leg minor leg Right In-Right Out STOP-controlled intersection.

- The westbound major approach provides for 3 lanes of through traffic;
- The eastbound major approach provides for 2 lanes of through traffic. Despite the existing median break, there are no left turns permitted from the eastbound approach;
- The southbound minor is a private approach and provides for 1 lane for right turns only;
- Sidewalks are provided along both sides of the east and west legs of the intersection;
- The southbound approach of the intersection has a sidewalk along the east side of the roadway;
- A continuous eastbound and westbound bike lane exists along the both side of West Hunt Club Road.

3. West Hunt Club Road and Roydon Place

This intersection is a 4-leg traffic signal-controlled public roadway intersection.

- The westbound major approach provides for 2 lanes of through traffic, one lane for shared through-right turn movement and 1 left turn lane;
- The eastbound major approach provides for 2 lanes of through traffic, 1 left turn lane and 1 right turn lane;
- Bike lanes are provided along the both sides of West Hunt Club Road;
- Both northbound and southbound approaches provide for 1 left turn lane and 1 shared through/right turn lane;
- Continuous sidewalks are provided along both sides of the westbound and eastbound approaches, as well as the east side of the southbound approach.

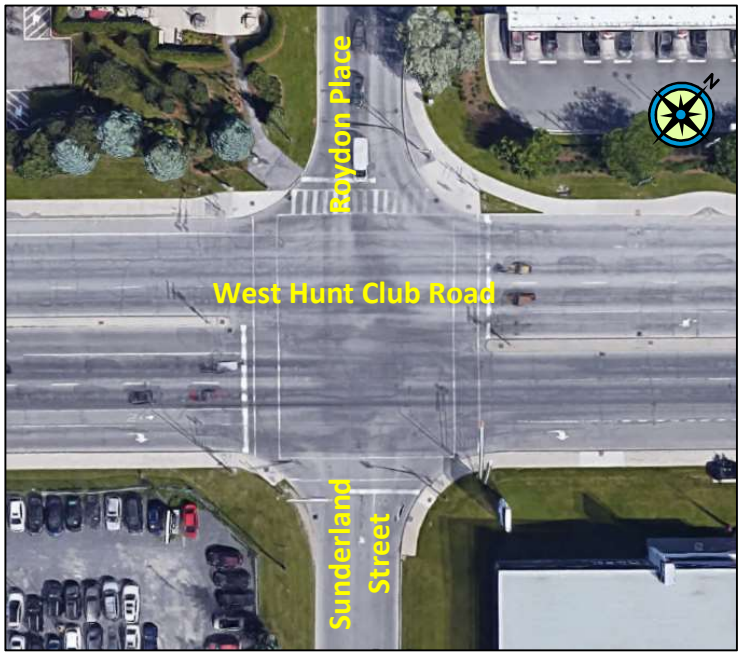


Exhibit 2-2-5 West Hunt Club Road and Roydon Place Intersection

4. Merivale Road and PetSmart Access

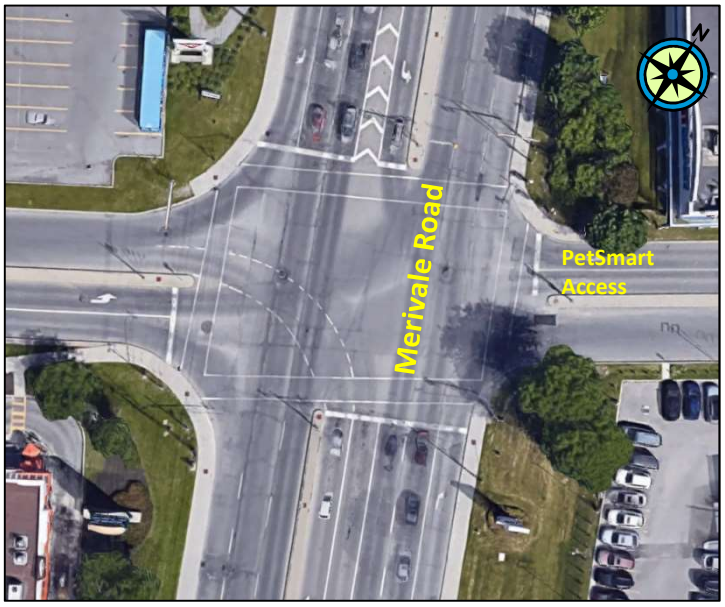


Exhibit 2-6: Merivale Road and PetSmart Access Intersection

This intersection is a 4-leg traffic signal-controlled intersection.

- The northbound approach provides for 2 lanes of through traffic, 2 left turn lanes and 1 right turn lane;
- The southbound approach provides for 2 lanes of through traffic, a single left turn lane and 1 right turn lane;
- Both westbound and eastbound approaches are private and provide for 1 left turn lane and 1 shared through/right turn lane;
- A continuous sidewalk is present along both sides of Merivale Road at the intersection;
- A solid median is present at all approaches;
- The left turns on major north-south legs are fully protected

5. Roydon Place and Costco Fuel Centre Access

This intersection is a 4-leg minor leg STOP-controlled intersection.

- The northbound approach provides for 1 shared through/left turn lane and a dedicated right turn lane;
- The eastbound and westbound minor approaches are private;
- The eastbound and westbound minor approaches and the southbound approach all provide for a single shared through-turn lane;
- A Sidewalk provided on the east side of the northbound approach.

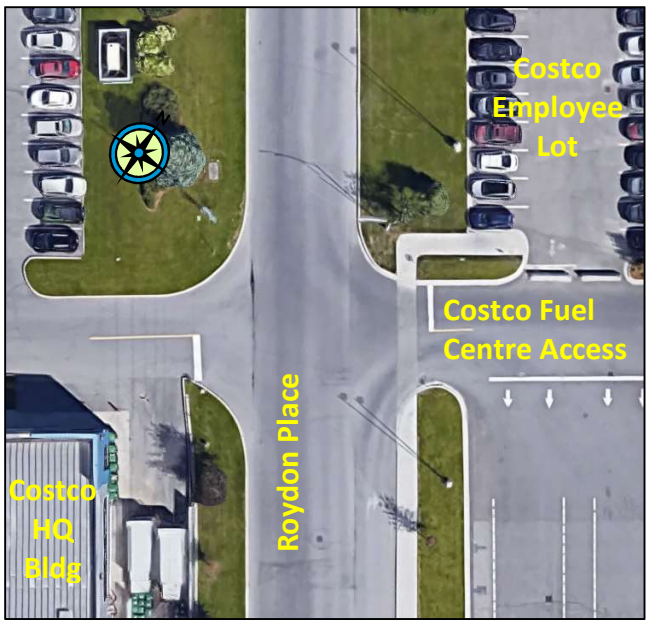


Exhibit 2-2-7: Roydon Place and Costco Fuel Centre Access

6. Roydon Place and Costco Employee Lot

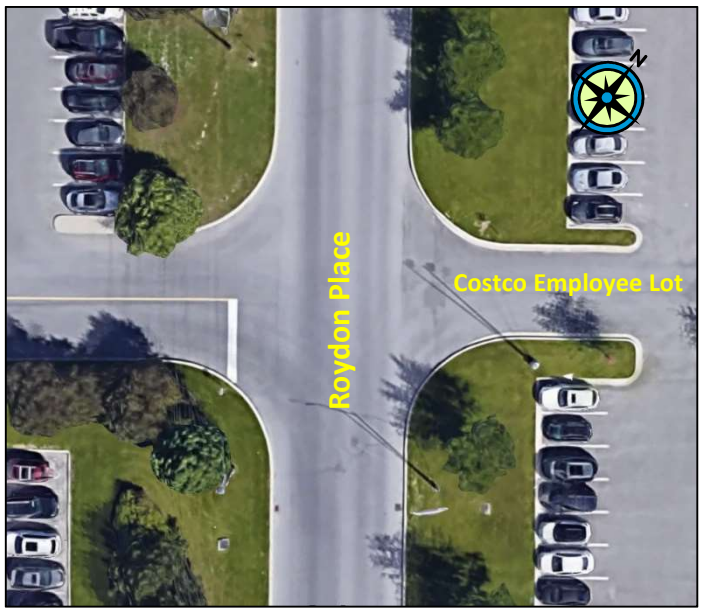


Exhibit 2-8: Roydon Place and Costco Employee Lot Intersection

This intersection is a 4-leg minor leg STOP-controlled intersection.

- All approaches have a single shared through-turn lane;
- The eastbound and westbound minor approaches are private;
- No sidewalks are provided at this intersection.

2.1.2.3 Existing Surrounding Driveways

Exhibit 2-9 illustrates the adjacent existing driveways within the immediate proximity (200 meters the access along each boundary street) of the proposed 415 West Hunt Club Road development. The existing site presently has access on Roydon Place and on the Toyota Access, and will continue to use these accesses. The following adjacent driveways were identified along three boundary streets (West Hunt Club Road, Roydon Place/Sunderland Street and Toyota Access):

West Hunt Club Road Accesses:

- *450 West Hunt Club Road* is a motorcycle dealership. It has 2 right in-right out access onto eastbound West Hunt Club Road. It is across the street from the West Hunt Club Road/Toyota Access intersection;
- *400 West Hunt Club Road* is a Mercedes Benz car dealership. It has a single right in-right out access onto eastbound West Hunt Club Road. The access is shared with 394 West Hunt Club Road below;
- *394 West Hunt Club Road* is an Infiniti car dealership. It has a single right in-right out access onto eastbound West Hunt Club Road. The access is shared with 400 West Hunt Club Road above;
- *390 West Hunt Club Road* is a Hyundai car dealership. It has a right in-right out access onto eastbound West Hunt Club Road. Additionally, it has an access onto Sunderland Street;
- *370 West Hunt Club Road* is a Jeep car dealership. It has a 2 right in-right out access onto eastbound West Hunt Club Road. It shares one of them with 390 West Hunt Club Road above;
- *369 West Hunt Club Road* is a Shell Fuel distribution centre. It has 1 access onto West Hunt Club Road, which is located 100 meters east of the West Hunt Club Road/Roydon Place intersection;

Roydon Place/Sunderland Street Accesses:

- *123 Roydon Place* is a Costco gas station. There is a single entrance on Roydon Place. Additionally there is an exit only onto West Hunt Club Road westbound;
- *30 Sunderland Street* is an Auto body Car Shop. They are located approximately 50 meters south of the West Hunt Club Road/Roydon Place intersection;
- *390 West Hunt Club Road* is a Hyundai car dealership in addition to its access on West Hunt Club Road, it has an access on Sunderland Street. It is located approximately 110 meters south of the West Hunt Club Road/Roydon Place intersection;

Toyota Access:

- *1855 Merivale Road (417 West Hunt Club Road)* is a Toyota car dealership. It has access onto the Toyota Access road, directly across from the proposed 415 West Hunt Club development.

Exhibit 2-9: Overview of Existing Adjacent Accesses & Driveways within 200m Radius of Proposed Site

2.1.2.4 Pedestrian Facilities

The following pedestrian facilities exist within the proximity of the development:

- West Hunt Club Road; Concrete sidewalks are provided along both sides
- Merivale Road; Concrete sidewalks are provided along both sides
- Roydon Place Concrete Sidewalks on the east side of the roadway
- Toyota/Costco Access Concrete Sidewalks on the east side of the roadway

2.1.2.5 Cycling Facilities

The following cycling facilities exist within the proximity of the development:

- West Hunt Club Road: "Spine Route" Classification: The corridor currently provides for eastbound and westbound bicycle lanes.
- Merivale Road: "Spine Route" Classification:
- Roydon Place: "Cycling Projects" Classification[3]:

All other roadways have no dedicated bicycle infrastructure with cyclists riding in mixed traffic with motor vehicles.

2.1.2.6 Area Traffic Management

No area traffic management strategies were found to be present within the study area.

2.1.2.7 Existing Transit Provisions

Exhibit 2-10 illustrates, and Table 2-1 describes, the existing transit (December 2022) operational service along roadways within the immediate proximity of the proposed development.

The nearest transit provisions include Routes 83 and 96, which use the bus stops West Hunt Club/Roydon and West Hunt Club/Sunderland. Route 80 uses the bus stop Merivale/West Hunt Club.

Less frequent routes include 186, 187, 199 and 680.

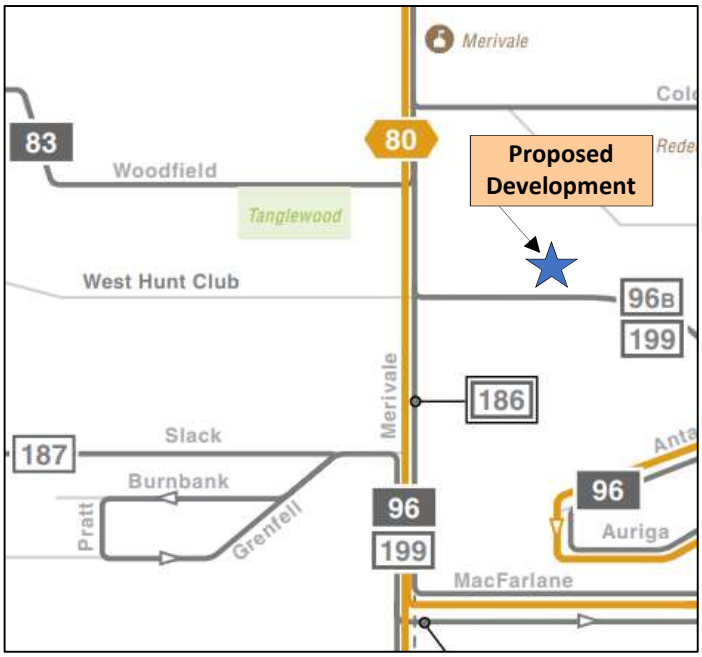


Exhibit 2-10: Transit Lines in the Study Area
(Not to Scale)

3 "*Ottawa Cycling Plan*", City of Ottawa, Nov. 2013. Page 64. "Cycling Projects "*are noted as "cross-town bikeways, missing links, community requests, employment node links, cycling potential and proximity to rapid transit*" facilities.

Table 2-1: Existing Transit Routes

Transit Route	Description
80	This "Frequent" bus route connects Barrhaven Centre in the South to the LRT system at Tunney's Pasture via Merivale Road. The rote runs Monday-Sunday with peak hour headways of 15 minutes
83	This "Frequent" bus route connects Viewmount, a neighbourhood near the development, to the LRT system at Tunney's Pasture via Baseline Station and the BRT. The rote runs Monday-Sunday with peak hour headways of 15 minutes.
96	This "Frequent" bus route between Merivale Mall and South Keys rapid bus station. Peak hour trips continue on to Hurdman Station to connect to the LRT system. The rote runs Monday-Sunday with peak hour headways of 15 minutes.
186	This "Local" bus route runs from the Slack Road Industrial Park to the BRT Lincoln Fields Station via Merivale Road, Meadowlands Road and Baseline Station. It runs every 25 minutes Monday-Friday.
187	This "Local" bus route connects the Amberwood neighbourhood to the BRT at Baseline station. It runs every 30 minutes Monday-Friday.
199	This Peak hour bus route provides service between Hurdman Station and the Leikin neighbourhood, Monday-Friday.
680	This special route provides service between Merivale High school and Riverside South before and after school Monday-Friday.

2.1.2.8 Existing Peak Hour Travel Demands by Mode

Pedestrian and Cyclist Travel Demand

Table 2-2 indicates the available morning & afternoon peak hour and 8-hour pedestrian and cyclist traffic volumes obtained from the City of Ottawa at the two available intersections nearest the proposed site.

The intersection traffic counts (provided by the City of Ottawa) indicated that they were conducted in the winter (February) of 2018 and 2020 and may not be representative of peak summer-time active transportation modes.

The traffic counts were undertaken at:

- the Merivale Road and West Hunt Club Road intersection on Monday, February 10, 2020;
- the West Hunt Club Road and Roydon Place intersection on Wednesday, February 27, 2018;

The traffic counts indicate moderate pedestrian and very minimal cyclist activity along the study area intersections. Given that the counts were conducted in the winter month of February, this is likely not representative of peak summer cycling activity.

Table 2-2: Pedestrian and Cyclist Peak Hour and 8-Hour Traffic Volumes

Period	Pedestrians Crossing	West Hunt Club Road and …			
		Merivale Road and		Roydon Place	
		Pedestrians	Cyclists	Pedestrians	Cyclists
8 Hour	Crossing East Leg	73	0	5	0
AM Peak		6	0	0	0
PM Peak		8	0	1	0
8 - Hour	Crossing West Leg	32	0	11	0
AM Peak		1	0	0	0
PM Peak		5	0	3	0
8 Hour	Crossing North Leg	37	0	9	1
AM Peak		3	0	0	1
PM Peak		1	0	3	0
8 Hour	Crossing South Leg	30	0	38	0
AM Peak		1	0	7	0
PM Peak		1	0	3	0
Total 8 Hour Counts		**172**	**0**	**63**	**1**
Total AM Peak Hour		**11**	**0**	**7**	**1**
Total PM Peak Hour		**15**	**0**	**10**	**0**

Vehicular Travel Demand

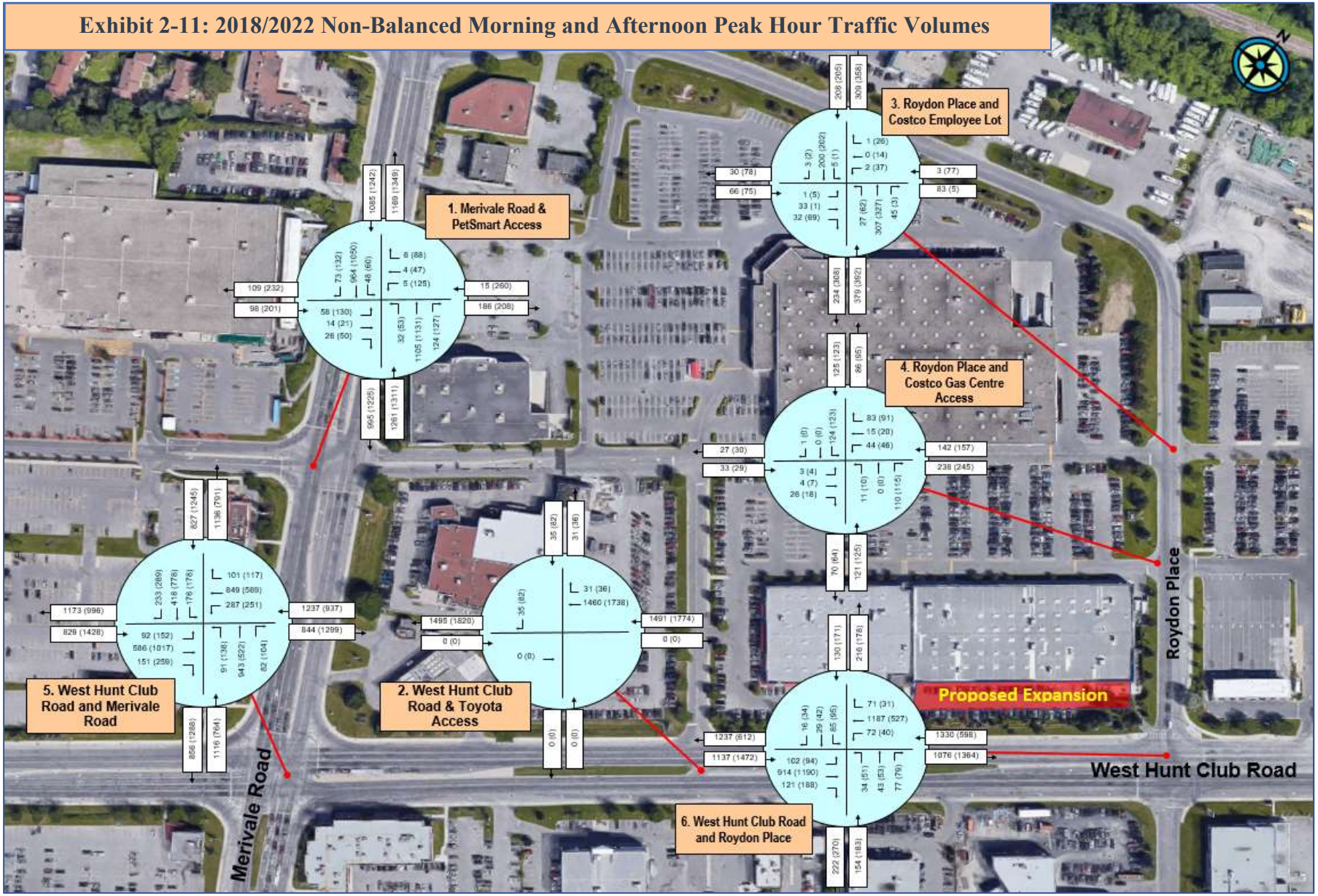
Exhibit 2-11 illustrates the existing (unbalanced) morning and afternoon peak hour traffic volumes within the study area using the traffic count data from the following intersections:

- West Hunt Club Road/Merivale Road: (City of Ottawa, February 10, 2020);
- West Hunt Club Road/Toyota Access: (City of Ottawa, February 27, 2018);
- West Hunt Club Road/Roydon: (Manual count, November 3, 2022);
- Merivale Road/ PetSmart Access: (Manual count, November 3, 2022);
- Roydon Place/Costco Fuel Centre Access: (Manual count, November 3, 2022);
- Roydon Place/Costco Employee Lot: (Manual count, November 3, 2022);

Exhibit 2-12 illustrates the existing balanced morning and afternoon peak hour traffic volumes. The following steps were completed in order to bring the traffic to a balanced 2022 horizon year:

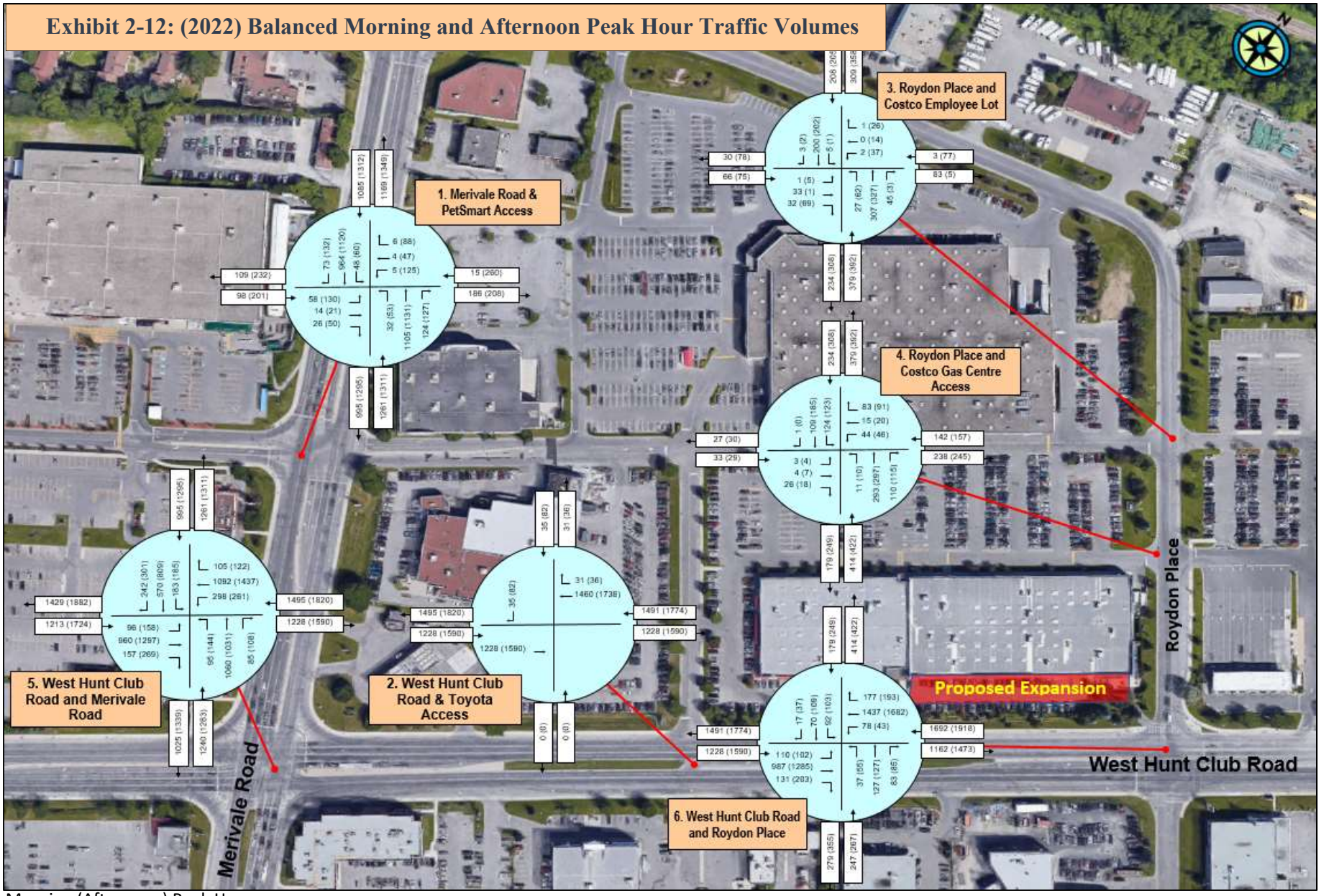
- Traffic volumes were balanced along West Hunt Club Road, Merivale Road and Roydon Place using the highest traffic volume recorded; and
- A 2% annual growth rate was applied to City of Ottawa traffic counts recorded on Merivale Road and West Hunt Club Road.

Exhibit 2-11: 2018/2022 Non-Balanced Morning and Afternoon Peak Hour Traffic Volumes



Morning (Afternoon) Peak Hour

Exhibit 2-12: (2022) Balanced Morning and Afternoon Peak Hour Traffic Volumes



Morning (Afternoon) Peak Hour

Existing Traffic Volumes Intersection Capacity Analysis

Table 2-3 summarizes the existing (2022) intersection capacity analysis (See Exhibit 2-12 for traffic volumes) undertaken with Synchro™ 10 traffic software for traffic-signal controlled intersections. City of Ottawa's MMLOS Guidelines were consulted to determine appropriate level of service metrics for each intersection. The levels of service are based on the volume-to-capacity (v/c) ratios. Target auto level of service for the "Arterial Mainstreet" and "All Other Designations" is LOS "D"[4].

This analysis assumes the development is not in place and only considers the effects of background growth and adjacent development traffic. Synchro analysis output sheets can be found in Appendix "F".

Table 2-3: Existing (2022) Traffic Operational Analysis Results

Intersection		*Control Type*	*Weekday Morning Peak Hour (Afternoon Peak Hour)*				
			Critical Movement				
			Approach / Movement	95th Percentile Queue (m)	Delay (seconds)	LOS	v/c
1.	West Hunt Club Road/Merivale Road	Traffic Signal	*WB-LT (EB-TH)*	192.2 (330.1)	560 (369)	F (F)	2.14 (1.74)
			WB Approach		145 (109)	F (F)	
			EB Approach		83 (288)	F (F)	
			SB Approach		67 (46)	E (D)	
			NB Approach		66 (103)	E (F)	
2.	West Hunt Club Road/Toyota Access	Minor Leg-STOP control (Right In-Right Out)	*SB-RT (SB-RT)*	3.75 (15.0)	20.6 (34.2)	A (A)	0.144 (0.43)
			WB Approach		0 (0)	A (A)	
3.	West Hunt Club Road/Roydon Place	Traffic Signal	*EB-LT (EB-LT)*	54.3 (23.9)	80.0 (58.6)	C (C)	0.78 (0.75)
			WB Approach		40 (36)	D (D)	
			EB Approach		32 (39)	C (D)	
4.	Merivale Road/PetSmart Access	Traffic Signal	*SB-LT (EB-LT)*	23.9 (52.8)	63.3 (77.8)	A (C)	0.47 (0.79)
			NB Approach		30 (6)	C (A)	
			SB Approach		28 (19)	C (B)	
5.	Roydon Place/Costco Fuel Centre Access	Minor Leg-STOP control	*WB (WB)*	12.0 (16.5)	18.1 (21.2)	A (A)	0.365 (0.443)
6.	Roydon Place/Costco Employee Lot	Minor Leg-STOP control	*EB (WB)*	3.75 (6.75)	13.6 (18.3)	A (A)	0.149 (0.241)

Intersections 1-thru-4 which have West Hunt Club Road or Merivale Road as an intersecting street can be considered to have land uses on either side of the roadways as "Arterial Mainstreet" land uses and as such would have a target auto LOS of "D"

Table 2-3 indicates the following:

- The intersection West Hunt Club Road/Merivale Road operates at inadequate levels of service "F" during both morning and afternoon peak hours of travel demand due to a high volume-to-capacity ratio of over 2.1 for the WB-LT movement during the morning peak hour, and over 1.7 for the EB-Th movement during the afternoon peak hour of travel demand; and
- All other intersection were found to operate at acceptable levels of service "D" or better;

4 "*City of Ottawa MMLOS Guidelines, Draft Report*", September 2015. Pages 21-24

2.1.2.9 Existing Road Safety Information

Historical collision information was reviewed for each of the study area intersections and segments. The collision information was provided by the City of Ottawa for the 5 year period between 2016-through-2020. The collision information provided included:

- the date and time of each collision;
- the type of collision (e.g., angle collision, rear-end);
- the severity of damage;
- vehicle details (truck, passenger vehicle, etc.);
- vehicle path/maneuver characteristics; and
- the number of pedestrians involved in the collision.

Table 2-4 provides a summary of both intersection and mid-block reported collision for the locations within the study area in terms of the type of collision and collision severity. As well, the table presents the calculated collision rate [as measured in number of collisions-per-million-vehicles that travelled either through the intersection or along the corridor.] A standard collision rate based on the number of collisions- per-million-entering-vehicles (MEV) was calculated. A rate greater than 1.0 collisions/MEV was considered to indicate a potential concern. Table 2-4 indicates the following:

Table 2-4: Five-Year Collision History (January 1st 2016 – December 31st 2020)

Intersection / Mid-block Location		Merivale Road and PetSmart Access	Merivale Road and West Hunt Club Road	West Hunt Club Road and Roydon Place	West Hunt Club Road Between Merivale Road and Roydon Place (EB mid-block)	West Hunt Club Road Between Merivale Road and Roydon Place (WB mid-block)
Total Collisions		**20**	**136**	**60**	**8**	**10**
Collision Type	**Rear End**	8	84	20	3	5
	Single Vehicle	4	4	2		1
	Sideswipe		31	8	5	
	Turning Movement	2	7	20		
	Angle	6	8	8		4
	Pedestrian					
	Other		2	2		
Collision Severity	**Property Damage**	12	118	49	6	9
	Non-Fatal Injury	8	18	10	2	1
	Fatal			1		
AADT		**32,400**	**56,500**	**35,200**	**14,000**	**12,500**
• **Collision Rate per-Millions of-Entering-Vehicles (MEV)**		**0.34**	**1.32**	**0.94**	**0.31**	**0.44**

- The *Merivale Road and PetSmart Access* 4-leg intersection was determined to have 20 collisions over a five-year period and exhibited an overall collision rate of 0.34 collisions/MEV which was considered to be within an acceptable range.
  - 40% of collisions were rear end collisions; and
  - 40% of the collisions resulted in injuries.

- The *Merivale Road and West Hunt Club Road* 4-leg intersection was determined to have 136 collisions over a five-year period and exhibited an overall collision rate of 1.32 collisions/MEV which is above the acceptable range.
  - 61% of collisions were rear end collisions; and
  - 13% of the collisions resulted in injuries.
- The *Mid-block on West Hunt Club Road between Merivale Road and Roydon Place* experienced 18 collisions (8 EB, 10 WB). [15 of them were just property damage, with 3 collisions resulting in injuries.] The collision rates are 0.31 eastbound and 0.44 westbound, which is considered to be within the acceptable range.
  - Pedestrians were never involved in these 18 collisions.
- The *West Hunt Club Road and Roydon Place* 4-leg intersection was determined to have 60 collisions over a five-year period and exhibited an overall collision rate of 0.94 collisions/MEV which is within the acceptable range, but is approaching the threshold.
  - 33% (20-of-the-60) collisions were "rear-end" collisions;
  - 33% (20-of-the-60) of collisions were "turning-movement" related.
  - The remainder (33% 20-of-the-60) were comprised of side-wipe, single vehicle, angle and other.

  Roughly 18% of the recorded collisions resulted in injuries; and

  Of the 33% of "turning-movement" collisions the following trends were identified:
  - 70% (14-of-the-20) collisions occurred during a left turn;
  - The left turning collisions were distributed fairly evenly between southbound, eastbound and westbound "initial direction of travel";
  - One of the rear-end westbound collisions involved three vehicles and a pedestrian fatality in 2016;
  - No real collision pattern can be identified.

Conclusions:

- The Merivale Road / PetSmart Access intersection and the mid-block along West Hunt Club Road between Merivale Road and Roydon Place both exhibited acceptable levels of safety;
- The Merivale Road / West Hunt Club Road intersection exhibits a rate of 1.32 which is greater than 1.0 collisions/MEV and was therefore considered to indicate a location of potential concern; and
- The West Hunt Club Road / Roydon Place intersection indicated a pedestrian fatality involving 3 westbound vehicles in 2016. The incident would seem to be attributed to the westbound traffic flow.

2.1.3 Planned Conditions

2.1.3.1 Changes to the Study Area Transportation Network

The City of Ottawa 2013 Transportation Master Plan presents a 2031 Network Concept plans that indicates the following:

- The West Hunt Club Road corridor is anticipated to be widened

- The West Hunt Club Road corridor is to be provided with infrastructure that assures it functions as a Transit Priority Corridor (with isolated measures); and
- The Merivale Road corridor is also designated as a Transit Priority Corridor (with continuous lanes).

2.1.3.2 Other Study Area Developments

Exhibit 2-13 illustrates the location of a single "active" development application" within the vicinity of the proposed Costco HQ expansion. This was identified through the City's development applications website. The only description of the project was "a connection between two existing buildings" and an estimated completion date was not provided. It is thought that this initiative would have a negligible traffic impact within the study area.

Exhibit 2-13: Adjacent Development Initiatives

2.2 Study Area and Time Periods

2.2.1 Study Area

Exhibit 2-1 illustrates the study area around the proposed development and includes the following boundary streets:

- West Hunt Club Road: Between Merivale Road and Roydon Place;
- Merivale Road: Between West Hunt Club Road and PetSmart Access; and

- Roydon Place: Between West Hunt Club Road and Costco Employee Lot Access.

A total of six intersections along the above boundary streets reside within the study area:

- West Hunt Club Road/Merivale Road;
- West Hunt Club Road/Roydon;
- Roydon Place/Costco Fuel Centre Access;
- West Hunt Club Road/Toyota Access;
- Merivale Road/ PetSmart Access; and
- Roydon Place/Costco Employee Lot;

The Merivale Road/Roydon Place intersection was excluded from the analysis as it is over 630m driving distance from the proposed office expansion and involves back-tracking into the HQ building. The route using the Merivale Road/PetSmart Access is only 500m driving distance. In addition, the site generated traffic to the Costco Headquarters building using this intersection is less than 19 vph during the peak hour of travel demand. The effect would be minimal to the intersection in that this translates to a single SB vehicle turning left onto Roydon Place.

2.2.2 Time Periods

The Forecasting Report examined the weekday morning and afternoon peak hours of travel demand. As the Costco Headquarters building is office related, and effectively closed on the weekend, the impact upon weekend travel patterns and traffic operations is negligible.

2.2.3 Horizon Years

The proposed development, at this point in time, is anticipated to be achieved by the Fall of 2024. The analysis to be undertaken for the forecasting report will also include a period anticipated to be five years after buildout which would be 2029.

2.3 EXEMPTION REQUEST

Table 2-5 reflects the requested exemptions/reductions in scope of work subsequent to the submission of the scoping document. These exemptions are contained within the Design Review and Network Impact Components of the TIA process.

Table 2-5: Exemptions as per TIA Guidelines

Module	Element	Exemption Considerations	Include Module in TIA
Design Review Component			
4.1 Development Design	**4.1.3 New Street Networks**	This is only required for plans of subdivision	No
4.2 Parking	**4.2.2 Spillover Parking**	The parking supply is not expected to be deficient	No
Network Impact Component			
4.8 Network Concept		The office expansion is not expected to generate more than 200 vehicle-trips during peak hours of travel demand.	No

3.0 FORECASTING

3.1 DEVELOPMENT GENERATED TRAVEL DEMAND

This section of the report describes the projected traffic generation by mode, as well as vehicle trip distribution and trip assignment associated with the full build-out and occupancy of the proposed development planned for 2024.

3.1.1 Trip Generation and Mode Shares

3.1.1.1 Trip Generation Rate and Split

The City of Ottawa TIA guidelines indicate that the source for forecasting traffic generation for employment generators is the ITE Trip Generation Manual, 11th Edition[5].

- The proposed expansion is classified as an "Office (700-799)"
- Table 3-1 outlines the average number of trip ends as referenced from the ITE Trip Generation Manual, 11th Edition for a corporate headquarters building.

Table 3-1: Vehicle Trip Generation per Peak Period (ITE Trip Generation Manual, 11t Edition)

ITE Land Use	Size	Morning Peak Hour		Afternoon Peak Hour	
		Entry	Exit	Entry	Exit
714 – Costco Corp HQ Expansion	46,000 Sq. Ft. GFA	62	5	5	55
	Total	**67**		**60**	

The table outlines the directional split factors that were applied to forecast the number of inbound and outbound vehicle trips. The development is forecast to generate:

- 62 inbound and 5 outbound trips during the morning peak hour; and
- 5 inbound and 55 outbound trips during the afternoon peak hour.

3.1.1.1 Mode Shares

Table 3-2 outlines the mode shares for an employment generator within the Merivale district, as referenced from the 2020 TRANS Trip Generation Manual[6].

Table 3-3 presents the resulting peak hour trips by travel mode for the proposed Costco expansion derived from applying the values in Table 3-2.

Table 3-2: Mode Shares
Employment Generator, Merivale (TRANS 2020)

Peak Period Mode Share Split (TRANS 2020 Table 12)		
Mode	**Mode Share, AM**	**Mode Share, PM***
Auto Driver	70%	70%
Auto Passenger	7%	7%
Transit	16%	16%
Cycling	3%	3%
Walking	4%	4%

* Employees are likely using the same mode of transportation when leaving work, it is fair to equivocate the PM peak period employment generator mode with the AM peak period.

5 City of Ottawa TIA Guidelines, Page 27
6 TRANS Trip Generation Manual Summary Report, Page 14, Table 12: Employment Generator Mode Share by District

Table 3-3: Peak Hour Trips* by Mode

	2024 Peak Hour Trips		2029 Peak Hour Trips	
Mode	**Morning**	**Afternoon**	**Morning**	**Afternoon**
Auto Driver	67	60	63	57
Auto Passenger	7	6	7	6
Transit	15	14	19	17
Cycling	3	3	3	3
Walking	4	4	4	3
Total Person Trips	**96**	**87**	**96**	**87**

* Values Rounded Up

3.1.1.2 Future Mode Shares

Table 3-4 outlines the future mode share targets for this development, along with justifications for each target. A comparison between the mode shares in Table 3-4 with the existing mode shares in Table 3-2 indicates an increase in transit shares from 16% to 20% recognizing transit improvements to both Merivale Road and West Hunt Club Road anticipated within the City of Ottawa TMP. The existing mode shares indicated in Table 3-2 were used for trip forecasting.

Table 3-4: Future (2029) Mode Share Targets

Travel Mode	Target Mode Share	Rationale
Transit	20%	West Hunt Club Road and Merivale Road are Transit Priority Corridors within the 2031 Network Plan. West Hunt Club Road is going to have isolated transit measures and Merivale Road will be widened to provide dedicated transit lanes.
Walking	4%	Good pedestrian and cycling infrastructure is already present in the area. Almost all roadways in the study area have sidewalks and West Hunt Club Road has cycling lanes in both directions. No change in walking or cycling mode shares are expected.
Cycling	3%	
Auto Passenger	7-11%	Auto passenger mode share could increase marginally, assuming a 1.15 vehicle occupancy[7]
Auto-driver	62-66%	West Hunt Club Road is expected to be widened within the 2031 Network Plan, but since the development horizon year is 2024, the only change in the auto-driver mode share could be minimal due to a slight increase in auto passenger trips.

3.1.2 Trip Distribution

As the development is an addition to an existing building, it is assumed that the trip distribution will remain the same as the existing travel patterns. A review of the 2022 traffic flow to and from the site was used as the basis for the following 2024 traffic distribution trends being adopted:

- North (29 inbound AM / 28 outbound PM)
- South (10 inbound AM/ 9 outbound PM)
- East (12 inbound AM/ 10 outbound PM)
- West (13 inbound AM/ 10 outbound PM)

The 2029 traffic trend results are slightly lower and account for an anticipated increased transit share.

3.1.3 Trip Assignment

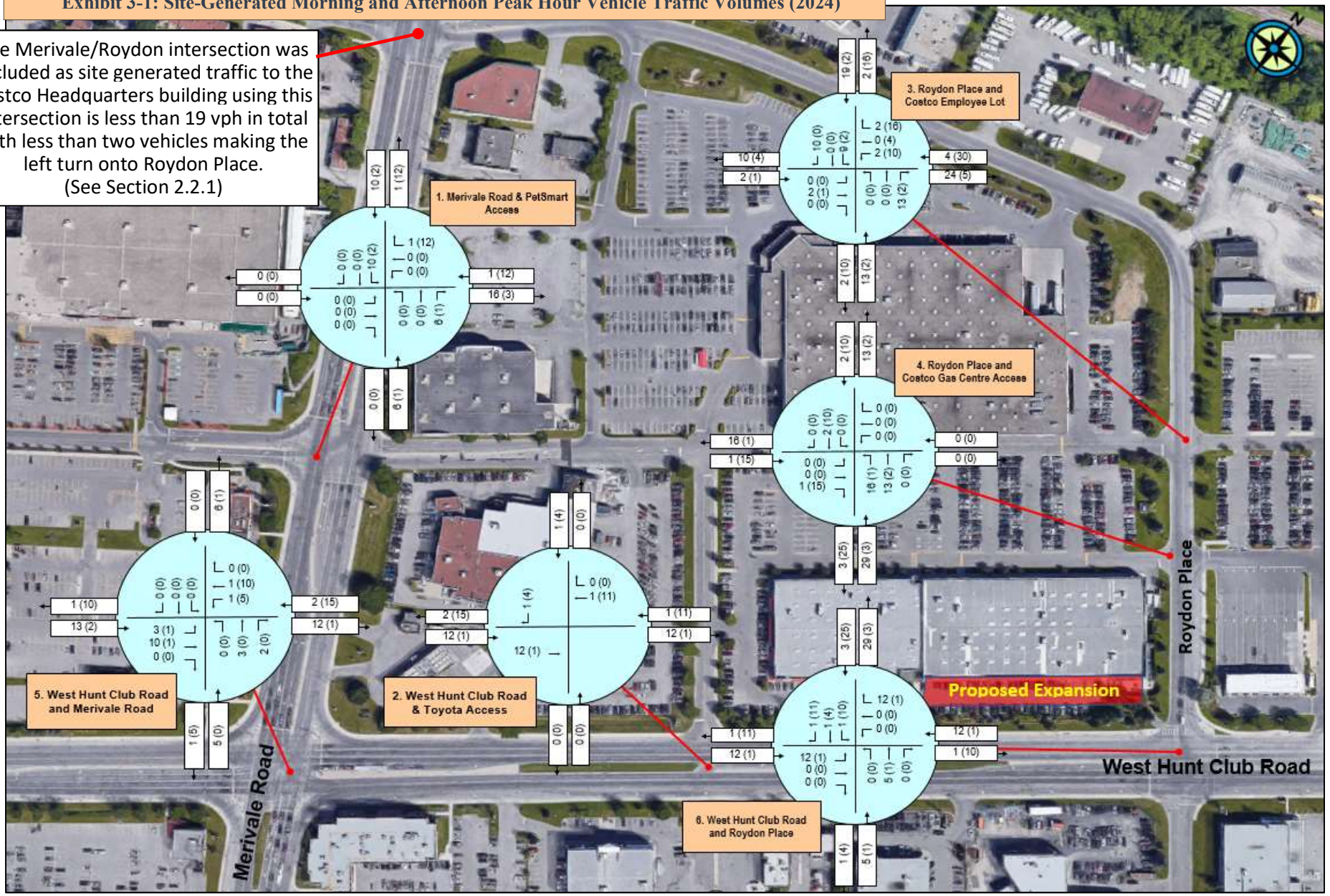
Exhibit 3-1 displays site-generated vehicle trips upon full occupancy of the development (2024). The traffic is assumed to access the development via the following intersections:

- Merivale Road / PetSmart Access
- Roydon Place / Costco Employee Lot
- West Hunt Club Road / Toyota Access
- Roydon Place / Costco Gas Centre Access

7 City of Ottawa TIA Guidelines, *June 2017*, Page 28

Exhibit 3-1: Site-Generated Morning and Afternoon Peak Hour Vehicle Traffic Volumes (2024)

The Merivale/Roydon intersection was excluded as site generated traffic to the Costco Headquarters building using this intersection is less than 19 vph in total with less than two vehicles making the left turn onto Roydon Place. (See Section 2.2.1)



Morning (Afternoon)

3.2 Background Network Travel Demand

3.2.1 Transportation Network Plans

As previously discussed in Section 2.1.3.1, the following changes to the transportation network are anticipated as part of the City of Ottawa's 2031 TMP:

- As part of 2031 Network Concept Plans, West Hunt Club Road is one of the arterial roads expected to be widened. This should improve traffic operations along West Hunt Club Road.
- As part of 2031 Network Concept Plans, West Hunt Club Road is one of the roadways identified as a Transport Priority Corridor. Only isolated measures are expected to occur, as opposed to continues bus lanes. The advent of these improvements could increase the transit mode share in the future.
- As part of 2031 Network Concept Plans, Merivale Road is one of the roadways identified as a Transport Priority Corridor. Continues bus lanes facilities are expected to be provide along the roadway. The advent of these improvements could increase the transit mode share in the future.

3.2.2 Background Growth

The 2031 TRANS Regional Model was compared to the calibrated 2011 model results. The adopted annual background growth rate along West Hunt Club Road and Merivale Road was determined to be 2%. A 1% annual background traffic growth rate along Roydon Place was assumed. Roydon Place is a collector roadway and the area surrounding it is fully developed, with the existing volumes matching or exceeding the 2031 TRANS Regional Model.

3.2.3 Other Developments

There is 1 development in the study area with an active development application (previously summarized in Section 2.1.3.2) involving a small auto repair shop. It is thought that this initiative would have a negligible impact on the traffic volumes in the study area's transportation network.

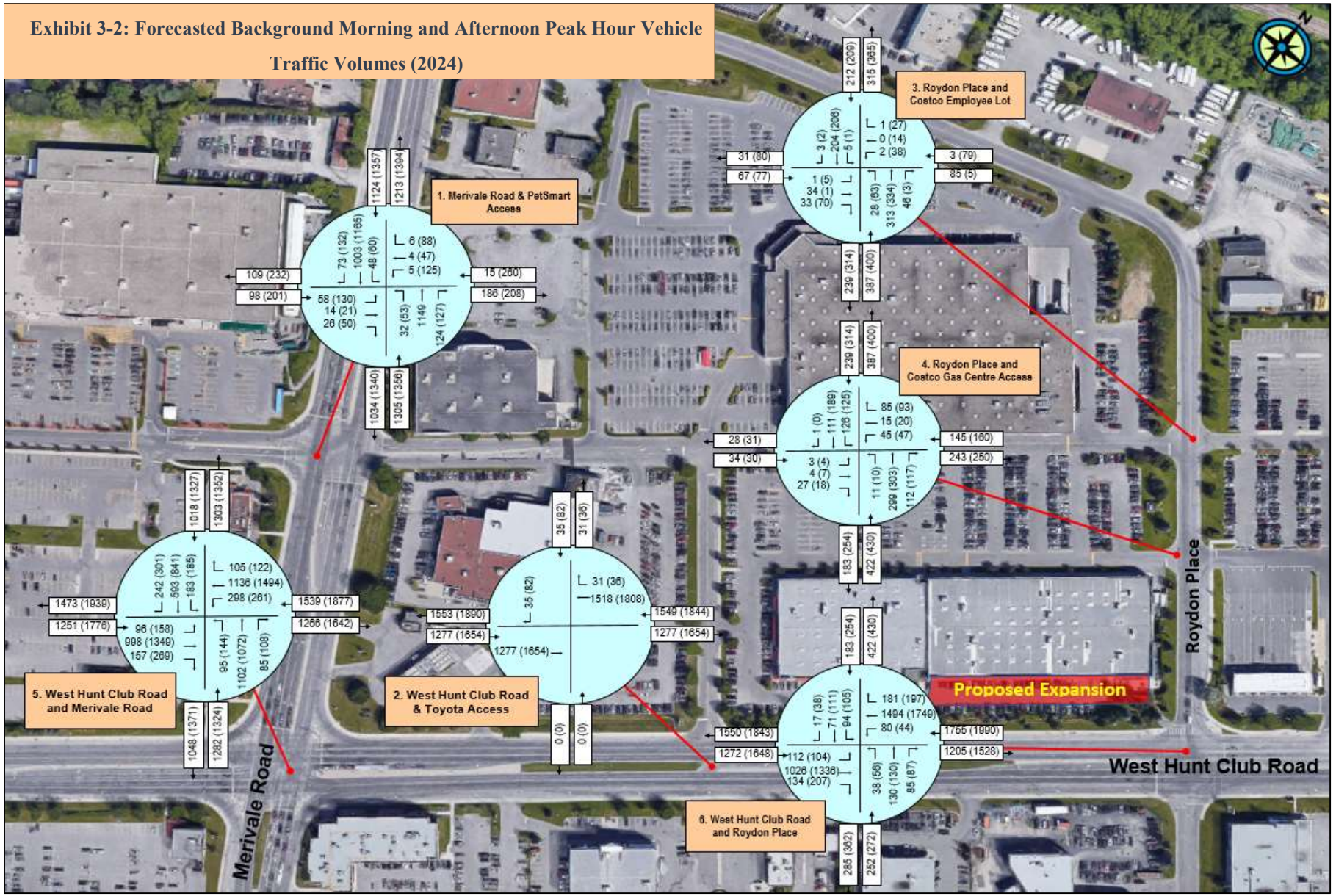
3.3 Demand Rationalization

The following section contains forecast traffic volumes for the forecast time of build-out (2024) and 5-years after build-out (2029), both with, and without, the proposed 415 West Hunt Club Road Costco Office Expansion.

3.3.1 Background Traffic Forecasts

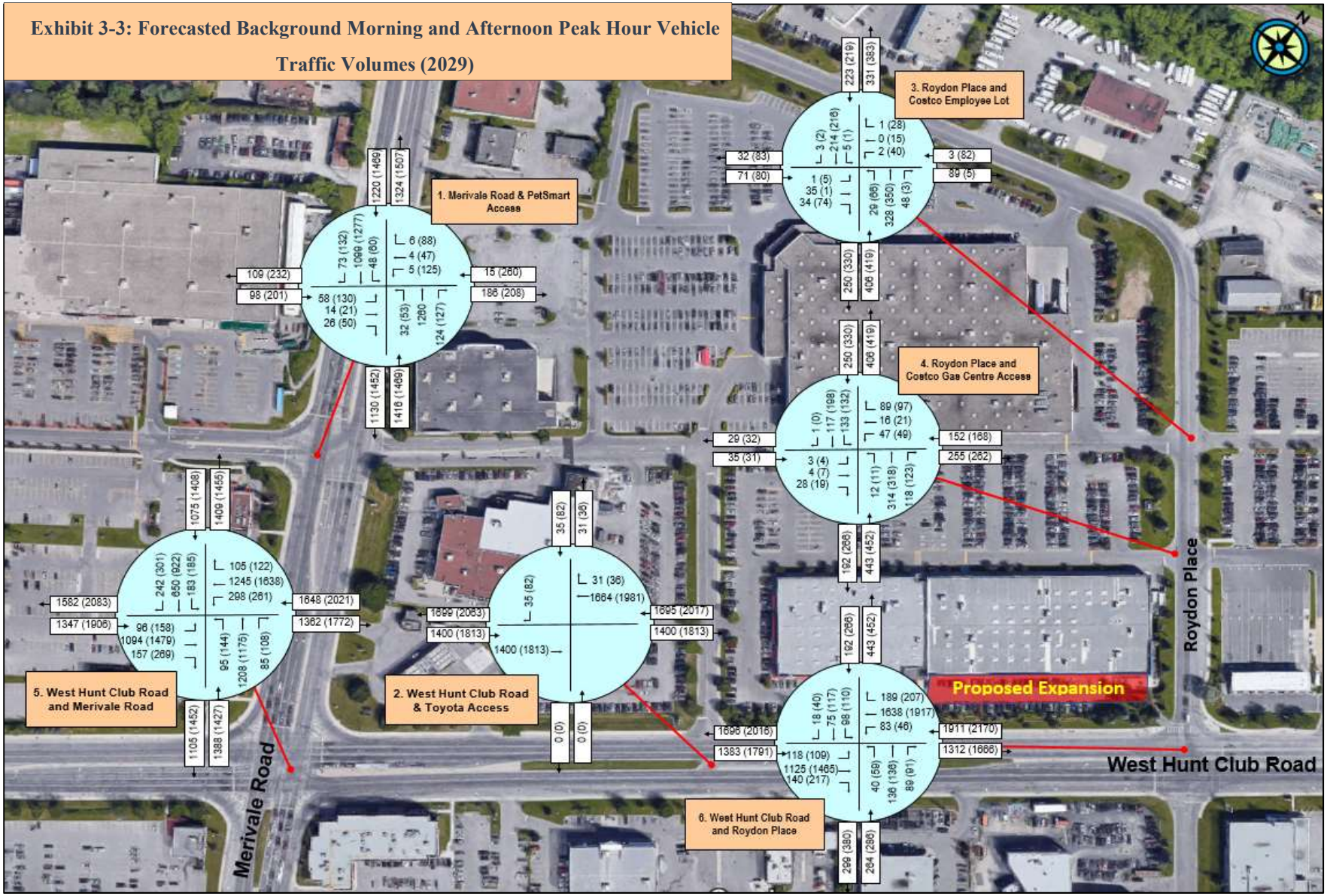
Exhibit 3-2 and exhibit 3-3 below illustrate background traffic forecasts for the forecast years 2024 and 2029, which combine the existing traffic network and the traffic generated by future developments in the study area. These exhibits exclude the impacts of the proposed 415 West Hunt Club Road Costco Office Expansion.

Exhibit 3-2: Forecasted Background Morning and Afternoon Peak Hour Vehicle Traffic Volumes (2024)



Morning (Afternoon)

Exhibit 3-3: Forecasted Background Morning and Afternoon Peak Hour Vehicle Traffic Volumes (2029)



Morning (Afternoon)

3.3.2 Total Traffic Forecasts

Exhibit 3-4 and Exhibit 3-5 below illustrate the total traffic forecasts for the 2024 and 2029 horizon years. The forecasts were developed by combining the forecast background network traffic and development-generated traffic demands.

Development-Generated Traffic Impacts

The advent of development is expected to cause minor impact on the surrounding transportation network. The 2024 horizon year would add a total of:

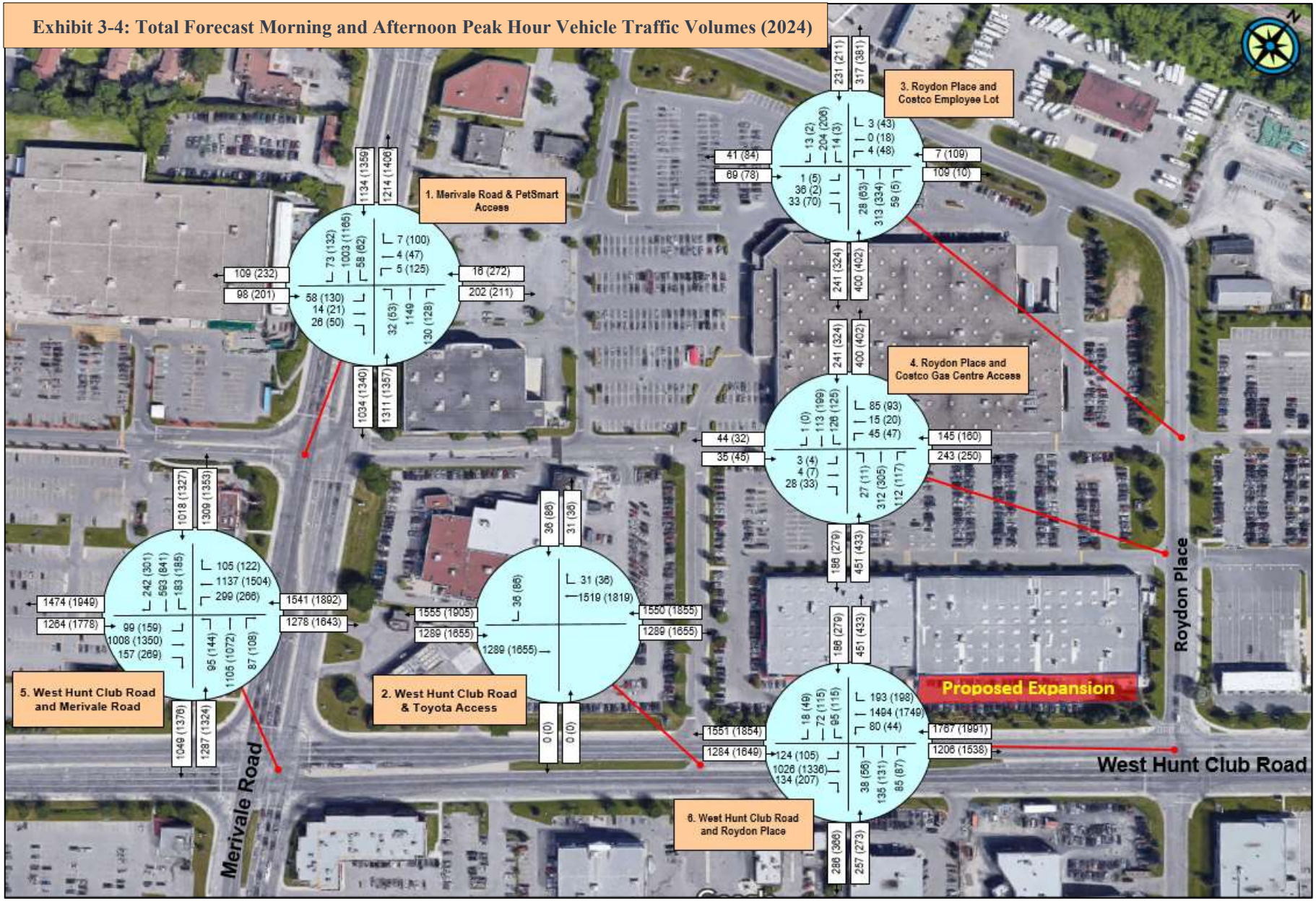
- 67 two-way auto-vehicle trips (62 inbound and 5 outbound) during the morning peak hour; and
- 60 two-way auto-vehicle trips (5 inbound and 55 outbound) during the afternoon peak hour.

The 2029 horizon year, with the advent of Transit Lanes along Merivale Road and isolated transit improvements along West Hunt Club Road would add a total of:

- 63 two-way auto-vehicle trips (58 inbound and 5 outbound) during the morning peak hour; and
- 57 two-way auto-vehicle trips (5 inbound and 52 outbound) during the afternoon peak hour.

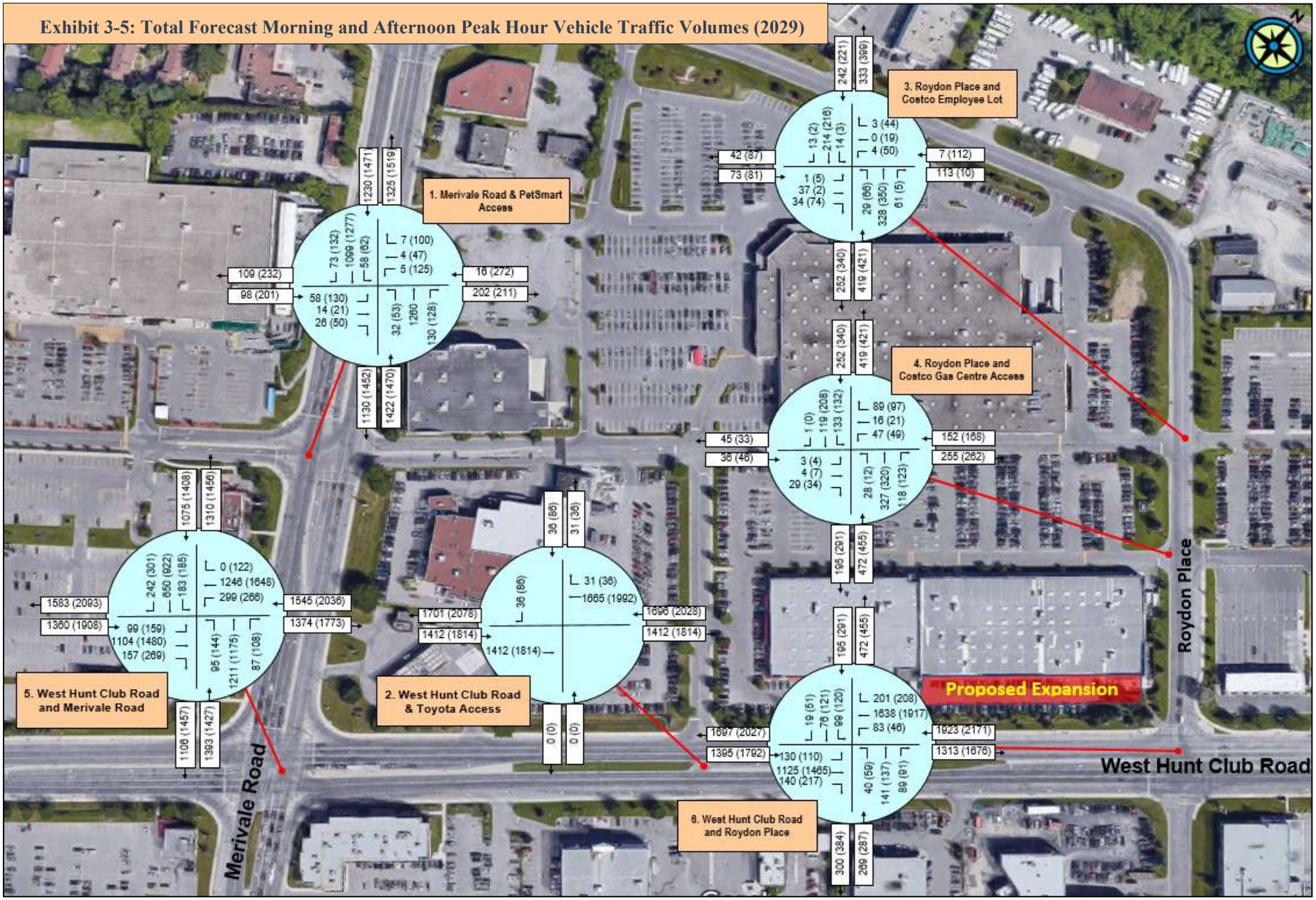
As West Hunt Club Road and Merivale Road are arterials with through volumes exceeding 1,000 vehicles per hour, the trips generated by the development will have a negligible impact on traffic operations of these roadways. Traffic along the collector roadway Roydon Place will experience up to 30 additional trips, but as the intersection along this roadway currently operate at a LOS “A”, the impact is expected to be minor.

Exhibit 3-4: Total Forecast Morning and Afternoon Peak Hour Vehicle Traffic Volumes (2024)



Morning (Afternoon)

Exhibit 3-5: Total Forecast Morning and Afternoon Peak Hour Vehicle Traffic Volumes (2029)



Morning (Afternoon)

3.3.3 Pedestrian-Generated Impacts

The employee parking lot located on the east side of Roydon place was monitored on Monday, Feb 27th, 2023 to assess the pedestrian traffic crossing Roydon Place during the morning and afternoon peak hours of travel demand. The table below indicates the east-west pedestrian activity crossing each of the two intersections on both the north and south sides of the intersections. The surveyors indicated that:

- Prior to 7AM there were 10 cars already parked in the Employee Lot;
- The Employee Lot is currently used for snow storage and there were 110 stalls of the possible 211 (52%) stalls available for parking on Feb 27th, 2023.
- At the end of the survey period (6pm) the lot was entirely empty.

Table 3-5 indicates that

- During the morning and afternoon peak hours of the survey approximately 100 pedestrians crossed Roydon Place. The majority of which were determined to be Costco employees headed to the corporate HQ building.
- The north leg of the south intersection accommodates the heaviest amount (approximately 66%) of morning and afternoon peak hour pedestrian traffic.
- Recognizing that almost half of the Employee Lot during the time of the survey was used for snow storage, it is natural to assume that pedestrian volumes during the summer months could potentially be double that indicated in the survey when the lot is fully used.

Table 3-5: Pedestrian Volumes

Roydon Place at ..	Pedestrians Crossing North Leg of Intersection		Pedestrians Crossing South Leg of Intersection	
Peak Period of Survey	Morning (7am-to-9am) [2.0 Hrs]	Afternoon (3:30pm-to-6pm) [2.5 Hrs]	Morning (7am-to-9am) [2.0 Hrs]	Afternoon (3:30pm-to-6pm) [2.5 Hrs]
• North Intersection	7	8	20	11
• South Intersection	59	80	1	7
Peak Hour of Vehicle Traffic	Morning	Afternoon	Morning	Afternoon
• North Intersection	7 (7:45am-to-8:45am)	4 (4:30pm-to-5:30pm)	17 (7:45am-to-8:45am)	7 (4:30pm-to-5:30pm)
• South Intersection	23 (8:00am-to-9:00am)	43 (4:45pm-to-5:45pm)	0 (8:00am-to-9:00am)	0 (4:45pm-to-5:45pm)

3.3.4 The Effects of Costco's HQ Work-at-Home Policy

Largely, in response to the Covid-19 pandemic, a work-at-home flexibility for various applicable employment positions was implemented at the Costco HQ facility. Over time the programme has been refined. The work-at-home flexibility requires that all eligible employees (with the exception of those that may be ill, travelling, on-vacation, having appointments away from the office etc.) are required to be in attendance each Monday and hence the flexibility operates only during Tuesdays-thru-Fridays. This schedule coincides with the parking demands with the adjacent warehouse/retail outlet in that, Mondays are

generally the lower demand days for retail activity and hence parking demands between the HQ employees and warehouse retail establishment are relatively balanced with one another.

Table 3-6 provides the employee attendance information at the Costco HQ facility (covering the month of September, 2022) that was analyzed to determine the impact of the work-at-home flexibility has upon current travel demand.

Table 3-6: Costco HQ Employee Work-from-Home (Sept 2022) Record

September 2022 Dates	Work Location	Full Attendance Day - Monday -	Work from Home Days				Weekly Total	Work From Home (Tues-thru-Friday) Total
			Tuesday	Wednesday	Thursday	Friday		
Aug 29-to-Sept 2	At Office	478	421	425	387	373	2,084	1,606
	At Home	8	69	62	96	66	301	293
	Total	486	490	487	483	439	2,385	1,899
Sept 5-to-Sept 9	At Office	Labour	402	422	385	411	1,620	1,620
	At Home	0	78	62	102	67	309	309
	Total	Day 0	480	484	487	478	1,929	1,929
Sept 12-to-Sept 16	At Office	513	424	440	398	424	2,199	1,686
	At Home	10	76	62	107	77	332	322
	Total	523	500	502	505	501	2,531	2,008
Sept 19-to-Sept 22	At Office	**536**	346	444	396	425	2,147	1,611
	At Home	12	74	70	108	77	341	329
	Total	**548**	420	514	504	502	2,488	1,940
Sept 26-to-Sept 30	At Office	512	452	436	413	437	2,250	1,738
	At Home	18	83	75	105	64	345	327
	Total	530	**535**	511	518	501	2,595	2,065
Average Daily Pct Working From Home	At Office	2,039	2,045	2,167	1,979	2,070	10,300	8,261
	At Home	48	380	331	518	351	1,628	1,580
	Total	2,087	2,425	2,498	2,497	2,421	11,928	9,841
	Average	**2.3%**	**15.7%**	**13.3%**	**20.7%**	**14.5%**	**13.6%**	**16.1%**

Maximum number of Employees Working (Mon-thru-Fri)	548
Maximum number of Employees in Attendance (Monday)	536

Total Employees Working (Tues-Thru-Fri) (includes Work-from-Home)	9,841
Maximum Daily Employees Working (Tues-thru-Fri) (includes Work-from-Home)	535
Minimum Daily Employees Working (Tues-thru-Fri) (includes Work-from-Home)	420
Average Daily Employees Working (Tues-thru-Fri) (includes Work-from-Home)	492

Total Employees Working-from-Home	1,580
Maximum Employees Working from Home (Tues-thru-Friday)	108
Minimum Employees Working from Home (Tues-thru-Friday)	62
Average Employees Working from Home (Tues-thru-Friday)	79

Total Employees Working at HQ Office (Tues-thru-Fri)	8,261
Maximum Daily Employees Working at Office (Tues-thru-Friday)	452
Minimum Daily Employees Working at Office (Tues-thru-Friday)	346
Average Employees Working at Office (Tues-thru-Friday)	413

Table 3-6 indicates that during the month of September, 2022:

- The maximum number of HQ employees working at the office on a Monday (when employees were, by policy, directed to be in attendance at work) was 548 employees [however 12 persons (2.3%) did work from home with permission]. Hence, the maximum number of employees working at the HQ site was found to be 536 employees of the full attendance Monday and 452 employees during the Tues-thru-Friday work days.

4.0 STRATEGY

4.1 DEVELOPMENT DESIGN

4.1.1 Design for Sustainable Modes

Travel Demand Management (TDM): The City of Ottawa's "TDM Supportive Development Design and Infrastructure" checklist was reviewed as part of this strategy report and it was determined that proposed development meets all of the required TDM infrastructure measures (See Appendix "F"). The building provides convenient and safe facilities to access the building for walking and cycling. All parking requirements for vehicles and bicycles were met. While not necessary, the following optional items were not provided for:

- No designated pick-up & drop-off facilities. The excess available parking or visitor parking spots can be used to pick-up & drop-off visitors or employees;
- No carpool/rideshare specific parking. Carpool mode shares are expected to be low, users can continue to utilize regular parking spaces;
- Secure bicycle parking and repair station. The mode share for cyclist is expected to be low, as such only simple bike racks and no bicycle repair station are provided; and
- On site amenities to minimize off-site trips.

Active Transportation Infrastructure: A review of nearby active transportation infrastructure indicates that pedestrian sidewalks are provided on both sides of West Hunt Club Road, and on both sides of Roydon Place as far as the Costco Employee parking lot. The development was found to provide good pedestrian connectivity to West Hunt Club Road.

In addition, cycling facilities (dedicated bike lanes) exist on both sides of West Hunt Club Road. The proposed location of new outdoor bike racks is conveniently position parallel to West Hunt Club Road on the south side of the parking lot facing Hunt Club Road. A concrete pathway located just to the east of the outdoor bike racks is conveniently located to assure accessibility. The attached Site Plan illustrates the 18 bike parking spaces provided outside the front entrance.

4.1.2 Circulation and Access

The proposed development represents an expansion to the existing office building *(See Exhibit 2-2 and Appendix "C")*. There are no deviations from the existing visitor parking stalls and garbage pickup locations. There are no new accesses being proposed and there are no modifications or proposed changes to the existing circulation routes.

4.2 PARKING

4.2.1 Motor Vehicle Parking

Table 4-1 summarizes the supply of parking required by the City of Ottawa's by-laws compared to the planned parking provisions associated with the proposed development.

Required Parking: The City of Ottawa's minimum parking requirements[8] indicate that 2.4 parking spaces-per-100 m^2 of gross floor area is required for an office development. The total area of the

8 "*City of Ottawa By-Law 2016-249*", Table 101, Row N59, area D on Schedule A1

Costco HQ building after the planned expansion would be approximately 13,235.5 m^2, and therefore

Table 4-1: Auto Parking Provisions Summary

Land Use	*Development Size*	*City Parking Requirement Rate*	*City Parking Requirement*	*Parking Provisions*
Office	12,994.4 m^2	2.4 per 100 m^2	312 stalls	604 stalls
Total			**312 stalls**	**604 stalls**

323 vehicle parking stalls would be required.

Supplied Parking: As indicated in Section 2.1.1.1, the proposed site plan, after the proposed building expansion which would require the removal of 54 parking stalls, would still provide for a total of 591 on-site employee parking stalls. This in addition to the 14 visitor parking stalls located closest to the front of the building results in a total parking supply of 604 stalls.

Section 3.3.4 emphasized that the Costco HQ Work-at-Home policy was found to require sufficient parking to accommodate 536 employees of the full attendance Monday and 452 employees during the Tuesday-thru-Friday workdays. The supply of 591 parking stalls more than accommodates employee e demand. It's noted that the surplus parking supply provides for shared parking to accommodate spill-over parking from the Costco Retail Center. However, the required full-attendance Monday for Costco HQ employees coincides with the significantly lower Monday patron demand at the Costco retail centre.

In summary, Table 4-1 indicates that the planned development's supply of parking requirements fully satisfies the City of Ottawa's by-law requirements.

4.2.2 Bicycle Parking

Table 4-2 summarizes the bicycle parking stall requirement of the City of Ottawa's By-law..

Table 4-2: Bicycle Parking Provisions Summary

Land Use	*City Requirement*	*Parking Provisions*
Office	18 stalls	18 stalls
Total	**18 stalls**	**18 stalls**

Required Bicycle Parking: The City of Ottawa's bicycle parking By-law[9] indicates that 1 bicycle stall is required-per-250 m^2 of gross floor area for an office land use. The City of Ottawa confirmed that under the previous zoning By-laws, the existing Costco HQ building had no requirement for bicycle parking (See Appendix "G" for correspondence). Hence, the minimum bicycle stall by-law provisions would only be applicable to the proposed building expansion. Therefore, when only the proposed expansion area of approximately 4,266.4 m^2 within the site plan is considered, a total of 18 bicycle parking stalls would be required.

Supplied Bicycle Parking: The proposed planned development would provide for 18 bicycle stalls in the form of a bike rack located west of the proposed new front entrance with 12 stalls, and a covered bike rack next to the front entrance proving 6 more stalls.

In summary, Table 4-2 indicates that the proposed development's provision of 18 bicycle stalls exceeds the City's By-law requirements. (See Exhibit 2-2 or Appendix C for site plan.)

9 City of Ottawa By-Law 2016-249, Section 111, Table 11A, (b) and (g)

4.3 BOUNDARY STREET DESIGN

The City of Ottawa's Multi-Modal Level of Service Guidelines[10] along with the MMLOS addendum[11] document were used to evaluate the multi-modal operational characteristics of the individual roadway segments in the vicinity of the proposed office expansion.

Exhibit 4-1 illustrates the location of the following five boundary street segments adjacent to the proposed 415 West Hunt Club Road development analyzed for MMLOS:

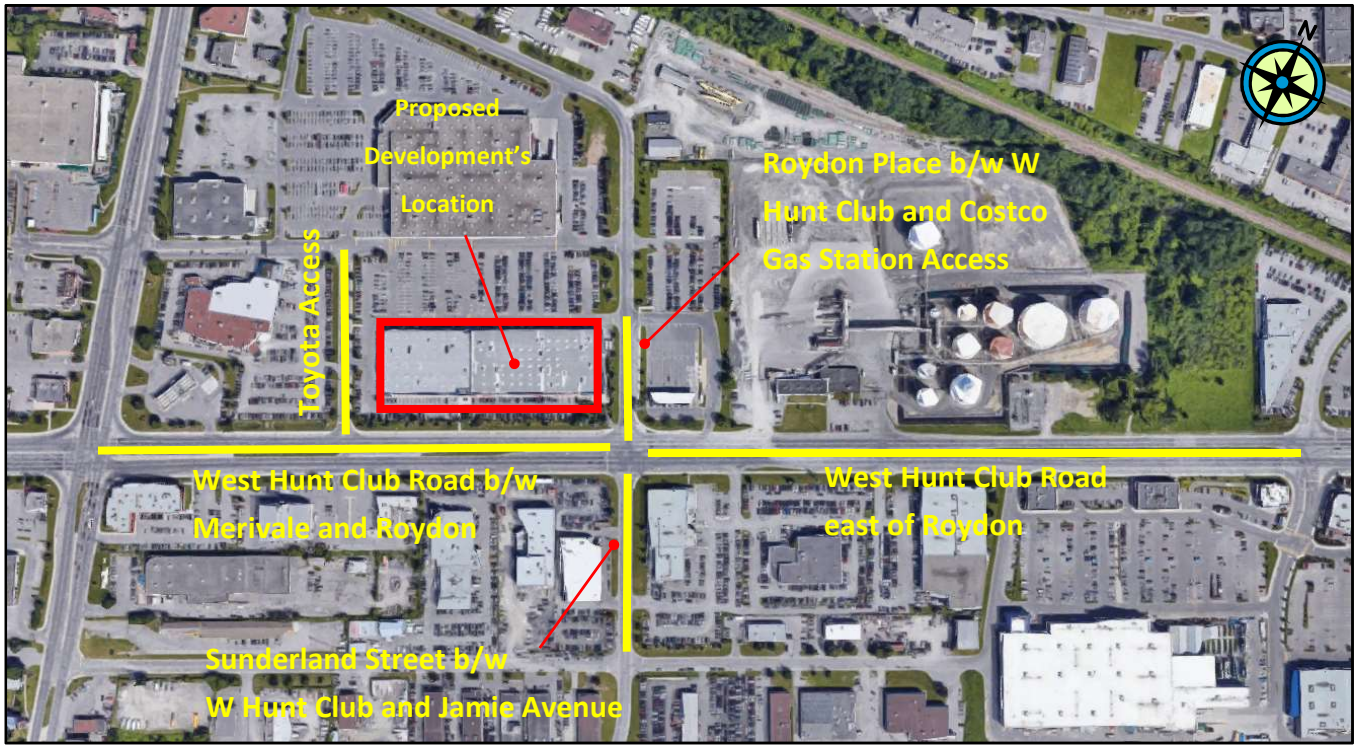


Exhibit 4-1: Boundary Street Segments for MMLOS Analysis

- West Hunt Club Road b/w Merivale Road and Roydon Place;
- West Hunt Club Road east of Roydon;
- Toyota Access.
- Sunderland Street b/w West Hunt Club Road and Jamie Avenue;
- Roydon Place b/w West Hunt Club Road and Costco Gas Access; and

The City of Ottawa's Multi-Modal Level of Service Guidelines outline the following level of service measures for various non-automotive transportation modes in the city:

- Pedestrian Level of Service (PLOS);
- Bicycle Level of Service (BLOS);
- Transit Level of Service (TLOS); and
- Truck Level of Service (TkLOS).

10 Multi-Modal Level of Service (MMLOS) Guidelines, IBI Group, September 2015
11 Document 5: Addendum to the City's Multi-Modal Level of Service Guidelines, December 2016

Table 4-3 provides the results of a segment MMLOS analysis in each direction of travel. The worst-scoring direction is used as an overall segment score. The table indicates the following:

Pedestrian Level of Service (PLOS): Only two segments (Roydon NB and Toyota Access NB) were found to meet their required PLOS of "C". The southbound direction for both of these segments, as well as Sunderland Street lack sidewalks. West Hunt Club Road requires the addition of boulevards to bring the PLOS along study area segments to target levels.

Bicycle Level of Service (BLOS): West Hunt Club Road segments fail to meets their BLOS target due to the operating speed of the roadway exceeding 70km/h. All other relevant segments meet the required BLOS.

Transit Level of Service (TLOS): All West Hunt Club Road segments meet their TLOS targets. All other segments do not have any existing transit service.

Truck Level of Service (TkLOS): All relevant segments meet the required TkLOS.

Table 4-3: Segment MMLOS Analysis Results

Location			Level of Service and Targets							
Roadway Segment		**Policy Area/ Land Use Designation**	**PLOS**	**Target PLOS**	**BLOS**	**Target BLOS**	**TLOS**	**Target TLOS**	**TkLOS**	**Target TkLOS**
West Hunt Club Road b/w Merivale Road and Roydon Place	WB	Arterial Main Street	**F**	C	**E**	C	D	D	A	D
	EB		**F**	C	**E**	C	D	D	A	D
West Hunt Club Road east of Roydon	WB		**F**	C	**E**	C	D	D	A	D
	EB		**F**	C	**E**	C	D	D	A	D
Roydon Place b/w West Hunt Club Road and Costco Gas Access	NB	Employment Area	C	C	D	E	N/A	N/A	B	D
	SB		**F**	C	D	E	N/A	N/A	B	D
Sunderland Street b/w West Hunt Club Road and Jamie Avenue	NB		**F**	C	N/A	N/A	N/A	N/A	B	E
	SB		**F**	C	N/A	N/A	N/A	N/A	B	E
Toyota Access	NB		B	C	No Target	No Target	N/A	N/A	B	E
	SB		**F**	C	No Target	No Target	N/A	N/A	B	E

Note – Levels of Service highlighted in bold font fail to meet the respective target LOS

- Detailed segment MMLOS analysis calculations are provided within Appendix "I".
- TLOS analysis was not performed on segments without existing transit service.

4.4 ACCESS INTERSECTION DESIGN

4.4.1 Location and Design of Access

The proposed development is an expansion of the Costco HQ building and will continue to utilize the existing accesses to the site. No new accesses are proposed. Vehicles will continue to access the development via the two intersections on Roydon Place as well as the entrance located off of the Toyota Access roadway.

4.4.2 Access Control

The proposed accesses to the development will continue to operate with STOP controls on the minor legs. While no modifications to the intersections are required to accommodate the additional motor vehicle traffic, pedestrian crossover improvements were considered, as conceptually illustrated within Exhibit 4-2, based on observed pedestrian traffic volumes that are detailed within Table 3-5. This concept was **NOT** pursued as City staff noted that the location is less than 200 meters from the West Hunt Club Road / Roydon Place traffic signal.

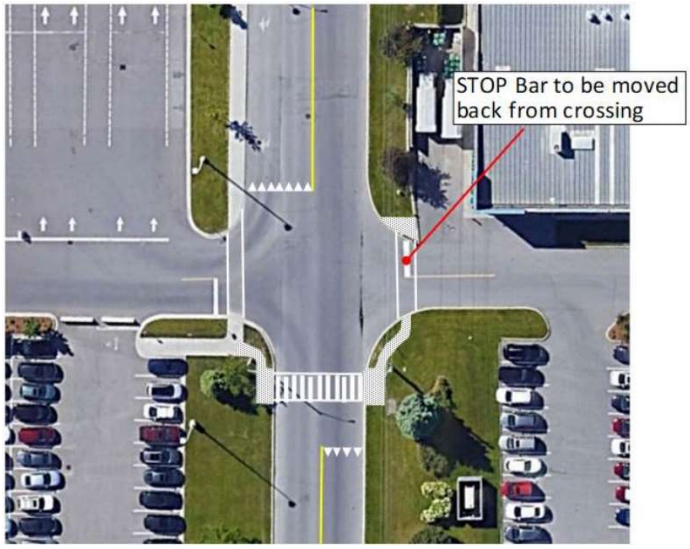


Exhibit 4-2: Conceptual Illustration of Pedestrian Cross-Over

4.4.3 Access MMLOS Analysis

Since the accesses are operating using minor leg-STOP control, no MMLOS analysis (including the auto LOS intersection capacity analysis) is required to be performed for the existing accesses. The City of Ottawa's MMLOS guidelines state that the LOS analysis is applicable to signalized intersections only[12].

4.5 TRANSPORTATION DEMAND MANAGEMENT

4.5.1 Context for TDM

The development's proposed mode share was compared to other equivalent developments. As seen in section 3.1.1.1, an employment generator in the Merivale Traffic Assessment Zone (TAZ) was used for comparing mode shares. The mode share percentages are found to be very similar.

Should the volumes generated by the proposed development be higher than expected, no other land uses will be affected. The hypothetical additional traffic will all be directed onto West Hunt Club Road and Merivale Road, which already operate under strained conditions without the developent in place.

Development Location and Involved Parties: the proposed development is not located in a Design Priority Area or Transit-oriented Development zone as per the City of Ottawa's Official Plan.

Costco Wholesale is the owner of the existing building as well as the proposed addition.

12 Multi-Modal Level of Service (MMLOS) Guidelines, IBI Group, September 2015. Page 4

Development Operations: This development is an office expansion for the existing Costco Headquarters building, and will continue to operate with the same opening and closing times. The majority (95%) of peak period person-trips will be employees commuting to and from work. The remaining 5% will be split amongst visitors, customers and deliveries.

4.5.2 Need and Opportunity

Based on the existing and proposed targets for sustainable mode shares, it is highly unlikely that there will be a failure in meeting the targets. There are already sufficient pedestrian and cycling facilities in place, and the advent of the West Hunt Club Road and Merivale Road being Transit Priority Corridors within the City of Ottawa's 2031 Network plan will increase transit users and decrease drivers.

4.5.3 TDM Program

As stated in Section 4.1.1, the existing building provides convenient and safe facilities to access the building for walking and cycling, and all parking requirements for vehicles and bicycles were met. Post-occupancy TDM measures beyond the ones already being provided are unnecessary. The completed TDM checklist is provided in Appendix "F".

4.6 Neighbourhood Traffic Management

4.6.1 Adjacent Neighbourhoods

A review of access routes to/from the proposed development concluded that Roydon Place, which is designated as a collector road, is used as the main access point. As seen in Exhibit 2-12, the existing (2022) traffic volumes (excluding the proposed development) along Roydon Place already exceed the 300 vehicles-per-hour threshold for collector roads. The reclassification of the roadway to Major collector may be necessary, but this occurs separate of the inclusion of development generated traffic.

4.7 Transit

Table 3-2 indicates that the proposed Costco HQ expansion may add a maximum of 20 additional transit users to the existing services by 2029. There are currently 8 routes with various headways servicing the study area. The capacity of the existing transit services can accommodate the new development-generated demand. This minor increase in passengers will not cause any transit delays.

4.8 Intersection Design

4.8.1 Signalized Intersection MMLOS

The intersection MMLOS analysis focused on the following signalized intersections in the study area and are consistent with the locations analyzed for vehicular levels of service:

- West Hunt Club Road/Merivale Road;
- West Hunt Club Road/Roydon;
- Merivale Road/ PetSmart Access;

Table 4-4 indicates the following results based on the intersection MMLOS analyses.

Table 4-4: Intersection MMLOS Analysis Results

Location		Level of Service and Targets							
Intersection	**Policy Area/ Land Use Designation**	**PLOS**	**Target PLOS**	**BLOS**	**Target BLOS**	**TLOS**	**Target TLOS**	**TkLOS**	**Target TkLOS**
West Hunt Club Road and Merivale Road	Arterial Main Street	**F**	C	**F**	C	**F**	D	A	D
West Hunt Club Road and Roydon Place	Arterial Main Street	**F**	C	**F**	C	**E**	D	F	D
Merivale Road and PetSmart Access	Mixed Use Centre	**F**	C	**F**	C	D	D	B	D

Note – Levels of Service highlighted in bold font fail to meet the respective target LOS

- Detailed intersection MMLOS analysis calculations are provided within Appendix "I".
- Each leg of the above three intersections were analyzed separately, and the worst-scoring intersection leg level of service is presented.

Pedestrian Level of Service (PLOS): All three signalized intersections failed to meet the target PLOS. This is largely attributed to the length of travel lanes required to be crossed.

Bicycle Level of Service (BLOS): All three signalized intersections failed to meet the target BLOS. Only West Hunt Club Road has bike lanes, but at all intersections, the amount of lanes to be crossed is too many and operating speeds are too large.

Transit Level of Service (TLOS): The Merivale/PetSmart Access meets the required TLOS, while the West Hunt Club Road intersections fail. This is due to large delays (over 40 seconds)

Truck Level of Service (TkLOS): All three intersections meet the required TkLOS.

4.8.2 Intersection Analysis (2024 Horizon Year)

Table 4-5 and Table 4-6 summarize the intersection capacity analysis results for the forecast year of buildout (2024) of the Costco HQ Expansion both with, and without, the proposed development in place. The analysis was undertaken with Synchro™ 10 traffic software. The Synchro analysis output sheets can be found in Appendix "E".

Table 4-5: Background 2024 Intersection Capacity Analysis (Without the Costco HQ Expansion)

Intersection		*Control Type*	*Weekday Morning Peak Hour (Afternoon Peak Hour)*				
			Critical Movement				
			Approach / Movement	**95th Percentile Queue (m)**	**Delay (seconds)**	**LOS**	**v/c**
1.	West Hunt Club Road/Merivale Road	Traffic Signal	*WB-LT (EB-TH)*	182.8 (304.1)	468.9 (321.3)	**F (F)**	1.92 (1.63)
2.	West Hunt Club Road/Toyota Access	Minor Leg-STOP control (Right In-Right Out)	*SB-RT (SB-RT)*	3.0 (11.25)	19.0 (28.5)	C (D)	0.12 (0.35)
3.	West Hunt Club Road/Roydon Place	Traffic Signal	*EB-LT (EB-LT)*	43.9 (22.7)	68.5 (58.4)	**E (E)**	0.64 (0.71)
4.	Merivale Road/PetSmart Access	Traffic Signal	*SB-LT (EB-LT)*	23.3 (47.1)	65.7 (72.2)	**E (E)**	0.43 (0.73)
5.	Roydon Place/Costco Fuel Centre Access	Minor Leg-STOP control	*WB (WB)*	9.75 (1.5)	16.0 (18.1)	C (C)	0.31 (0.37)
6.	Roydon Place/Costco Employee Lot	Minor Leg-STOP control	*EB (WB)*	3.0 (5.25)	12.9 (16.5)	B (C)	0.13 (0.20)

Table 4-6: Total 2024 Intersection Capacity Analysis (With the Costco HQ Expansion)

Intersection		*Control Type*	*Weekday Morning Peak Hour (Afternoon Peak Hour)*				
			Critical Movement				
			Approach / Movement	**95th Percentile Queue (m)**	**Delay (seconds)**	**LOS**	**v/c**
1.	West Hunt Club Road/Merivale Road	Traffic Signal	*WB-LT (EB-TH)*	173.6 (304.3)	471.6 (321.8)	**F (F)**	1.93 (1.63)
2.	West Hunt Club Road/Toyota Access	Minor Leg-STOP control (Right In-Right Out)	*SB-RT (SB-RT)*	3.0 (12.0)	19.1 (29.4)	C (D)	0.12 (0.37)
3.	West Hunt Club Road/Roydon Place	Traffic Signal	*EB-LT (EB-LT)*	48.1 (23.4)	71.4 (58.4)	**E (E)**	0.69 (0.71)
4.	Merivale Road/PetSmart Access	Traffic Signal	*SB-LT (EB-LT)*	27.1 (47.7)	69.7 (75.7)	**E (E)**	0.51 (0.76)
5.	Roydon Place/Costco Fuel Centre Access	Minor Leg-STOP control	*WB (WB)*	10.5 (13.5)	17.0 (18.8)	C (C)	0.33 (0.38)
6.	Roydon Place/Costco Employee Lot	Minor Leg-STOP control	*EB (WB)*	3.75 (8.25)	13.4 (17.3)	B (C)	0.14 (0.27)

The City of Ottawa's MMLOS Guidelines were referenced to determine the appropriate level of service metrics for each intersection. The levels of service are based on the volume-to-capacity (v/c) ratios. The target auto level-of-service for the "Arterial Mainstreet" and "All Other Designations" is LOS "D"[13].

13 "*City of Ottawa MMLOS Guidelines, Draft Report*", September 2015. Pages 21-24

A comparison of the result of Table 4-5 (without the proposed Costco expansion) to Table 4-6 (with the proposed Costco expansion) indicate the following:

- *The West Hunt Club Road/Merivale Road intersection* operates at inadequate levels of service "F" during both morning and afternoon peak hours of travel demand due to high volume-to-capacity ratios of 1.93 in the WB-LT and 1.63 in the EB-TH respectively;
- The intersection West Hunt Club Road/Roydon Place operates at inadequate levels of service "E" during both morning and afternoon peak hours of travel demand due to high volume-to-capacity ratios in the EB-TH of 0.69 and 0.71 respectively;
- The intersection Merivale Road/PetSmart Access operates at inadequate levels of service "E" during both morning and afternoon peak hours of travel demand due to high volume-to-capacity ratios of 0.51 in the SB-LT and 0.76 in the EB-LT respectively and delays of over 70 seconds; and
- All other intersection were found to operate at acceptable levels of service "D" or better with or without the development traffic in place;

The comparison of the results indicates that the effect of the proposed expansion of the office building is essentially negligible, implying that the failure of the above intersections represents a pre-existing condition.

4.8.3 Intersection Analysis (2029 Horizon Year)

In a similar manner, Table 4-7 and Table 4-8 summarize the future intersection capacity analysis results for the period 5-years beyond buildout (2029) of the Costco HQ Expansion both with, and without, the proposed development in place.

Table 4-7: Background 2029 Intersection Capacity Analysis (Without the Costco HQ Expansion)

Intersection		*Control Type*	*Weekday Morning Peak Hour (Afternoon Peak Hour)*				
			Critical Movement				
			Approach / Movement	**95th Percentile Queue (m)**	**Delay (seconds)**	**LOS**	**v/c**
1.	West Hunt Club Road/Merivale Road	Traffic Signal	*WB-LT (EB-TH)*	172.5 (340.7)	468.9 (388.7)	**F (F)**	1.92 (1.79)
2.	West Hunt Club Road/Toyota Access	Minor Leg-STOP control (Right In-Right Out)	*SB-RT (SB-RT)*	3.75 (13.5)	20.8 (33.8)	C (D)	0.13 (0.40)
3.	West Hunt Club Road/Roydon Place	Traffic Signal	*EB-LT (EB-LT)*	51.5 (22.6)	76.6 (59.0)	**E (E)**	0.72 (0.73)
4.	Merivale Road/PetSmart Access	Traffic Signal	*SB-LT (EB-LT)*	23.6 (47.1)	69.2 (72.2)	**E (E)**	0.47 (0.73)
5.	Roydon Place/Costco Fuel Centre Access	Minor Leg-STOP control	*WB (WB)*	11.25 (14.25)	17.1 (19.7)	C (C)	0.34 (0.41)
6.	Roydon Place/Costco Employee Lot	Minor Leg-STOP control	*EB (WB)*	3.75 (6.0)	13.3 (17.5)	B (C)	0.14 (0.22)

Table 4-8: Total 2029 Intersection Capacity Analysis (With the Costco HQ Expansion)

Intersection		*Control Type*	*Weekday Morning Peak Hour (Afternoon Peak Hour)*				
			Critical Movement				
			Approach / Movement	**95th Percentile Queue (m)**	**Delay (seconds)**	**LOS**	**v/c**
1.	West Hunt Club Road/Merivale Road	Traffic Signal	*WB-LT (EB-TH)*	173.6 (341.1)	471.6 (389.3)	**F (F)**	1.93 (1.79)
2.	West Hunt Club Road/Toyota Access	Minor Leg-STOP control (Right In-Right Out)	*SB-RT (SB-RT)*	3.75 (14.25)	20.9 (35.2)	C (D)	0.14 (0.42)
3.	West Hunt Club Road/Roydon Place	Traffic Signal	*EB-LT (EB-LT)*	59.3 (22.6)	81.4 (59.1)	**F (E)**	0.77 (0.73)
4.	Merivale Road/PetSmart Access	Traffic Signal	*SB-LT (EB-LT)*	28.0 (47.7)	74.3 (75.7)	**E (E)**	0.55 (0.76)
5.	Roydon Place/Costco Fuel Centre Access	Minor Leg-STOP control	*WB (WB)*	12.0 (15.0)	18.3 (20.4)	C (C)	0.36 (0.42)
6.	Roydon Place/Costco Employee Lot	Minor Leg-STOP control	*EB (WB)*	3.75 (9.0)	13.8 (18.4)	B (C)	0.15 (0.30)

A comparison of the result of Table 4-7 (without the proposed Costco expansion) to Table 4-8 (with the proposed Costco expansion) for the 2029 Horizon year indicates the following:

- *The West Hunt Club Road/Merivale Road intersection* continues to operates at unsatisfactory levels of service "F" due to high v/c ratios of 1.93 in the WB-LT and 1.79 in the EB-TH during both morning and afternoon peak hours of travel demand respectively;
- *The West Hunt Club Road/Roydon Place intersection* exhibits relatively high v/c ratios of 0.77 and 0.73 associated with the EB-TH movement with inadequate levels of service "E" during both morning and afternoon peak hours of travel demand;
- *The Merivale Road/PetSmart Access intersection* is forecast to operate at a congested levels of service "E" during both morning and afternoon peak hours of travel demand with v/c ratios of 0.55 in the SB-LT and 0.76 in the EB-LT respectively with delays exceeding 70 seconds; and
- All other intersection were found to operate at acceptable levels of service "D"-or-better with, or without, the development traffic in place;

The comparison of the results indicates that the effect of the proposed expansion of the office building can be considered to be essentially negligible, implying that the failure of the above intersections represents a pre-existing condition.

5.0 CONCLUSION

The following traffic operation related conclusions have been found relating to the proposed 415 West Hunt Club Road HQ office expansion:

- The net effect of the generated traffic upon the roadway network is anticipated to result in negligible impacts to traffic operational characteristics such as levels-of-service, volume-to-capacity ratios and delays at the adjacent intersections. This is substantiated by the "with development" and "without development analyses for the 2024 and 2029 horizon years.";
- A review of current motor-vehicles and bicycle parking demand and supply indicates that the Costco HQ site has sufficient parking supply to accommodate the proposed office expansion to remain in compliance with the City's current municipal parking by-laws; and
- The site provides adequate connections to transit and active mode infrastructure in the area.

6.0 SIGN-OFF

Should you have any questions or comments, please do not hesitate to contact us.

We await your feedback prior to finalizing this TIA report.

Yours truly,

Mr. Arthur Gordon B.A. P.Eng
Principal Engineer
Castleglenn Consultants Inc.

Mr. Konstantin Joulanov BASc., M. Eng
Transportation Planner
Castleglenn Consultants Inc.

APPENDIX A:

CERTIFICATION FORM FOR TIA STUDY PROJECT MANAGER

Certification Form for TIA Study PM

TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

CERTIFICATION

- ☑ I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
- ☑ I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
- ☑ I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
- ☑ I am either a licensed[1] or registered[2] professional in good standing, whose field of expertise
  - ☑ is either transportation engineering
  - ☑ or transportation planning.

[1,2] License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.

City Of Ottawa
Infrastructure Services and Community Sustainability
Planning and Growth Management
110 Laurier Avenue West, 4th fl.
Ottawa, ON K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Dated at Ottawa (City) this 13 day of February, 20 23.

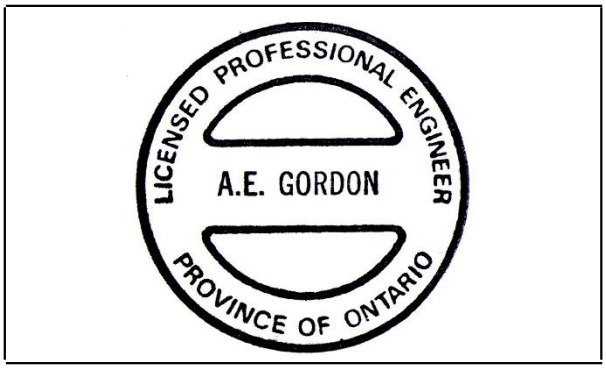
Name : Arthur Gordon

Professional title: Principal, Chairman Board of Directors

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

Office Contact Information (Please Print)
Address: 2460 Lancaster Road, Suite 200
City / Postal Code: K1B 4S5
E-Mail Address: agordon@castleglenn.ca

Stamp



APPENDIX B:

SCREENING FORM

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	415 West Hunt Club Road
Description of Location	
Land Use Classification	Office
Development Size (units)	0
Development Size (m^2)	4,273.6 m2 GFA
Number of Accesses and Locations	None Proposed
Phase of Development	1 phase
Buildout Year	2024

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^2
Industrial	5,000 m^2
Fast-food restaurant or coffee shop	100 m^2
Destination retail	1,000 m^2
Gas station or convenience market	75 m^2

** 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.

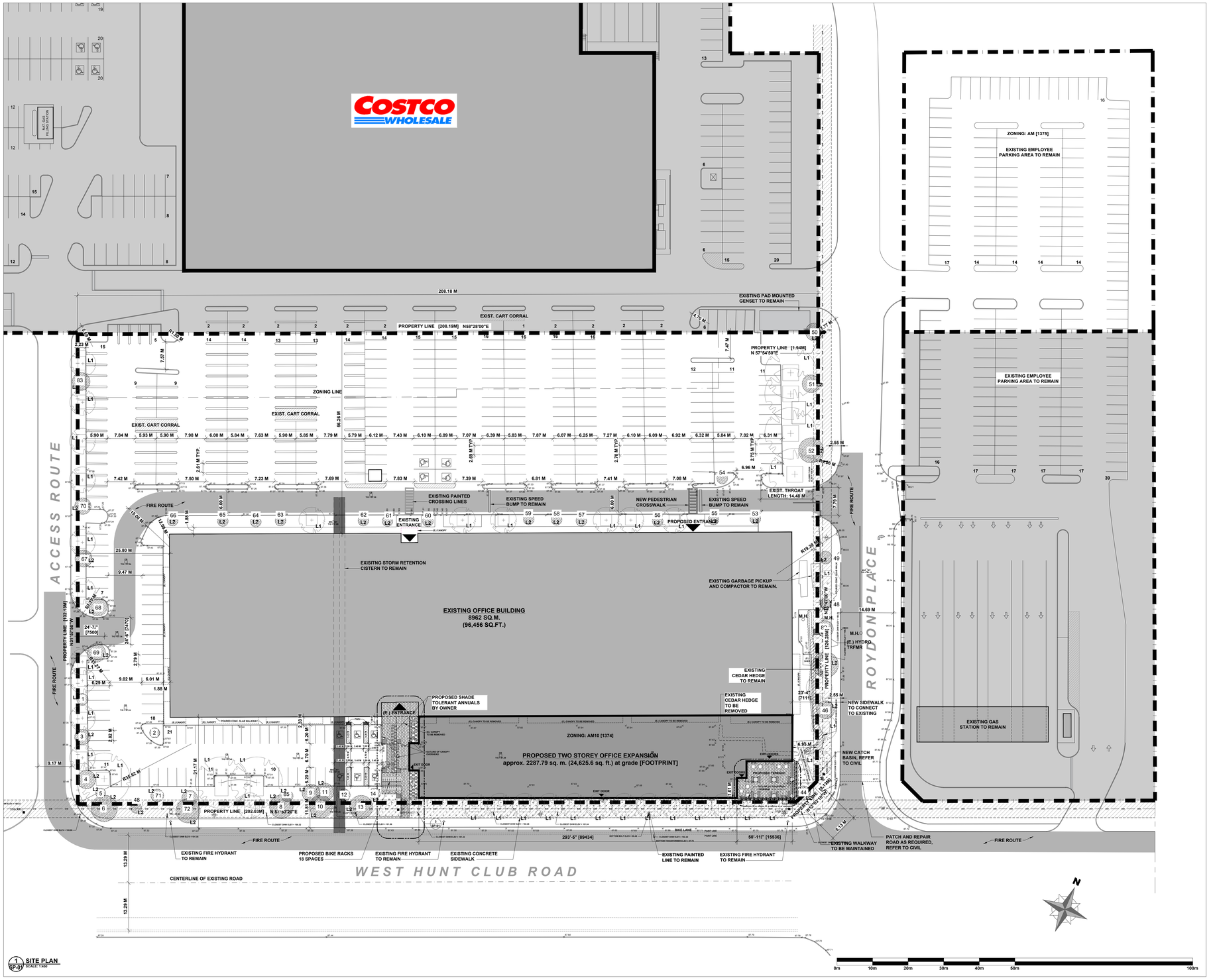
5. Summary

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

SITE PLAN



1 SITE PLAN
SP-01 SCALE: 1:400

LEGEND:

- PROPERTY LINE
- OHW — OVERHEAD WIRES
- EXISTING BUILDING
- BUILDING ENTRANCE
- H.P. HYDRO POLE
- F.H. FIRE HYDRANT
- M.H. MANHOLE
- C.B. CATCH BASIN
- (E.) CANOPY — EXISTING CANOPY
- OVERHEAD WIRE HYDRO NO-BUILD ZONE
- INTERLOCK PAVERS
- DESIGNATED FIRE ROUTE
- CC(AOG) — SURVEY MONUMENT FOUND CUT-CROSS ANNIS, O'SULLIVAN, VOLLEBEKK Ltd.
- SSIB(AOG) — SURVEY MONUMENT FOUND SHORT STANDARD IRON BAR ANNIS, O'SULLIVAN, VOLLEBEKK Ltd.
- PB — SURVEY MONUMENT FOUND PLASTIC BAR
- CP(AOG) — SURVEY MONUMENT FOUND CONCRETE PIN ANNIS, O'SULLIVAN, VOLLEBEKK Ltd.
- x87.80 — EXISTING TOPO MARKERS

2/SP-01 + 3/SP-01 LEGEND:

1. 1200mm x 1200mm ACM-CLAD COLUMN
2. 1830mm x 610mm OUTDOOR PARK BENCH
3. 18x 1800mm x 600mm BICYCLE RACKS REFER TO RACK EQUIPMENT SPEC.
4. SOFTSCAPE AREA 1 22.25 m²
5. SOFTSCAPE AREA 2 20.20 m²
6. SOFTSCAPE AREA 2 22.6 m²
7. HARDSCAPE AREA 194.44 m² FINISH AS PER LANDSCAPING SPEC.
8. HARDSCAPE AREA 148.50 m² FINISH AS PER LANDSCAPING SPEC.
9. 1200 x 1200mm PLANTER c/w 150 x 150mm ALUM. SUPPORT COLUMNS FOR SUN SCREEN ABOVE

415 West Hunt Club — AM10 [1374]

Provision	Section	Required	Proposed
Min. Lot Area (sq.m)	Table 185, (a)	none	25,109.52 sq. m
Min. Lot Width (m)	Table 185 (b)	none	202.03 m
Min. Front Yard Setback (m)	S. 186, (10)(b)(i)	0 m	1.01 m
Min. Corner Yard Setback (m)	S. 186, (10)(b)(i)	0 m	6.95 m
Min. Interior Yard Setback (m)	Table 185, (d)(ii)	0 m	25.80 m
Min. Rear Setback (m)	Table 185 (e)(iv)	0 m	56.26 m
Min. Landscaped Buffer (parking lot)(m)	Table 110, (a)(b)	3 m	2.23 m (EXISTING CONDITION)
Max. Building Height (m)	S. 186, (10)(j)(v)	30 m	10.08 m - 2 storeys
Min. Building Height - 10m from front or corner lot line (m)	S. 186 (10)(e)	4.5m for the ground floor AND 7.5m or 2 storeys total	4.54 m for the ground floor 10.08 m (2 storeys) total
Min. Glazing (West Hunt Club) (%)	S. 186, (10)(h)	50% from grade to a height of 4.5m	36%
Min. Glazing (Roydon Place) (%)	S. 186, (10)(h)	50% from grade to a height of 4.5m	43.0%
Min. Percentage of Building Wall	S. 186, (10)(b)(i)	50% within 3m of corner lot line	61.4%
Max. FSI	Table 185, (g)(ii)	none	0.54
GFA (sq.m) PROPOSED ADDITION TOTAL: 3571.39m²	-	-	3571.39 m² (expansion) 12,533.39 m² (total)
Footprint Area (sq.m)	-	-	2287.79 m² (expansion) 11249.79 m² (total)
Parking - Office	Table 101, N59 (v)	2.4 spaces/100 sq.m GFA 2.4 x 125.33 = 301 spaces	602 spaces (parking lot total)
Minimum Number of Barrier-Free Parking Spaces	AODA 80.36 (4)	2 spaces + 2% total number of spaces provided = 10 spaces	10 spaces
Bicycle Parking - Office	Table 111A,(e)	1 space / 250 sq.m GFA 3571.29 sq.m. / 250 = 14.29 = 14 spaces	18 spaces (exterior)
Minimum Driveway	S. 107, (1)(a)(iii)	6m	7.56m
Minimum Drive Aisle Width	T. 107, (d)	6.7m	6.7m
Minimum Number of Active Entrances for Building Within 4.5m of the Front Lot Line	S. 186, (10)(g)(i)	1 active entrances	0 active entrances
Minimum Landscaped Area - Parking Lot	S. 110 (1)	15% of parking lot area	12% (non-compliant requiring variance)

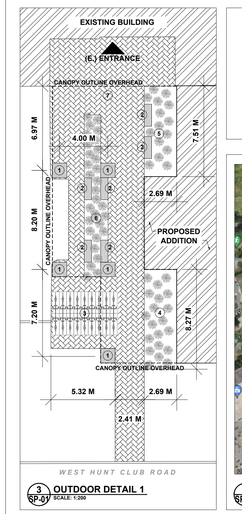
415 West Hunt Club

SITE PIN:	04052 - 0811 (EXISTING STRUCTURE) 04052 - 0437 (R.R. 032 - WEST HUNT CLUB ROAD) 04052 - 0809 (ROAD WIDENING BY-LAW 2013-7, INST. OC1450402) 04052 - 0497 (BY-LAW 15-1996, INST. LT973870) 04052 - 0496 (ROYDON PLACE - BY-LAWS 121-1997, INST. LT1101028) 04052 - 0810 (ROAD WIDENING BY-LAW 2013-7, INST. OC1450402) 04052 - 0430 (ACCESS ROUTE ROAD)
LEGAL DESCRIPTION:	SOUTH HALF OF LOT 29, CONCESSION "A" (RIDEAU FRONT) (NEPEAN)
STATEMENT: SOURCE OF PROPERTY BOUNDARY INFORMATION:	PROPERTY BOUNDARY INFORMATION FOR THIS SUBMISSION IS DERIVED FROM THE: Topographic Plan of Survey of Southerly Limit of Pin 04052-0811 being PART of LOT 29, CONCESSION "A" (Rideau Front) Geographic Township of Nepean City of Ottawa Surveyed by Annis, O'Sullivan, Vollebekk Ltd. ASSOCIATION OF ONTARIO LAND SURVEYORS PLAN SUBMISSION FORM # *V-69279*

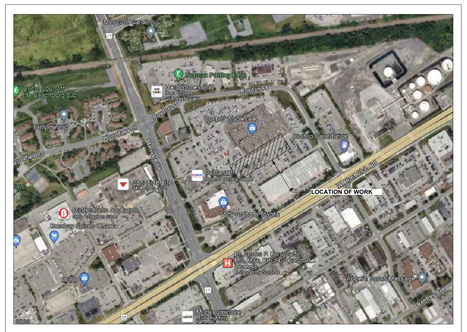
ADDITIONAL NOTES: COMMENT:	RESPONSE:
# 7 - IDENTIFY LOCATION OF SNOW STORAGE	# 7 - SNOW TO BE REMOVED AND STORED OFF-SITE

Landscaping Legend (showing to-remain + proposed vegetation) coordinate with Tree Conservation Report + Landscape Plan

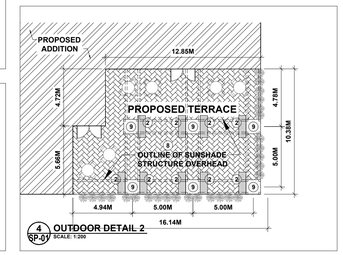
REF. #	SYMBOL	DESCRIPTION
L1		PROPOSED DECIDUOUS TREE 40 yr. CANOPY PROJECTION REQUIRES SOIL VOLUME: (30m³ / large tree) , (20m³ / small tree)
L2	XX	EXISTING TREE TO REMAIN (COORDINATE REFERENCE # WITH LANDSCAPING PLAN FOR VEGETATION DETAILS



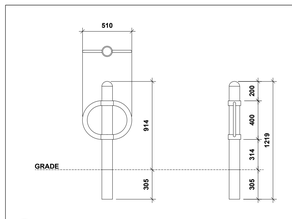
3 OUTDOOR DETAIL 1
SP-01 SCALE: 1:200



2 KEY PLAN
SP-01 SCALE: N.T.S.



4 OUTDOOR DETAIL 2
SP-01 SCALE: 1:200



5 BOLLARD BIKE RACK DETAIL
SP-01 SCALE: 1:25

P2 concepts
2200 THURSTON DR., UNIT 203
OTTAWA, ONTARIO, K1G 6E1

brian k. clark
A·R·C·H·I·T·E·C·T
141 Catherine Street, Suite 102
Ottawa, Ontario K2P 1C3
TEL•(613) 238-7412 FAX•238-1799
Email•bkclarkarchitect@gmail.com

CLIENT: COSTCO WHOLESALE

STAMP

PROJECT: COSTCO HEAD OFFICE ADDITION

No.	REVISIONS	DATE
09		
08		
07		
06		
05	ISSUED FOR SPC SUBMISSION	2024-09-19
04	REVISED LANDSCAPING LAYOUT	2024-08-23
03	ISSUED FOR COORDINATION	2024-08-08
02	ISSUED FOR SITE PLAN APPROVAL	2024-04-19
01	ISSUED FOR SITE PLAN APPROVAL	2023-12-15

DRAWING TITLE: SITE PLAN

DATE: 2024-08-23 PROJECT: 0350-018 SP-01

APPENDIX D:

EXISTING TRAFFIC COUNTS, SIGNAL TIMINGS AND COLLISION INFORMATION

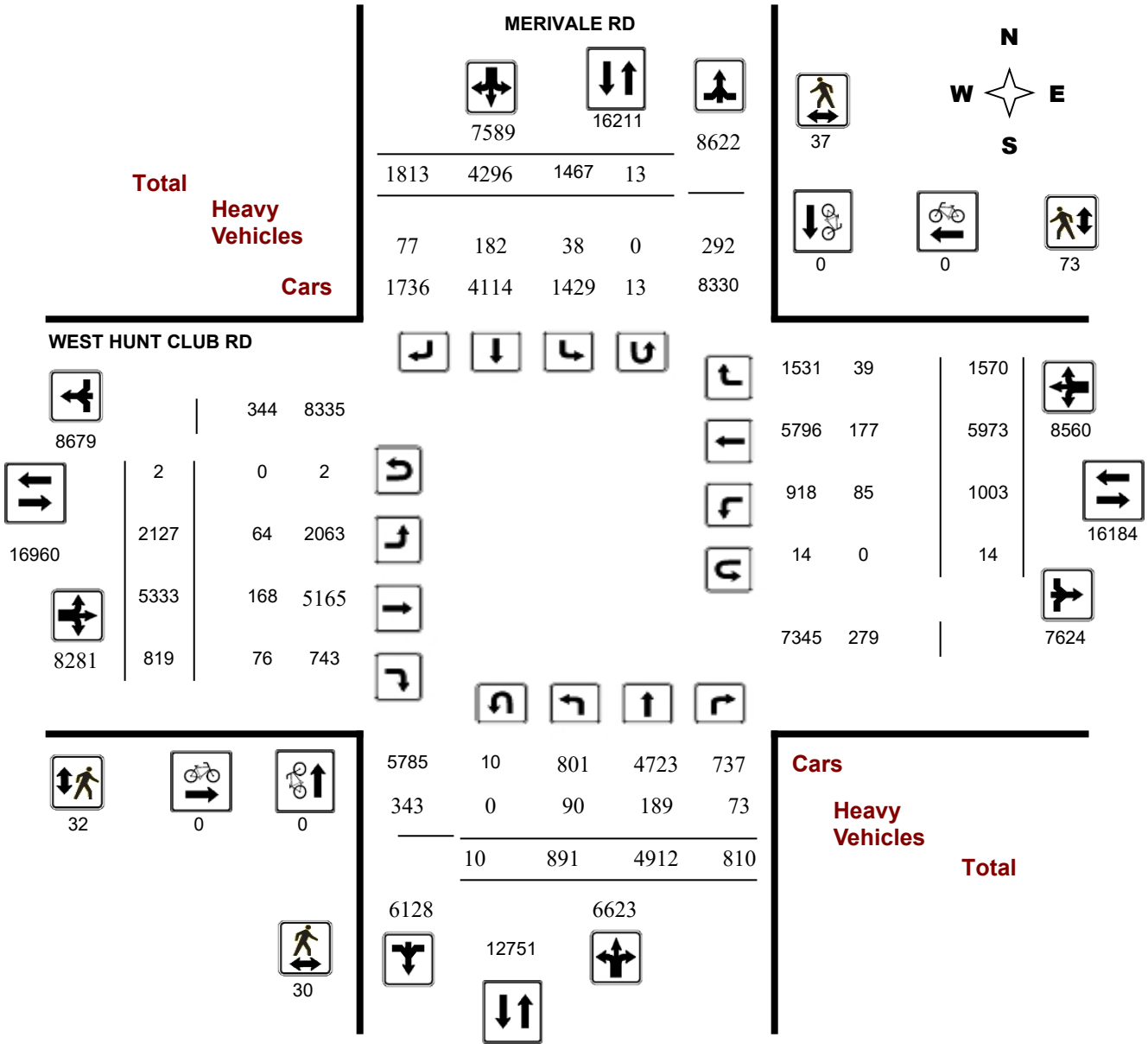
Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ WEST HUNT CLUB RD

Survey Date: Monday, February 10, 2020
Start Time: 07:00
WO No: 39439
Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

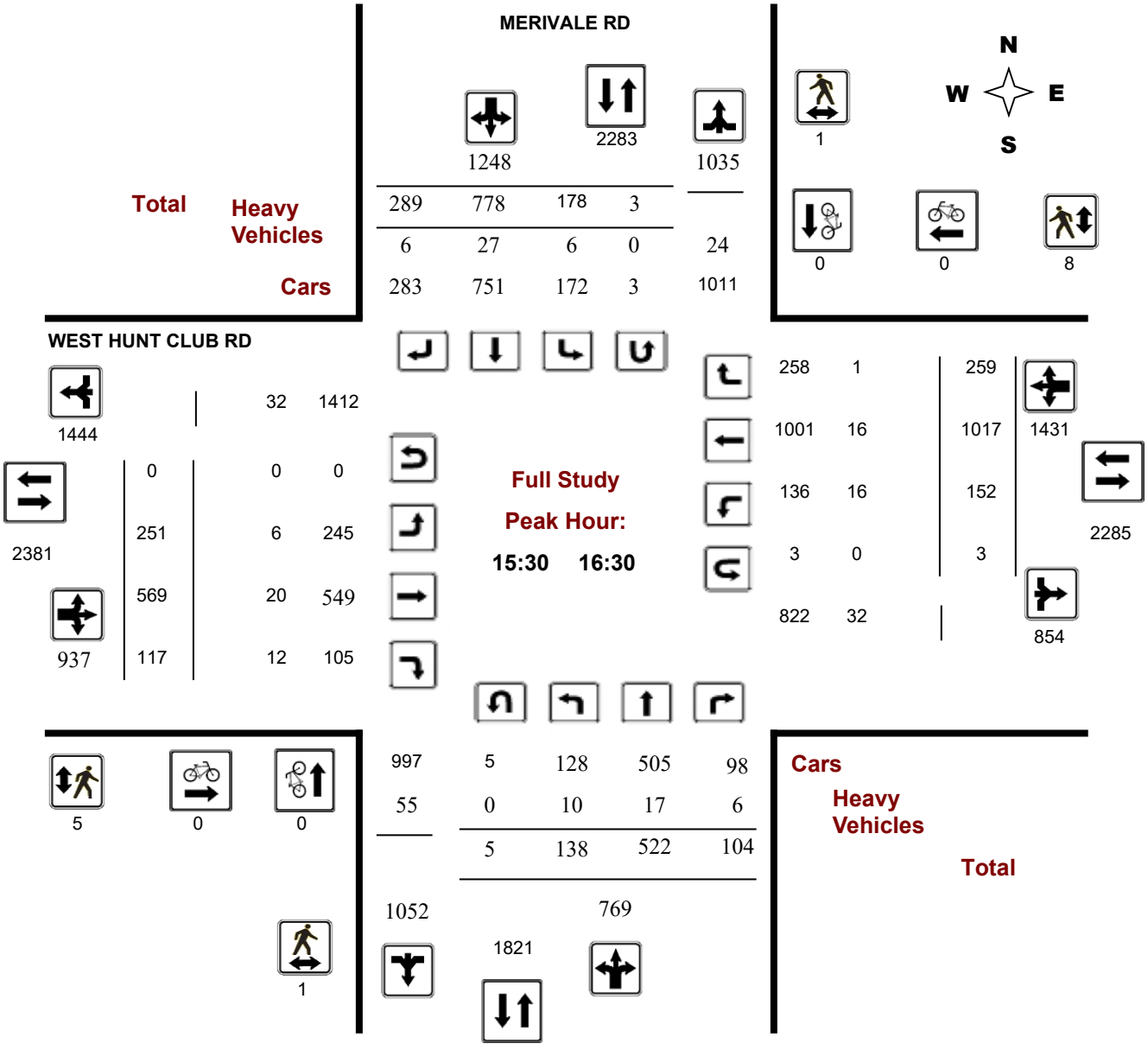
Turning Movement Count - Study Results

MERIVALE RD @ WEST HUNT CLUB RD

Survey Date: Monday, February 10, 2020 **WO No:** 39439

Start Time: 07:00 **Device:** Miovision

Full Study Peak Hour Diagram



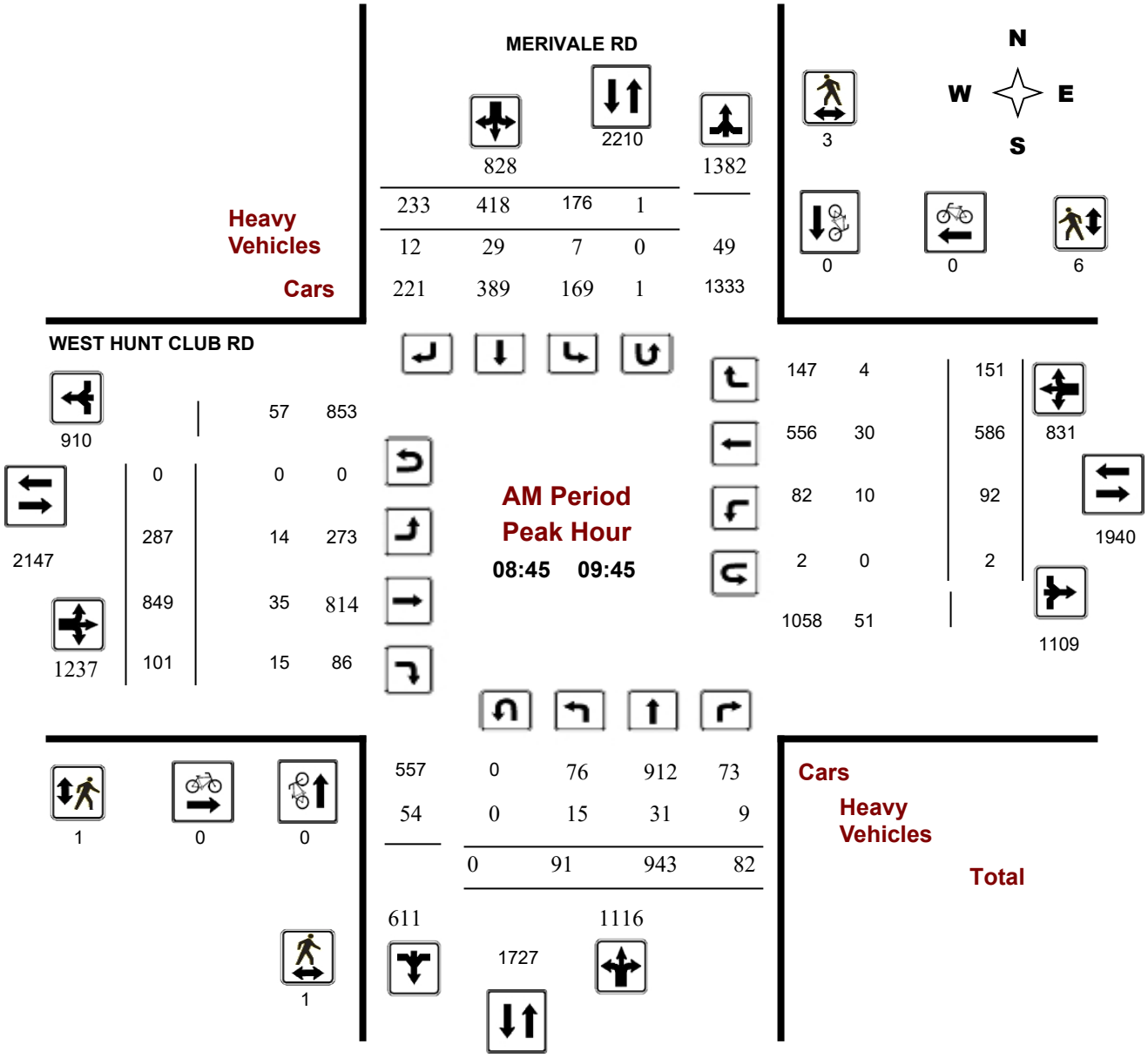
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD @ WEST HUNT CLUB RD

Survey Date: Monday, February 10, 2020 **WO No:** 39439

Start Time: 07:00 **Device:** Miovision



Comments

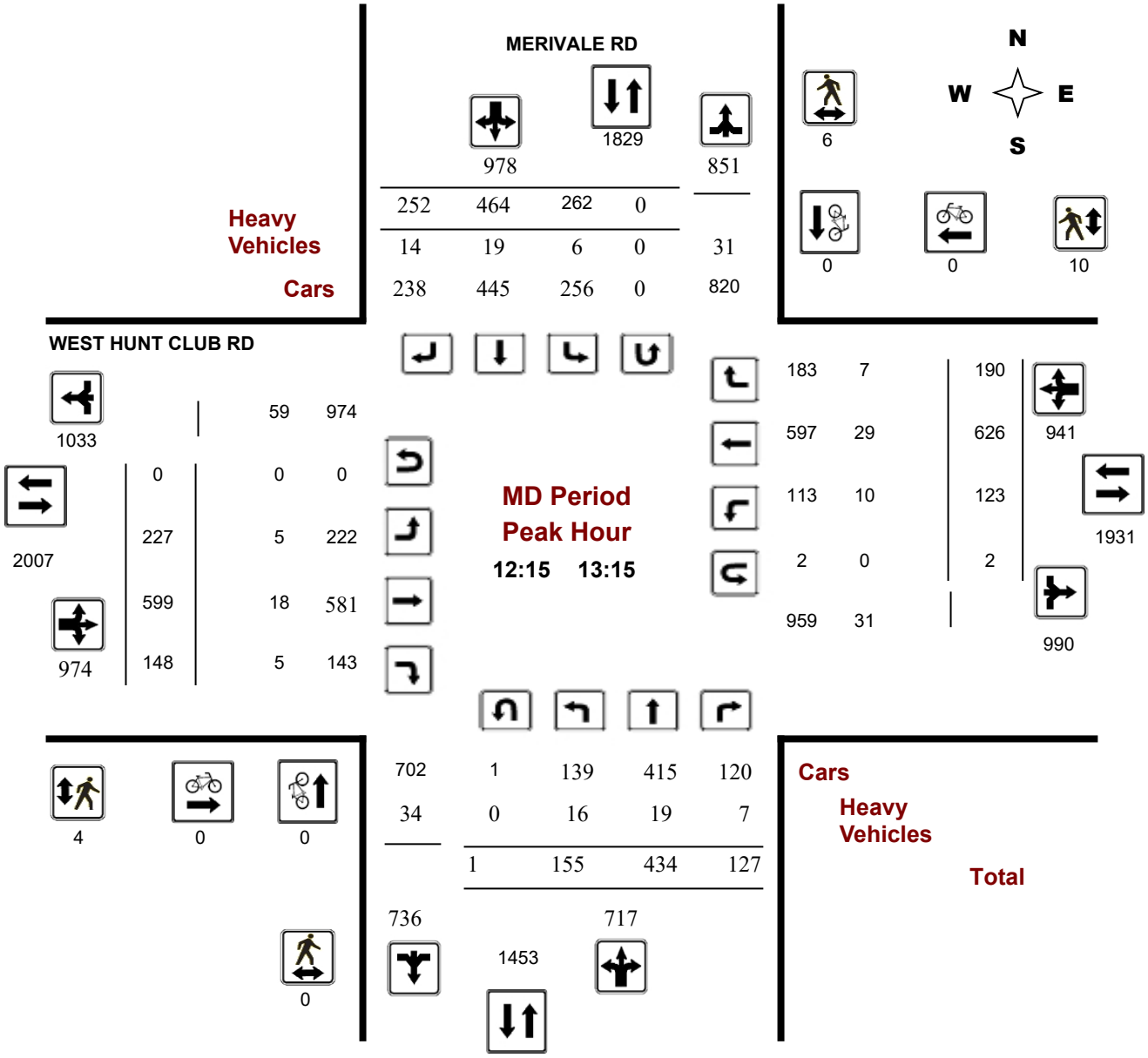
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD @ WEST HUNT CLUB RD

Survey Date: Monday, February 10, 2020 **WO No:** 39439

Start Time: 07:00 **Device:** Miovision



Comments

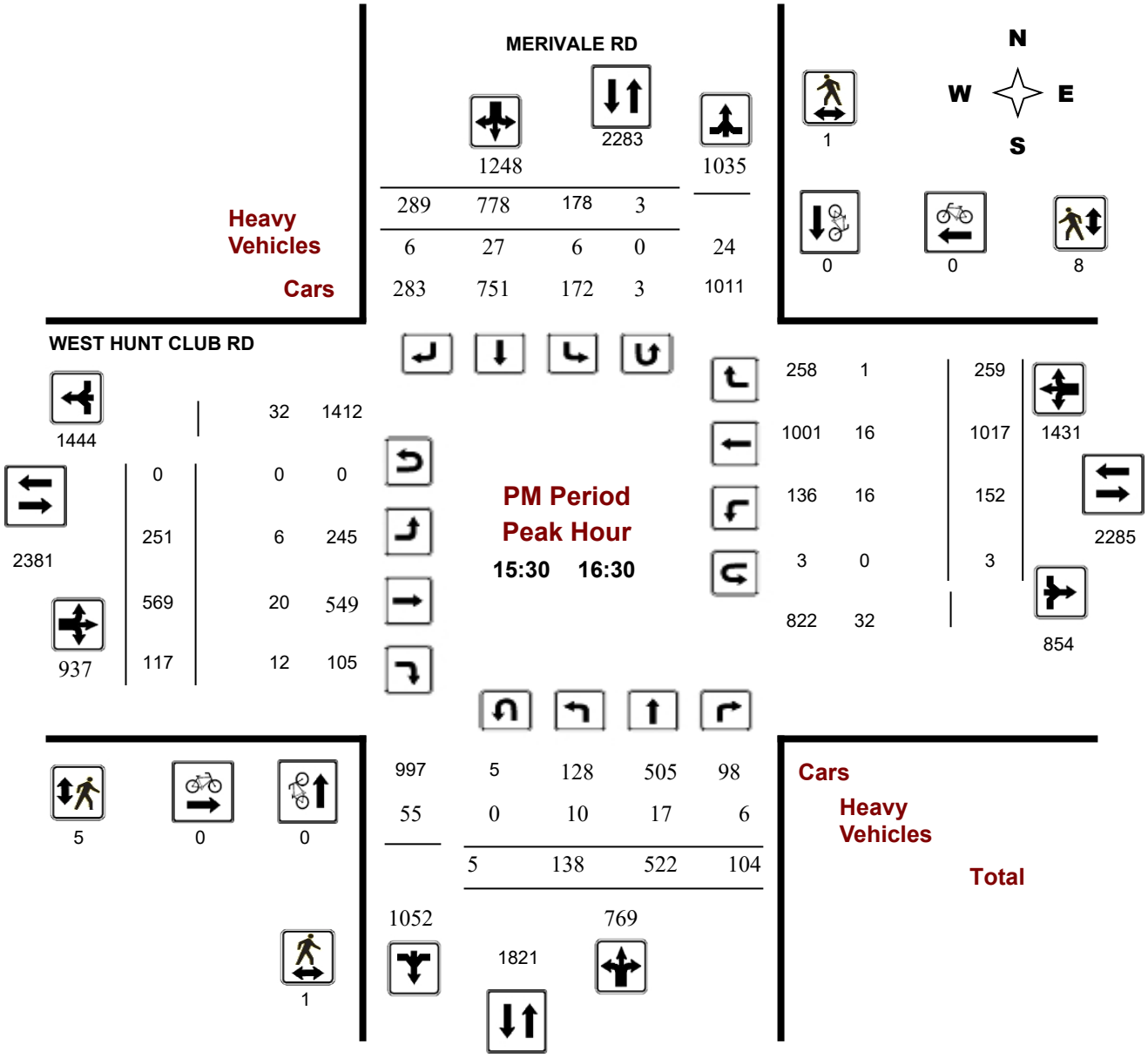
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD @ WEST HUNT CLUB RD

Survey Date: Monday, February 10, 2020 **WO No:** 39439

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ WEST HUNT CLUB RD

Survey Date: Monday, February 10, 2020 **WO No:** 39439

Start Time: 07:00 **Device:** Miovision

Full Study Summary (8 HR Standard)

Survey Date: Monday, February 10, 2020

Total Observed U-Turns

Northbound: 10 Southbound: 13

Eastbound: 2 Westbound: 14

AADT Factor

1.00

	MERIVALE RD								WEST HUNT CLUB RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	68	838	100	**1006**	147	346	143	**636**	**1642**	363	846	86	**1295**	84	572	97	**753**	**2048**	**3690**
08:00 09:00	50	758	79	**887**	182	395	184	**761**	**1648**	275	925	64	**1264**	89	651	136	**876**	**2140**	**3788**
09:00 10:00	109	912	93	**1114**	176	379	199	**754**	**1868**	303	852	101	**1256**	111	593	143	**847**	**2103**	**3971**
11:30 12:30	139	425	131	**695**	220	441	231	**892**	**1587**	250	551	129	**930**	101	603	214	**918**	**1848**	**3435**
12:30 13:30	155	425	141	**721**	249	458	237	**944**	**1665**	206	579	145	**930**	131	603	187	**921**	**1851**	**3516**
15:00 16:00	122	474	116	**712**	198	674	302	**1174**	**1886**	232	618	96	**946**	121	1023	235	**1379**	**2325**	**4211**
16:00 17:00	145	560	77	**782**	144	825	250	**1219**	**2001**	256	485	111	**852**	174	949	282	**1405**	**2257**	**4258**
17:00 18:00	103	520	73	**696**	151	778	267	**1196**	**1892**	242	477	87	**806**	192	979	276	**1447**	**2253**	**4145**
Sub Total	891	4912	810	**6613**	1467	4296	1813	**7576**	**14189**	2127	5333	819	**8279**	1003	5973	1570	**8546**	**16825**	**31014**
U Turns	10			**10**	13			**13**	**23**	**2**			**2**	14			**14**	**16**	**39**
Total	901	4912	810	**6623**	1480	4296	1813	**7589**	**14212**	2129	5333	819	**8281**	1017	5973	1570	**8560**	**16841**	**31053**
EQ 12Hr	1252	6828	1126	**9206**	2057	5971	2520	**10548**	**19754**	2959	7413	1138	**11510**	1414	8302	2182	**11898**	**23408**	**43162**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	1252	6828	1126	**9206**	2057	5971	2520	**10548**	**19754**	2959	7413	1138	**11510**	1414	8302	2182	**11898**	**23408**	**43162**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	1640	8945	1475	**12060**	2695	7822	3301	**13818**	**25878**	3876	9711	1491	**15078**	1852	10876	2858	**15586**	**30664**	**56542**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ WEST HUNT CLUB RD

Survey Date: Monday, February 10, 2020 **WO No:** 39439

Start Time: 07:00 **Device:** Miovision

Full Study Cyclist Volume

Time Period		MERIVALE RD			WEST HUNT CLUB RD			
		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	0	**0**	0	0	**0**	**0**
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	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	0	**0**	0	0	**0**	**0**
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	0	**0**	0	0	**0**	**0**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ WEST HUNT CLUB RD

Survey Date: Monday, February 10, 2020 **WO No:** 39439

Start Time: 07:00 **Device:** Miovision

Full Study Pedestrian Volume

Time Period	MERIVALE RD NB Approach (E or W Crossing)	MERIVALE RD SB Approach (E or W Crossing)	MERIVALE RD Total	WEST HUNT CLUB RD EB Approach (N or S Crossing)	WEST HUNT CLUB RD WB Approach (N or S Crossing)	WEST HUNT CLUB RD Total	Grand Total
07:00 07:15	0	0	**0**	0	2	**2**	**2**
07:15 07:30	0	1	**1**	0	1	**1**	**2**
07:30 07:45	0	1	**1**	1	1	**2**	**3**
07:45 08:00	2	2	**4**	3	4	**7**	**11**
08:00 08:15	2	0	**2**	2	1	**3**	**5**
08:15 08:30	0	1	**1**	1	2	**3**	**4**
08:30 08:45	1	1	**2**	1	2	**3**	**5**
08:45 09:00	0	1	**1**	0	0	**0**	**1**
09:00 09:15	1	0	**1**	0	1	**1**	**2**
09:15 09:30	0	1	**1**	0	4	**4**	**5**
09:30 09:45	0	1	**1**	1	1	**2**	**3**
09:45 10:00	1	1	**2**	1	1	**2**	**4**
11:30 11:45	1	0	**1**	2	2	**4**	**5**
11:45 12:00	1	3	**4**	0	2	**2**	**6**
12:00 12:15	1	0	**1**	0	1	**1**	**2**
12:15 12:30	0	1	**1**	0	2	**2**	**3**
12:30 12:45	0	3	**3**	2	1	**3**	**6**
12:45 13:00	0	0	**0**	0	6	**6**	**6**
13:00 13:15	0	2	**2**	2	1	**3**	**5**
13:15 13:30	0	1	**1**	1	2	**3**	**4**
15:00 15:15	3	0	**3**	1	2	**3**	**6**
15:15 15:30	2	3	**5**	0	4	**4**	**9**
15:30 15:45	1	0	**1**	3	0	**3**	**4**
15:45 16:00	0	0	**0**	0	1	**1**	**1**
16:00 16:15	0	1	**1**	2	4	**6**	**7**
16:15 16:30	0	0	**0**	0	3	**3**	**3**
16:30 16:45	0	3	**3**	1	6	**7**	**10**
16:45 17:00	6	0	**6**	3	4	**7**	**13**
17:00 17:15	4	4	**8**	4	6	**10**	**18**
17:15 17:30	0	1	**1**	0	1	**1**	**2**
17:30 17:45	4	4	**8**	1	4	**5**	**13**
17:45 18:00	0	1	**1**	0	1	**1**	**2**
Total	30	37	**67**	32	73	**105**	**172**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ WEST HUNT CLUB RD

Survey Date: Monday, February 10, 2020 **WO No:** 39439

Start Time: 07:00 **Device:** Miovision

Full Study Heavy Vehicles

		MERIVALE RD									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	10	10	1		0	3	7		**31**	0	5	2		3	8	0		**18**	**49**
07:15	07:30	1	13	2		1	5	8		**30**	3	0	1		1	7	2		**14**	**44**
07:30	07:45	6	7	7		1	2	9		**32**	0	5	0		3	7	2		**17**	**49**
07:45	08:00	0	16	2		1	9	2		**30**	2	3	0		3	7	1		**16**	**46**
08:00	08:15	3	4	2		1	6	2		**18**	5	2	0		4	10	1		**22**	**40**
08:15	08:30	1	8	2		0	6	2		**19**	1	6	2		3	5	3		**20**	**39**
08:30	08:45	0	6	4		0	5	0		**15**	0	10	3		1	6	6		**26**	**41**
08:45	09:00	4	10	1		1	7	3		**26**	1	8	4		1	10	1		**25**	**51**
09:00	09:15	3	7	1		1	7	3		**22**	2	11	4		3	6	1		**27**	**49**
09:15	09:30	3	7	5		2	7	3		**27**	5	9	4		5	9	0		**32**	**59**
09:30	09:45	5	7	2		3	8	3		**28**	6	7	3		1	5	2		**24**	**52**
09:45	10:00	3	6	1		0	7	5		**22**	1	8	4		6	6	2		**27**	**49**
11:30	11:45	3	8	1		1	3	0		**16**	2	9	3		5	8	3		**30**	**46**
11:45	12:00	5	5	6		1	6	2		**25**	5	7	5		3	6	0		**26**	**51**
12:00	12:15	0	3	3		3	5	2		**16**	2	5	4		1	3	2		**17**	**33**
12:15	12:30	3	3	2		3	3	3		**17**	2	7	1		2	3	2		**17**	**34**
12:30	12:45	5	2	1		0	5	3		**16**	1	1	1		2	8	0		**13**	**29**
12:45	13:00	4	7	1		1	8	4		**25**	0	3	0		3	8	2		**16**	**41**
13:00	13:15	4	7	3		2	3	4		**23**	2	7	3		3	10	3		**28**	**51**
13:15	13:30	1	3	4		3	5	2		**18**	0	9	3		2	10	1		**25**	**43**
15:00	15:15	4	4	1		0	11	1		**21**	1	9	1		2	3	1		**17**	**38**
15:15	15:30	4	6	5		1	7	1		**24**	1	6	2		1	8	0		**18**	**42**
15:30	15:45	3	4	1		1	5	0		**14**	1	3	3		6	1	0		**14**	**28**
15:45	16:00	3	2	1		4	7	2		**19**	1	5	1		3	7	0		**17**	**36**
16:00	16:15	3	6	1		0	7	3		**20**	1	10	4		6	7	1		**29**	**49**
16:15	16:30	1	5	3		1	8	1		**19**	3	2	4		1	1	0		**11**	**30**
16:30	16:45	2	5	2		0	6	0		**15**	2	2	2		1	0	0		**7**	**22**
16:45	17:00	1	3	3		0	5	2		**14**	2	3	3		4	3	1		**16**	**30**
17:00	17:15	0	6	2		2	5	0		**15**	2	2	2		0	2	0		**8**	**23**
17:15	17:30	2	5	1		1	3	0		**12**	4	1	2		3	1	0		**11**	**23**
17:30	17:45	2	2	0		2	5	0		**11**	4	1	3		0	2	2		**12**	**23**
17:45	18:00	1	2	2		1	3	0		**9**	2	2	2		3	0	0		**9**	**18**
Total:	None	90	189	73	**0**	38	182	77	**0**	**649**	64	168	76	**0**	85	177	39	**0**	**609**	**1,258**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ WEST HUNT CLUB RD

Survey Date: Monday, February 10, 2020 **WO No:** 39439

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

Time Period		MERIVALE RD Northbound U-Turn Total	MERIVALE RD Southbound U-Turn Total	WEST HUNT CLUB RD Eastbound U-Turn Total	WEST HUNT CLUB RD Westbound U-Turn Total	Total
07:00	07:15	0	2	0	0	**2**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	1	1	0	1	**3**
07:45	08:00	0	1	0	0	**1**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	1	0	0	**1**
08:30	08:45	0	0	0	1	**1**
08:45	09:00	0	1	0	1	**2**
09:00	09:15	0	0	0	0	**0**
09:15	09:30	0	0	0	1	**1**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	2	0	0	**2**
11:30	11:45	0	1	0	0	**1**
11:45	12:00	0	0	1	0	**1**
12:00	12:15	0	0	0	2	**2**
12:15	12:30	0	0	0	0	**0**
12:30	12:45	0	0	0	1	**1**
12:45	13:00	1	0	0	0	**1**
13:00	13:15	0	0	0	1	**1**
13:15	13:30	1	0	1	2	**4**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	1	0	0	1	**2**
15:30	15:45	2	1	0	1	**4**
15:45	16:00	1	1	0	0	**2**
16:00	16:15	1	0	0	1	**2**
16:15	16:30	1	1	0	1	**3**
16:30	16:45	1	0	0	0	**1**
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	1	0	0	**1**
Total		10	13	2	14	**39**

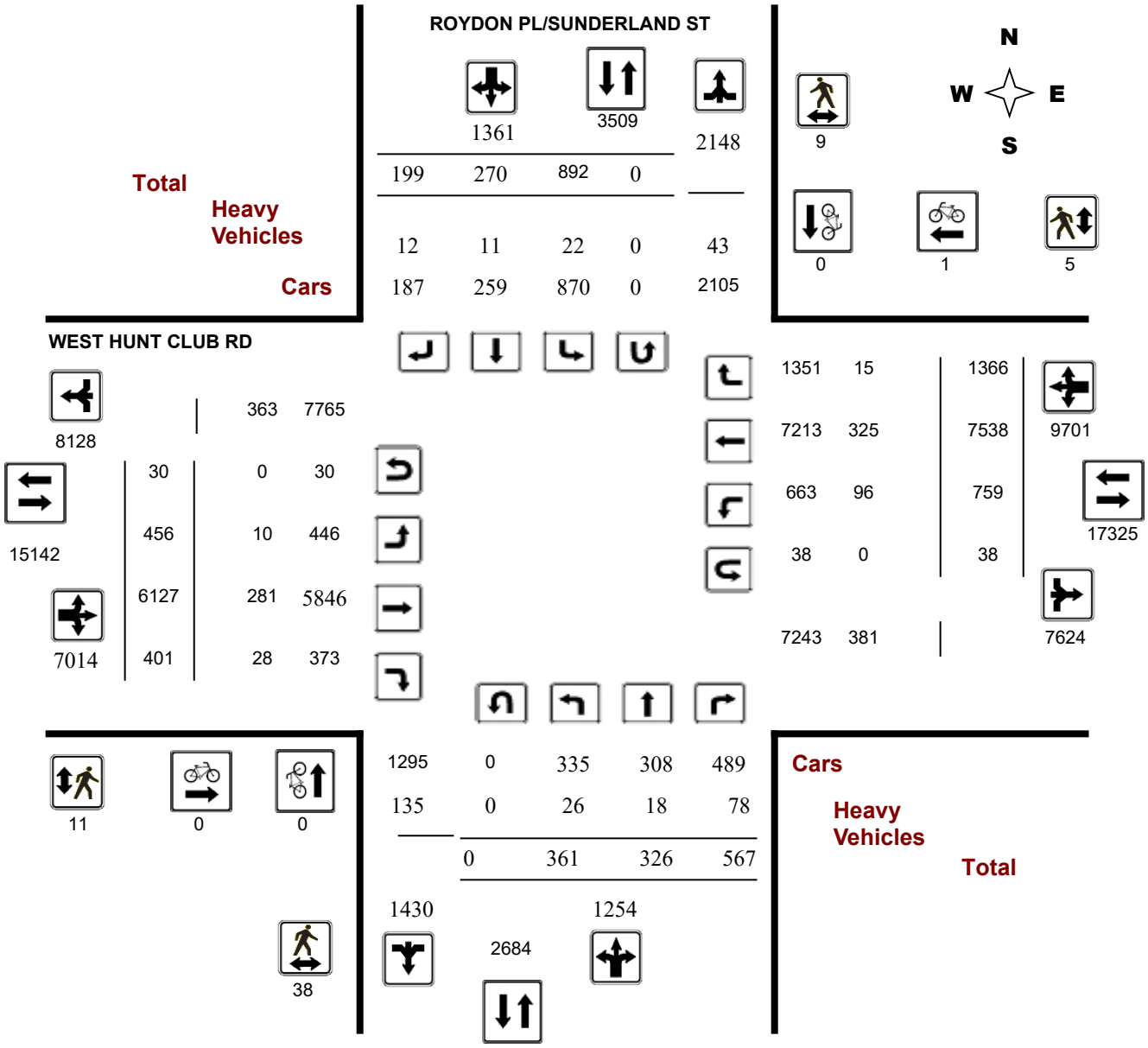
Transportation Services - Traffic Services

Turning Movement Count - Study Results

WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018
Start Time: 07:00
WO No: 37509
Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

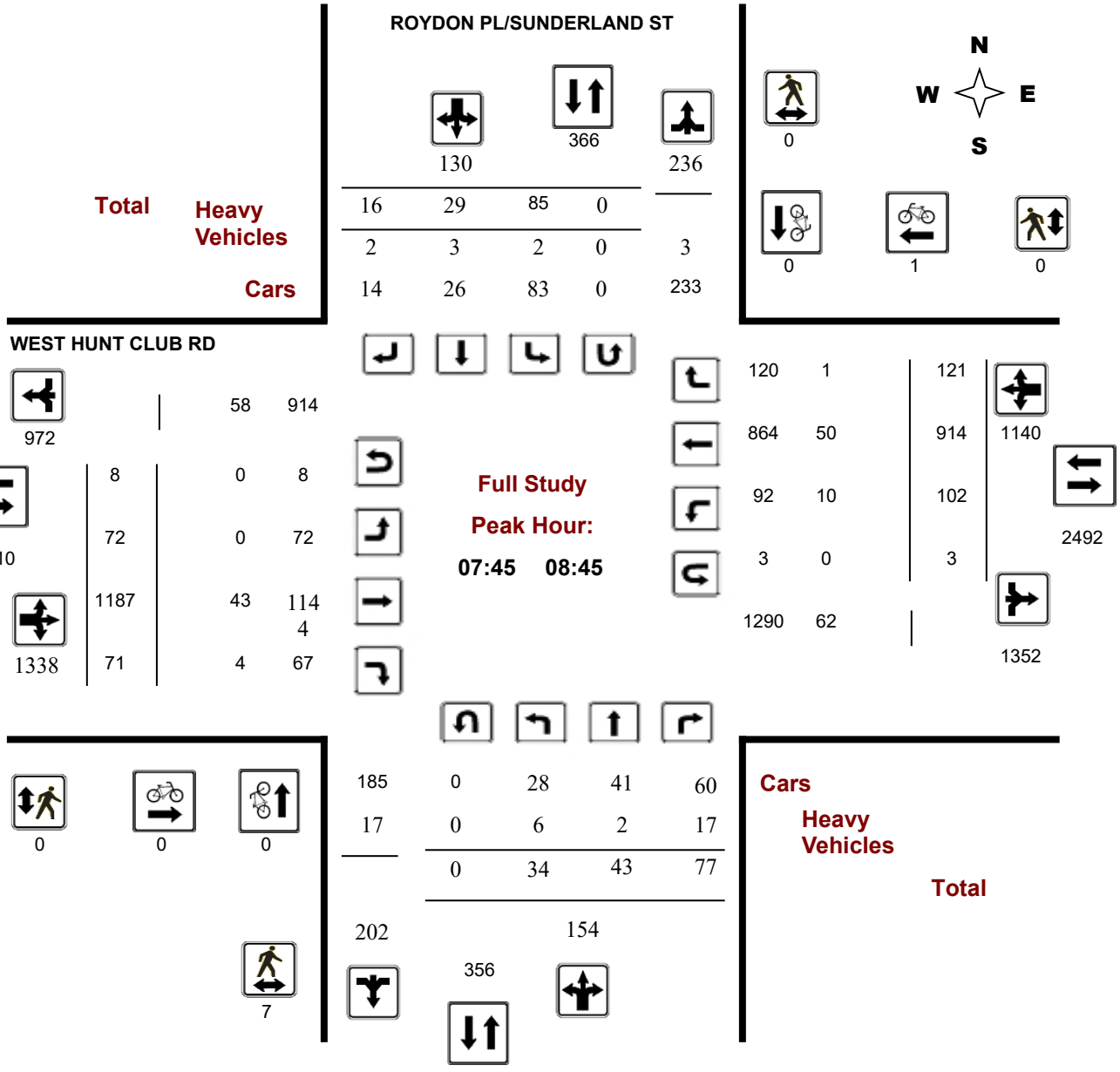
Turning Movement Count - Study Results

WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018 **WO No:** 37509

Start Time: 07:00 **Device:** Miovision

Full Study Peak Hour Diagram



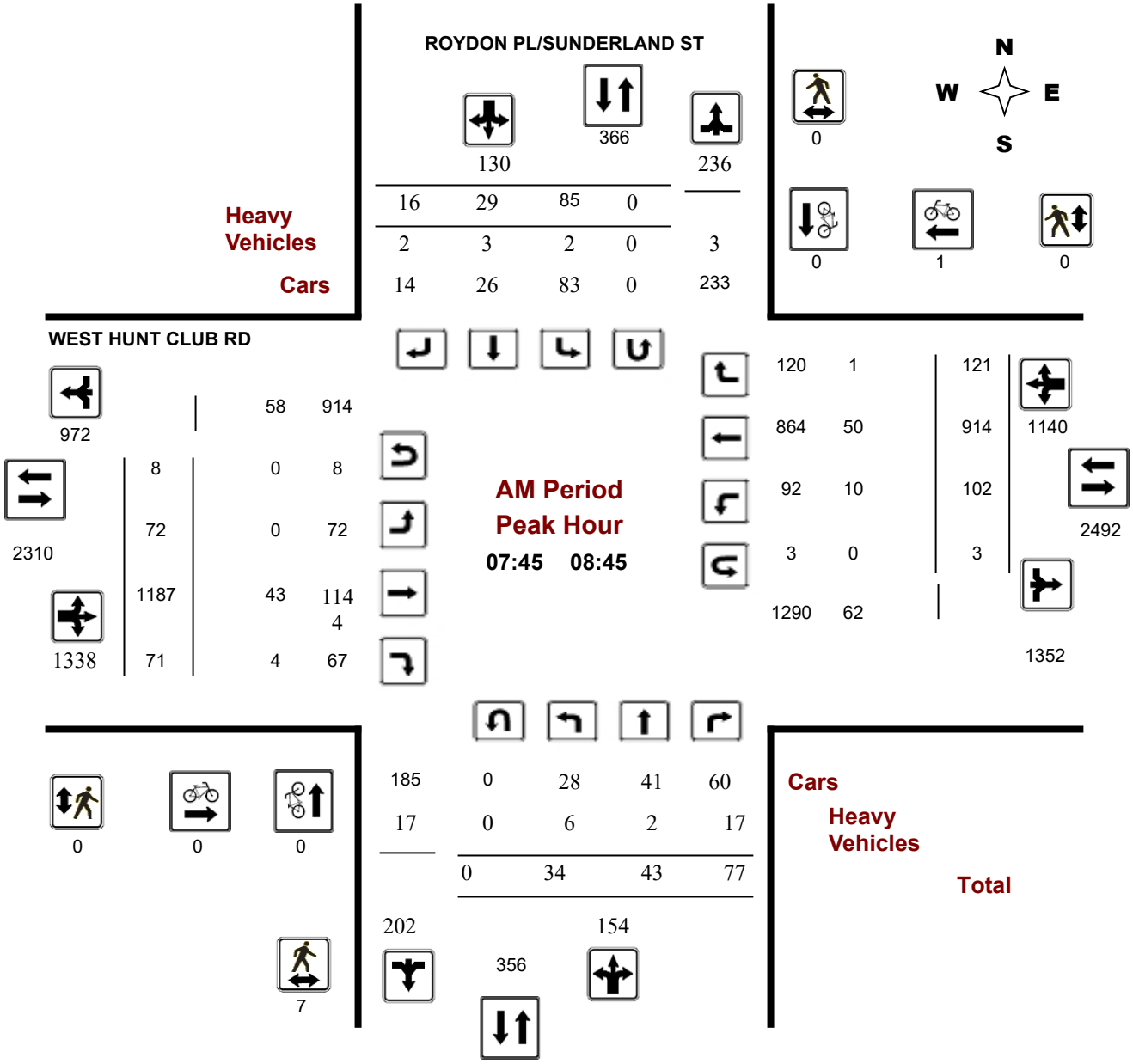
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018 **WO No:** 37509

Start Time: 07:00 **Device:** Miovision



Comments

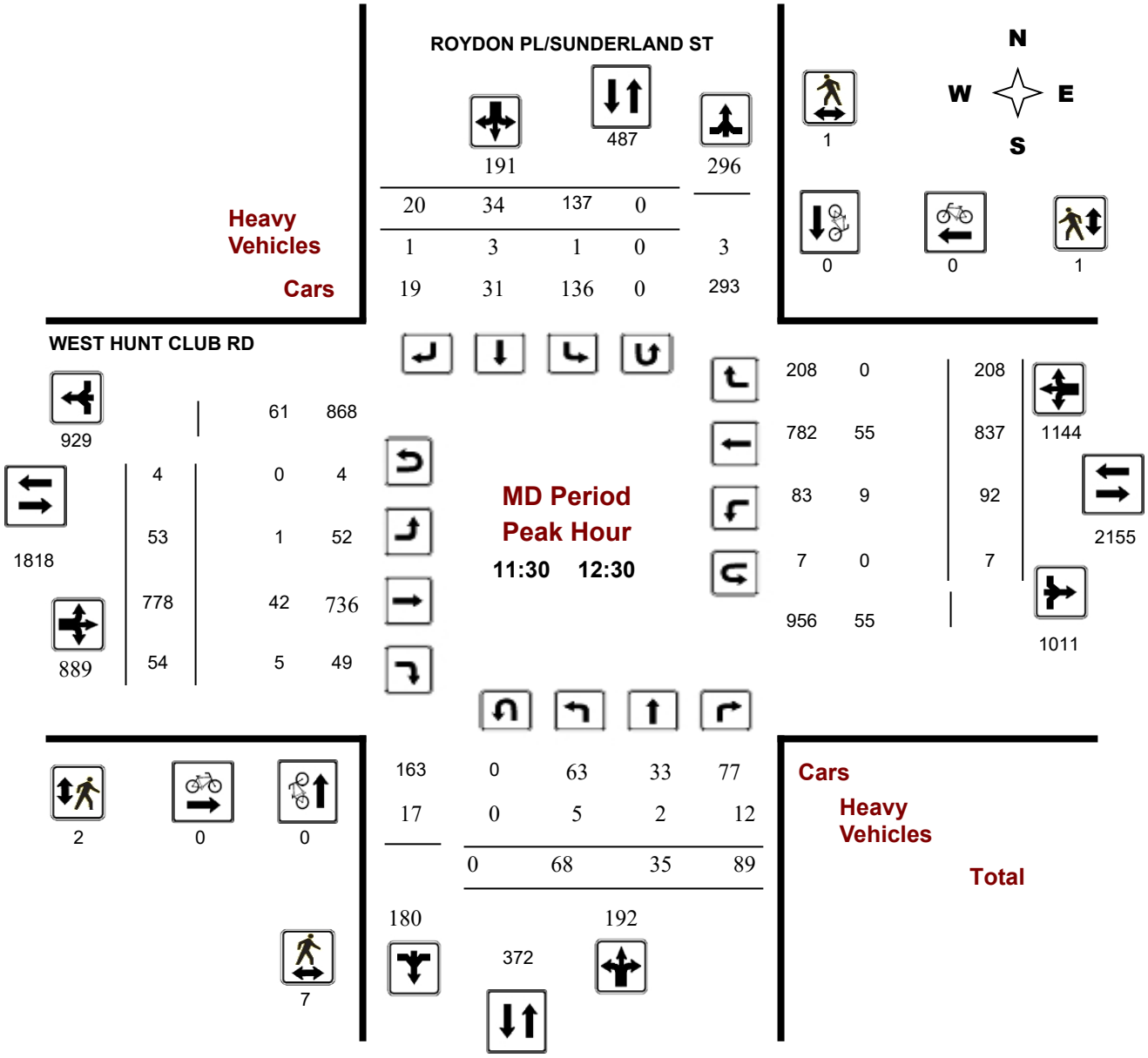
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018 **WO No:** 37509

Start Time: 07:00 **Device:** Miovision



Comments

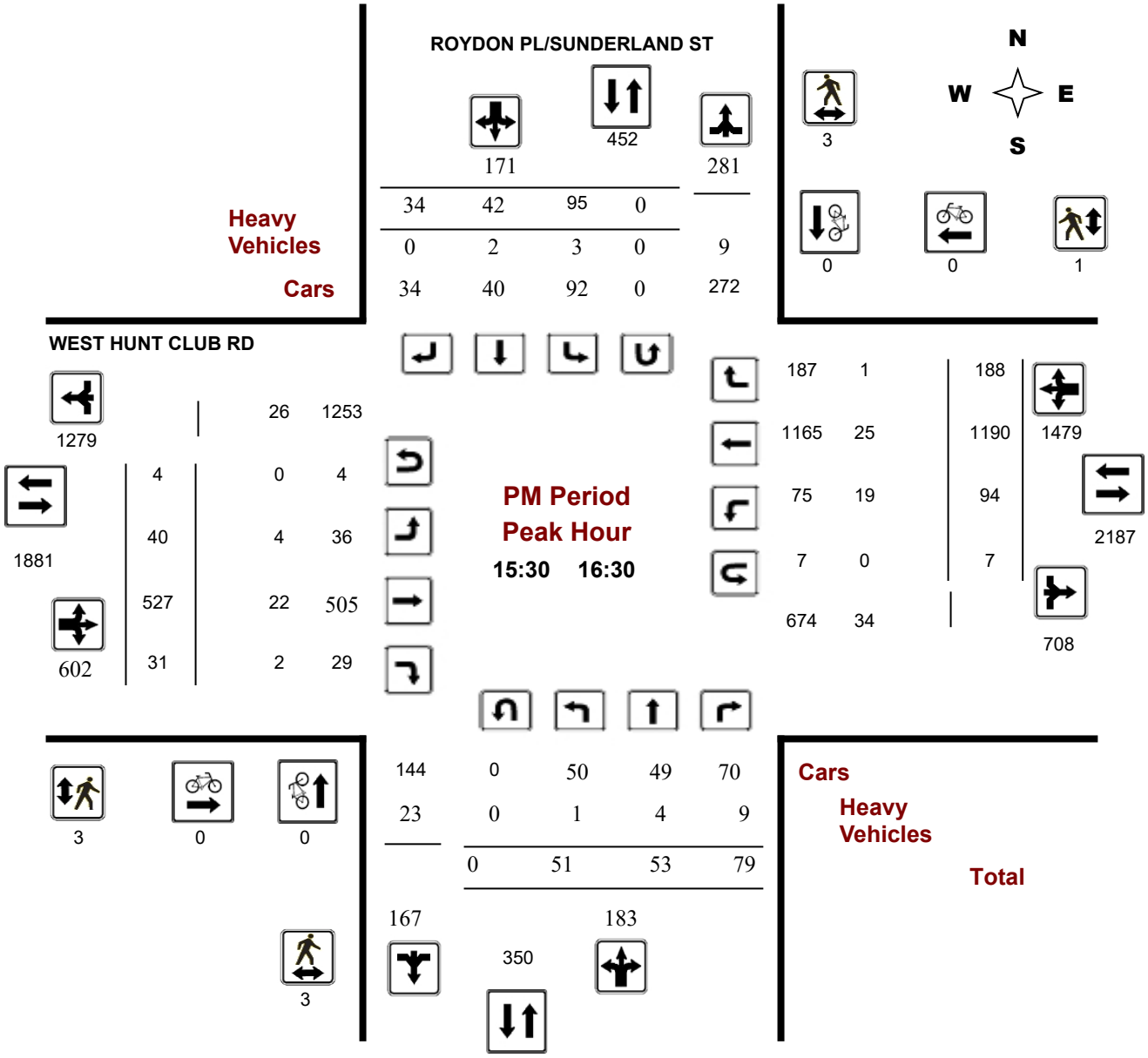
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018 **WO No:** 37509

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018 **WO No:** 37509

Start Time: 07:00 **Device:** Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, February 07, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 30 Westbound: 38

AADT Factor

1.00

	ROYDON PL/SUNDERLAND ST									WEST HUNT CLUB RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	34	40	54	**128**	108	13	14	**135**	**263**	97	1059	80	**1236**	123	856	126	**1105**	**2341**	**2604**
08:00 09:00	30	45	77	**152**	99	32	19	**150**	**302**	78	1185	64	**1327**	99	864	125	**1088**	**2415**	**2717**
09:00 10:00	41	24	72	**137**	86	15	21	**122**	**259**	59	856	53	**968**	89	735	190	**1014**	**1982**	**2241**
11:30 12:30	68	35	89	**192**	137	34	20	**191**	**383**	53	778	54	**885**	92	837	208	**1137**	**2022**	**2405**
12:30 13:30	46	33	81	**160**	173	39	25	**237**	**397**	52	700	51	**803**	108	828	181	**1117**	**1920**	**2317**
15:00 16:00	46	34	72	**152**	101	29	19	**149**	**301**	43	649	34	**726**	80	1107	171	**1358**	**2084**	**2385**
16:00 17:00	51	59	64	**174**	97	57	34	**188**	**362**	35	477	32	**544**	105	1152	187	**1444**	**1988**	**2350**
17:00 18:00	45	56	58	**159**	91	51	47	**189**	**348**	39	423	33	**495**	63	1159	178	**1400**	**1895**	**2243**
Sub Total	361	326	567	**1254**	892	270	199	**1361**	**2615**	456	6127	401	**6984**	759	7538	1366	**9663**	**16647**	**19262**
U Turns				**0**				**0**	**0**				**30**				**38**	**68**	**68**
Total	361	326	567	**1254**	892	270	199	**1361**	**2615**	456	6127	401	**7014**	759	7538	1366	**9701**	**16715**	**19330**
EQ 12Hr	502	453	788	**1743**	1240	375	277	**1892**	**3635**	634	8517	557	**9749**	1055	10478	1899	**13484**	**23234**	**26869**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	502	453	788	**1743**	1240	492	362	**1892**	**3635**	634	8517	557	**9749**	1055	10478	1899	**13484**	**23234**	**26869**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	658	593	1032	**2283**	1624	645	474	**2479**	**4762**	831	11157	730	**12771**	1382	13726	2488	**17664**	**30437**	**35198**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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 @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018 **WO No:** 37509

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute Increments

		ROYDON PL/SUNDERLAND ST									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	5	11	9	25	20	4	3	27	52	33	242	20	296	21	188	18	228	524	576
07:15	07:30	11	11	14	36	35	0	3	38	74	31	292	19	343	29	209	39	277	620	694
07:30	07:45	6	11	14	31	34	5	6	45	76	20	253	18	292	44	224	36	305	597	673
07:45	08:00	12	7	17	36	19	4	2	25	61	13	272	23	309	29	235	33	297	606	667
08:00	08:15	10	15	20	45	24	10	2	36	81	20	293	15	330	19	222	29	270	600	681
08:15	08:30	6	14	19	39	19	7	6	32	71	22	309	15	351	30	217	30	277	628	699
08:30	08:45	6	7	21	34	23	8	6	37	71	17	313	18	348	24	240	29	296	644	715
08:45	09:00	8	9	17	34	33	7	5	45	79	19	270	16	305	26	185	37	249	554	633
09:00	09:15	9	5	21	35	18	3	2	23	58	20	220	17	257	29	159	38	229	486	544
09:15	09:30	13	9	19	41	24	3	5	32	73	13	232	8	254	21	180	40	242	496	569
09:30	09:45	8	6	17	31	14	3	5	22	53	18	198	14	230	22	208	52	285	515	568
09:45	10:00	11	4	15	30	30	6	9	45	75	8	206	14	231	17	188	60	266	497	572
11:30	11:45	14	7	26	47	39	11	8	58	105	17	212	15	244	26	216	55	298	542	647
11:45	12:00	15	9	19	43	29	10	4	43	86	9	183	15	208	18	196	41	255	463	549
12:00	12:15	17	11	15	43	30	8	2	40	83	16	171	9	199	26	242	54	325	524	607
12:15	12:30	22	8	29	59	39	5	6	50	109	11	212	15	238	22	183	58	266	504	613
12:30	12:45	9	9	23	41	36	11	4	51	92	19	175	9	203	22	214	39	277	480	572
12:45	13:00	13	1	16	30	48	6	11	65	95	10	190	19	219	31	184	48	264	483	578
13:00	13:15	14	12	23	49	46	11	6	63	112	11	157	9	178	24	237	48	310	488	600
13:15	13:30	10	11	19	40	43	11	4	58	98	12	178	14	205	31	193	46	272	477	575
15:00	15:15	6	1	17	24	20	2	3	25	49	11	206	6	224	23	260	40	325	549	598
15:15	15:30	9	9	17	35	31	8	6	45	80	14	143	12	170	22	262	44	328	498	578
15:30	15:45	20	15	22	57	30	7	2	39	96	8	144	8	161	15	292	49	357	518	614
15:45	16:00	11	9	16	36	20	12	8	40	76	10	156	8	174	20	293	38	352	526	602
16:00	16:15	8	20	20	48	21	11	20	52	100	11	125	10	147	28	300	49	379	526	626
16:15	16:30	12	9	21	42	24	12	4	40	82	11	102	5	120	31	305	52	391	511	593
16:30	16:45	16	17	14	47	27	15	6	48	95	4	135	10	150	23	296	37	356	506	601
16:45	17:00	15	13	9	37	25	19	4	48	85	9	115	7	133	23	251	49	323	456	541
17:00	17:15	21	18	27	66	28	20	14	62	128	13	105	5	123	20	280	46	346	469	597
17:15	17:30	11	12	13	36	20	16	9	45	81	8	125	11	144	15	316	50	382	526	607
17:30	17:45	8	16	10	34	17	11	9	37	71	9	94	7	110	12	274	44	330	440	511
17:45	18:00	5	10	8	23	26	4	15	45	68	9	99	10	118	16	289	38	344	462	530
Total:		361	326	567	1254	892	270	199	1361	2615	456	6127	401	7014	759	7538	1366	9701	16715	19,330

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018 **WO No:** 37509

Start Time: 07:00 **Device:** Miovision

Full Study Cyclist Volume

Time Period		ROYDON PL/SUNDERLAND ST			WEST HUNT CLUB RD			
		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	1	1	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	0	0	0	0
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	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	0	0	0	0	0	0
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	0	**0**	0	1	1	1

Transportation Services - Traffic Services

Turning Movement Count - Study Results

WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018 **WO No:** 37509

Start Time: 07:00 **Device:** Miovision

Full Study Pedestrian Volume

	ROYDON PL/SUNDERLAND ST			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	2	0	**2**	1	0	**1**	**3**
07:30 07:45	0	1	**1**	1	0	**1**	**2**
07:45 08:00	2	0	**2**	0	0	**0**	**2**
08:00 08:15	3	0	**3**	0	0	**0**	**3**
08:15 08:30	1	0	**1**	0	0	**0**	**1**
08:30 08:45	1	0	**1**	0	0	**0**	**1**
08:45 09:00	1	0	**1**	0	0	**0**	**1**
09:00 09:15	0	0	**0**	0	0	**0**	**0**
09:15 09:30	1	0	**1**	0	0	**0**	**1**
09:30 09:45	2	1	**3**	0	2	**2**	**5**
09:45 10:00	2	0	**2**	0	0	**0**	**2**
11:30 11:45	3	0	**3**	2	0	**2**	**5**
11:45 12:00	0	1	**1**	0	1	**1**	**2**
12:00 12:15	2	0	**2**	0	0	**0**	**2**
12:15 12:30	2	0	**2**	0	0	**0**	**2**
12:30 12:45	0	0	**0**	0	0	**0**	**0**
12:45 13:00	2	1	**3**	2	1	**3**	**6**
13:00 13:15	0	0	**0**	0	0	**0**	**0**
13:15 13:30	3	0	**3**	1	0	**1**	**4**
15:00 15:15	3	0	**3**	0	0	**0**	**3**
15:15 15:30	3	0	**3**	0	0	**0**	**3**
15:30 15:45	2	0	**2**	3	0	**3**	**5**
15:45 16:00	1	2	**3**	0	0	**0**	**3**
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	0	**0**	0	0	**0**	**0**
16:45 17:00	1	1	**2**	0	0	**0**	**2**
17:00 17:15	0	0	**0**	0	0	**0**	**0**
17:15 17:30	1	0	**1**	0	0	**0**	**1**
17:30 17:45	0	0	**0**	0	0	**0**	**0**
17:45 18:00	0	1	**1**	1	0	**1**	**2**
Total	38	9	**47**	11	5	**16**	**63**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018 **WO No:** 37509

Start Time: 07:00 **Device:** Miovision

Full Study Heavy Vehicles

		ROYDON PL/SUNDERLAND ST									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	0	1	0	**2**	1	0	1	**4**	**6**	1	8	0	**22**	1	12	0	**22**	**44**	**25**
07:15	07:30	3	0	5	**10**	0	0	1	**2**	**12**	1	9	1	**23**	1	8	0	**23**	**46**	**29**
07:30	07:45	1	0	4	**13**	1	0	0	**1**	**14**	0	13	0	**23**	8	9	0	**35**	**58**	**36**
07:45	08:00	1	0	4	**8**	1	0	0	**1**	**9**	0	5	1	**18**	2	11	0	**23**	**41**	**25**
08:00	08:15	4	0	4	**11**	0	1	0	**1**	**12**	0	13	0	**32**	2	15	0	**34**	**66**	**39**
08:15	08:30	1	1	4	**15**	1	1	1	**4**	**19**	0	12	3	**29**	5	12	0	**34**	**63**	**41**
08:30	08:45	0	1	5	**8**	0	1	1	**4**	**12**	0	13	0	**26**	1	12	1	**32**	**58**	**35**
08:45	09:00	1	1	4	**9**	2	0	0	**4**	**13**	1	15	0	**29**	3	12	0	**36**	**65**	**39**
09:00	09:15	0	0	4	**10**	2	0	0	**5**	**15**	1	11	2	**28**	4	14	2	**37**	**65**	**40**
09:15	09:30	1	0	4	**8**	2	0	1	**3**	**11**	0	13	2	**35**	1	18	0	**38**	**73**	**42**
09:30	09:45	0	0	2	**7**	0	0	1	**3**	**10**	0	13	1	**22**	4	7	2	**28**	**50**	**30**
09:45	10:00	0	1	3	**7**	2	1	1	**5**	**12**	0	5	0	**21**	2	15	0	**27**	**48**	**30**
11:30	11:45	0	1	5	**11**	0	2	0	**3**	**14**	0	12	1	**23**	2	10	0	**29**	**52**	**33**
11:45	12:00	2	1	5	**12**	0	0	0	**2**	**14**	1	9	1	**29**	3	16	0	**33**	**62**	**38**
12:00	12:15	1	0	0	**4**	0	1	0	**1**	**5**	0	7	1	**23**	1	14	0	**22**	**45**	**25**
12:15	12:30	2	0	2	**9**	1	0	1	**2**	**11**	0	14	2	**34**	3	15	0	**35**	**69**	**40**
12:30	12:45	0	0	4	**9**	2	0	1	**4**	**13**	0	6	1	**23**	4	15	1	**32**	**55**	**34**
12:45	13:00	2	0	0	**6**	0	0	0	**1**	**7**	0	11	1	**24**	3	10	1	**25**	**49**	**28**
13:00	13:15	5	0	3	**15**	1	0	1	**3**	**18**	0	10	1	**28**	6	11	1	**32**	**60**	**39**
13:15	13:30	1	2	4	**8**	1	0	0	**3**	**11**	0	18	0	**29**	1	10	0	**34**	**63**	**37**
15:00	15:15	0	1	0	**9**	0	1	0	**5**	**14**	1	12	1	**23**	6	9	2	**29**	**52**	**33**
15:15	15:30	0	2	0	**10**	0	1	1	**7**	**17**	0	5	3	**17**	4	8	3	**20**	**37**	**27**
15:30	15:45	1	1	4	**14**	0	1	0	**3**	**17**	0	4	1	**13**	6	7	1	**22**	**35**	**26**
15:45	16:00	0	1	2	**5**	0	0	0	**2**	**7**	1	6	1	**17**	1	9	0	**18**	**35**	**21**
16:00	16:15	0	1	0	**10**	2	1	0	**4**	**14**	0	3	0	**8**	8	5	0	**18**	**26**	**20**
16:15	16:30	0	1	3	**8**	1	0	0	**5**	**13**	3	9	0	**16**	4	4	0	**21**	**37**	**25**
16:30	16:45	0	0	2	**5**	2	0	0	**3**	**8**	0	6	1	**13**	2	6	1	**19**	**32**	**20**
16:45	17:00	0	0	0	**3**	0	0	0	**0**	**3**	0	7	0	**12**	3	5	0	**15**	**27**	**15**
17:00	17:15	0	1	0	**5**	0	0	1	**2**	**7**	0	2	2	**9**	2	4	0	**8**	**17**	**12**
17:15	17:30	0	1	0	**2**	0	0	0	**1**	**3**	0	2	0	**9**	1	7	0	**10**	**19**	**11**
17:30	17:45	0	0	0	**1**	0	0	0	**0**	**1**	0	6	0	**10**	1	4	0	**11**	**21**	**11**
17:45	18:00	0	0	1	**3**	0	0	0	**0**	**3**	0	2	1	**14**	1	11	0	**15**	**29**	**16**
Total:	None	26	18	78	**257**	22	11	12	**88**	**345**	10	281	28	**682**	96	325	15	**817**	**1499**	**922**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Survey Date: Wednesday, February 07, 2018 **WO No:** 37509

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

Time Period		ROYDON PL/SUNDERLAND ST Northbound U-Turn Total	ROYDON PL/SUNDERLAND ST Southbound U-Turn Total	WEST HUNT CLUB RD Eastbound U-Turn Total	WEST HUNT CLUB RD Westbound U-Turn Total	Total
07:00	07:15	0	0	1	1	2
07:15	07:30	0	0	1	0	1
07:30	07:45	0	0	1	1	2
07:45	08:00	0	0	1	0	1
08:00	08:15	0	0	2	0	2
08:15	08:30	0	0	5	0	5
08:30	08:45	0	0	0	3	3
08:45	09:00	0	0	0	1	1
09:00	09:15	0	0	0	3	3
09:15	09:30	0	0	1	1	2
09:30	09:45	0	0	0	3	3
09:45	10:00	0	0	3	1	4
11:30	11:45	0	0	0	1	1
11:45	12:00	0	0	1	0	1
12:00	12:15	0	0	3	3	6
12:15	12:30	0	0	0	3	3
12:30	12:45	0	0	0	2	2
12:45	13:00	0	0	0	1	1
13:00	13:15	0	0	1	1	2
13:15	13:30	0	0	1	2	3
15:00	15:15	0	0	1	2	3
15:15	15:30	0	0	1	0	1
15:30	15:45	0	0	1	1	2
15:45	16:00	0	0	0	1	1
16:00	16:15	0	0	1	2	3
16:15	16:30	0	0	2	3	5
16:30	16:45	0	0	1	0	1
16:45	17:00	0	0	2	0	2
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	1	1
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	1	1
Total		0	0	30	38	68

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

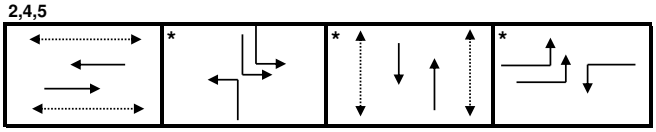
Intersection:	***Main:*** West Hunt Club	***Side:***	Merivale
Controller:	**ATC 3**	**TSD:**	**5857**
Author:	Matthew Anderson	**Date:**	16-Jan-2023

Existing Timing Plans†

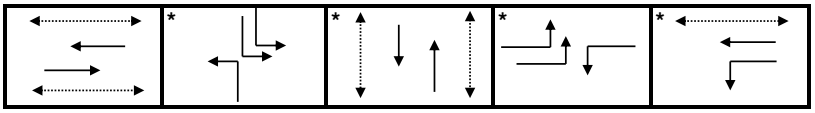
	Plan						Ped Minimum Time		
	Early AM	Off Peak	PM Peak	Night	Weekend	AM Peak	*Walk*	*DW*	*A+R*
	1	2	3	4	5	21			
Cycle	110	110	130	100	110	130			
Offset	82	14	28	40	14	102			
EB Thru	43	34	39	35	34	45	7	20	4.6+2.0
WB Thru	34	34	45	35	34	36	7	20	4.6+2.0
NB Left (fp)	16	20	20	13	20	23	-	-	3.7+2.9
SB Left (fp)	14	20	20	13	20	13	-	-	3.7+2.9
NB Thru	41	39	45	40	39	52	7	25	3.7+2.9
SB Thru	39	39	45	40	39	42	7	25	3.7+2.9
EB Left (fp)	21	17	20	12	17	29	-	-	4.6+2.4
WB Left (fp)	12	17	26	12	17	20	-	-	4.6+2.4

Phasing Sequence‡

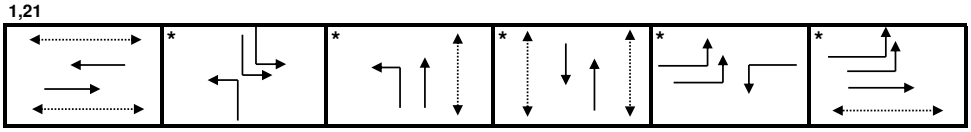
Plan: **2,4,5**



Plan: **3**



Plan: **1,21**



Notes: 1) All plans except for plan 4 have a min recall of 10s green on the NS thru phases

Schedule

Weekday

Time	Plan
0:15	4
6:30	1
7:00	21
9:30	2
15:00	3
18:30	2
22:00	4

Saturday

Time	Plan
0:15	4
8:00	2
9:30	5
18:00	2
23:00	4

Sunday

Time	Plan
0:15	4
9:30	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 $61.16 ($54.12 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Operations Unit

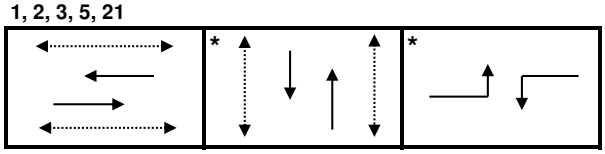
Intersection:	**Main:**	West Hunt Club	**Side:**	Roydon / Sunderland	
Controller:	**ATC3**			**TSD:**	**5396**
Author:	Matthew Anderson			**Date:**	16-Jan-2023

Existing Timing Plans†

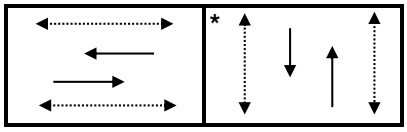
	Plan						**Ped Minimum Time**		
	AM Peak	**Off Peak**	**PM Peak**	**Night**	**Weekend**	**AM Rush**	***Walk***	***DW***	***A+R***
	1	2	3	4	5	21			
Cycle	110	110	130	90	110	130			
Offset	73	4	20	X	4	97			
EB Thru	52	54	69	49	54	70	7	16	4.6+1.8
WB Thru	52	54	69	49	54	70	7	16	4.6+1.8
NB Thru	41	41	41	41	41	41	7	27	3.3+3.4
SB Thru	41	41	41	41	41	41	7	27	3.3+3.4
EB Left	17	15	20	-	15	19	-	-	4.6+1.8
WB Left	17	15	20	-	15	19	-	-	4.6+1.8

Phasing Sequence‡

Plan: 1, 2, 3, 5, 21



Plan: 4



Schedule

Weekday

Time	Plan
0:15	4
6:00	1
7:00	21
9:30	2
15:00	3
18:30	2
22:00	4

Saturday

Time	Plan
0:15	4
8:00	2
9:30	5
18:00	2
22:30	4

Sunday

Time	Plan
0:15	4
9:30	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 $61.16 ($54.12 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

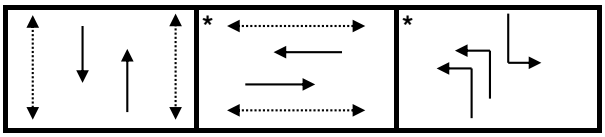
Intersection:	***Main:*** Merivale	***Side:***	170m N of West Hunt Club
Controller:	**MS 3200**	**TSD:**	**5215**
Author:	Matthew Anderson	**Date:**	16-Jan-2023

Existing Timing Plans†

	Plan						**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**Weekend** 5	**AM Rush** 21	***Walk***	***DW***	***A+R***
Cycle	110	110	130	90	110	130			
Offset	30	89	92	X	89	13			
NB Thru	53	43	69	36	43	73	7	20	3.7+2.4
SB Thru	53	43	69	36	43	73	7	20	3.7+2.4
EB Thru	43	43	43	43	43	43	7	29	3.3+3.7
WB Thru	43	43	43	43	43	43	7	29	3.3+3.7
NB Left (fp)	14	24	18	11	24	14	-	-	3.7+2.4
SB Left (fp)	14	24	18	11	24	14	-	-	3.7+2.4

Phasing Sequence‡

Plan: All



Notes: 1) For plans 1 & 21, if the EW pedestrian phase is not actuated, the EW phase will force off 22s early
2) For plan 3, if the EW pedestrian phase is not actuated, the EW phase will force off 13s early

Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
18:30	2
22:30	4

Saturday

Time	Plan
0:15	4
6:30	2
10:00	5
19:30	2
23:00	4

Sunday

Time	Plan
0:15	4
8:00	2
22:00	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 $61.16 ($54.12 + HST)

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ 170 N OF HUNTCLUB RD/COSTCO/CANA

Traffic Control: Traffic signal **Total Collisions:** 20

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Apr-29, Fri,17:46	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jun-03, Fri,15:21	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2016-Aug-15, Mon,21:30	Clear	Rear end	P.D. only	Dry	South	Unknown	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2017-Feb-23, Thu,18:30	Clear	Angle	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-17, Fri,12:26	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Pedestrian	1
2017-Nov-06, Mon,10:31	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Nov-09, Thu,12:51	Clear	SMV other	Non-fatal injury	Dry	North	Turning right	Unknown	Pedestrian	1
2017-Dec-26, Tue,09:41	Clear	Angle	P.D. only	Slush	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-13, Tue,12:07	Clear	SMV other	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Pedestrian	1
2018-Sep-27, Thu,12:00	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jul-10, Wed,13:41	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Passenger van	Other motor vehicle	
2019-Sep-10, Tue,13:54	Clear	SMV other	Non-fatal injury	Dry	North	Unknown	Unknown	Pedestrian	1
2019-Nov-12, Tue,13:48	Drifting Snow	Rear end	P.D. only	Slush	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ 170 N OF HUNTCLUB RD/COSTCO/CANA

Traffic Control: Traffic signal **Total Collisions:** 20

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Jan-24, Fri,20:20	Clear	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Feb-21, Fri,14:27	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2020-May-26, Tue,16:38	Clear	Angle	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Jun-01, Mon,16:23	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2020-Jul-12, Sun,16:22	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Oct-07, Wed,11:00	Rain	Turning movement	P.D. only	Wet	South	Turning left	Passenger van	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Dec-16, Wed,11:20	Clear	Rear end	Non-fatal injury	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jan-06, Wed,16:15	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Feb-10, Wed,14:54	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Feb-26, Fri,11:53	Rain	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Mar-11, Fri,11:21	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Mar-24, Thu,12:27	Freezing Rain	Rear end	P.D. only	Slush	North	Unknown	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Apr-07, Thu,23:54	Clear	SMV other	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Pole (utility, power)	0
2016-Apr-21, Thu,11:43	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2016-Apr-29, Fri,13:29	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Slowing or stopping	Pick-up truck	Other motor vehicle	
2016-May-23, Mon,19:47	Clear	Rear end	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-May-30, Mon,12:45	Clear	Rear end	Non-fatal injury	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Jun-02, Thu,07:48	Rain	Rear end	Non-fatal injury	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jun-13, Mon,18:43	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jul-02, Sat,14:20	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Jul-13, Wed,08:43	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Passenger van	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jul-18, Mon,14:45	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Passenger van	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2016-Jul-22, Fri,09:59	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Aug-20, Sat,12:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
2016-Sep-03, Sat,12:44	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Motorcycle	Other	0
2016-Sep-15, Thu,14:43	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2016-Oct-04, Tue,09:43	Clear	Rear end	Non-fatal injury	Dry	North	Slowing or stopping	Delivery van	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Passenger van	Other motor vehicle	
2016-Nov-03, Thu,15:58	Clear	Rear end	P.D. only	Wet	West	Turning left	Pick-up truck	Other motor vehicle	0
					West	Turning left	Pick-up truck	Other motor vehicle	
2016-Nov-14, Mon,14:01	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Nov-25, Fri,20:58	Clear	Rear end	Non-fatal injury	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Pick-up truck	Other motor vehicle	
2016-Dec-27, Tue,19:08	Freezing Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Dec-29, Thu,12:15	Snow	Rear end	P.D. only	Ice	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Tow truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jan-10, Tue,17:30	Snow	Turning movement	P.D. only	Loose snow	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Feb-15, Wed,17:58	Snow	Sideswipe	P.D. only	Loose snow	East	Slowing or stopping	Pick-up truck	Skidding/sliding	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Feb-17, Fri,13:42	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-08, Wed,07:48	Clear	Turning movement	P.D. only	Dry	South	Turning left	Delivery van	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2017-Mar-10, Fri,12:01	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-17, Fri,10:36	Clear	Rear end	P.D. only	Dry	South	Unknown	Pick-up truck	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Mar-26, Sun,13:03	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Apr-19, Wed,10:21	Rain	Rear end	P.D. only	Wet	West	Going ahead	Delivery van	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2017-Apr-21, Fri,08:24	Rain	Rear end	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Municipal transit bus	Other motor vehicle	
2017-Apr-21, Fri,11:49	Clear	Rear end	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Passenger van	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
2017-Apr-28, Fri,16:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jun-07, Wed,17:38	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Municipal transit bus	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Jun-22, Thu,13:51	Clear	Rear end	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle	0
					North	Changing lanes	Pick-up truck	Other motor vehicle	
2017-Jun-30, Fri,11:30	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2017-Jul-03, Mon,01:06	Rain	Rear end	P.D. only	Wet	South	Turning right	Automobile, station wagon	Skidding/sliding	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Jul-17, Mon,09:05	Clear	Rear end	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Aug-24, Thu,11:30	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Oct-14, Sat,10:00	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Oct-14, Sat,12:27	Clear	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Nov-03, Fri,18:03	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Nov-08, Wed,16:38	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Nov-11, Sat,15:18	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Nov-24, Fri,17:07	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Unknown	Unknown	Other motor vehicle	
2017-Nov-29, Wed,14:20	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-05, Tue,18:08	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
2017-Dec-07, Thu,12:40	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck - closed	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-12, Tue,08:12	Snow	Angle	Non-fatal injury	Loose snow	North	Turning right	Pick-up truck	Skidding/sliding	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2017-Dec-20, Wed,16:53	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Dec-22, Fri,17:30	Snow	SMV other	P.D. only	Slush	West	Going ahead	Automobile, station wagon	Other	0
2017-Dec-27, Wed,17:07	Clear	SMV other	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Ran off road	0
2017-Dec-29, Fri,06:49	Snow	Rear end	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-18, Thu,07:40	Clear	Rear end	P.D. only	Packed snow	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Delivery van	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Feb-05, Mon,07:30	Snow	Rear end	P.D. only	Slush	South	Going ahead	Automobile, station wagon	Skidding/sliding	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Feb-05, Mon,19:43	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-13, Tue,06:33	Clear	Rear end	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	0
					North	Turning left	Pick-up truck	Other motor vehicle	
2018-Mar-05, Mon,08:23	Clear	Rear end	P.D. only	Dry	South	Going ahead	Truck - closed	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Mar-05, Mon,14:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Mar-08, Thu,18:40	Snow	Rear end	P.D. only	Slush	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Apr-16, Mon,17:34	Rain	Angle	Non-fatal injury	Wet	North	Going ahead	Passenger van	Other motor vehicle	0
					East	Going ahead	Passenger van	Other motor vehicle	
2018-May-03, Thu,14:41	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-May-08, Tue,20:00	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Automobile, station wagon	Other motor vehicle	0
					West	Unknown	Automobile, station wagon	Other motor vehicle	
2018-May-11, Fri,05:58	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Motorcycle	Other motor vehicle	
2018-May-12, Sat,15:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Unknown	Other motor vehicle	0
					East	Stopped	Delivery van	Other motor vehicle	
					East	Stopped	Unknown	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-May-22, Tue,13:15	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-25, Fri,17:00	Rain	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Skidding/sliding	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Jun-23, Sat,18:18	Rain	Rear end	Non-fatal injury	Wet	East	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jul-07, Sat,12:16	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jul-11, Wed,14:18	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2018-Jul-20, Fri,20:08	Clear	Rear end	P.D. only	Dry	East	Going ahead	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jul-22, Sun,12:39	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Unknown	Other motor vehicle	
2018-Aug-01, Wed,13:08	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Aug-24, Fri,20:43	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Aug-29, Wed,23:33	Clear	Rear end	P.D. only	Dry	East	Turning right	Unknown	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Sep-21, Fri,11:02	Rain	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Sep-23, Sun,10:12	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Oct-17, Wed,17:00	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Oct-19, Fri,22:23	Rain	Rear end	P.D. only	Wet	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Nov-01, Thu,12:04	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Truck - tank	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-15, Thu,14:29	Clear	Rear end	P.D. only	Dry	North	Turning right	Unknown	Other motor vehicle	0
					North	Turning right	Delivery van	Other motor vehicle	
2018-Nov-16, Fri,10:21	Snow	Rear end	P.D. only	Loose snow	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Passenger van	Other motor vehicle	
2018-Nov-28, Wed,09:46	Snow	Rear end	P.D. only	Loose snow	East	Turning left	Passenger van	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Dec-31, Mon,13:10	Clear	Rear end	P.D. only	Wet	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jan-02, Wed,08:26	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Delivery van	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jan-17, Thu,22:17	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2019-Jan-23, Wed,11:09	Snow	Sideswipe	P.D. only	Loose snow	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Truck - dump	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jan-25, Fri,19:30	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Mar-03, Sun,11:42	Clear	Rear end	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Mar-12, Tue,07:51	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2019-May-27, Mon,08:20	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2019-Jun-05, Wed,16:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-13, Thu,12:22	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jul-02, Tue,09:18	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jul-23, Tue,15:31	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Aug-11, Sun,11:37	Clear	Rear end	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Aug-14, Wed,10:20	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Sep-19, Thu,16:39	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Oct-01, Tue,14:30	Rain	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Oct-04, Fri,11:50	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Delivery van	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2019-Oct-10, Thu,08:24	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Unknown	Other motor vehicle	
2019-Oct-19, Sat,19:10	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-01, Fri,09:45	Snow	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Nov-01, Fri,12:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Nov-17, Sun,14:58	Clear	Turning movement	P.D. only	Packed snow	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Nov-18, Mon,10:49	Clear	Sideswipe	Non-fatal injury	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-21, Thu,22:05	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-28, Thu,16:57	Clear	Sideswipe	P.D. only	Dry	South	Unknown	Delivery van	Other motor vehicle	0
					South	Unknown	Passenger van	Other motor vehicle	
2019-Dec-08, Sun,12:02	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Passenger van	Other motor vehicle	
2019-Dec-20, Fri,17:48	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Dec-24, Tue,10:45	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Passenger van	Other motor vehicle	0
					North	Going ahead	Passenger van	Other motor vehicle	
2019-Dec-28, Sat,15:45	Clear	Other	P.D. only	Dry	South	Reversing	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jan-05, Sun,14:20	Clear	Sideswipe	P.D. only	Slush	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jan-18, Sat,15:00	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Unknown	Unknown	Other motor vehicle	
2020-Feb-19, Wed,17:09	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Feb-29, Sat,09:35	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Mar-23, Mon,21:02	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Apr-30, Thu,12:33	Rain	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-May-27, Wed,09:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2020-May-27, Wed,13:06	Clear	Other	P.D. only	Dry	West	Reversing	Pick-up truck	Other motor vehicle	0
					East	Stopped	Motorcycle	Other motor vehicle	
2020-May-28, Thu,09:09	Clear	Rear end	P.D. only	Dry	East	Turning right	Truck - closed	Other motor vehicle	0
					East	Turning right	Passenger van	Other motor vehicle	
2020-May-30, Sat,19:59	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Pick-up truck	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: MERIVALE RD @ WEST HUNT CLUB RD

Traffic Control: Traffic signal **Total Collisions:** 136

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Jun-12, Fri,13:28	Clear	Rear end	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jun-15, Mon,10:36	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Unknown	Other motor vehicle	0
					North	Turning left	Pick-up truck	Other motor vehicle	
2020-Aug-09, Sun,20:00	Clear	Angle	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Sep-06, Sun,15:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Sep-10, Thu,21:11	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Pick-up truck	Other motor vehicle	
2020-Sep-16, Wed,19:10	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Pick-up truck	Other motor vehicle	
2020-Oct-13, Tue,17:11	Clear	Rear end	P.D. only	Wet	East	Going ahead	Passenger van	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2020-Oct-14, Wed,13:00	Clear	Rear end	P.D. only	Dry	South	Going ahead	Passenger van	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2020-Oct-31, Sat,15:00	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Nov-04, Wed,13:05	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2020-Nov-28, Sat,14:16	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	

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From: January 1, 2016 **To:** December 31, 2020

Location: WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Traffic Control: Traffic signal **Total Collisions:** 60

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Mar-20, Sun,21:50	Clear	SMV other	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Pole (utility, power)	0
2016-Apr-11, Mon,14:49	Clear	Angle	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Pick-up truck	Other motor vehicle	
2016-Apr-19, Tue,16:51	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2016-May-10, Tue,11:40	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Truck and trailer	Other motor vehicle	
2016-May-12, Thu,16:40	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2016-May-19, Thu,19:24	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2016-May-27, Fri,11:40	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Truck and trailer	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Jul-14, Thu,17:49	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2016-Jul-20, Wed,16:41	Clear	Turning movement	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Cyclist	0
					East	Going ahead	Bicycle	Other motor vehicle	
2016-Jul-28, Thu,14:38	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2016-Jul-28, Thu,15:22	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Truck - closed	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Sep-10, Sat,17:38	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Traffic Control: Traffic signal **Total Collisions:** 60

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Oct-21, Fri,21:03	Rain	Other	Fatal injury	Wet	West	Going ahead	Automobile, station wagon	Pedestrian	1
					West	Going ahead	Pick-up truck	Pedestrian	
					West	Going ahead	Automobile, station wagon	Pedestrian	
2016-Oct-27, Thu,16:48	Snow	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Dec-12, Mon,21:55	Snow	Turning movement	Non-fatal injury	Loose snow	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Unknown	Other motor vehicle	
2016-Dec-23, Fri,11:52	Clear	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jan-13, Fri,16:24	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Feb-06, Mon,17:00	Snow	Rear end	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Apr-07, Fri,14:41	Rain	Turning movement	P.D. only	Wet	East	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2017-Apr-20, Thu,12:15	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-May-18, Thu,18:38	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jul-12, Wed,18:14	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Aug-08, Tue,16:07	Clear	Rear end	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Traffic Control: Traffic signal **Total Collisions:** 60

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Nov-07, Tue,10:06	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Nov-21, Tue,21:20	Rain	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2017-Dec-04, Mon,12:00	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2018-Feb-06, Tue,09:35	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2018-Mar-21, Wed,12:54	Clear	Turning movement	P.D. only	Dry	East	Making "U" turn	Passenger van	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-25, Sun,19:36	Clear	Turning movement	P.D. only	Dry	North	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-28, Wed,15:16	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Truck - tractor	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jul-10, Tue,18:04	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Aug-10, Fri,03:55	Clear	SMV other	P.D. only	Dry	East	Going ahead	Pick-up truck	Animal - wild	0
2018-Aug-28, Tue,11:35	Clear	Sideswipe	P.D. only	Dry	West	Merging	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-29, Wed,07:50	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-11, Tue,11:01	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Traffic Control: Traffic signal **Total Collisions:** 60

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Oct-01, Mon,15:07	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
2018-Oct-04, Thu,13:20	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Nov-23, Fri,07:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Feb-22, Fri,11:50	Clear	Rear end	P.D. only	Dry	East	Going ahead	Delivery van	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Apr-08, Mon,12:00	Rain	Sideswipe	P.D. only	Wet	East	Merging	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Apr-13, Sat,15:53	Clear	Rear end	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Pick-up truck	Other motor vehicle	
2019-Apr-26, Fri,15:44	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-02, Fri,16:28	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2019-Aug-12, Mon,16:25	Rain	Rear end	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Sep-11, Wed,10:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Truck - closed	Other motor vehicle	
2019-Oct-04, Fri,06:28	Clear	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Traffic Control: Traffic signal **Total Collisions:** 60

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Oct-08, Tue,16:09	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
2019-Nov-08, Fri,16:15	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Dec-08, Sun,16:59	Clear	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Dec-09, Mon,09:04	Rain	Turning movement	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2020-Jan-18, Sat,18:47	Snow	Turning movement	P.D. only	Loose snow	South	Turning left	Passenger van	Other motor vehicle	0
					North	Going ahead	Delivery van	Other motor vehicle	
2020-Jan-31, Fri,09:18	Clear	Other	P.D. only	Dry	East	Reversing	Truck - closed	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2020-Jun-16, Tue,12:25	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jun-24, Wed,15:55	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jun-30, Tue,14:56	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2020-Jul-09, Thu,07:46	Clear	Turning movement	P.D. only	Dry	East	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2020-Aug-26, Wed,16:35	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: WEST HUNT CLUB RD @ ROYDON PL/SUNDERLAND ST

Traffic Control: Traffic signal **Total Collisions:** 60

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Sep-18, Fri,15:30	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Passenger van	Other motor vehicle	
2020-Nov-13, Fri,15:40	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	
2020-Nov-23, Mon,12:03	Clear	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Truck and trailer	Other motor vehicle	

Location: WEST HUNT CLUB RD EB btwn MERIVALE RD & SUNDERLAND ST

Traffic Control: No control **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Apr-29, Fri,08:16	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Slowing or stopping	Passenger van	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2016-Jun-07, Tue,11:49	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Unknown	Unknown	Other	
2016-Jul-27, Wed,16:42	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Truck - open	Other motor vehicle	
2016-Oct-07, Fri,17:32	Clear	Sideswipe	Non-fatal injury	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Truck and trailer	Other motor vehicle	
2017-Jun-12, Mon,08:48	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-07, Mon,12:08	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: WEST HUNT CLUB RD EB btwn MERIVALE RD & SUNDERLAND ST

Traffic Control: No control **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Jan-03, Wed,07:55	Snow	Sideswipe	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Passenger van	Other motor vehicle	
2020-Jul-06, Mon,11:15	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Pick-up truck	Other motor vehicle	0
					East	Unknown	Pick-up truck	Other motor vehicle	

Location: WEST HUNT CLUB RD WB btwn MERIVALE RD & ROYDON PL

Traffic Control: No control **Total Collisions:** 10

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jan-05, Thu,20:47	Clear	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jul-15, Sat,07:15	Clear	SMV other	Non-fatal injury	Wet	East	Going ahead	Automobile, station wagon	Pole (utility, power)	0
2018-Jan-01, Mon,07:30	Clear	Rear end	P.D. only	Slush	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2018-Apr-25, Wed,20:15	Rain	Angle	P.D. only	Wet	South	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-15, Thu,20:55	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Tow truck	Other motor vehicle	
2019-Nov-19, Tue,16:50	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2020-Feb-21, Fri,15:00	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Aug-26, Wed,17:45	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: WEST HUNT CLUB RD WB btwn MERIVALE RD & ROYDON PL

Traffic Control: No control **Total Collisions:** 10

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Aug-27, Thu,15:07	Clear	Rear end	P.D. only	Dry	West	Unknown	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Unknown	Other motor vehicle	
2020-Nov-13, Fri,15:35	Clear	Angle	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

APPENDIX E:

SYNCHRO ANALYSIS

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1228	1460	31	0	35
Future Vol, veh/h	0	1228	1460	31	0	35
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	90	90	90	90	90	90
Heavy Vehicles, %	2	6	5	2	2	2
Mvmt Flow	0	1364	1622	34	0	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	828
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	270
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	270
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	270
HCM Lane V/C Ratio	-	-	-	0.144
HCM Control Delay (s)	-	-	-	20.6
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.5

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	33	32	2	0	1	27	307	45	5	200	3
Future Vol, veh/h	1	33	32	2	0	1	27	307	45	5	200	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	37	36	2	0	1	30	341	50	6	222	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	663	687	224	698	663	366	225	0	0	391	0	0
Stage 1	236	236	-	426	426	-	-	-	-	-	-	-
Stage 2	427	451	-	272	237	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	375	370	815	355	382	679	1344	-	-	1168	-	-
Stage 1	767	710	-	606	586	-	-	-	-	-	-	-
Stage 2	606	571	-	734	709	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	365	357	815	305	369	679	1344	-	-	1168	-	-
Mov Cap-2 Maneuver	365	357	-	305	369	-	-	-	-	-	-	-
Stage 1	745	706	-	588	569	-	-	-	-	-	-	-
Stage 2	587	554	-	662	705	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.6	14.7	0.6	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1344	-	-	491	374	1168	-	-
HCM Lane V/C Ratio	0.022	-	-	0.149	0.009	0.005	-	-
HCM Control Delay (s)	7.7	0	-	13.6	14.7	8.1	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0	0	-	-

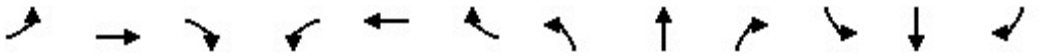
Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↗		↕	
Traffic Vol, veh/h	3	4	26	44	15	83	11	293	110	124	109	1
Future Vol, veh/h	3	4	26	44	15	83	11	293	110	124	109	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	4	29	49	17	92	12	326	122	138	121	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	864	870	122	764	748	326	122	0	0	448	0	0
Stage 1	398	398	-	350	350	-	-	-	-	-	-	-
Stage 2	466	472	-	414	398	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	274	290	929	321	341	715	1465	-	-	1112	-	-
Stage 1	628	603	-	666	633	-	-	-	-	-	-	-
Stage 2	577	559	-	616	603	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	204	249	929	273	292	715	1465	-	-	1112	-	-
Mov Cap-2 Maneuver	204	249	-	273	292	-	-	-	-	-	-	-
Stage 1	621	523	-	659	626	-	-	-	-	-	-	-
Stage 2	484	553	-	513	523	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.9	18.1	0.2	4.6
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1465	-	-	562	432	1112	-	-
HCM Lane V/C Ratio	0.008	-	-	0.065	0.365	0.124	-	-
HCM Control Delay (s)	7.5	0	-	11.9	18.1	8.7	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	1.6	0.4	-	-



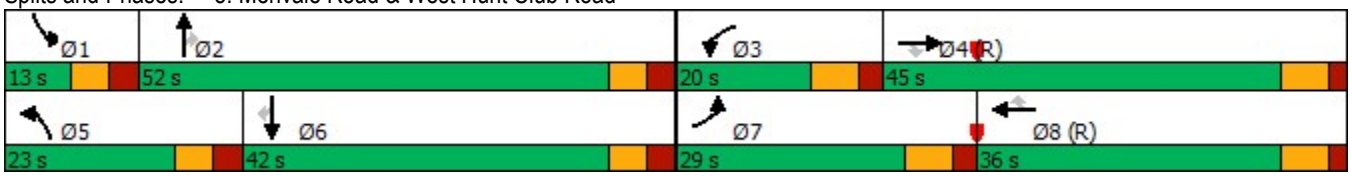
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	960	157	298	1092	105	95	1060	85	183	570	242
Future Volume (vph)	96	960	157	298	1092	105	95	1060	85	183	570	242
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	100.0		100.0	0.0		0.0	100.0		0.0
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3195	3325	1345	1558	4732	1502	1491	3357	1394	3225	3232	1473
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3195	3325	1345	1558	4732	1502	1491	3357	1394	3225	3232	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			200			258			203			269
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		121.8			343.9			90.7			254.6	
Travel Time (s)		5.5			15.5			5.4			15.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	4%	15%	11%	5%	3%	16%	3%	11%	4%	7%	5%
Adj. Flow (vph)	107	1067	174	331	1213	117	106	1178	94	203	633	269
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	1067	174	331	1213	117	106	1178	94	203	633	269
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	29.0	45.0	45.0	20.0	36.0	36.0	23.0	52.0	52.0	13.0	42.0	42.0
Total Split (s)	29.0	45.0	45.0	20.0	36.0	36.0	23.0	52.0	52.0	13.0	42.0	42.0
Total Split (%)	22.3%	34.6%	34.6%	15.4%	27.7%	27.7%	17.7%	40.0%	40.0%	10.0%	32.3%	32.3%
Maximum Green (s)	22.0	38.4	38.4	13.0	29.4	29.4	16.4	45.4	45.4	6.4	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	2.0	2.0	2.4	2.0	2.0	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	6.6	6.6	7.0	6.6	6.6	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)		20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	9.7	38.4	38.4	13.0	41.7	41.7	13.6	45.4	45.4	6.4	38.2	38.2
Actuated g/C Ratio	0.07	0.30	0.30	0.10	0.32	0.32	0.10	0.35	0.35	0.05	0.29	0.29
v/c Ratio	0.45	1.09	0.32	2.14	0.80	0.18	0.68	1.01	0.15	1.28	0.67	0.43
Control Delay	63.1	98.3	4.4	559.7	45.5	0.6	77.3	69.7	0.5	215.1	45.0	6.5
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

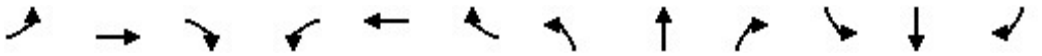
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	63.1	98.3	4.4	559.7	45.5	0.6	77.3	69.7	0.5	215.1	45.0	6.5
LOS	E	F	A	F	D	A	E	E	A	F	D	A
Approach Delay		83.4			144.8			65.5			66.9	
Approach LOS		F			F			E			E	
Queue Length 50th (m)	13.7	~161.3	0.0	~134.7	103.8	0.0	26.4	~159.7	0.0	~33.9	75.7	0.0
Queue Length 95th (m)	22.7	#202.7	11.2	#192.2	126.0	0.0	45.4	#207.7	0.0	#58.6	98.7	20.7
Internal Link Dist (m)		97.8			319.9			66.7			230.6	
Turn Bay Length (m)				100.0		100.0				100.0		
Base Capacity (vph)	540	982	538	155	1516	656	188	1172	618	158	950	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	1.09	0.32	2.14	0.80	0.18	0.56	1.01	0.15	1.28	0.67	0.43

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 102 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.14
Intersection Signal Delay: 94.2 Intersection LOS: F
Intersection Capacity Utilization 104.2% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Merivale Road & West Hunt Club Road



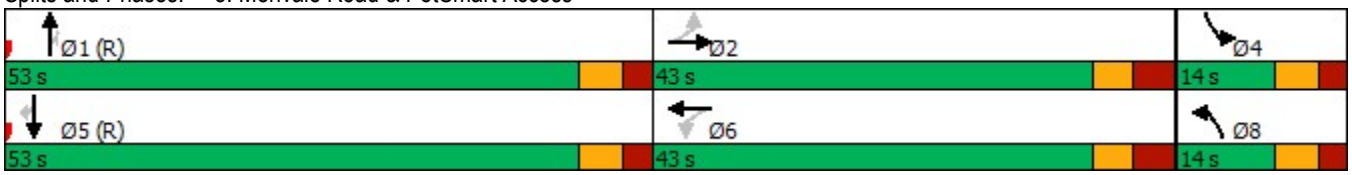


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	14	26	5	4	6	32	1105	124	48	964	73
Future Volume (vph)	58	14	26	5	4	6	32	1105	124	48	964	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	100.0		100.0	0.0		0.0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		0.903			0.905				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1611	0	1695	1615	0	3288	3325	1517	1695	3325	1517
Flt Permitted	0.750			0.728			0.950			0.950		
Satd. Flow (perm)	1338	1611	0	1299	1615	0	3288	3325	1517	1695	3325	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			7				138			100
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		111.1			112.8			254.6			89.1	
Travel Time (s)		8.0			8.1			15.3			5.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	64	16	29	6	4	7	36	1228	138	53	1071	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	45	0	6	11	0	36	1228	138	53	1071	81
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		2!			6!		8	1!		4	5!	
Permitted Phases	2!			6!					1			5
Detector Phase	2	2		6	6		8	1	1	4	5	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	43.0	43.0		43.0	43.0		14.0	53.0	53.0	14.0	53.0	53.0
Total Split (s)	43.0	43.0		43.0	43.0		14.0	53.0	53.0	14.0	53.0	53.0
Total Split (%)	39.1%	39.1%		39.1%	39.1%		12.7%	48.2%	48.2%	12.7%	48.2%	48.2%
Maximum Green (s)	36.0	36.0		36.0	36.0		7.9	46.9	46.9	7.9	46.9	46.9
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.7	3.7		3.7	3.7		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
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lag		Lag	Lag			Lead	Lead		Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	Max	Max		Max	Max		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)	29.0	29.0		29.0	29.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5		5	5			5	5		5	5
Act Effct Green (s)	36.0	36.0		36.0	36.0		7.3	49.8	49.8	7.3	49.8	49.8
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.07	0.45	0.45	0.07	0.45	0.45
v/c Ratio	0.15	0.08		0.01	0.02		0.16	0.82	0.18	0.47	0.71	0.11
Control Delay	27.4	13.4		25.2	17.1		49.9	32.6	3.9	63.3	28.5	2.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	27.4	13.4		25.2	17.1		49.9	32.6	3.9	63.3	28.5	2.8
LOS	C	B		C	B		D	C	A	E	C	A
Approach Delay		21.6			20.0			30.2			28.3	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	9.7	2.3		0.9	0.6		3.8	123.5	0.0	11.1	100.2	0.0
Queue Length 95th (m)	19.8	10.2		3.8	4.6		8.9	154.0	11.0	23.9	125.6	6.1
Internal Link Dist (m)		87.1			88.8			230.6			65.1	
Turn Bay Length (m)							100.0		100.0			
Base Capacity (vph)	437	546		425	533		236	1505	762	121	1505	741
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.08		0.01	0.02		0.15	0.82	0.18	0.44	0.71	0.11

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 30 (27%), Referenced to phase 1:NBT and 5:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 29.0		Intersection LOS: C	
Intersection Capacity Utilization 62.5%		ICU Level of Service B	
Analysis Period (min) 15			
! Phase conflict between lane groups.			

Splits and Phases: 8: Merivale Road & PetSmart Access

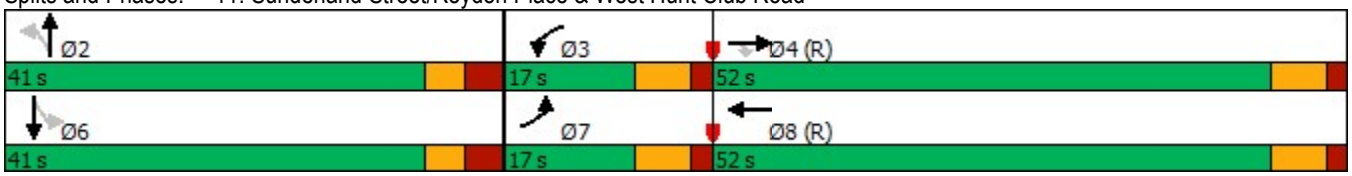


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	987	131	78	1437	177	37	127	83	92	70	17
Future Volume (vph)	110	987	131	78	1437	177	37	127	83	92	70	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.984			0.941			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3325	1459	1572	4671	0	1465	1533	0	1695	1634	0
Flt Permitted	0.950			0.950			0.694			0.532		
Satd. Flow (perm)	1695	3325	1459	1572	4671	0	1070	1533	0	949	1634	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			146		24			31			12	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		371.1			116.0			89.5			157.1	
Travel Time (s)		16.7			5.2			6.4			11.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	4%	6%	10%	5%	2%	18%	5%	22%	2%	7%	13%
Adj. Flow (vph)	122	1097	146	87	1597	197	41	141	92	102	78	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	1097	146	87	1794	0	41	233	0	102	97	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	17.0	52.0	52.0	17.0	52.0		41.0	41.0		41.0	41.0	
Total Split (s)	17.0	52.0	52.0	17.0	52.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.5%	47.3%	47.3%	15.5%	47.3%		37.3%	37.3%		37.3%	37.3%	
Maximum Green (s)	10.6	45.6	45.6	10.6	45.6		34.3	34.3		34.3	34.3	
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		6.7	6.7		6.7	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	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	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max		Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		16.0	16.0		16.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		5	5		5		5	5		5	5	
Act Effct Green (s)	10.2	49.2	49.2	9.6	46.0		34.3	34.3		34.3	34.3	
Actuated g/C Ratio	0.09	0.45	0.45	0.09	0.42		0.31	0.31		0.31	0.31	
v/c Ratio	0.78	0.74	0.20	0.64	0.91		0.12	0.47		0.35	0.19	
Control Delay	80.0	29.9	4.0	69.1	38.2		28.5	29.9		33.3	25.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	80.0	29.9	4.0	69.1	38.2		28.5	29.9		33.3	25.3	
LOS	F	C	A	E	D		C	C		C	C	
Approach Delay		31.6			39.6			29.7			29.4	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	25.9	106.3	0.0	18.2	129.7		6.3	34.6		16.8	13.2	
Queue Length 95th (m)	#54.3	132.9	11.6	#36.9	#155.9		14.7	57.7		32.0	26.0	
Internal Link Dist (m)		347.1			92.0			65.5			133.1	
Turn Bay Length (m)	100.0		100.0									
Base Capacity (vph)	163	1487	733	151	1966		333	499		295	517	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.75	0.74	0.20	0.58	0.91		0.12	0.47		0.35	0.19	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 73 (66%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 35.4		Intersection LOS: D	
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 11: Sunderland Street/Roydon Place & West Hunt Club Road



Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1590	1738	36	0	82
Future Vol, veh/h	0	1590	1738	36	0	82
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1767	1931	40	0	91

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	986
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	212
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	212
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	34.2
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	212
HCM Lane V/C Ratio	-	-	-	0.43
HCM Control Delay (s)	-	-	-	34.2
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	2

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	69	37	14	26	62	327	3	1	202	2
Future Vol, veh/h	5	1	69	37	14	26	62	327	3	1	202	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1	77	41	16	29	69	363	3	1	224	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	752	731	225	769	731	365	226	0	0	366	0	0
Stage 1	227	227	-	503	503	-	-	-	-	-	-	-
Stage 2	525	504	-	266	228	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	327	349	814	318	349	680	1342	-	-	1193	-	-
Stage 1	776	716	-	551	541	-	-	-	-	-	-	-
Stage 2	536	541	-	739	715	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	286	326	814	273	326	680	1342	-	-	1193	-	-
Mov Cap-2 Maneuver	286	326	-	273	326	-	-	-	-	-	-	-
Stage 1	726	715	-	515	506	-	-	-	-	-	-	-
Stage 2	465	506	-	668	714	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	18.3	1.2	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1342	-	-	712	355	1193	-	-
HCM Lane V/C Ratio	0.051	-	-	0.117	0.241	0.001	-	-
HCM Control Delay (s)	7.8	0	-	10.7	18.3	8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.9	0	-	-

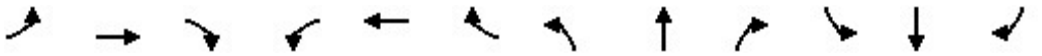
Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	4	7	18	46	20	91	10	297	115	123	185	0
Future Vol, veh/h	4	7	18	46	20	91	10	297	115	123	185	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	8	20	51	22	101	11	330	128	137	206	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	958	960	206	846	832	330	206	0	0	458	0	0
Stage 1	480	480	-	352	352	-	-	-	-	-	-	-
Stage 2	478	480	-	494	480	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	237	257	835	282	305	712	1365	-	-	1103	-	-
Stage 1	567	554	-	665	632	-	-	-	-	-	-	-
Stage 2	568	554	-	557	554	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	169	219	835	237	260	712	1365	-	-	1103	-	-
Mov Cap-2 Maneuver	169	219	-	237	260	-	-	-	-	-	-	-
Stage 1	561	476	-	658	625	-	-	-	-	-	-	-
Stage 2	465	548	-	460	476	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.5	21.2	0.2	3.5
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1365	-	-	376	394	1103	-	-
HCM Lane V/C Ratio	0.008	-	-	0.086	0.443	0.124	-	-
HCM Control Delay (s)	7.7	0	-	15.5	21.2	8.7	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	2.2	0.4	-	-



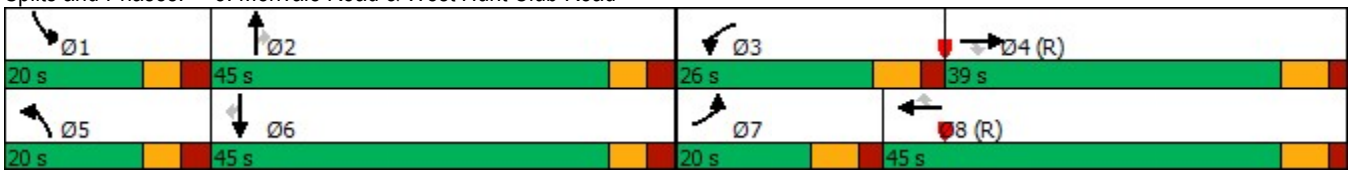
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	1297	269	261	1437	122	144	1031	108	185	809	301
Future Volume (vph)	158	1297	269	261	1437	122	144	1031	108	185	809	301
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	100.0		100.0	0.0		0.0	100.0		0.0
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3325	1406	1544	4871	1517	1616	3357	1459	3257	3357	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3288	3325	1406	1544	4871	1517	1616	3357	1459	3257	3357	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			160			144			144			273
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		121.8			343.9			90.7			254.6	
Travel Time (s)		5.5			15.5			5.4			15.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	4%	10%	12%	2%	2%	7%	3%	6%	3%	3%	2%
Adj. Flow (vph)	176	1441	299	290	1597	136	160	1146	120	206	899	334
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	1441	299	290	1597	136	160	1146	120	206	899	334
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	39.0	39.0	26.0	45.0	45.0	20.0	45.0	45.0	20.0	45.0	45.0
Total Split (s)	20.0	39.0	39.0	26.0	45.0	45.0	20.0	45.0	45.0	20.0	45.0	45.0
Total Split (%)	15.4%	30.0%	30.0%	20.0%	34.6%	34.6%	15.4%	34.6%	34.6%	15.4%	34.6%	34.6%
Maximum Green (s)	13.0	32.4	32.4	19.0	38.4	38.4	13.4	38.4	38.4	13.4	38.4	38.4
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	2.0	2.0	2.4	2.0	2.0	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	6.6	6.6	7.0	6.6	6.6	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)		20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	11.6	32.4	32.4	19.0	39.8	39.8	13.4	39.4	39.4	12.4	38.4	38.4
Actuated g/C Ratio	0.09	0.25	0.25	0.15	0.31	0.31	0.10	0.30	0.30	0.10	0.30	0.30
v/c Ratio	0.60	1.74	0.64	1.29	1.07	0.24	0.96	1.13	0.22	0.67	0.91	0.52
Control Delay	65.7	369.0	26.5	193.4	100.7	23.2	118.8	111.1	4.1	77.3	51.5	11.5
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

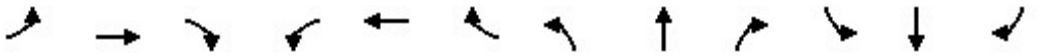
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	65.7	369.0	26.5	193.4	100.7	23.2	118.8	111.1	4.1	77.3	51.5	11.5
LOS	E	F	C	F	F	C	F	F	A	E	D	B
Approach Delay		287.7			108.8			103.0			45.9	
Approach LOS		F			F			F			D	
Queue Length 50th (m)	22.6	~287.5	31.6	~97.0	~163.6	12.6	41.5	~182.1	0.0	29.1	100.2	2.1
Queue Length 95th (m)	34.4	#330.1	63.4	m#122.1	#197.2	m18.5	#84.5	#223.8	9.4	41.9	#149.3	44.1
Internal Link Dist (m)		97.8			319.9			66.7			230.6	
Turn Bay Length (m)				100.0		100.0				100.0		
Base Capacity (vph)	328	828	470	225	1492	564	166	1018	542	335	991	640
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	1.74	0.64	1.29	1.07	0.24	0.96	1.13	0.22	0.61	0.91	0.52

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 28 (22%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.74
Intersection Signal Delay: 144.6 Intersection LOS: F
Intersection Capacity Utilization 111.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Merivale Road & West Hunt Club Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	21	50	125	47	88	53	1131	127	60	1120	132
Future Volume (vph)	130	21	50	125	47	88	53	1131	127	60	1120	132
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	100.0		100.0	0.0		0.0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		0.894			0.902				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1595	0	1695	1609	0	3288	3390	1517	1695	3390	1517
Flt Permitted	0.583			0.706			0.950			0.950		
Satd. Flow (perm)	1040	1595	0	1260	1609	0	3288	3390	1517	1695	3390	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		56			72				141			132
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		111.1			112.8			254.6			89.1	
Travel Time (s)		8.0			8.1			15.3			5.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	23	56	139	52	98	59	1257	141	67	1244	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	79	0	139	150	0	59	1257	141	67	1244	147
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	43.0	43.0		43.0	43.0		18.0	69.0	69.0	18.0	69.0	69.0
Total Split (s)	43.0	43.0		43.0	43.0		18.0	69.0	69.0	18.0	69.0	69.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		13.8%	53.1%	53.1%	13.8%	53.1%	53.1%
Maximum Green (s)	36.0	36.0		36.0	36.0		11.9	62.9	62.9	11.9	62.9	62.9
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.7	3.7		3.7	3.7		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
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							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
Recall Mode	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	7.0
Flash Dont Walk (s)	29.0	29.0		29.0	29.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5		5	5			5	5		5	5
Act Effct Green (s)	22.9	22.9		22.9	22.9		7.7	80.5	80.5	9.9	82.6	82.6
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.06	0.62	0.62	0.08	0.64	0.64
v/c Ratio	0.79	0.24		0.63	0.44		0.30	0.60	0.14	0.52	0.58	0.15
Control Delay	77.8	17.2		60.4	26.7		72.3	3.5	0.1	71.5	17.5	3.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.8	17.2		60.4	26.7		72.3	3.5	0.1	71.5	17.5	3.5

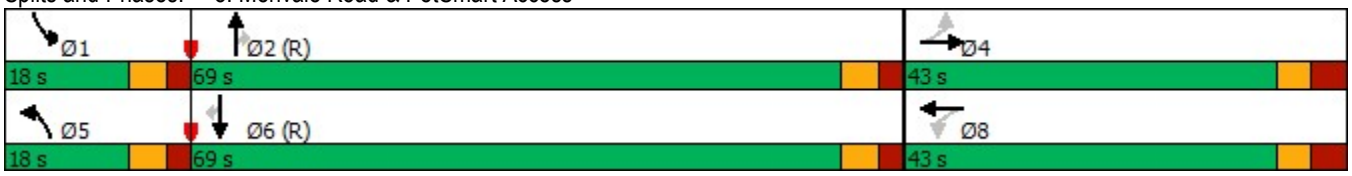
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	B		E	C		E	A	A	E	B	A
Approach Delay		56.3			42.9			6.0			18.6	
Approach LOS		E			D			A			B	
Queue Length 50th (m)	36.0	5.0		33.7	17.6		8.3	5.7	0.0	16.7	93.7	1.4
Queue Length 95th (m)	52.8	16.5		48.7	33.2		m9.0	m16.2	m0.0	31.7	155.1	12.6
Internal Link Dist (m)		87.1			88.8			230.6			65.1	
Turn Bay Length (m)							100.0		100.0			
Base Capacity (vph)	288	482		348	497		300	2098	992	156	2152	1011
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.16		0.40	0.30		0.20	0.60	0.14	0.43	0.58	0.15

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 92 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 17.7 Intersection LOS: B
Intersection Capacity Utilization 74.9% ICU Level of Service D
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Merivale Road & PetSmart Access



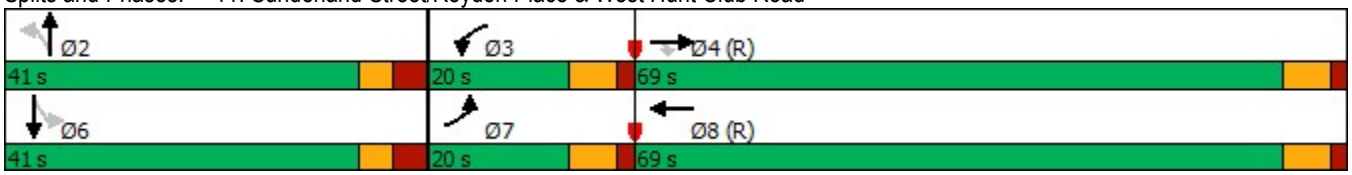
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1285	203	43	1682	193	55	127	85	103	109	37
Future Volume (vph)	102	1285	203	43	1682	193	55	127	85	103	109	37
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.985			0.940			0.962	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	3325	1459	1441	4803	0	1695	1567	0	1679	1680	0
Flt Permitted	0.950			0.950			0.602			0.475		
Satd. Flow (perm)	1572	3325	1459	1441	4803	0	1074	1567	0	839	1680	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			226		21			25			13	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		371.1			116.0			89.5			157.1	
Travel Time (s)		16.7			5.2			6.4			11.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	4%	6%	20%	2%	1%	2%	8%	11%	3%	5%	2%
Adj. Flow (vph)	113	1428	226	48	1869	214	61	141	94	114	121	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	1428	226	48	2083	0	61	235	0	114	162	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	69.0	69.0	20.0	69.0		41.0	41.0		41.0	41.0	
Total Split (s)	20.0	69.0	69.0	20.0	69.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.4%	53.1%	53.1%	15.4%	53.1%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	13.6	62.6	62.6	13.6	62.6		34.3	34.3		34.3	34.3	
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		6.7	6.7		6.7	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	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	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max		Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		16.0	16.0		16.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		5	5		5		5	5		5	5	
Act Effct Green (s)	12.5	68.9	68.9	9.6	63.7		34.3	34.3		34.3	34.3	
Actuated g/C Ratio	0.10	0.53	0.53	0.07	0.49		0.26	0.26		0.26	0.26	
v/c Ratio	0.75	0.81	0.26	0.45	0.88		0.22	0.55		0.52	0.36	
Control Delay	58.6	42.9	6.8	70.0	35.2		39.9	42.1		50.5	38.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	58.6	42.9	6.8	70.0	35.2		39.9	42.1		50.5	38.4	
LOS	E	D	A	E	D		D	D		D	D	
Approach Delay		39.3			36.0			41.6			43.4	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	31.0	121.8	7.1	12.0	172.7		12.3	46.4		25.0	31.0	
Queue Length 95th (m)	m23.9	m57.7	m3.5	24.3	195.5		24.6	73.1		44.9	51.2	
Internal Link Dist (m)		347.1			92.0			65.5			133.1	
Turn Bay Length (m)	100.0		100.0									
Base Capacity (vph)	164	1763	879	150	2362		283	431		221	452	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.69	0.81	0.26	0.32	0.88		0.22	0.55		0.52	0.36	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 20 (15%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 38.1 Intersection LOS: D
Intersection Capacity Utilization 85.2% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Sunderland Street/Roydon Place & West Hunt Club Road



Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1277	1518	31	0	35
Future Vol, veh/h	0	1277	1518	31	0	35
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	6	5	2	2	2
Mvmt Flow	0	1277	1518	31	0	35

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	775
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	292
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	292
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	292
HCM Lane V/C Ratio	-	-	-	0.12
HCM Control Delay (s)	-	-	-	19
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.4

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	34	33	2	0	1	28	313	45	5	204	3
Future Vol, veh/h	1	34	33	2	0	1	28	313	45	5	204	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	34	33	2	0	1	28	313	45	5	204	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	608	630	206	641	609	336	207	0	0	358	0	0
Stage 1	216	216	-	392	392	-	-	-	-	-	-	-
Stage 2	392	414	-	249	217	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	408	399	835	388	410	706	1364	-	-	1201	-	-
Stage 1	786	724	-	633	606	-	-	-	-	-	-	-
Stage 2	633	593	-	755	723	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	398	387	835	340	397	706	1364	-	-	1201	-	-
Mov Cap-2 Maneuver	398	387	-	340	397	-	-	-	-	-	-	-
Stage 1	766	720	-	617	590	-	-	-	-	-	-	-
Stage 2	616	578	-	687	719	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.9	13.8	0.6	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1364	-	-	524	411	1201	-	-
HCM Lane V/C Ratio	0.021	-	-	0.13	0.007	0.004	-	-
HCM Control Delay (s)	7.7	0	-	12.9	13.8	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0	0	-	-

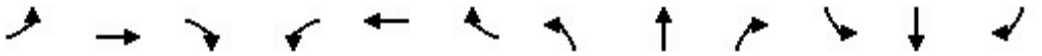
Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	3	4	27	45	15	83	11	299	112	126	111	1
Future Vol, veh/h	3	4	27	45	15	83	11	299	112	126	111	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	4	27	45	15	83	11	299	112	126	111	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	790	797	112	700	685	299	112	0	0	411	0	0
Stage 1	364	364	-	321	321	-	-	-	-	-	-	-
Stage 2	426	433	-	379	364	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	308	319	941	354	371	741	1478	-	-	1148	-	-
Stage 1	655	624	-	691	652	-	-	-	-	-	-	-
Stage 2	606	582	-	643	624	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	239	279	941	307	324	741	1478	-	-	1148	-	-
Mov Cap-2 Maneuver	239	279	-	307	324	-	-	-	-	-	-	-
Stage 1	648	551	-	684	645	-	-	-	-	-	-	-
Stage 2	520	576	-	547	551	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	16	0.2	4.5
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1478	-	-	612	469	1148	-	-
HCM Lane V/C Ratio	0.007	-	-	0.056	0.305	0.11	-	-
HCM Control Delay (s)	7.5	0	-	11.2	16	8.5	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	1.3	0.4	-	-



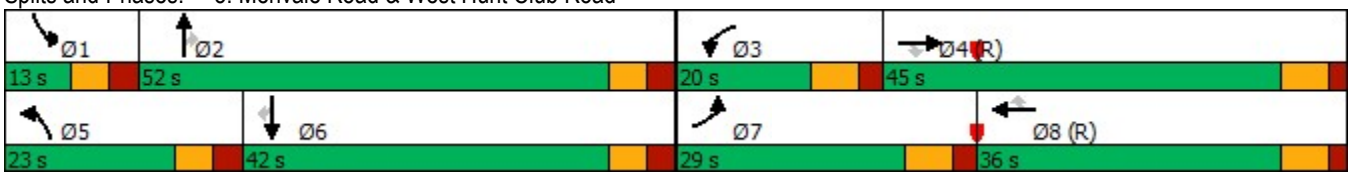
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	998	157	298	1136	105	95	1102	85	183	593	242
Future Volume (vph)	96	998	157	298	1136	105	95	1102	85	183	593	242
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	100.0		100.0	0.0		0.0	100.0		0.0
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3195	3325	1345	1558	4732	1502	1491	3357	1394	3225	3232	1473
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3195	3325	1345	1558	4732	1502	1491	3357	1394	3225	3232	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			200			258			203			258
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		121.8			343.9			90.7			254.6	
Travel Time (s)		5.5			15.5			5.4			15.3	
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 (%)	5%	4%	15%	11%	5%	3%	16%	3%	11%	4%	7%	5%
Adj. Flow (vph)	96	998	157	298	1136	105	95	1102	85	183	593	242
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	998	157	298	1136	105	95	1102	85	183	593	242
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	29.0	45.0	45.0	20.0	36.0	36.0	23.0	52.0	52.0	13.0	42.0	42.0
Total Split (s)	29.0	45.0	45.0	20.0	36.0	36.0	23.0	52.0	52.0	13.0	42.0	42.0
Total Split (%)	22.3%	34.6%	34.6%	15.4%	27.7%	27.7%	17.7%	40.0%	40.0%	10.0%	32.3%	32.3%
Maximum Green (s)	22.0	38.4	38.4	13.0	29.4	29.4	16.4	45.4	45.4	6.4	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	2.0	2.0	2.4	2.0	2.0	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	6.6	6.6	7.0	6.6	6.6	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)		20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	9.3	38.4	38.4	13.0	42.1	42.1	13.0	45.4	45.4	6.4	38.8	38.8
Actuated g/C Ratio	0.07	0.30	0.30	0.10	0.32	0.32	0.10	0.35	0.35	0.05	0.30	0.30
v/c Ratio	0.42	1.02	0.29	1.92	0.74	0.16	0.64	0.94	0.14	1.16	0.62	0.39
Control Delay	63.0	78.1	3.2	468.9	43.0	0.5	74.9	56.6	0.5	173.3	43.1	5.4
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

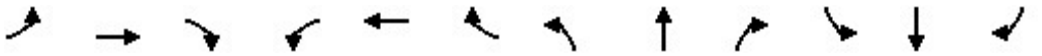
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	63.0	78.1	3.2	468.9	43.0	0.5	74.9	56.6	0.5	173.3	43.1	5.4
LOS	E	E	A	F	D	A	E	E	A	F	D	A
Approach Delay		67.5			122.5			54.3			57.5	
Approach LOS		E			F			D			E	
Queue Length 50th (m)	12.3	~138.8	0.0	~117.2	94.6	0.0	23.7	143.3	0.0	~28.4	69.3	0.0
Queue Length 95th (m)	20.9	#182.8	7.3	#172.5	115.3	0.0	41.0	#185.9	0.0	#52.3	91.8	16.1
Internal Link Dist (m)		97.8			319.9			66.7			230.6	
Turn Bay Length (m)				100.0		100.0				100.0		
Base Capacity (vph)	540	982	538	155	1533	660	188	1172	618	158	964	620
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	1.02	0.29	1.92	0.74	0.16	0.51	0.94	0.14	1.16	0.62	0.39

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 102 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.92
Intersection Signal Delay: 78.8 Intersection LOS: E
Intersection Capacity Utilization 106.5% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Merivale Road & West Hunt Club Road



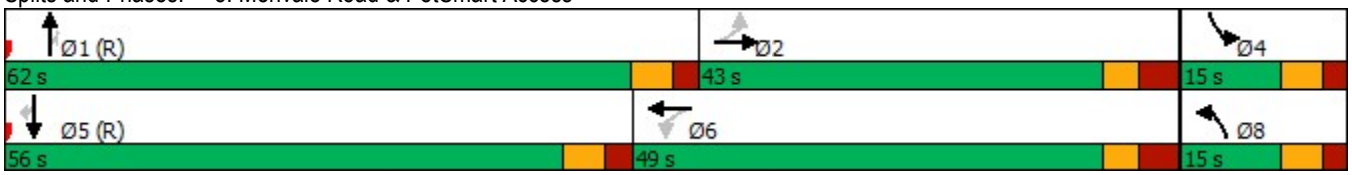


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	14	26	5	4	6	32	1149	124	48	1003	73
Future Volume (vph)	58	14	26	5	4	6	32	1149	124	48	1003	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	100.0		100.0	0.0		0.0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		0.902			0.910				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1609	0	1695	1624	0	3288	3325	1517	1695	3325	1517
Flt Permitted	0.751			0.627			0.950			0.950		
Satd. Flow (perm)	1340	1609	0	1119	1624	0	3288	3325	1517	1695	3325	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			6				124			92
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		111.1			112.8			254.6			89.1	
Travel Time (s)		8.0			8.1			15.3			5.3	
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%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	58	14	26	5	4	6	32	1149	124	48	1003	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	40	0	5	10	0	32	1149	124	48	1003	73
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		2!			6!		8	1!		4	5!	
Permitted Phases	2!			6!					1			5
Detector Phase	2	2		6	6		8	1	1	4	5	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	43.0	43.0		43.0	43.0		14.0	53.0	53.0	14.0	53.0	53.0
Total Split (s)	43.0	43.0		49.0	49.0		15.0	62.0	62.0	15.0	56.0	56.0
Total Split (%)	35.8%	35.8%		40.8%	40.8%		12.5%	51.7%	51.7%	12.5%	46.7%	46.7%
Maximum Green (s)	36.0	36.0		42.0	42.0		8.9	55.9	55.9	8.9	49.9	49.9
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.7	3.7		3.7	3.7		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
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lag		Lag	Lag			Lead	Lead		Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	Max	Max		Max	Max		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)	29.0	29.0		29.0	29.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5		5	5			5	5		5	5
Act Effct Green (s)	36.0	36.0		42.0	42.0		7.9	59.2	59.2	7.9	53.2	53.2
Actuated g/C Ratio	0.30	0.30		0.35	0.35		0.07	0.49	0.49	0.07	0.44	0.44
v/c Ratio	0.14	0.08		0.01	0.02		0.15	0.70	0.15	0.43	0.68	0.10
Control Delay	32.0	15.7		25.8	17.8		53.8	27.3	3.6	65.7	30.4	3.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	32.0	15.7		25.8	17.8		53.8	27.3	3.6	65.7	30.4	3.0
LOS	C	B		C	B		D	C	A	E	C	A
Approach Delay		25.4			20.5			25.7			30.2	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	10.0	2.3		0.8	0.6		3.7	113.2	0.0	11.0	102.1	0.0
Queue Length 95th (m)	20.5	10.5		3.6	4.3		8.7	139.5	10.1	23.3	126.7	6.0
Internal Link Dist (m)		87.1			88.8			230.6			65.1	
Turn Bay Length (m)							100.0		100.0			
Base Capacity (vph)	402	500		391	572		243	1640	811	125	1474	723
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.08		0.01	0.02		0.13	0.70	0.15	0.38	0.68	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 1:NBT and 5:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 27.6		Intersection LOS: C	
Intersection Capacity Utilization 63.1%		ICU Level of Service B	
Analysis Period (min) 15			
! Phase conflict between lane groups.			

Splits and Phases: 8: Merivale Road & PetSmart Access

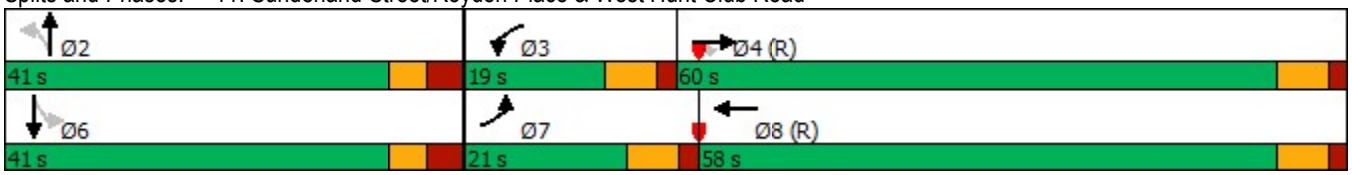


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	1026	134	80	1494	181	38	130	85	94	71	17
Future Volume (vph)	112	1026	134	80	1494	181	38	130	85	94	71	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.984			0.941			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3325	1459	1572	4671	0	1465	1533	0	1695	1634	0
Flt Permitted	0.950			0.950			0.700			0.534		
Satd. Flow (perm)	1695	3325	1459	1572	4671	0	1080	1533	0	953	1634	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134		22			27			10	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		371.1			116.0			89.5			157.1	
Travel Time (s)		16.7			5.2			6.4			11.3	
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%	4%	6%	10%	5%	2%	18%	5%	22%	2%	7%	13%
Adj. Flow (vph)	112	1026	134	80	1494	181	38	130	85	94	71	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	1026	134	80	1675	0	38	215	0	94	88	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	17.0	52.0	52.0	17.0	52.0		41.0	41.0		41.0	41.0	
Total Split (s)	21.0	60.0	60.0	19.0	58.0		41.0	41.0		41.0	41.0	
Total Split (%)	17.5%	50.0%	50.0%	15.8%	48.3%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	14.6	53.6	53.6	12.6	51.6		34.3	34.3		34.3	34.3	
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		6.7	6.7		6.7	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	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	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max		Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		16.0	16.0		16.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		5	5		5		5	5		5	5	
Act Effct Green (s)	12.3	58.3	58.3	10.6	53.9		34.3	34.3		34.3	34.3	
Actuated g/C Ratio	0.10	0.49	0.49	0.09	0.45		0.29	0.29		0.29	0.29	
v/c Ratio	0.64	0.64	0.17	0.58	0.79		0.12	0.47		0.35	0.19	
Control Delay	68.5	26.4	3.8	68.8	31.8		33.2	34.7		38.4	29.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	68.5	26.4	3.8	68.8	31.8		33.2	34.7		38.4	29.9	
LOS	E	C	A	E	C		C	C		D	C	
Approach Delay		27.7			33.5			34.5			34.3	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	25.5	97.6	0.0	18.3	121.4		6.6	36.4		17.6	13.8	
Queue Length 95th (m)	43.9	123.4	10.8	34.2	144.6		15.5	59.8		33.1	27.0	
Internal Link Dist (m)		347.1			92.0			65.5			133.1	
Turn Bay Length (m)	100.0		100.0									
Base Capacity (vph)	206	1614	777	165	2109		308	457		272	474	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.54	0.64	0.17	0.48	0.79		0.12	0.47		0.35	0.19	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 31.5		Intersection LOS: C	
Intersection Capacity Utilization 81.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 11: Sunderland Street/Roydon Place & West Hunt Club Road



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1654	1808	36	0	82
Future Vol, veh/h	0	1654	1808	36	0	82
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	0	1654	1808	36	0	82

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	922
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	234
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	234
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	28.5
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	234
HCM Lane V/C Ratio	-	-	-	0.35
HCM Control Delay (s)	-	-	-	28.5
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	1.5

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	70	38	14	27	63	334	3	1	206	2
Future Vol, veh/h	5	1	70	38	14	27	63	334	3	1	206	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1	70	38	14	27	63	334	3	1	206	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	691	672	207	707	672	336	208	0	0	337	0	0
Stage 1	209	209	-	462	462	-	-	-	-	-	-	-
Stage 2	482	463	-	245	210	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	359	377	833	350	377	706	1363	-	-	1222	-	-
Stage 1	793	729	-	580	565	-	-	-	-	-	-	-
Stage 2	565	564	-	759	728	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	320	355	833	306	355	706	1363	-	-	1222	-	-
Mov Cap-2 Maneuver	320	355	-	306	355	-	-	-	-	-	-	-
Stage 1	748	728	-	547	533	-	-	-	-	-	-	-
Stage 2	499	532	-	694	727	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	16.5	1.2	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1363	-	-	742	391	1222	-	-
HCM Lane V/C Ratio	0.046	-	-	0.102	0.202	0.001	-	-
HCM Control Delay (s)	7.8	0	-	10.4	16.5	7.9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.7	0	-	-

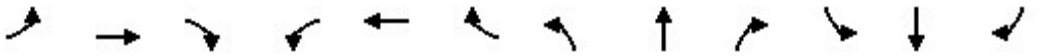
Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	7	18	47	20	93	10	303	117	125	189	0
Future Vol, veh/h	4	7	18	47	20	93	10	303	117	125	189	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	7	18	47	20	93	10	303	117	125	189	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	877	879	189	775	762	303	189	0	0	420	0	0
Stage 1	439	439	-	323	323	-	-	-	-	-	-	-
Stage 2	438	440	-	452	439	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	269	286	853	315	335	737	1385	-	-	1139	-	-
Stage 1	597	578	-	689	650	-	-	-	-	-	-	-
Stage 2	597	578	-	587	578	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	200	248	853	271	291	737	1385	-	-	1139	-	-
Mov Cap-2 Maneuver	200	248	-	271	291	-	-	-	-	-	-	-
Stage 1	591	507	-	682	644	-	-	-	-	-	-	-
Stage 2	500	572	-	497	507	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	18.1	0.2	3.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1385	-	-	418	434	1139	-	-
HCM Lane V/C Ratio	0.007	-	-	0.069	0.369	0.11	-	-
HCM Control Delay (s)	7.6	0	-	14.3	18.1	8.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	1.7	0.4	-	-

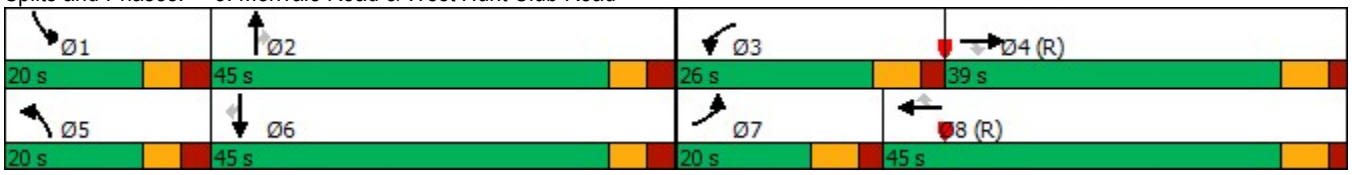


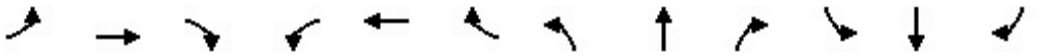
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	1349	269	261	1494	122	144	1072	108	185	841	301
Future Volume (vph)	158	1349	269	261	1494	122	144	1072	108	185	841	301
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	100.0		100.0	0.0		0.0	100.0		0.0
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3325	1406	1544	4871	1517	1616	3357	1459	3257	3357	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3288	3325	1406	1544	4871	1517	1616	3357	1459	3257	3357	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			154			144			144			281
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		121.8			343.9			90.7			254.6	
Travel Time (s)		5.5			15.5			5.4			15.3	
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%	4%	10%	12%	2%	2%	7%	3%	6%	3%	3%	2%
Adj. Flow (vph)	158	1349	269	261	1494	122	144	1072	108	185	841	301
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	1349	269	261	1494	122	144	1072	108	185	841	301
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	39.0	39.0	26.0	45.0	45.0	20.0	45.0	45.0	20.0	45.0	45.0
Total Split (s)	20.0	39.0	39.0	26.0	45.0	45.0	20.0	45.0	45.0	20.0	45.0	45.0
Total Split (%)	15.4%	30.0%	30.0%	20.0%	34.6%	34.6%	15.4%	34.6%	34.6%	15.4%	34.6%	34.6%
Maximum Green (s)	13.0	32.4	32.4	19.0	38.4	38.4	13.4	38.4	38.4	13.4	38.4	38.4
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	2.0	2.0	2.4	2.0	2.0	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	6.6	6.6	7.0	6.6	6.6	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)		20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	11.2	32.4	32.4	19.0	40.2	40.2	13.2	39.8	39.8	12.0	38.6	38.6
Actuated g/C Ratio	0.09	0.25	0.25	0.15	0.31	0.31	0.10	0.31	0.31	0.09	0.30	0.30
v/c Ratio	0.56	1.63	0.58	1.16	0.99	0.21	0.88	1.04	0.20	0.62	0.84	0.46
Control Delay	64.6	321.3	23.2	150.4	81.1	21.1	102.5	83.6	2.9	77.6	46.2	8.8
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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	64.6	321.3	23.2	150.4	81.1	21.1	102.5	83.6	2.9	77.6	46.2	8.8
LOS	E	F	C	F	F	C	F	F	A	E	D	A
Approach Delay		253.3			86.8			79.1			42.1	
Approach LOS		F			F			E			D	
Queue Length 50th (m)	20.3	~261.7	25.1	~80.7	~128.8	9.7	36.9	~158.8	0.0	26.1	105.5	1.0
Queue Length 95th (m)	31.2	#304.1	54.1 m	#115.0	#176.1	m17.2	#74.4	#202.8	6.3	38.1	103.7	33.6
Internal Link Dist (m)		97.8			319.9			66.7			230.6	
Turn Bay Length (m)				100.0		100.0				100.0		
Base Capacity (vph)	328	828	466	225	1506	568	166	1028	546	335	997	648
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	1.63	0.58	1.16	0.99	0.21	0.87	1.04	0.20	0.55	0.84	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 28 (22%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.63			
Intersection Signal Delay: 122.7		Intersection LOS: F	
Intersection Capacity Utilization 113.8%		ICU Level of Service H	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Merivale Road & West Hunt Club Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	21	50	125	47	88	53	1176	127	60	1165	132
Future Volume (vph)	130	21	50	125	47	88	53	1176	127	60	1165	132
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	100.0		100.0	0.0		0.0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		0.894			0.902				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1595	0	1695	1609	0	3288	3390	1517	1695	3390	1517
Flt Permitted	0.614			0.711			0.950			0.950		
Satd. Flow (perm)	1096	1595	0	1269	1609	0	3288	3390	1517	1695	3390	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			72				127			127
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		111.1			112.8			254.6			89.1	
Travel Time (s)		8.0			8.1			15.3			5.3	
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
Adj. Flow (vph)	130	21	50	125	47	88	53	1176	127	60	1165	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	71	0	125	135	0	53	1176	127	60	1165	132
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	43.0	43.0		43.0	43.0		18.0	69.0	69.0	18.0	69.0	69.0
Total Split (s)	43.0	43.0		43.0	43.0		18.0	69.0	69.0	18.0	69.0	69.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		13.8%	53.1%	53.1%	13.8%	53.1%	53.1%
Maximum Green (s)	36.0	36.0		36.0	36.0		11.9	62.9	62.9	11.9	62.9	62.9
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.7	3.7		3.7	3.7		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
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							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
Recall Mode	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	7.0
Flash Dont Walk (s)	29.0	29.0		29.0	29.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5		5	5			5	5		5	5
Act Effct Green (s)	21.3	21.3		21.3	21.3		7.5	82.4	82.4	9.5	84.3	84.3
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.06	0.63	0.63	0.07	0.65	0.65
v/c Ratio	0.73	0.23		0.60	0.42		0.28	0.55	0.13	0.48	0.53	0.13
Control Delay	72.2	18.1		60.6	25.2		73.0	2.6	0.1	70.3	15.7	3.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.2	18.1		60.6	25.2		73.0	2.6	0.1	70.3	15.7	3.0

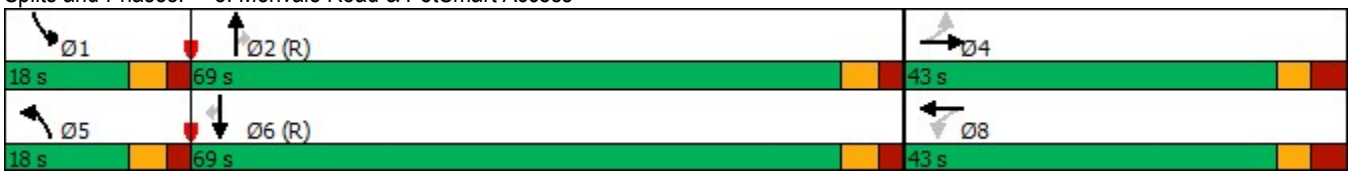
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	B		E	C		E	A	A	E	B	A
Approach Delay		53.1			42.2			5.1			16.9	
Approach LOS		D			D			A			B	
Queue Length 50th (m)	32.5	4.7		30.5	14.4		7.4	3.0	0.0	15.0	79.9	0.4
Queue Length 95th (m)	47.1	15.6		44.1	28.9		m8.5	m13.8	m0.0	28.9	139.6	10.6
Internal Link Dist (m)		87.1			88.8			230.6			65.1	
Turn Bay Length (m)							100.0		100.0			
Base Capacity (vph)	303	477		351	497		300	2148	1007	155	2199	1028
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.15		0.36	0.27		0.18	0.55	0.13	0.39	0.53	0.13

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 92 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 16.2 Intersection LOS: B
Intersection Capacity Utilization 76.2% ICU Level of Service D
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Merivale Road & PetSmart Access

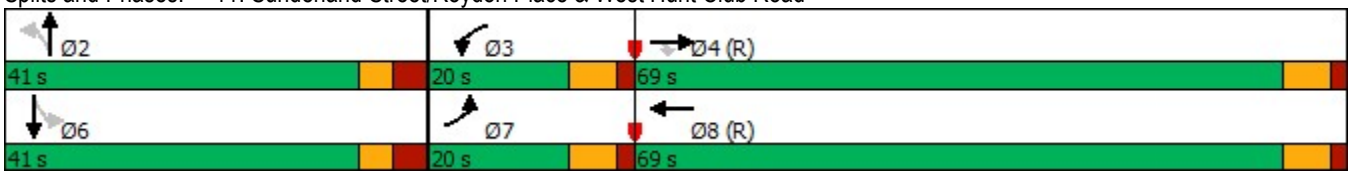


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	1336	207	44	1749	197	56	130	87	105	111	38
Future Volume (vph)	104	1336	207	44	1749	197	56	130	87	105	111	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.985			0.940			0.962	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	3325	1459	1441	4803	0	1695	1567	0	1679	1680	0
Flt Permitted	0.950			0.950			0.625			0.506		
Satd. Flow (perm)	1572	3325	1459	1441	4803	0	1115	1567	0	894	1680	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207		20			25			13	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		371.1			116.0			89.5			157.1	
Travel Time (s)		16.7			5.2			6.4			11.3	
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%	4%	6%	20%	2%	1%	2%	8%	11%	3%	5%	2%
Adj. Flow (vph)	104	1336	207	44	1749	197	56	130	87	105	111	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	1336	207	44	1946	0	56	217	0	105	149	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	69.0	69.0	20.0	69.0		41.0	41.0		41.0	41.0	
Total Split (s)	20.0	69.0	69.0	20.0	69.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.4%	53.1%	53.1%	15.4%	53.1%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	13.6	62.6	62.6	13.6	62.6		34.3	34.3		34.3	34.3	
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		6.7	6.7		6.7	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	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	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max		Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		16.0	16.0		16.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		5	5		5		5	5		5	5	
Act Effct Green (s)	12.2	69.2	69.2	9.3	64.0		34.3	34.3		34.3	34.3	
Actuated g/C Ratio	0.09	0.53	0.53	0.07	0.49		0.26	0.26		0.26	0.26	
v/c Ratio	0.71	0.75	0.24	0.43	0.82		0.19	0.50		0.45	0.33	
Control Delay	58.4	39.7	6.8	69.3	31.7		39.3	40.5		47.2	37.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	58.4	39.7	6.8	69.3	31.7		39.3	40.5		47.2	37.5	
LOS	E	D	A	E	C		D	D		D	D	
Approach Delay		36.8			32.5			40.2			41.5	
Approach LOS		D			C			D			D	
Queue Length 50th (m)	28.5	108.1	6.2	11.0	153.7		11.2	41.9		22.5	28.1	
Queue Length 95th (m)	m22.7	m56.1	m3.5	22.7	174.6		22.9	67.2		41.2	47.5	
Internal Link Dist (m)		347.1			92.0			65.5			133.1	
Turn Bay Length (m)	100.0		100.0									
Base Capacity (vph)	164	1771	873	150	2374		294	431		235	452	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.63	0.75	0.24	0.29	0.82		0.19	0.50		0.45	0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 20 (15%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 35.3		Intersection LOS: D	
Intersection Capacity Utilization 87.2%		ICU Level of Service E	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 11: Sunderland Street/Roydon Place & West Hunt Club Road



Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1289	1519	31	0	36
Future Vol, veh/h	0	1289	1519	31	0	36
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	6	5	2	2	2
Mvmt Flow	0	1289	1519	31	0	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	775
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	292
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	292
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	292
HCM Lane V/C Ratio	-	-	-	0.123
HCM Control Delay (s)	-	-	-	19.1
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.4

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	36	33	3	0	4	28	313	59	14	204	13
Future Vol, veh/h	1	36	33	3	0	4	28	313	59	14	204	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	36	33	3	0	4	28	313	59	14	204	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	640	667	211	672	644	343	217	0	0	372	0	0
Stage 1	239	239	-	399	399	-	-	-	-	-	-	-
Stage 2	401	428	-	273	245	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	388	380	829	370	391	700	1353	-	-	1186	-	-
Stage 1	764	708	-	627	602	-	-	-	-	-	-	-
Stage 2	626	585	-	733	703	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	374	365	829	319	376	700	1353	-	-	1186	-	-
Mov Cap-2 Maneuver	374	365	-	319	376	-	-	-	-	-	-	-
Stage 1	744	699	-	611	586	-	-	-	-	-	-	-
Stage 2	606	570	-	659	694	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.4	12.9	0.5	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1353	-	-	496	463	1186	-	-
HCM Lane V/C Ratio	0.021	-	-	0.141	0.015	0.012	-	-
HCM Control Delay (s)	7.7	0	-	13.4	12.9	8.1	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0	0	-	-

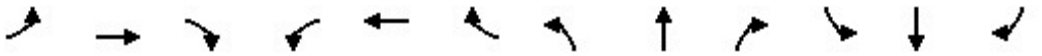
Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↗		↕	
Traffic Vol, veh/h	3	4	28	45	15	85	27	312	112	126	113	1
Future Vol, veh/h	3	4	28	45	15	85	27	312	112	126	113	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	4	28	45	15	85	27	312	112	126	113	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	838	844	114	748	732	312	114	0	0	424	0	0
Stage 1	366	366	-	366	366	-	-	-	-	-	-	-
Stage 2	472	478	-	382	366	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	286	300	939	329	348	728	1475	-	-	1135	-	-
Stage 1	653	623	-	653	623	-	-	-	-	-	-	-
Stage 2	573	556	-	640	623	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	217	258	939	282	299	728	1475	-	-	1135	-	-
Mov Cap-2 Maneuver	217	258	-	282	299	-	-	-	-	-	-	-
Stage 1	637	549	-	637	608	-	-	-	-	-	-	-
Stage 2	482	543	-	543	549	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	17	0.4	4.5
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1475	-	-	592	444	1135	-	-
HCM Lane V/C Ratio	0.018	-	-	0.059	0.327	0.111	-	-
HCM Control Delay (s)	7.5	0	-	11.5	17	8.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	1.4	0.4	-	-



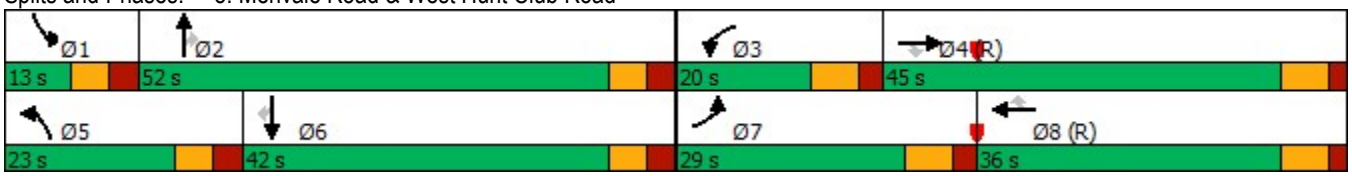
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	1008	157	299	1137	105	95	1105	87	183	593	242
Future Volume (vph)	99	1008	157	299	1137	105	95	1105	87	183	593	242
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	100.0		100.0	0.0		0.0	100.0		0.0
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3195	3325	1345	1558	4732	1502	1491	3357	1394	3225	3232	1473
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3195	3325	1345	1558	4732	1502	1491	3357	1394	3225	3232	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			200			258			203			258
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		121.8			343.9			90.7			254.6	
Travel Time (s)		5.5			15.5			5.4			15.3	
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 (%)	5%	4%	15%	11%	5%	3%	16%	3%	11%	4%	7%	5%
Adj. Flow (vph)	99	1008	157	299	1137	105	95	1105	87	183	593	242
Shared Lane Traffic (%)												
Lane Group Flow (vph)	99	1008	157	299	1137	105	95	1105	87	183	593	242
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	29.0	45.0	45.0	20.0	36.0	36.0	23.0	52.0	52.0	13.0	42.0	42.0
Total Split (s)	29.0	45.0	45.0	20.0	36.0	36.0	23.0	52.0	52.0	13.0	42.0	42.0
Total Split (%)	22.3%	34.6%	34.6%	15.4%	27.7%	27.7%	17.7%	40.0%	40.0%	10.0%	32.3%	32.3%
Maximum Green (s)	22.0	38.4	38.4	13.0	29.4	29.4	16.4	45.4	45.4	6.4	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	2.0	2.0	2.4	2.0	2.0	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	6.6	6.6	7.0	6.6	6.6	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)		20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	9.4	38.4	38.4	13.0	42.0	42.0	13.0	45.4	45.4	6.4	38.8	38.8
Actuated g/C Ratio	0.07	0.30	0.30	0.10	0.32	0.32	0.10	0.35	0.35	0.05	0.30	0.30
v/c Ratio	0.43	1.03	0.29	1.93	0.74	0.16	0.64	0.94	0.14	1.16	0.62	0.39
Control Delay	63.0	80.6	3.2	471.6	43.1	0.5	74.9	57.0	0.5	173.3	43.1	5.4
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

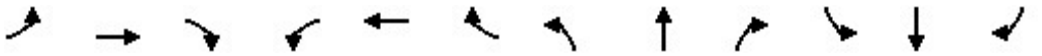
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	63.0	80.6	3.2	471.6	43.1	0.5	74.9	57.0	0.5	173.3	43.1	5.4
LOS	E	F	A	F	D	A	E	E	A	F	D	A
Approach Delay		69.6			123.4			54.5			57.5	
Approach LOS		E			F			D			E	
Queue Length 50th (m)	12.7	~144.7	0.0	~117.7	94.9	0.0	23.7	143.9	0.0	~28.4	69.3	0.0
Queue Length 95th (m)	21.4	#186.0	7.3	#173.6	115.7	0.0	41.0	#187.0	0.0	#52.3	91.8	16.1
Internal Link Dist (m)		97.8			319.9			66.7			230.6	
Turn Bay Length (m)				100.0		100.0				100.0		
Base Capacity (vph)	540	982	538	155	1528	659	188	1172	618	158	964	620
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	1.03	0.29	1.93	0.74	0.16	0.51	0.94	0.14	1.16	0.62	0.39

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 102 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.93
Intersection Signal Delay: 79.6 Intersection LOS: E
Intersection Capacity Utilization 107.0% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Merivale Road & West Hunt Club Road



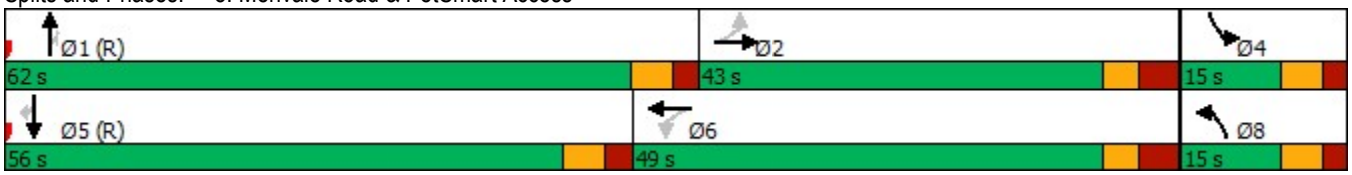


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	14	26	5	4	7	32	1149	130	58	1003	73
Future Volume (vph)	58	14	26	5	4	7	32	1149	130	58	1003	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	100.0		100.0	0.0		0.0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		0.902			0.905				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1609	0	1695	1615	0	3288	3325	1517	1695	3325	1517
Flt Permitted	0.750			0.627			0.950			0.950		
Satd. Flow (perm)	1338	1609	0	1119	1615	0	3288	3325	1517	1695	3325	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			7				130			92
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		111.1			112.8			254.6			89.1	
Travel Time (s)		8.0			8.1			15.3			5.3	
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%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	58	14	26	5	4	7	32	1149	130	58	1003	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	40	0	5	11	0	32	1149	130	58	1003	73
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		2!			6!		8	1!		4	5!	
Permitted Phases	2!			6!					1			5
Detector Phase	2	2		6	6		8	1	1	4	5	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	43.0	43.0		43.0	43.0		14.0	53.0	53.0	14.0	53.0	53.0
Total Split (s)	43.0	43.0		49.0	49.0		15.0	62.0	62.0	15.0	56.0	56.0
Total Split (%)	35.8%	35.8%		40.8%	40.8%		12.5%	51.7%	51.7%	12.5%	46.7%	46.7%
Maximum Green (s)	36.0	36.0		42.0	42.0		8.9	55.9	55.9	8.9	49.9	49.9
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.7	3.7		3.7	3.7		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
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lag		Lag	Lag			Lead	Lead		Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	Max	Max		Max	Max		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)	29.0	29.0		29.0	29.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5		5	5			5	5		5	5
Act Effct Green (s)	36.0	36.0		42.0	42.0		8.0	59.1	59.1	8.1	53.1	53.1
Actuated g/C Ratio	0.30	0.30		0.35	0.35		0.07	0.49	0.49	0.07	0.44	0.44
v/c Ratio	0.14	0.08		0.01	0.02		0.15	0.70	0.16	0.51	0.68	0.10
Control Delay	32.0	15.7		25.8	17.3		53.7	27.4	3.5	69.7	30.6	3.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	32.0	15.7		25.8	17.3		53.7	27.4	3.5	69.7	30.6	3.0
LOS	C	B		C	B		D	C	A	E	C	A
Approach Delay		25.4			19.9			25.7			30.8	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	10.0	2.3		0.8	0.6		3.7	113.4	0.0	13.3	102.2	0.0
Queue Length 95th (m)	20.5	10.5		3.6	4.6		8.7	139.5	10.4	27.1	126.7	6.0
Internal Link Dist (m)		87.1			88.8			230.6			65.1	
Turn Bay Length (m)							100.0		100.0			
Base Capacity (vph)	401	500		391	569		243	1637	813	125	1471	722
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.08		0.01	0.02		0.13	0.70	0.16	0.46	0.68	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 1:NBT and 5:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			
! Phase conflict between lane groups.			

Splits and Phases: 8: Merivale Road & PetSmart Access

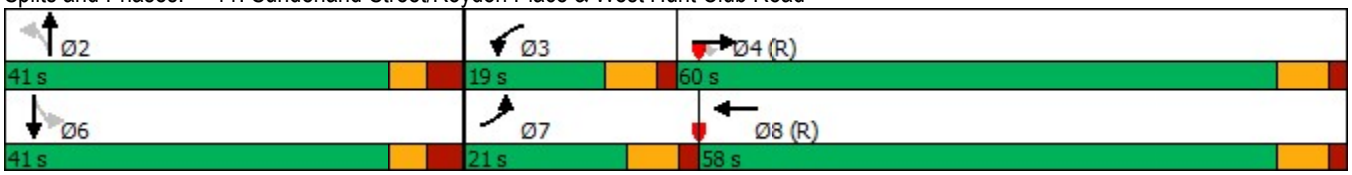


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	1026	134	80	1494	193	38	135	85	95	72	18
Future Volume (vph)	124	1026	134	80	1494	193	38	135	85	95	72	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.983			0.942			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3325	1459	1572	4667	0	1465	1537	0	1695	1632	0
Flt Permitted	0.950			0.950			0.699			0.526		
Satd. Flow (perm)	1695	3325	1459	1572	4667	0	1078	1537	0	939	1632	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134		24			26			11	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		371.1			116.0			89.5			157.1	
Travel Time (s)		16.7			5.2			6.4			11.3	
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%	4%	6%	10%	5%	2%	18%	5%	22%	2%	7%	13%
Adj. Flow (vph)	124	1026	134	80	1494	193	38	135	85	95	72	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	1026	134	80	1687	0	38	220	0	95	90	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	17.0	52.0	52.0	17.0	52.0		41.0	41.0		41.0	41.0	
Total Split (s)	21.0	60.0	60.0	19.0	58.0		41.0	41.0		41.0	41.0	
Total Split (%)	17.5%	50.0%	50.0%	15.8%	48.3%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	14.6	53.6	53.6	12.6	51.6		34.3	34.3		34.3	34.3	
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		6.7	6.7		6.7	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	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	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max		Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		16.0	16.0		16.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		5	5		5		5	5		5	5	
Act Effct Green (s)	12.7	58.3	58.3	10.6	53.5		34.3	34.3		34.3	34.3	
Actuated g/C Ratio	0.11	0.49	0.49	0.09	0.45		0.29	0.29		0.29	0.29	
v/c Ratio	0.69	0.64	0.17	0.58	0.81		0.12	0.48		0.35	0.19	
Control Delay	71.4	26.4	3.8	68.8	32.4		33.2	35.3		38.7	29.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	71.4	26.4	3.8	68.8	32.4		33.2	35.3		38.7	29.6	
LOS	E	C	A	E	C		C	D		D	C	
Approach Delay		28.4			34.1			35.0			34.3	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	28.3	97.6	0.0	18.3	124.3		6.6	37.7		17.8	14.0	
Queue Length 95th (m)	48.1	123.4	10.8	34.2	145.9		15.5	61.8		33.7	27.3	
Internal Link Dist (m)		347.1			92.0			65.5			133.1	
Turn Bay Length (m)	100.0		100.0									
Base Capacity (vph)	206	1614	777	165	2093		308	457		268	474	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.60	0.64	0.17	0.48	0.81		0.12	0.48		0.35	0.19	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 32.1		Intersection LOS: C	
Intersection Capacity Utilization 82.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 11: Sunderland Street/Roydon Place & West Hunt Club Road



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1655	1819	36	0	86
Future Vol, veh/h	0	1655	1819	36	0	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	0	1655	1819	36	0	86

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	928
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	232
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	232
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	29.4
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	232
HCM Lane V/C Ratio	-	-	-	0.371
HCM Control Delay (s)	-	-	-	29.4
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	1.6

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	2	70	48	18	43	63	334	5	3	206	2
Future Vol, veh/h	5	2	70	48	18	43	63	334	5	3	206	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	2	70	48	18	43	63	334	5	3	206	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	706	678	207	712	677	337	208	0	0	339	0	0
Stage 1	213	213	-	463	463	-	-	-	-	-	-	-
Stage 2	493	465	-	249	214	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	351	374	833	347	375	705	1363	-	-	1220	-	-
Stage 1	789	726	-	579	564	-	-	-	-	-	-	-
Stage 2	558	563	-	755	725	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	303	352	833	302	353	705	1363	-	-	1220	-	-
Mov Cap-2 Maneuver	303	352	-	302	353	-	-	-	-	-	-	-
Stage 1	744	724	-	546	532	-	-	-	-	-	-	-
Stage 2	477	531	-	688	723	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	17.3	1.2	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1363	-	-	725	402	1220	-	-
HCM Lane V/C Ratio	0.046	-	-	0.106	0.271	0.002	-	-
HCM Control Delay (s)	7.8	0	-	10.6	17.3	8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	1.1	0	-	-

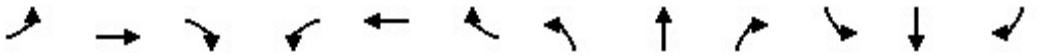
Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	4	7	33	47	20	93	11	305	117	126	199	0
Future Vol, veh/h	4	7	33	47	20	93	11	305	117	126	199	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	7	33	47	20	93	11	305	117	126	199	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	893	895	199	798	778	305	199	0	0	422	0	0
Stage 1	451	451	-	327	327	-	-	-	-	-	-	-
Stage 2	442	444	-	471	451	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	262	280	842	304	328	735	1373	-	-	1137	-	-
Stage 1	588	571	-	686	648	-	-	-	-	-	-	-
Stage 2	594	575	-	573	571	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	194	242	842	256	284	735	1373	-	-	1137	-	-
Mov Cap-2 Maneuver	194	242	-	256	284	-	-	-	-	-	-	-
Stage 1	582	500	-	678	641	-	-	-	-	-	-	-
Stage 2	497	569	-	475	500	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	18.8	0.2	3.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1373	-	-	496	420	1137	-	-
HCM Lane V/C Ratio	0.008	-	-	0.089	0.381	0.111	-	-
HCM Control Delay (s)	7.6	0	-	13	18.8	8.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	1.8	0.4	-	-



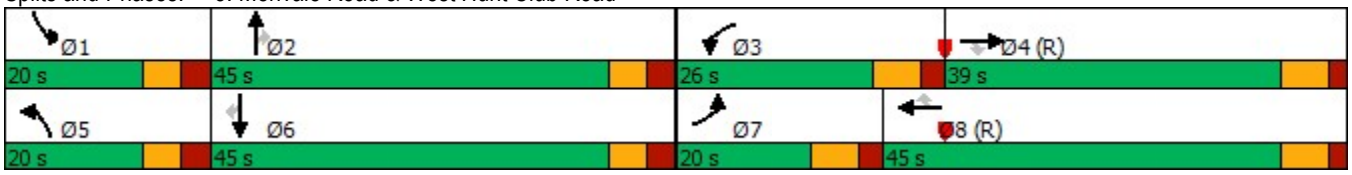
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	1350	269	266	1504	122	144	1072	108	185	841	301
Future Volume (vph)	159	1350	269	266	1504	122	144	1072	108	185	841	301
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	100.0		100.0	0.0		0.0	100.0		0.0
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3325	1406	1544	4871	1517	1616	3357	1459	3257	3357	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3288	3325	1406	1544	4871	1517	1616	3357	1459	3257	3357	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			154			144			144			281
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		121.8			343.9			90.7			254.6	
Travel Time (s)		5.5			15.5			5.4			15.3	
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%	4%	10%	12%	2%	2%	7%	3%	6%	3%	3%	2%
Adj. Flow (vph)	159	1350	269	266	1504	122	144	1072	108	185	841	301
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	1350	269	266	1504	122	144	1072	108	185	841	301
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	39.0	39.0	26.0	45.0	45.0	20.0	45.0	45.0	20.0	45.0	45.0
Total Split (s)	20.0	39.0	39.0	26.0	45.0	45.0	20.0	45.0	45.0	20.0	45.0	45.0
Total Split (%)	15.4%	30.0%	30.0%	20.0%	34.6%	34.6%	15.4%	34.6%	34.6%	15.4%	34.6%	34.6%
Maximum Green (s)	13.0	32.4	32.4	19.0	38.4	38.4	13.4	38.4	38.4	13.4	38.4	38.4
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	2.0	2.0	2.4	2.0	2.0	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	6.6	6.6	7.0	6.6	6.6	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)		20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	11.2	32.4	32.4	19.0	40.2	40.2	13.2	39.8	39.8	12.0	38.6	38.6
Actuated g/C Ratio	0.09	0.25	0.25	0.15	0.31	0.31	0.10	0.31	0.31	0.09	0.30	0.30
v/c Ratio	0.56	1.63	0.58	1.18	1.00	0.21	0.88	1.04	0.20	0.62	0.84	0.46
Control Delay	64.7	321.8	23.2	157.9	82.5	20.9	102.5	83.6	2.9	77.5	46.1	8.8
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

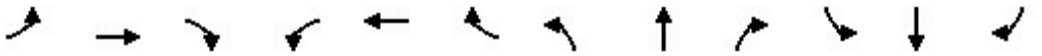
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	64.7	321.8	23.2	157.9	82.5	20.9	102.5	83.6	2.9	77.5	46.1	8.8
LOS	E	F	C	F	F	C	F	F	A	E	D	A
Approach Delay		253.6			89.1			79.1			42.0	
Approach LOS		F			F			E			D	
Queue Length 50th (m)	20.4	~262.1	25.1	~84.2	~131.0	9.6	36.9	~158.8	0.0	26.1	102.4	1.0
Queue Length 95th (m)	31.3	#304.3	54.1 m	#118.6	#178.6	m17.0	#74.4	#202.8	6.3	38.1	103.7	33.6
Internal Link Dist (m)		97.8			319.9			66.7			230.6	
Turn Bay Length (m)				100.0		100.0				100.0		
Base Capacity (vph)	328	828	466	225	1506	568	166	1028	546	335	997	648
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	1.63	0.58	1.18	1.00	0.21	0.87	1.04	0.20	0.55	0.84	0.46

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 28 (22%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.63
Intersection Signal Delay: 123.4 Intersection LOS: F
Intersection Capacity Utilization 114.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Merivale Road & West Hunt Club Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	21	50	125	47	100	53	1176	128	62	1165	132
Future Volume (vph)	130	21	50	125	47	100	53	1176	128	62	1165	132
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	100.0		100.0	0.0		0.0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		0.894			0.898				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1595	0	1695	1602	0	3288	3390	1517	1695	3390	1517
Flt Permitted	0.582			0.711			0.950			0.950		
Satd. Flow (perm)	1038	1595	0	1269	1602	0	3288	3390	1517	1695	3390	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			81				128			127
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		111.1			112.8			254.6			89.1	
Travel Time (s)		8.0			8.1			15.3			5.3	
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
Adj. Flow (vph)	130	21	50	125	47	100	53	1176	128	62	1165	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	71	0	125	147	0	53	1176	128	62	1165	132
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	43.0	43.0		43.0	43.0		18.0	69.0	69.0	18.0	69.0	69.0
Total Split (s)	43.0	43.0		43.0	43.0		18.0	69.0	69.0	18.0	69.0	69.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		13.8%	53.1%	53.1%	13.8%	53.1%	53.1%
Maximum Green (s)	36.0	36.0		36.0	36.0		11.9	62.9	62.9	11.9	62.9	62.9
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.7	3.7		3.7	3.7		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
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							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
Recall Mode	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	7.0
Flash Dont Walk (s)	29.0	29.0		29.0	29.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5		5	5			5	5		5	5
Act Effct Green (s)	21.6	21.6		21.6	21.6		7.5	82.0	82.0	9.6	84.0	84.0
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.06	0.63	0.63	0.07	0.65	0.65
v/c Ratio	0.76	0.23		0.59	0.44		0.28	0.55	0.13	0.50	0.53	0.13
Control Delay	75.7	17.9		59.7	24.6		72.7	2.6	0.1	70.7	15.9	3.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.7	17.9		59.7	24.6		72.7	2.6	0.1	70.7	15.9	3.1

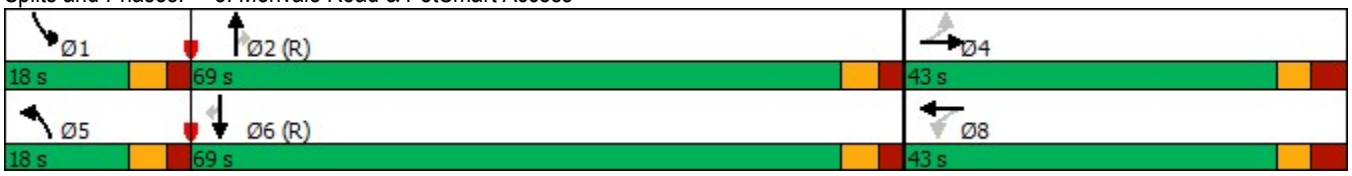
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	B		E	C		E	A	A	E	B	A
Approach Delay		55.3			40.8			5.1			17.2	
Approach LOS		E			D			A			B	
Queue Length 50th (m)	32.6	4.7		30.4	15.1		7.4	3.3	0.0	15.5	80.7	0.4
Queue Length 95th (m)	47.7	15.6		44.1	30.4		m8.5	m13.9	m0.0	29.8	139.6	10.6
Internal Link Dist (m)		87.1			88.8			230.6			65.1	
Turn Bay Length (m)							100.0		100.0			
Base Capacity (vph)	287	477		351	502		300	2137	1004	155	2191	1025
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.15		0.36	0.29		0.18	0.55	0.13	0.40	0.53	0.13

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 92 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 16.4 Intersection LOS: B
Intersection Capacity Utilization 77.0% ICU Level of Service D
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Merivale Road & PetSmart Access

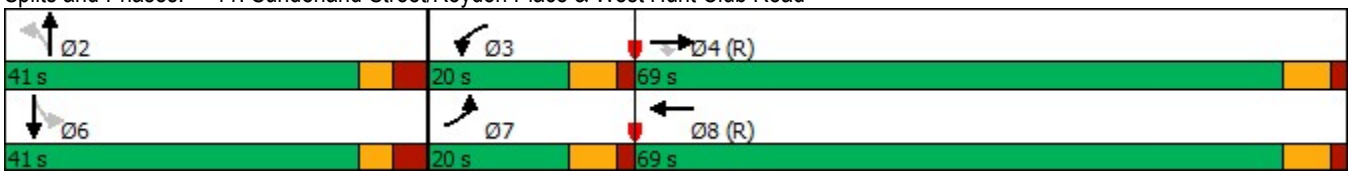


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	1336	207	44	1749	198	56	131	87	115	115	49
Future Volume (vph)	105	1336	207	44	1749	198	56	131	87	115	115	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.985			0.940			0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	3325	1459	1441	4803	0	1695	1567	0	1679	1670	0
Flt Permitted	0.950			0.950			0.598			0.504		
Satd. Flow (perm)	1572	3325	1459	1441	4803	0	1067	1567	0	891	1670	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207		21			25			16	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		371.1			116.0			89.5			157.1	
Travel Time (s)		16.7			5.2			6.4			11.3	
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%	4%	6%	20%	2%	1%	2%	8%	11%	3%	5%	2%
Adj. Flow (vph)	105	1336	207	44	1749	198	56	131	87	115	115	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	105	1336	207	44	1947	0	56	218	0	115	164	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	69.0	69.0	20.0	69.0		41.0	41.0		41.0	41.0	
Total Split (s)	20.0	69.0	69.0	20.0	69.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.4%	53.1%	53.1%	15.4%	53.1%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	13.6	62.6	62.6	13.6	62.6		34.3	34.3		34.3	34.3	
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		6.7	6.7		6.7	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	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	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max		Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		16.0	16.0		16.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		5	5		5		5	5		5	5	
Act Effct Green (s)	12.3	69.2	69.2	9.3	63.9		34.3	34.3		34.3	34.3	
Actuated g/C Ratio	0.09	0.53	0.53	0.07	0.49		0.26	0.26		0.26	0.26	
v/c Ratio	0.71	0.75	0.24	0.43	0.82		0.20	0.51		0.49	0.36	
Control Delay	58.4	39.7	6.8	69.3	31.7		39.6	40.6		48.8	37.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	58.4	39.7	6.8	69.3	31.7		39.6	40.6		48.8	37.8	
LOS	E	D	A	E	C		D	D		D	D	
Approach Delay		36.8			32.6			40.4			42.3	
Approach LOS		D			C			D			D	
Queue Length 50th (m)	28.8	108.1	6.2	11.0	153.7		11.2	42.1		25.0	30.9	
Queue Length 95th (m)	m23.4	m56.1	m3.5	22.7	174.6		23.0	67.2		44.8	51.4	
Internal Link Dist (m)		347.1			92.0			65.5			133.1	
Turn Bay Length (m)	100.0		100.0									
Base Capacity (vph)	164	1771	873	150	2372		281	431		235	452	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.64	0.75	0.24	0.29	0.82		0.20	0.51		0.49	0.36	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 20 (15%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 35.4		Intersection LOS: D	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 11: Sunderland Street/Roydon Place & West Hunt Club Road



Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1400	1664	31	0	35
Future Vol, veh/h	0	1400	1664	31	0	35
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	6	5	2	2	2
Mvmt Flow	0	1400	1664	31	0	35

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	848
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	262
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	262
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	262
HCM Lane V/C Ratio	-	-	-	0.134
HCM Control Delay (s)	-	-	-	20.8
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.5

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	35	34	2	0	1	29	328	48	5	214	3
Future Vol, veh/h	1	35	34	2	0	1	29	328	48	5	214	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	35	34	2	0	1	29	328	48	5	214	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	637	660	216	670	637	352	217	0	0	376	0	0
Stage 1	226	226	-	410	410	-	-	-	-	-	-	-
Stage 2	411	434	-	260	227	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	390	383	824	371	395	692	1353	-	-	1182	-	-
Stage 1	777	717	-	619	595	-	-	-	-	-	-	-
Stage 2	618	581	-	745	716	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	380	371	824	322	382	692	1353	-	-	1182	-	-
Mov Cap-2 Maneuver	380	371	-	322	382	-	-	-	-	-	-	-
Stage 1	756	713	-	602	579	-	-	-	-	-	-	-
Stage 2	600	565	-	676	712	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.3	14.3	0.6	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1353	-	-	506	392	1182	-	-
HCM Lane V/C Ratio	0.021	-	-	0.138	0.008	0.004	-	-
HCM Control Delay (s)	7.7	0	-	13.3	14.3	8.1	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0	0	-	-

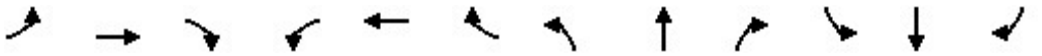
Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	3	4	28	47	16	89	12	314	118	133	117	1
Future Vol, veh/h	3	4	28	47	16	89	12	314	118	133	117	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	4	28	47	16	89	12	314	118	133	117	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	834	840	118	738	722	314	118	0	0	432	0	0
Stage 1	384	384	-	338	338	-	-	-	-	-	-	-
Stage 2	450	456	-	400	384	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	288	302	934	334	353	726	1470	-	-	1128	-	-
Stage 1	639	611	-	676	641	-	-	-	-	-	-	-
Stage 2	589	568	-	626	611	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	217	261	934	287	305	726	1470	-	-	1128	-	-
Mov Cap-2 Maneuver	217	261	-	287	305	-	-	-	-	-	-	-
Stage 1	632	534	-	669	634	-	-	-	-	-	-	-
Stage 2	498	562	-	527	534	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	17.1	0.2	4.6
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1470	-	-	592	449	1128	-	-
HCM Lane V/C Ratio	0.008	-	-	0.059	0.339	0.118	-	-
HCM Control Delay (s)	7.5	0	-	11.5	17.1	8.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	1.5	0.4	-	-



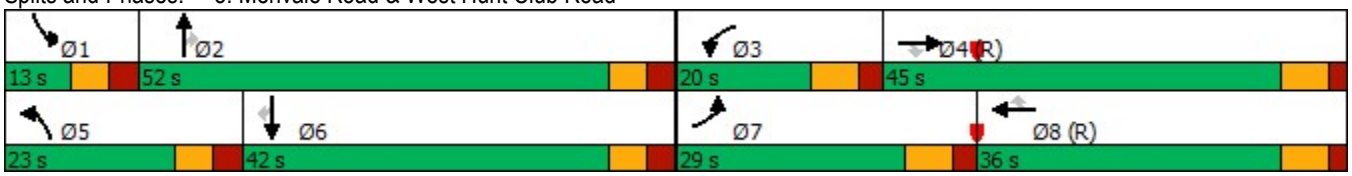
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	1094	157	298	1245	105	95	1208	85	183	650	242
Future Volume (vph)	96	1094	157	298	1245	105	95	1208	85	183	650	242
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	100.0		100.0	0.0		0.0	100.0		0.0
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3195	3325	1345	1558	4732	1502	1491	3357	1394	3225	3232	1473
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3195	3325	1345	1558	4732	1502	1491	3357	1394	3225	3232	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			200			258			203			258
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		121.8			343.9			90.7			254.6	
Travel Time (s)		5.5			15.5			5.4			15.3	
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 (%)	5%	4%	15%	11%	5%	3%	16%	3%	11%	4%	7%	5%
Adj. Flow (vph)	96	1094	157	298	1245	105	95	1208	85	183	650	242
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1094	157	298	1245	105	95	1208	85	183	650	242
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	29.0	45.0	45.0	20.0	36.0	36.0	23.0	52.0	52.0	13.0	42.0	42.0
Total Split (s)	29.0	45.0	45.0	20.0	36.0	36.0	23.0	52.0	52.0	13.0	42.0	42.0
Total Split (%)	22.3%	34.6%	34.6%	15.4%	27.7%	27.7%	17.7%	40.0%	40.0%	10.0%	32.3%	32.3%
Maximum Green (s)	22.0	38.4	38.4	13.0	29.4	29.4	16.4	45.4	45.4	6.4	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	2.0	2.0	2.4	2.0	2.0	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	6.6	6.6	7.0	6.6	6.6	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)		20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	9.3	38.4	38.4	13.0	42.1	42.1	13.0	45.4	45.4	6.4	38.8	38.8
Actuated g/C Ratio	0.07	0.30	0.30	0.10	0.32	0.32	0.10	0.35	0.35	0.05	0.30	0.30
v/c Ratio	0.42	1.11	0.29	1.92	0.81	0.16	0.64	1.03	0.14	1.16	0.67	0.39
Control Delay	63.0	107.7	3.2	468.9	45.7	0.5	74.9	76.0	0.5	173.3	44.8	5.4
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

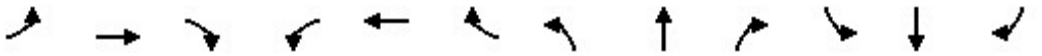
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	63.0	107.7	3.2	468.9	45.7	0.5	74.9	76.0	0.5	173.3	44.8	5.4
LOS	E	F	A	F	D	A	E	E	A	F	D	A
Approach Delay		92.4			119.3			71.3			57.8	
Approach LOS		F			F			E			E	
Queue Length 50th (m)	12.3	~168.8	0.0	~117.2	106.9	0.0	23.7	~174.1	0.0	~28.4	77.6	0.0
Queue Length 95th (m)	20.9	#210.3	7.3	#172.5	129.3	0.0	41.0	#216.2	0.0	#52.3	101.8	16.1
Internal Link Dist (m)		97.8			319.9			66.7			230.6	
Turn Bay Length (m)				100.0		100.0				100.0		
Base Capacity (vph)	540	982	538	155	1533	660	188	1172	618	158	964	620
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	1.11	0.29	1.92	0.81	0.16	0.51	1.03	0.14	1.16	0.67	0.39

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 102 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.92
Intersection Signal Delay: 88.3 Intersection LOS: F
Intersection Capacity Utilization 112.4% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Merivale Road & West Hunt Club Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	14	26	5	4	6	32	1280	124	48	1099	73
Future Volume (vph)	58	14	26	5	4	6	32	1280	124	48	1099	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	100.0		100.0	0.0		0.0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		0.902			0.910				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1609	0	1695	1624	0	3288	3325	1517	1695	3325	1517
Flt Permitted	0.751			0.642			0.950			0.950		
Satd. Flow (perm)	1340	1609	0	1146	1624	0	3288	3325	1517	1695	3325	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			6				124			92
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		111.1			112.8			254.6			89.1	
Travel Time (s)		8.0			8.1			15.3			5.3	
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%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	58	14	26	5	4	6	32	1280	124	48	1099	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	40	0	5	10	0	32	1280	124	48	1099	73
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		2!			6!		8	1!		4	5!	
Permitted Phases	2!			6!					1			5
Detector Phase	2	2		6	6		8	1	1	4	5	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	43.0	43.0		43.0	43.0		14.0	53.0	53.0	14.0	53.0	53.0
Total Split (s)	43.0	43.0		48.0	48.0		14.0	63.0	63.0	14.0	58.0	58.0
Total Split (%)	35.8%	35.8%		40.0%	40.0%		11.7%	52.5%	52.5%	11.7%	48.3%	48.3%
Maximum Green (s)	36.0	36.0		41.0	41.0		7.9	56.9	56.9	7.9	51.9	51.9
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.7	3.7		3.7	3.7		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
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lag		Lag	Lag			Lead	Lead		Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	Max	Max		Max	Max		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)	29.0	29.0		29.0	29.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5		5	5			5	5		5	5
Act Effct Green (s)	36.0	36.0		41.0	41.0		7.3	59.8	59.8	7.3	54.8	54.8
Actuated g/C Ratio	0.30	0.30		0.34	0.34		0.06	0.50	0.50	0.06	0.46	0.46
v/c Ratio	0.14	0.08		0.01	0.02		0.16	0.77	0.15	0.47	0.72	0.10
Control Delay	32.0	15.7		26.4	18.3		54.9	29.4	3.5	69.2	30.7	2.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	32.0	15.7		26.4	18.3		54.9	29.4	3.5	69.2	30.7	2.8
LOS	C	B		C	B		D	C	A	E	C	A
Approach Delay		25.4			21.0			27.8			30.6	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	10.0	2.3		0.8	0.6		3.7	132.0	0.0	11.1	113.3	0.0
Queue Length 95th (m)	20.5	10.5		3.6	4.4		8.8	161.5	9.9	23.6	139.7	5.8
Internal Link Dist (m)		87.1			88.8			230.6			65.1	
Turn Bay Length (m)							100.0		100.0			
Base Capacity (vph)	402	500		391	558		216	1656	818	111	1518	742
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.08		0.01	0.02		0.15	0.77	0.15	0.43	0.72	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 1:NBT and 5:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 28.9		Intersection LOS: C	
Intersection Capacity Utilization 63.1%		ICU Level of Service B	
Analysis Period (min) 15			
! Phase conflict between lane groups.			

Splits and Phases: 8: Merivale Road & PetSmart Access

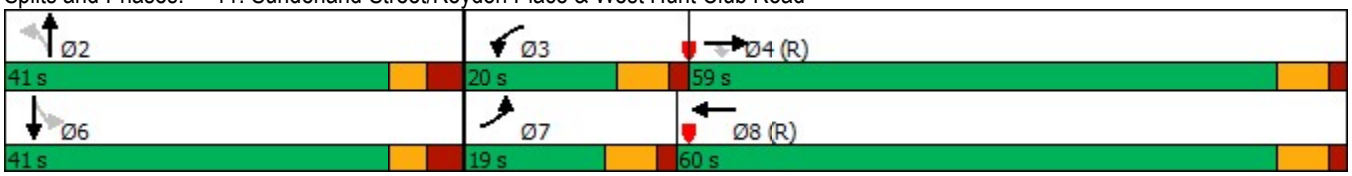
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	1125	140	83	1638	189	40	136	89	98	75	18
Future Volume (vph)	118	1125	140	83	1638	189	40	136	89	98	75	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.984			0.941			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3325	1459	1572	4670	0	1465	1533	0	1695	1634	0
Flt Permitted	0.950			0.950			0.697			0.518		
Satd. Flow (perm)	1695	3325	1459	1572	4670	0	1075	1533	0	924	1634	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			140		21			27			10	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		371.1			116.0			89.5			157.1	
Travel Time (s)		16.7			5.2			6.4			11.3	
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%	4%	6%	10%	5%	2%	18%	5%	22%	2%	7%	13%
Adj. Flow (vph)	118	1125	140	83	1638	189	40	136	89	98	75	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	1125	140	83	1827	0	40	225	0	98	93	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	17.0	52.0	52.0	17.0	52.0		41.0	41.0		41.0	41.0	
Total Split (s)	19.0	59.0	59.0	20.0	60.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.8%	49.2%	49.2%	16.7%	50.0%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	12.6	52.6	52.6	13.6	53.6		34.3	34.3		34.3	34.3	
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		6.7	6.7		6.7	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	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	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max		Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		16.0	16.0		16.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		5	5		5		5	5		5	5	
Act Effct Green (s)	11.7	57.8	57.8	11.1	54.5		34.3	34.3		34.3	34.3	
Actuated g/C Ratio	0.10	0.48	0.48	0.09	0.45		0.29	0.29		0.29	0.29	
v/c Ratio	0.72	0.70	0.18	0.57	0.86		0.13	0.49		0.37	0.20	
Control Delay	76.6	28.7	3.9	67.2	34.1		33.3	35.5		39.3	30.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	76.6	28.7	3.9	67.2	34.1		33.3	35.5		39.3	30.2	
LOS	E	C	A	E	C		C	D		D	C	
Approach Delay		30.3			35.6			35.1			34.9	
Approach LOS		C			D			D			C	
Queue Length 50th (m)	27.2	112.3	0.0	19.0	138.4		7.0	38.7		18.4	14.7	
Queue Length 95th (m)	#51.5	142.8	11.3	34.9	160.2		15.9	62.9		34.6	28.2	
Internal Link Dist (m)		347.1			92.0			65.5			133.1	
Turn Bay Length (m)	100.0		100.0									
Base Capacity (vph)	177	1600	775	178	2133		307	457		264	474	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.67	0.70	0.18	0.47	0.86		0.13	0.49		0.37	0.20	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 33.5 Intersection LOS: C
Intersection Capacity Utilization 85.6% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Sunderland Street/Roydon Place & West Hunt Club Road



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1813	1981	36	0	82
Future Vol, veh/h	0	1813	1981	36	0	82
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	0	1813	1981	36	0	82

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1009
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	205
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	205
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	33.8
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	205
HCM Lane V/C Ratio	-	-	-	0.4
HCM Control Delay (s)	-	-	-	33.8
HCM Lane LOS	-	-	-	D
HCM 95th %tile Q(veh)	-	-	-	1.8

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	74	40	15	28	66	350	3	1	216	2
Future Vol, veh/h	5	1	74	40	15	28	66	350	3	1	216	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1	74	40	15	28	66	350	3	1	216	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	724	704	217	741	704	352	218	0	0	353	0	0
Stage 1	219	219	-	484	484	-	-	-	-	-	-	-
Stage 2	505	485	-	257	220	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	341	361	823	332	361	692	1352	-	-	1206	-	-
Stage 1	783	722	-	564	552	-	-	-	-	-	-	-
Stage 2	549	552	-	748	721	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	301	339	823	287	339	692	1352	-	-	1206	-	-
Mov Cap-2 Maneuver	301	339	-	287	339	-	-	-	-	-	-	-
Stage 1	735	721	-	530	518	-	-	-	-	-	-	-
Stage 2	480	518	-	679	720	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	17.5	1.2	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1352	-	-	731	370	1206	-	-
HCM Lane V/C Ratio	0.049	-	-	0.109	0.224	0.001	-	-
HCM Control Delay (s)	7.8	0	-	10.5	17.5	8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.8	0	-	-

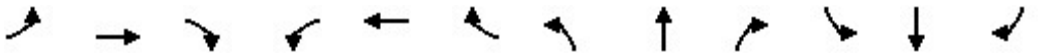
Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	4	7	19	49	21	97	12	318	123	132	198	0
Future Vol, veh/h	4	7	19	49	21	97	12	318	123	132	198	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	7	19	49	21	97	12	318	123	132	198	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	925	927	198	817	804	318	198	0	0	441	0	0
Stage 1	462	462	-	342	342	-	-	-	-	-	-	-
Stage 2	463	465	-	475	462	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	250	268	843	295	316	723	1375	-	-	1119	-	-
Stage 1	580	565	-	673	638	-	-	-	-	-	-	-
Stage 2	579	563	-	570	565	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	182	230	843	251	271	723	1375	-	-	1119	-	-
Mov Cap-2 Maneuver	182	230	-	251	271	-	-	-	-	-	-	-
Stage 1	573	490	-	665	630	-	-	-	-	-	-	-
Stage 2	479	556	-	476	490	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	19.7	0.2	3.5
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1375	-	-	400	410	1119	-	-
HCM Lane V/C Ratio	0.009	-	-	0.075	0.407	0.118	-	-
HCM Control Delay (s)	7.6	0	-	14.7	19.7	8.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	1.9	0.4	-	-



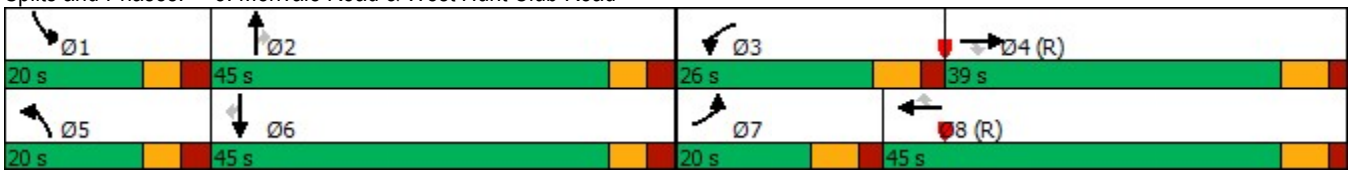
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	1479	269	261	1638	122	144	1175	108	185	922	301
Future Volume (vph)	158	1479	269	261	1638	122	144	1175	108	185	922	301
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	100.0		100.0	0.0		0.0	100.0		0.0
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3325	1406	1544	4871	1517	1616	3357	1459	3257	3357	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3288	3325	1406	1544	4871	1517	1616	3357	1459	3257	3357	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			144			144			144			268
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		121.8			343.9			90.7			254.6	
Travel Time (s)		5.5			15.5			5.4			15.3	
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%	4%	10%	12%	2%	2%	7%	3%	6%	3%	3%	2%
Adj. Flow (vph)	158	1479	269	261	1638	122	144	1175	108	185	922	301
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	1479	269	261	1638	122	144	1175	108	185	922	301
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	39.0	39.0	26.0	45.0	45.0	20.0	45.0	45.0	20.0	45.0	45.0
Total Split (s)	20.0	39.0	39.0	26.0	45.0	45.0	20.0	45.0	45.0	20.0	45.0	45.0
Total Split (%)	15.4%	30.0%	30.0%	20.0%	34.6%	34.6%	15.4%	34.6%	34.6%	15.4%	34.6%	34.6%
Maximum Green (s)	13.0	32.4	32.4	19.0	38.4	38.4	13.4	38.4	38.4	13.4	38.4	38.4
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	2.0	2.0	2.4	2.0	2.0	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	6.6	6.6	7.0	6.6	6.6	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)		20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	11.2	32.4	32.4	19.0	40.2	40.2	13.2	39.8	39.8	12.0	38.6	38.6
Actuated g/C Ratio	0.09	0.25	0.25	0.15	0.31	0.31	0.10	0.31	0.31	0.09	0.30	0.30
v/c Ratio	0.56	1.79	0.59	1.16	1.09	0.21	0.88	1.14	0.20	0.62	0.92	0.47
Control Delay	64.6	388.7	25.2	145.8	105.9	20.6	102.5	117.1	2.9	77.0	53.1	9.8
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

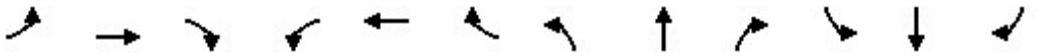
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	64.6	388.7	25.2	145.8	105.9	20.6	102.5	117.1	2.9	77.0	53.1	9.8
LOS	E	F	C	F	F	C	F	F	A	E	D	A
Approach Delay		310.6			105.9			107.0			47.0	
Approach LOS		F			F			F			D	
Queue Length 50th (m)	20.3	~298.2	27.7	~80.6	~169.1	10.0	36.9	~187.7	0.0	26.1	119.3	0.8
Queue Length 95th (m)	31.2	#340.7	56.9	m#101.4	#204.6	m14.5	#74.4	#232.2	6.3	38.4	#156.0	38.6
Internal Link Dist (m)		97.8			319.9			66.7			230.6	
Turn Bay Length (m)				100.0		100.0				100.0		
Base Capacity (vph)	328	828	458	225	1506	568	166	1028	546	335	997	638
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	1.79	0.59	1.16	1.09	0.21	0.87	1.14	0.20	0.55	0.92	0.47

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 28 (22%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.79
Intersection Signal Delay: 151.5 Intersection LOS: F
Intersection Capacity Utilization 120.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Merivale Road & West Hunt Club Road





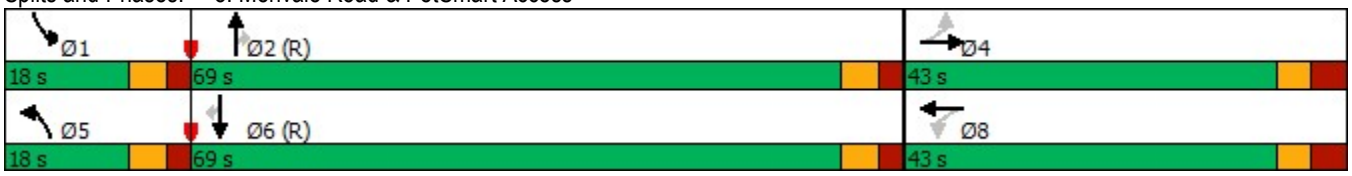
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	21	50	125	47	88	53	1289	127	60	1277	132
Future Volume (vph)	130	21	50	125	47	88	53	1289	127	60	1277	132
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	100.0		100.0	0.0		0.0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		0.894			0.902				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1595	0	1695	1609	0	3288	3390	1517	1695	3390	1517
Flt Permitted	0.614			0.711			0.950			0.950		
Satd. Flow (perm)	1096	1595	0	1269	1609	0	3288	3390	1517	1695	3390	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			72				127			116
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		111.1			112.8			254.6			89.1	
Travel Time (s)		8.0			8.1			15.3			5.3	
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
Adj. Flow (vph)	130	21	50	125	47	88	53	1289	127	60	1277	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	71	0	125	135	0	53	1289	127	60	1277	132
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	43.0	43.0		43.0	43.0		18.0	69.0	69.0	18.0	69.0	69.0
Total Split (s)	43.0	43.0		43.0	43.0		18.0	69.0	69.0	18.0	69.0	69.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		13.8%	53.1%	53.1%	13.8%	53.1%	53.1%
Maximum Green (s)	36.0	36.0		36.0	36.0		11.9	62.9	62.9	11.9	62.9	62.9
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.7	3.7		3.7	3.7		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
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							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
Recall Mode	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	7.0
Flash Dont Walk (s)	29.0	29.0		29.0	29.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5		5	5			5	5		5	5
Act Effct Green (s)	21.3	21.3		21.3	21.3		7.5	82.4	82.4	9.5	84.3	84.3
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.06	0.63	0.63	0.07	0.65	0.65
v/c Ratio	0.73	0.23		0.60	0.42		0.28	0.60	0.13	0.48	0.58	0.13
Control Delay	72.2	18.1		60.6	25.2		72.1	3.8	0.1	70.3	16.7	3.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.2	18.1		60.6	25.2		72.1	3.8	0.1	70.3	16.7	3.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	B		E	C		E	A	A	E	B	A
Approach Delay		53.1			42.2			6.0			17.8	
Approach LOS		D			D			A			B	
Queue Length 50th (m)	32.5	4.7		30.5	14.4		7.5	6.9	0.0	15.0	92.3	1.4
Queue Length 95th (m)	47.1	15.6		44.1	28.9		m8.1	m13.6	m0.3	28.9	160.5	12.1
Internal Link Dist (m)		87.1			88.8			230.6			65.1	
Turn Bay Length (m)							100.0		100.0			
Base Capacity (vph)	303	477		351	497		300	2148	1007	155	2199	1024
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.15		0.36	0.27		0.18	0.60	0.13	0.39	0.58	0.13

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 92 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 16.6		Intersection LOS: B	
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Merivale Road & PetSmart Access



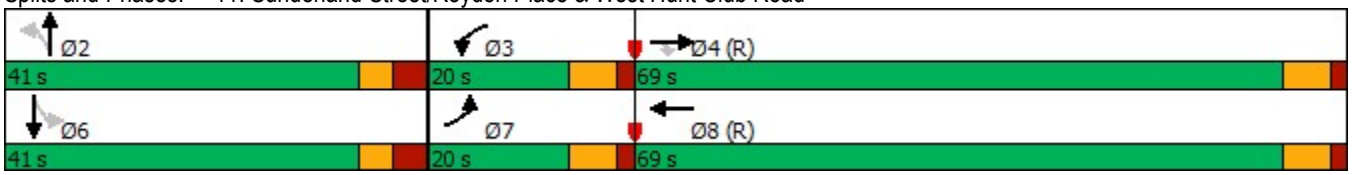
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	1465	217	46	1917	207	59	136	91	110	117	40
Future Volume (vph)	109	1465	217	46	1917	207	59	136	91	110	117	40
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.985			0.940			0.962	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	3325	1459	1441	4803	0	1695	1567	0	1679	1680	0
Flt Permitted	0.950			0.950			0.611			0.489		
Satd. Flow (perm)	1572	3325	1459	1441	4803	0	1090	1567	0	864	1680	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			213		19			25			13	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		371.1			116.0			89.5			157.1	
Travel Time (s)		16.7			5.2			6.4			11.3	
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%	4%	6%	20%	2%	1%	2%	8%	11%	3%	5%	2%
Adj. Flow (vph)	109	1465	217	46	1917	207	59	136	91	110	117	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	1465	217	46	2124	0	59	227	0	110	157	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	69.0	69.0	20.0	69.0		41.0	41.0		41.0	41.0	
Total Split (s)	20.0	69.0	69.0	20.0	69.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.4%	53.1%	53.1%	15.4%	53.1%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	13.6	62.6	62.6	13.6	62.6		34.3	34.3		34.3	34.3	
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		6.7	6.7		6.7	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	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	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max		Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		16.0	16.0		16.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		5	5		5		5	5		5	5	
Act Effct Green (s)	12.4	69.1	69.1	9.5	63.8		34.3	34.3		34.3	34.3	
Actuated g/C Ratio	0.10	0.53	0.53	0.07	0.49		0.26	0.26		0.26	0.26	
v/c Ratio	0.73	0.83	0.25	0.44	0.90		0.21	0.53		0.48	0.35	
Control Delay	59.0	43.7	6.8	69.5	36.3		39.6	41.3		48.9	38.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	59.0	43.7	6.8	69.5	36.3		39.6	41.3		48.9	38.1	
LOS	E	D	A	E	D		D	D		D	D	
Approach Delay		40.2			37.0			41.0			42.5	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	29.5	126.8	6.8	11.5	179.1		11.8	44.4		23.9	29.9	
Queue Length 95th (m)	m22.6	m57.0	m3.4	23.7	202.8		23.9	70.1		43.4	49.7	
Internal Link Dist (m)		347.1			92.0			65.5			133.1	
Turn Bay Length (m)	100.0		100.0									
Base Capacity (vph)	164	1766	874	150	2367		287	431		227	452	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.66	0.83	0.25	0.31	0.90		0.21	0.53		0.48	0.35	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 20 (15%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 38.8 Intersection LOS: D
Intersection Capacity Utilization 92.0% ICU Level of Service F
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Sunderland Street/Roydon Place & West Hunt Club Road



Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1412	1665	31	0	36
Future Vol, veh/h	0	1412	1665	31	0	36
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	6	5	2	2	2
Mvmt Flow	0	1412	1665	31	0	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	848
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	262
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	262
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.9
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	262
HCM Lane V/C Ratio	-	-	-	0.137
HCM Control Delay (s)	-	-	-	20.9
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.5

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	37	34	3	0	4	29	328	61	14	214	13
Future Vol, veh/h	1	37	34	3	0	4	29	328	61	14	214	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	37	34	3	0	4	29	328	61	14	214	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	668	696	221	701	672	359	227	0	0	389	0	0
Stage 1	249	249	-	417	417	-	-	-	-	-	-	-
Stage 2	419	447	-	284	255	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	372	365	819	353	377	685	1341	-	-	1170	-	-
Stage 1	755	701	-	613	591	-	-	-	-	-	-	-
Stage 2	612	573	-	723	696	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	358	350	819	301	361	685	1341	-	-	1170	-	-
Mov Cap-2 Maneuver	358	350	-	301	361	-	-	-	-	-	-	-
Stage 1	734	691	-	596	574	-	-	-	-	-	-	-
Stage 2	591	557	-	647	686	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	13.3	0.5	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1341	-	-	480	443	1170	-	-
HCM Lane V/C Ratio	0.022	-	-	0.15	0.016	0.012	-	-
HCM Control Delay (s)	7.7	0	-	13.8	13.3	8.1	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0	0	-	-

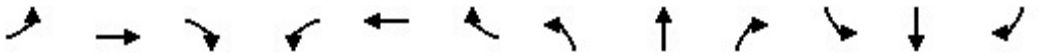
Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	3	4	29	47	16	89	28	327	118	133	119	1
Future Vol, veh/h	3	4	29	47	16	89	28	327	118	133	119	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	4	29	47	16	89	28	327	118	133	119	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	881	887	120	785	769	327	120	0	0	445	0	0
Stage 1	386	386	-	383	383	-	-	-	-	-	-	-
Stage 2	495	501	-	402	386	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	267	283	931	310	332	714	1468	-	-	1115	-	-
Stage 1	637	610	-	640	612	-	-	-	-	-	-	-
Stage 2	556	543	-	625	610	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	198	240	931	262	282	714	1468	-	-	1115	-	-
Mov Cap-2 Maneuver	198	240	-	262	282	-	-	-	-	-	-	-
Stage 1	620	532	-	623	596	-	-	-	-	-	-	-
Stage 2	461	529	-	524	532	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	18.3	0.4	4.6
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1468	-	-	572	421	1115	-	-
HCM Lane V/C Ratio	0.019	-	-	0.063	0.361	0.119	-	-
HCM Control Delay (s)	7.5	0	-	11.7	18.3	8.7	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	1.6	0.4	-	-



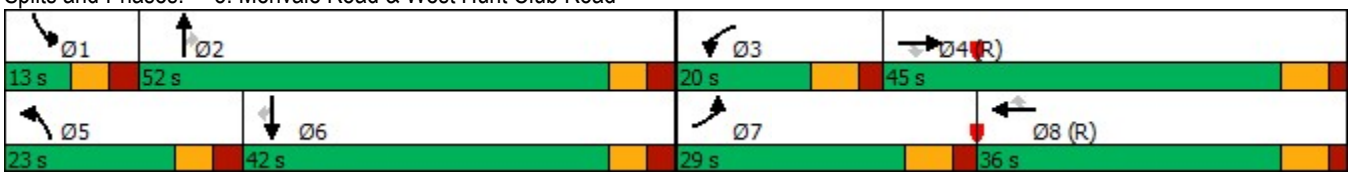
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	1104	157	299	1246	105	95	1211	87	183	650	242
Future Volume (vph)	99	1104	157	299	1246	105	95	1211	87	183	650	242
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	100.0		100.0	0.0		0.0	100.0		0.0
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3195	3325	1345	1558	4732	1502	1491	3357	1394	3225	3232	1473
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3195	3325	1345	1558	4732	1502	1491	3357	1394	3225	3232	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			200			258			203			258
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		121.8			343.9			90.7			254.6	
Travel Time (s)		5.5			15.5			5.4			15.3	
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 (%)	5%	4%	15%	11%	5%	3%	16%	3%	11%	4%	7%	5%
Adj. Flow (vph)	99	1104	157	299	1246	105	95	1211	87	183	650	242
Shared Lane Traffic (%)												
Lane Group Flow (vph)	99	1104	157	299	1246	105	95	1211	87	183	650	242
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	29.0	45.0	45.0	20.0	36.0	36.0	23.0	52.0	52.0	13.0	42.0	42.0
Total Split (s)	29.0	45.0	45.0	20.0	36.0	36.0	23.0	52.0	52.0	13.0	42.0	42.0
Total Split (%)	22.3%	34.6%	34.6%	15.4%	27.7%	27.7%	17.7%	40.0%	40.0%	10.0%	32.3%	32.3%
Maximum Green (s)	22.0	38.4	38.4	13.0	29.4	29.4	16.4	45.4	45.4	6.4	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	2.0	2.0	2.4	2.0	2.0	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	6.6	6.6	7.0	6.6	6.6	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)		20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	9.4	38.4	38.4	13.0	42.0	42.0	13.0	45.4	45.4	6.4	38.8	38.8
Actuated g/C Ratio	0.07	0.30	0.30	0.10	0.32	0.32	0.10	0.35	0.35	0.05	0.30	0.30
v/c Ratio	0.43	1.12	0.29	1.93	0.82	0.16	0.64	1.03	0.14	1.16	0.67	0.39
Control Delay	63.0	111.4	3.2	471.6	45.9	0.5	74.9	76.7	0.5	173.3	44.8	5.4
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

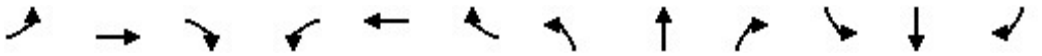
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	63.0	111.4	3.2	471.6	45.9	0.5	74.9	76.7	0.5	173.3	44.8	5.4
LOS	E	F	A	F	D	A	E	E	A	F	D	A
Approach Delay		95.4			120.2			71.8			57.8	
Approach LOS		F			F			E			E	
Queue Length 50th (m)	12.7	~171.6	0.0	~117.7	107.2	0.0	23.7	~175.0	0.0	~28.4	77.6	0.0
Queue Length 95th (m)	21.4	#213.4	7.3	#173.6	129.8	0.0	41.0	#217.0	0.0	#52.3	101.8	16.1
Internal Link Dist (m)		97.8			319.9			66.7			230.6	
Turn Bay Length (m)				100.0		100.0				100.0		
Base Capacity (vph)	540	982	538	155	1528	659	188	1172	618	158	964	620
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	1.12	0.29	1.93	0.82	0.16	0.51	1.03	0.14	1.16	0.67	0.39

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 102 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.93
Intersection Signal Delay: 89.5 Intersection LOS: F
Intersection Capacity Utilization 112.9% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Merivale Road & West Hunt Club Road



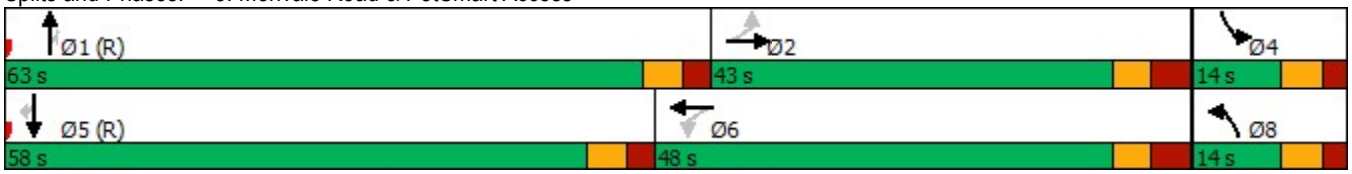


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	14	26	5	4	7	32	1280	130	58	1099	73
Future Volume (vph)	58	14	26	5	4	7	32	1280	130	58	1099	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	100.0		100.0	0.0		0.0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		0.902			0.905				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1609	0	1695	1615	0	3288	3325	1517	1695	3325	1517
Flt Permitted	0.750			0.642			0.950			0.950		
Satd. Flow (perm)	1338	1609	0	1146	1615	0	3288	3325	1517	1695	3325	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			7				130			92
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		111.1			112.8			254.6			89.1	
Travel Time (s)		8.0			8.1			15.3			5.3	
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%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Adj. Flow (vph)	58	14	26	5	4	7	32	1280	130	58	1099	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	40	0	5	11	0	32	1280	130	58	1099	73
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		2!			6!		8	1!		4	5!	
Permitted Phases	2!			6!					1			5
Detector Phase	2	2		6	6		8	1	1	4	5	5
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	43.0	43.0		43.0	43.0		14.0	53.0	53.0	14.0	53.0	53.0
Total Split (s)	43.0	43.0		48.0	48.0		14.0	63.0	63.0	14.0	58.0	58.0
Total Split (%)	35.8%	35.8%		40.0%	40.0%		11.7%	52.5%	52.5%	11.7%	48.3%	48.3%
Maximum Green (s)	36.0	36.0		41.0	41.0		7.9	56.9	56.9	7.9	51.9	51.9
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.7	3.7		3.7	3.7		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
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lag	Lag		Lag	Lag			Lead	Lead		Lead	Lead
Lead-Lag Optimize?	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
Recall Mode	Max	Max		Max	Max		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)	29.0	29.0		29.0	29.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5		5	5			5	5		5	5
Act Effct Green (s)	36.0	36.0		41.0	41.0		7.4	59.7	59.7	7.5	54.7	54.7
Actuated g/C Ratio	0.30	0.30		0.34	0.34		0.06	0.50	0.50	0.06	0.46	0.46
v/c Ratio	0.14	0.08		0.01	0.02		0.16	0.77	0.16	0.55	0.73	0.10
Control Delay	32.0	15.7		26.4	17.7		54.8	29.5	3.4	74.3	30.8	2.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	32.0	15.7		26.4	17.7		54.8	29.5	3.4	74.3	30.8	2.8
LOS	C	B		C	B		D	C	A	E	C	A
Approach Delay		25.4			20.4			27.7			31.2	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	10.0	2.3		0.8	0.6		3.7	132.0	0.0	13.5	113.3	0.0
Queue Length 95th (m)	20.5	10.5		3.6	4.7		8.8	161.5	10.2	#28.0	139.7	5.8
Internal Link Dist (m)		87.1			88.8			230.6			65.1	
Turn Bay Length (m)							100.0		100.0			
Base Capacity (vph)	401	500		391	556		216	1654	819	111	1515	741
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.08		0.01	0.02		0.15	0.77	0.16	0.52	0.73	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 1:NBT and 5:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 29.2		Intersection LOS: C	
Intersection Capacity Utilization 67.6%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
! Phase conflict between lane groups.			

Splits and Phases: 8: Merivale Road & PetSmart Access



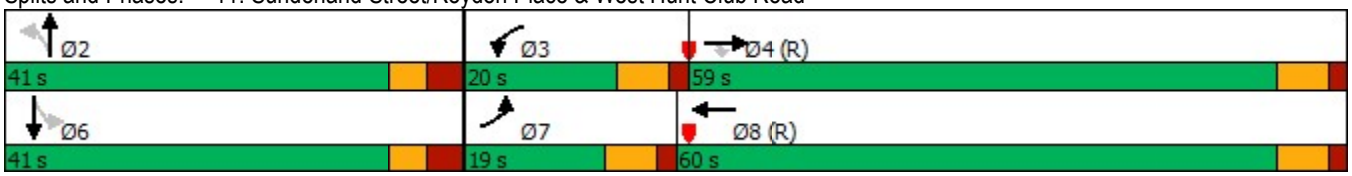
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1125	140	83	1638	201	40	141	89	99	78	19
Future Volume (vph)	130	1125	140	83	1638	201	40	141	89	99	78	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.984			0.942			0.971	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	3325	1459	1572	4671	0	1465	1537	0	1695	1634	0
Flt Permitted	0.950			0.950			0.694			0.510		
Satd. Flow (perm)	1695	3325	1459	1572	4671	0	1070	1537	0	910	1634	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			140		23			27			10	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		371.1			116.0			89.5			157.1	
Travel Time (s)		16.7			5.2			6.4			11.3	
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%	4%	6%	10%	5%	2%	18%	5%	22%	2%	7%	13%
Adj. Flow (vph)	130	1125	140	83	1638	201	40	141	89	99	78	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	1125	140	83	1839	0	40	230	0	99	97	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	17.0	52.0	52.0	17.0	52.0		41.0	41.0		41.0	41.0	
Total Split (s)	19.0	59.0	59.0	20.0	60.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.8%	49.2%	49.2%	16.7%	50.0%		34.2%	34.2%		34.2%	34.2%	
Maximum Green (s)	12.6	52.6	52.6	13.6	53.6		34.3	34.3		34.3	34.3	
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		6.7	6.7		6.7	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	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	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max		Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		16.0	16.0		16.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		5	5		5		5	5		5	5	
Act Effct Green (s)	12.0	57.8	57.8	11.1	54.2		34.3	34.3		34.3	34.3	
Actuated g/C Ratio	0.10	0.48	0.48	0.09	0.45		0.29	0.29		0.29	0.29	
v/c Ratio	0.77	0.70	0.18	0.57	0.87		0.13	0.50		0.38	0.20	
Control Delay	81.4	28.7	3.9	67.2	34.8		33.4	35.8		39.6	30.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	81.4	28.7	3.9	67.2	34.8		33.4	35.8		39.6	30.5	
LOS	F	C	A	E	C		C	D		D	C	
Approach Delay		31.1			36.2			35.4			35.1	
Approach LOS		C			D			D			D	
Queue Length 50th (m)	30.2	112.3	0.0	19.0	139.8		7.0	39.8		18.7	15.5	
Queue Length 95th (m)	#59.3	142.8	11.3	34.9	161.8		15.9	64.5		35.2	29.3	
Internal Link Dist (m)		347.1			92.0			65.5			133.1	
Turn Bay Length (m)	100.0		100.0									
Base Capacity (vph)	177	1600	775	178	2123		305	458		260	474	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.73	0.70	0.18	0.47	0.87		0.13	0.50		0.38	0.20	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 34.2 Intersection LOS: C
Intersection Capacity Utilization 86.9% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Sunderland Street/Roydon Place & West Hunt Club Road



Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1814	1992	36	0	86
Future Vol, veh/h	0	1814	1992	36	0	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	0	1814	1992	36	0	86

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1014
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	203
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	203
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	35.2
HCM LOS			E

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	203
HCM Lane V/C Ratio	-	-	-	0.424
HCM Control Delay (s)	-	-	-	35.2
HCM Lane LOS	-	-	-	E
HCM 95th %tile Q(veh)	-	-	-	1.9

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	2	74	50	19	44	66	350	5	3	216	2
Future Vol, veh/h	5	2	74	50	19	44	66	350	5	3	216	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	2	74	50	19	44	66	350	5	3	216	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	739	710	217	746	709	353	218	0	0	355	0	0
Stage 1	223	223	-	485	485	-	-	-	-	-	-	-
Stage 2	516	487	-	261	224	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	333	359	823	330	359	691	1352	-	-	1204	-	-
Stage 1	780	719	-	563	552	-	-	-	-	-	-	-
Stage 2	542	550	-	744	718	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	284	336	823	284	336	691	1352	-	-	1204	-	-
Mov Cap-2 Maneuver	284	336	-	284	336	-	-	-	-	-	-	-
Stage 1	732	717	-	529	518	-	-	-	-	-	-	-
Stage 2	459	516	-	673	716	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	18.4	1.2	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1352	-	-	714	381	1204	-	-
HCM Lane V/C Ratio	0.049	-	-	0.113	0.297	0.002	-	-
HCM Control Delay (s)	7.8	0	-	10.7	18.4	8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	1.2	0	-	-

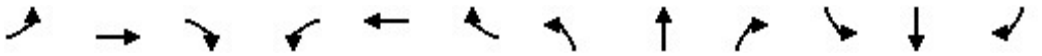
Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	4	7	34	49	21	97	12	320	123	132	208	0
Future Vol, veh/h	4	7	34	49	21	97	12	320	123	132	208	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	7	34	49	21	97	12	320	123	132	208	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	937	939	208	837	816	320	208	0	0	443	0	0
Stage 1	472	472	-	344	344	-	-	-	-	-	-	-
Stage 2	465	467	-	493	472	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	245	264	832	286	311	721	1363	-	-	1117	-	-
Stage 1	573	559	-	671	637	-	-	-	-	-	-	-
Stage 2	578	562	-	558	559	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	177	226	832	238	266	721	1363	-	-	1117	-	-
Mov Cap-2 Maneuver	177	226	-	238	266	-	-	-	-	-	-	-
Stage 1	566	484	-	663	629	-	-	-	-	-	-	-
Stage 2	478	555	-	457	484	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.3	20.4	0.2	3.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1363	-	-	477	398	1117	-	-
HCM Lane V/C Ratio	0.009	-	-	0.094	0.42	0.118	-	-
HCM Control Delay (s)	7.7	0	-	13.3	20.4	8.7	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	2	0.4	-	-



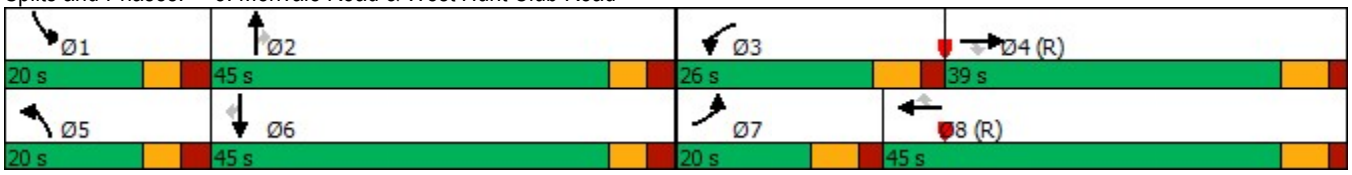
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	1480	269	266	1648	122	144	1175	108	185	922	301
Future Volume (vph)	159	1480	269	266	1648	122	144	1175	108	185	922	301
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	100.0		100.0	0.0		0.0	100.0		0.0
Storage Lanes	2		1	1		1	1		1	2		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3288	3325	1406	1544	4871	1517	1616	3357	1459	3257	3357	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3288	3325	1406	1544	4871	1517	1616	3357	1459	3257	3357	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			144			144			144			268
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		121.8			343.9			90.7			254.6	
Travel Time (s)		5.5			15.5			5.4			15.3	
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%	4%	10%	12%	2%	2%	7%	3%	6%	3%	3%	2%
Adj. Flow (vph)	159	1480	269	266	1648	122	144	1175	108	185	922	301
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	1480	269	266	1648	122	144	1175	108	185	922	301
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	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	39.0	39.0	26.0	45.0	45.0	20.0	45.0	45.0	20.0	45.0	45.0
Total Split (s)	20.0	39.0	39.0	26.0	45.0	45.0	20.0	45.0	45.0	20.0	45.0	45.0
Total Split (%)	15.4%	30.0%	30.0%	20.0%	34.6%	34.6%	15.4%	34.6%	34.6%	15.4%	34.6%	34.6%
Maximum Green (s)	13.0	32.4	32.4	19.0	38.4	38.4	13.4	38.4	38.4	13.4	38.4	38.4
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	2.0	2.0	2.4	2.0	2.0	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	6.6	6.6	7.0	6.6	6.6	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)		20.0	20.0		20.0	20.0		25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	11.2	32.4	32.4	19.0	40.2	40.2	13.2	39.8	39.8	12.0	38.6	38.6
Actuated g/C Ratio	0.09	0.25	0.25	0.15	0.31	0.31	0.10	0.31	0.31	0.09	0.30	0.30
v/c Ratio	0.56	1.79	0.59	1.18	1.09	0.21	0.88	1.14	0.20	0.62	0.92	0.47
Control Delay	64.7	389.3	25.2	153.4	108.1	20.4	102.5	117.1	2.9	76.9	53.2	9.9
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

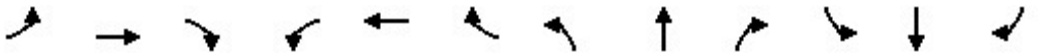
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	64.7	389.3	25.2	153.4	108.1	20.4	102.5	117.1	2.9	76.9	53.2	9.9
LOS	E	F	C	F	F	C	F	F	A	E	D	A
Approach Delay		310.9			108.8			107.0			47.1	
Approach LOS		F			F			F			D	
Queue Length 50th (m)	20.4	~298.5	27.7	~84.0	~171.1	9.8	36.9	~187.7	0.0	26.1	116.2	0.8
Queue Length 95th (m)	31.3	#341.1	56.9	m#103.6	#206.4	m14.0	#74.4	#232.2	6.3	38.4	#156.0	38.6
Internal Link Dist (m)		97.8			319.9			66.7			230.6	
Turn Bay Length (m)				100.0		100.0				100.0		
Base Capacity (vph)	328	828	458	225	1506	568	166	1028	546	335	997	638
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	1.79	0.59	1.18	1.09	0.21	0.87	1.14	0.20	0.55	0.92	0.47

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 28 (22%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.79
Intersection Signal Delay: 152.5 Intersection LOS: F
Intersection Capacity Utilization 120.9% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Merivale Road & West Hunt Club Road





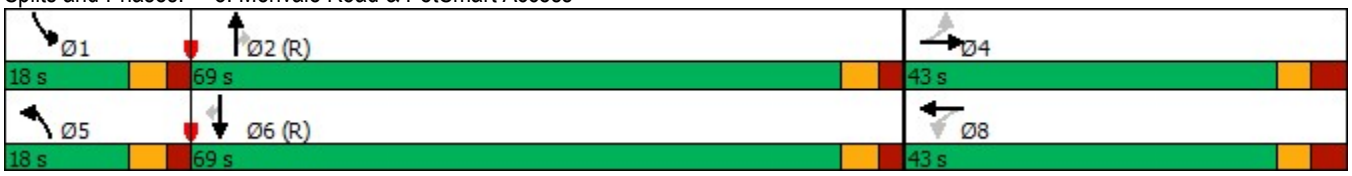
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	21	50	125	47	100	53	1289	128	62	1277	132
Future Volume (vph)	130	21	50	125	47	100	53	1289	128	62	1277	132
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	100.0		100.0	0.0		0.0
Storage Lanes	1		0	1		0	2		1	1		1
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		0.894			0.898				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1595	0	1695	1602	0	3288	3390	1517	1695	3390	1517
Flt Permitted	0.582			0.711			0.950			0.950		
Satd. Flow (perm)	1038	1595	0	1269	1602	0	3288	3390	1517	1695	3390	1517
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			81				128			116
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		111.1			112.8			254.6			89.1	
Travel Time (s)		8.0			8.1			15.3			5.3	
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
Adj. Flow (vph)	130	21	50	125	47	100	53	1289	128	62	1277	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	71	0	125	147	0	53	1289	128	62	1277	132
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	43.0	43.0		43.0	43.0		18.0	69.0	69.0	18.0	69.0	69.0
Total Split (s)	43.0	43.0		43.0	43.0		18.0	69.0	69.0	18.0	69.0	69.0
Total Split (%)	33.1%	33.1%		33.1%	33.1%		13.8%	53.1%	53.1%	13.8%	53.1%	53.1%
Maximum Green (s)	36.0	36.0		36.0	36.0		11.9	62.9	62.9	11.9	62.9	62.9
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.7	3.7		3.7	3.7		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
Total Lost Time (s)	7.0	7.0		7.0	7.0		6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							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
Recall Mode	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	7.0
Flash Dont Walk (s)	29.0	29.0		29.0	29.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	5	5		5	5			5	5		5	5
Act Effct Green (s)	21.6	21.6		21.6	21.6		7.5	82.0	82.0	9.6	84.0	84.0
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.06	0.63	0.63	0.07	0.65	0.65
v/c Ratio	0.76	0.23		0.59	0.44		0.28	0.60	0.13	0.50	0.58	0.13
Control Delay	75.7	17.9		59.7	24.6		72.4	3.8	0.1	70.7	16.9	3.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.7	17.9		59.7	24.6		72.4	3.8	0.1	70.7	16.9	3.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	B		E	C		E	A	A	E	B	A
Approach Delay		55.3			40.8			6.0			18.0	
Approach LOS		E			D			A			B	
Queue Length 50th (m)	32.6	4.7		30.4	15.1		7.5	6.8	0.0	15.5	93.1	1.4
Queue Length 95th (m)	47.7	15.6		44.1	30.4		m8.1	m13.6	m0.3	29.8	160.5	12.1
Internal Link Dist (m)		87.1			88.8			230.6			65.1	
Turn Bay Length (m)							100.0		100.0			
Base Capacity (vph)	287	477		351	502		300	2137	1004	155	2191	1021
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.15		0.36	0.29		0.18	0.60	0.13	0.40	0.58	0.13

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 92 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 16.8		Intersection LOS: B	
Intersection Capacity Utilization 80.3%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Merivale Road & PetSmart Access



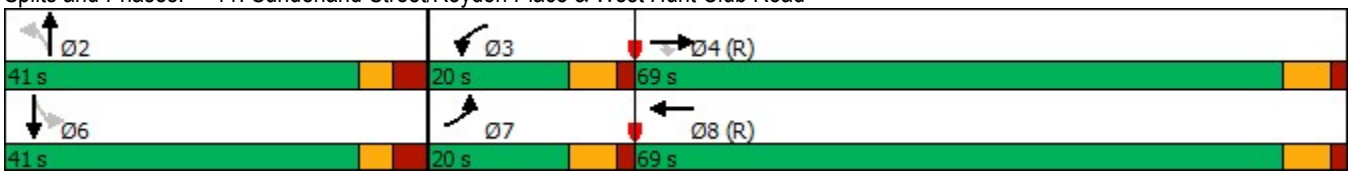
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1465	217	46	1917	208	59	137	91	120	121	51
Future Volume (vph)	110	1465	217	46	1917	208	59	137	91	120	121	51
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	100.0		100.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.985			0.940			0.956	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	3325	1459	1441	4803	0	1695	1567	0	1679	1671	0
Flt Permitted	0.950			0.950			0.584			0.487		
Satd. Flow (perm)	1572	3325	1459	1441	4803	0	1042	1567	0	861	1671	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			213		19			25			16	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		371.1			116.0			89.5			157.1	
Travel Time (s)		16.7			5.2			6.4			11.3	
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%	4%	6%	20%	2%	1%	2%	8%	11%	3%	5%	2%
Adj. Flow (vph)	110	1465	217	46	1917	208	59	137	91	120	121	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	1465	217	46	2125	0	59	228	0	120	172	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4				2			6		
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	69.0	69.0	20.0	69.0		41.0	41.0		41.0	41.0	
Total Split (s)	20.0	69.0	69.0	20.0	69.0		41.0	41.0		41.0	41.0	
Total Split (%)	15.4%	53.1%	53.1%	15.4%	53.1%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	13.6	62.6	62.6	13.6	62.6		34.3	34.3		34.3	34.3	
Yellow Time (s)	4.6	4.6	4.6	4.6	4.6		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8		3.4	3.4		3.4	3.4	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	6.4		6.7	6.7		6.7	6.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	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	
Recall Mode	None	C-Max	C-Max	None	C-Max		Max	Max		Max	Max	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		16.0	16.0		16.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		5	5		5		5	5		5	5	
Act Effct Green (s)	12.4	69.1	69.1	9.5	63.8		34.3	34.3		34.3	34.3	
Actuated g/C Ratio	0.10	0.53	0.53	0.07	0.49		0.26	0.26		0.26	0.26	
v/c Ratio	0.73	0.83	0.25	0.44	0.90		0.22	0.53		0.53	0.38	
Control Delay	59.1	43.7	6.8	69.5	36.4		40.0	41.4		50.8	38.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	59.1	43.7	6.8	69.5	36.4		40.0	41.4		50.8	38.3	
LOS	E	D	A	E	D		D	D		D	D	
Approach Delay		40.2			37.1			41.1			43.4	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	30.0	126.8	6.8	11.5	179.3		11.8	44.7		26.4	32.7	
Queue Length 95th (m)	m22.6	m56.9	m3.4	23.7	202.8		24.0	70.8		47.5	53.7	
Internal Link Dist (m)		347.1			92.0			65.5			133.1	
Turn Bay Length (m)	100.0		100.0									
Base Capacity (vph)	164	1766	874	150	2365		274	431		227	452	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.67	0.83	0.25	0.31	0.90		0.22	0.53		0.53	0.38	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 20 (15%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 39.0 Intersection LOS: D
Intersection Capacity Utilization 92.7% ICU Level of Service F
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Sunderland Street/Roydon Place & West Hunt Club Road



APPENDIX F:

TDM SUPPORTIVE DEVELOPMENT DESIGN AND INFRASTRUCTURE" CHECKLIST

TDM-Supportive Development Design and Infrastructure Checklist:

Non-Residential Developments (office, institutional, retail or industrial)

Legend

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

	TDM-supportive design & infrastructure measures: *Non-residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	1. WALKING & CYCLING: ROUTES		
	1.1 Building location & access points		
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☑ Building is on the corner lot adjacent to 2 streets
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑ Main entrance provides access to the West Hunt Club Road sidewalk and employee entrance provides access to employee parking lot
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☑
	1.2 Facilities for walking & cycling		
REQUIRED	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 Official Plan policy 4.3.3)*	☑ Bus stops are located approximately 300 meters are from the main entrance, accessed using the sidewalks along West Hunt Club Road
REQUIRED	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 Official Plan policy 4.3.12)*	☑ A direct pathway from the West Hunt Club Road sidewalk is provided, which lead directly to the main entrance of the building. The employee entrance is connected to Roydon Place via a pedestrian crossover

TDM-supportive design & infrastructure measures: *Non-residential developments*			Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	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 *(See Official Plan policy 4.3.10)*	☑ Concrete slab sidewalks are provided to and from the building entrances
REQUIRED	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 *(See Official Plan policy 4.3.10)*	☑ Sidewalks are easily accessible with gradual grade transition
REQUIRED	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 *(See Official Plan policy 4.3.11)*	☑ Path links are provided from the main entrance to West Hunt Club Road and from the employee entrance to the employee lot.
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☑ A clearly marked pedestrian path connects from the main entrance of the building to West Hunt Club Road sidewalk
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☑
BASIC	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	☒ West Hunt Club Road has an operating speed of 80 km/h, with bike lanes
	1.3	**Amenities for walking & cycling**	
BASIC	1.3.1	Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☑
BASIC	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)	☒ Wayfinding not required

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(See Official Plan policy 4.3.6)*	☑ Bicycle racks are provided near the main 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 Zoning By-law Section 111)*	☑ 24 bicycle parking spaces are provided based zoning By-law regulations
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 Zoning By-law Section 111)*	☑ Bicycle spaces meet minimum dimensions, all are horizontal spaces, racks anchored to concrete
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	☑ Expected number of cyclists based on mode share is 3, 18 parking spaces are provided
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	☑ The 18 provided stalls provides the necessary amount of bike parking for the expected number of commuters
	2.2	**Secure bicycle parking**	
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 Zoning By-law Section 111)*	☑ The City bylaw requires 18 stalls and provision is being made for 18 outdoor bicycle parking spaces on racks.
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)	☒ There is no secure bicycle parking provision in the bylaw for less than 50 stalls.
	2.3	**Shower & change facilities**	
BASIC	2.3.1	Provide shower and change facilities for the use of active commuters	☒
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	☒
	2.4	**Bicycle repair station**	
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)	☒ No repair station is provided

	TDM-supportive design & infrastructure measures: *Non-residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	3. TRANSIT		
	3.1 Customer amenities		
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☒ There are no on-site transit stops
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	☒ There are no off-site transit stops abutting the site
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☒ There are no on-site transit stops
	4. RIDESHARING		
	4.1 Pick-up & drop-off facilities		
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	☒ There is no dedicated area for carpool motorists as stalls are available on a 1st come basis.
	4.2 Carpool parking		
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	☒ There are no signed parking spaces for carpools
BETTER	4.2.2	At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	☒ There are no signed parking spaces for carpools
	5. CARSHARING & BIKESHARING		
	5.1 Carshare parking spaces		
BETTER	5.1.1	Provide carshare parking spaces in permitted non- residential zones, occupying either required or provided parking spaces *(See Zoning By-law Section 94)*	☒ There are no carsharing spaces
	5.2 Bikeshare station location		
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☒ There are no bike-sharing spaces

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	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	☑ Sufficient parking is provided based on zoning By-laws
BASIC	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	☑ 14 Visitor parking spaces are provided for the office
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(See Zoning By-law Section 104)*	☑ Only one land use is featured on this site (office)
BETTER	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 *(See Zoning By-law Section 111)*	☒ No reduction has been made
	6.2	**Separate long-term & short-term parking areas**	
BETTER	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)	☑ Visitor parking spaces are clearly marked with signage
	7.	**OTHER**	
	7.1	**On-site amenities to minimize off-site trips**	
BETTER	7.1.1	Provide on-site amenities to minimize mid-day or mid-commute errands	☒ No amenities are provided in this office building

APPENDIX G:

MMLOS ANALYSIS WORKSHEET

Performance Measure	*Roadway Segments Adjacent to the Development*			
	West Hunt Club Road b/w Merivale Road and Roydon Place	West Hunt Club Road East of Roydon Place	Roydon Place b/w West Hunt Club Road and Costco Gas Access	Sunderland Street b/w West Hunt Club Road and Jamie Avenue
Pedestrian LOS (PLOS)				
Sidewalk Width (m)	2.5	2.5	2.25	0
Boulevard Width (m)	0	0	0	0
Average Daily Curb Lane Traffic Volume	>3000	>3000	<3000	<3000
Presence of On-Street Parking	No	No	No	No
Operating Speed (km/h) Posted +10 km/hr	90	90	60	60
Segment PLOS	F	F	F	F
Target PLOS	C	C	C	C
Bicycle LOS (BLOS)				
Bikeway Type	Bike Lanes	Bike Lanes	Mixed Traffic	N/A
Number of Lanes per direction	3	3	2	
Bike Lane Width (m)	2	2	N/A	
Operating Speed (km/h) Posted +10 km/hr	90	90	60	
Bike Lane Blockage	N/A	N/A	N/A	
Segment BLOS	**E**	**E**	D	
Target BLOS	C	C	E	
Transit LOS (TLOS)				
Facility Type	Mixed Traffic	Mixed Traffic	N/A	N/A
Level/Exposure to Parking/Driveway Friction	Low	Low		
Average Transit Travel Speed (km/h)	N/A	N/A		
Posted Speed Limit (km/h)	80	80		
Segment TLOS	D	D		
Target TLOS	D	D		
Truck LOS (TkLOS)				
Number of lanes (in each direction)	3	3	2	2
Curb Lane Width (m)	>3.7	>3.7	>3.7	>3.7
Segment TkLOS	A	A	B	B
Target TkLOS	D	D	D	E

	West Hunt Club Road and Merivale Road - Intersection Leg			
Performance Measure	West Leg - West Hunt Club Road	East Leg - West Hunt Club Road	North Leg - Merivale Road	South Leg - Merivale Road
Pedestrian LOS (PLOS)				
Leg PLOS	F	F	F	F
Intersection PLOS	F			
Target PLOS	C			
Bicycle LOS (BLOS)				
Leg BLOS	E	E	E	E
Intersection BLOS	E		E	
Target BLOS	C		C	
Transit LOS (TLOS)				
Intersection TLOS	D	D	D	D
Target TLOS	D			
Truck LOS (TkLOS)				
Leg TkLOS	A	A	A	A
Intersection TkLOS	A		A	
Target TkLOS	D			

	West Hunt Club Road and Roydon Place - Intersection Leg			
Performance Measure	West Leg - West Hunt Club Road	East Leg - West Hunt Club Road	North Leg - Roydon Place	South Leg - Sunderland Street
Pedestrian LOS (PLOS)				
Leg PLOS	F	F	C	F
Intersection PLOS	F			
Target PLOS	C			
Bicycle LOS (BLOS)				
Leg BLOS	E	E	D	N/A
Intersection BLOS	E		D	
Target BLOS	C		E	
Transit LOS (TLOS)				
Intersection TLOS	D	D	N/A	N/A
Target TLOS	D		N/A	
Truck LOS (TkLOS)				
Leg TkLOS	A	A	B	B
Intersection TkLOS	A		B	
Target TkLOS	D	D	D	E

	Merivale Road and PetSmart Access - Intersection Leg			
Performance Measure	West Leg - Canadian Tire Plaza	East Leg - PetSmart Access	North Leg - Merivale Road	South Leg - Merivale Road
Pedestrian LOS (PLOS)				
Leg PLOS	E	E	F	F
Intersection PLOS	F			
Target PLOS	C			
Bicycle LOS (BLOS)				
Leg BLOS	F	F	F	F
Intersection BLOS	F		F	
Target BLOS	C		C	
Transit LOS (TLOS)				
Intersection TLOS	N/A	N/A	D	D
Target TLOS	N/A		D	
Truck LOS (TkLOS)				
Leg TkLOS	N/A	N/A	B	B
Intersection TkLOS	N/A		B	
Target TkLOS	No Target	No Target	D	D