



# Bowers District Traffic Impact Study

Williamson & Associates



WATT CONSULTING GROUP  
November 18, 2021

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# BOWERS DISTRICT

## Traffic Impact Assessment

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## 1.0 INTRODUCTION

WATT Consulting Group was retained by Williamson & Associates to undertake a transportation impact assessment (TIA) for the proposed development at 6261 Hammond Bay Road in the City of Nanaimo (CoN). The proposed development contains multi-family residential, retail, and commercial land uses.

This report examines the existing and long-term conditions within the study area, highlights any potential operational issues, and recommends mitigation measures to ensure accommodation of development traffic. A review of the transit, pedestrian, and cycling accommodations is provided.

### 1.1 STUDY AREA

The proposed development is on the Green Thumb Garden Centre site which is located between Hammond Bay Road, Uplands Drive, Island Highway, and Turner Road. The study area includes the following intersections:

- Nanaimo Parkway (Highway 19) / Aulds Road;
- Island Highway (Highway 19A) / Aulds Road / Hammond Bay Road;
- Island Highway (Highway 19A) / Enterprise Street;
- Island Highway (Highway 19A) / Turner Road;
- Aulds Road / Metral Drive;
- Applecross Road / Hammond Bay Road;
- Marlin Way / Hammond Bay Road;
- Calinda Street / Hammond Bay Road;
- Uplands Drive / Hammond Bay Road;
- Parkwood Drive / Uplands Drive;
- Turner Road / Uplands Drive.

The Study Area and key intersections are shown in **Figure 1**.



Figure 1: Study Area

## 2.0 EXISTING CONDITIONS

### 2.1 CURRENT LAND USE

The development site currently contains the Green Thumb Garden Centre and is zoned as Urban Reserve (AR2). The surrounding land use is comprised of Low Density Residential (R6), Medium Density Residential (R8), Community Service One (CS1), and Woodgrove Urban Centre (CC4).

### 2.2 ROAD NETWORK

There are eleven roadways within the study area as described below:

- **Nanaimo Parkway (Highway 19)** is a divided four-lane arterial / highway that runs north / south and is under the Ministry of Transportation and Infrastructure's (MoTI) jurisdiction. There are existing paved shoulders on the Highway.



- **Island Highway (Highway 19A)** is a divided four-lane arterial / highway that runs north / south and is under the MoTI's jurisdiction. The Island Highway has a combination of paved and gravel shoulders within the study area.
- **Aulds Road** is a divided four-lane arterial road within the study area that runs east / west and is under the CoN jurisdiction. There is existing sidewalk on both sides of the road.
- **Hammond Bay Road** is the continuation of Aulds Road to the east of Island Highway. Hammond Bay Road transitions from a divided road to an undivided road and has four-lanes within the study area. There is existing sidewalk on both sides of the road.
- **Uplands Drive** is a major road north of Hammond Bay Road and an arterial road south of Hammond Bay Road. Uplands Drive is divided and transitions from a two-lane road to a four-lane road towards the south. There is existing sidewalk on the east side of the road.
- **Turner Road** is divided four-lane arterial road that runs east / west. Turner Road has existing sidewalk on both sides of the road within the study area.
- **Metral Drive** is an undivided major road except at the Aulds Road intersection where the roadway is divided by a median. Metral Drive is a four-lane road that runs north / south. There is continuous sidewalk on the west side of the road and an intermittent sidewalk on the east side of the roadway within the study area.
- **Enterprise Street** is divided four-lane minor road that runs east / west. There is existing sidewalk on the south side of the road.
- **Applecross Road** is an undivided two-lane commercial road that runs north / south. There is existing sidewalk on both sides of the road north of Hammond Bay Road. South of Hammond Bay Road Applecross Road transitions into a parking lot.
- **Calinda Street** is an undivided two-lane commercial road that runs north / south. Calinda Street has sidewalk on both sides of the road.
- **Marlin Way** is an undivided two-lane local road that runs north / south. Marlin Way has gravel or grass shoulders and no existing sidewalk.
- **Parkwood Drive** is an undivided two-lane local road that runs east / west. Parkwood Drive has sidewalk on both sides of the road.

The posted speed limit on all roads is 50 km/h except for the Nanaimo Parkway and the Island Highway which have a speed limit of 70-80 km/h within the study area. There are eleven intersections within the study area, they are as follows:

- **Nanaimo Parkway / Aulds Road** is a four-leg, signalized intersection. There are left and right turn lanes on each approach. There is a dual left turn lane for the westbound





traffic. The northbound and southbound left turns have protected phases. The eastbound and westbound directions have split phasing. This intersection is within the MoTI's jurisdiction.

- **Island Highway / Aulds Road / Hammond Bay Road** is a four-leg, signalized intersection. The northbound and southbound left turns have protected phases. The eastbound and westbound directions have split phasing. This intersection is within the MoTI's jurisdiction.
- **Island Highway / Enterprise Street** is a three-leg, signalized intersection. The northbound left has protected / permitted phasing. There is a dual left turn lane for the eastbound traffic. This intersection is within the MoTI's jurisdiction.
- **Island Highway / Turner Road** is a four-leg, signalized intersection. The northbound and southbound left turns have protected phases. The eastbound and westbound directions have split phasing. This intersection is within the MoTI's jurisdiction.
- **Metral Drive / Aulds Road** is a four-leg, signalized intersection. There are separate left turn lanes with protected / permitted phasing for the eastbound and westbound approaches. The northbound and southbound directions have split phasing.
- **Calinda Street / Hammond Bay Road** is a three-leg, signalized intersection. There is a protected / permitted phase for the eastbound left traffic. The eastbound and southbound approaches have separate left turn lanes.
- **Uplands Drive / Hammond Bay Road** is a four-leg, signalized intersection. There are separate left turn lanes with protected / permitted phasing for each approach. The southbound right has a separate right turn lane.
- **Turner Road / Uplands Drive** is a four-leg, signalized intersection with separate left turn lanes for all approaches. There are protected phases for the northbound and southbound left turns. The eastbound and westbound left turns have protected / permitted phasing.
- **Applecross Road / Hammond Bay Road** is a four-leg, stop controlled intersection for the northbound and southbound approaches. The north / south legs are right-in / right-out except eastbound left turns are permitted and have a separate lane.
- **Marlin Way / Hammond Bay Road** is a three-leg stop controlled intersection for the northbound approach. The northbound and westbound approaches have separate left turn lanes.
- **Parkwood Drive / Uplands Drive** is a three-leg, stop controlled intersection for the westbound approach. There is a separate left turn lane for the southbound approach.



## 2.3 TRAFFIC VOLUMES AND CONDITIONS

### 2.3.1 DATA COLLECTION

Traffic conditions are often collected and analyzed during what is considered typical travel pattern days on Tuesday, Wednesday, and / or Thursdays; however, some regions have specific travel patterns that require consideration. The City of Nanaimo takes into consideration the Friday PM peak. Traffic volumes were collected at the study intersections during the AM and PM peak hours on a typical Thursday as well as during the Friday PM peak hour. The PM peak hour traffic volumes on the typical day were compared to the traffic volumes on Friday. There was 0.63% (or 23 vehicles) more traffic on the roads on the typical day compared to Friday. Given the similarities for the traffic data collected on the typical Thursday compared to the Friday this report analyzed the Thursday or typical PM peak hour. The AM peak hour was also analyzed.

The traffic data in this report was collected or provided between 2018 and 2020. The 2020 data was collected prior to the Covid-19 pandemic altered traffic patterns.

### 2.3.2 TRAFFIC MODELLING DETAILS

Synchro / SimTraffic is a two-part traffic modelling software that provides analysis of traffic conditions. The Synchro methodology for signalized intersections is based on the Intersection Capacity Utilization while the Highway Capacity Manual (2010) methodology was selected for un-signalized intersections. These measures of effectiveness provided by the software include level of service (LOS), delay and 95th percentile queue length.

The type of traffic control is analyzed to determine the level of service and delays. The levels of service are broken down into six letter grades with LOS A being little or no delay and LOS F being unstable operations with high delay. Level of service C is generally considered to be an acceptable LOS by most municipalities. LOS D is generally considered to be on the threshold between acceptable and unacceptable. Additional information on the Synchro software can be found in **Appendix A**.

### 2.3.3 2020 AM EXISTING TRAFFIC CONDITIONS

The existing 2020 traffic volume data was analyzed within the study area for the AM peak hour. See **Figure 2** and **Table 1** for the existing 2020 AM peak hour conditions.

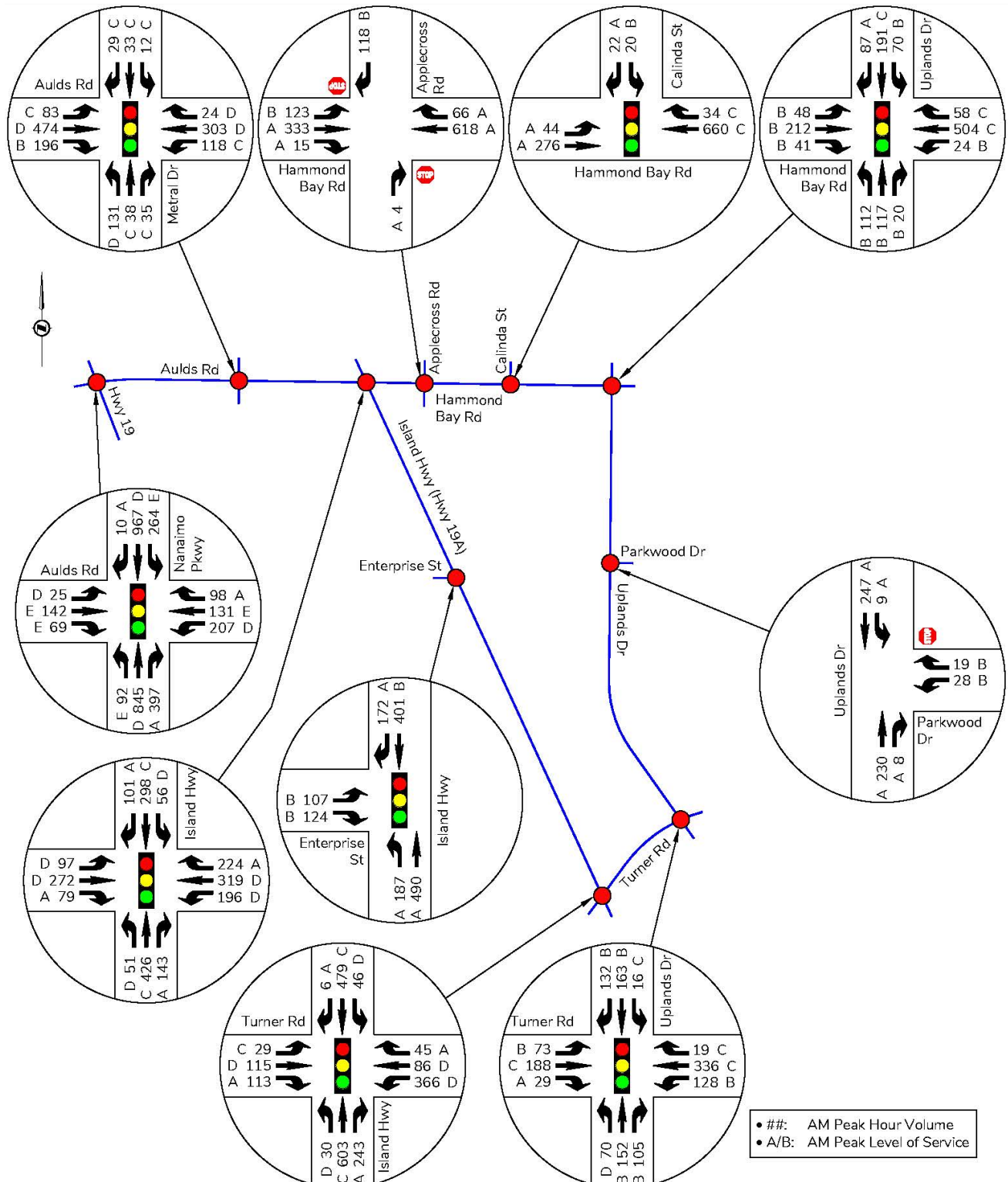


Figure 2: 2020 AM Existing Peak Hour Traffic Conditions

**TABLE 1: 2020 AM EXISTING PEAK HOUR TRAFFIC CONDITIONS**

Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Nanaimo Pkwy / Aulds Rd	EBL	D	38.3	20	Island Hwy / Aulds Rd / Hammond Bay Rd	EBL	D	38.5	40
	EBT	E	61.6	60		EBT	D	40.8	40
	EBR	E	61.6	60		EBR	A	4.6	30
	WBL	D	44.2	35		WBL	D	42.7	35
	WBT	E	60.0	100		WBT	D	37.1	50
	WBR	A	3.8	25		WBR	A	7.4	15
	NBL	E	68.7	30		NBL	D	46.0	15
	NBT	D	37.8	60		NBT	C	27.3	45
	NBR	A	6.8	0		NBR	A	5.5	0
	SBL	E	63.2	80		SBL	D	49.2	25
	SBT	D	38.2	80		SBT	C	23.1	35
	SBR	A	0.1	0		SBR	A	4.0	0
Island Hwy / Enterprise St	EB L/R	B	14.8	25	Calinda St / Hammond Bay Rd	EBL	A	9.6	20
	NBL	A	5.1	30		EBT	A	9.3	35
	NBT	A	3.9	30		WBT	C	20.6	65
	SBT	B	10.8	30		SBL	B	15.9	10
	SBR	A	2.8	0		SBR	A	7.5	10
Uplands Dr / Hammond Bay Rd	EBL	B	14.2	20	Turner Rd / Uplands Dr	EBL	B	15.5	25
	EB T/R	B	17.5	30		EBT	C	28.2	40
	WBL	B	12.5	15		EBR	A	0.3	15
	WB T/R	C	26.0	55		WBL	B	18.0	35
	NBL	B	13.0	25		WB T/R	C	23.3	55
	NB T/R	B	15.2	25		NBL	D	41.1	25
	SBL	B	12.6	20		NB T/R	B	15.8	30
	SBT	C	21.5	45		SBL	C	30.5	15
SBR	A	1.4	20	SB T/R	B	18.5	30		
Marlin Way / Hammond Bay Rd	EB T/R	A	0.0	5	Applecross Rd / Hammond Bay Rd	EBL	B	10.2	25
	WBL	A	8.0	10		EB T/R	A	0.0	0
	WBT	A	0.0	0		WBT	A	0.0	5
	NBL	C	15.8	15		WBR	A	0.0	10
	NBR	A	9.4	15		NBR	A	9.4	0
Parkwood Dr / Uplands Dr	WB	B	12.1	15	Island Hwy / Turner Rd	SBR	B	12.0	10
	NB T/R	A	0.0	0		EBL	C	28.8	20
	SBL	A	7.8	5		EBT	D	36.0	40
	SBT	A	0.0	0		EBR	A	3.7	20
Metral Dr / Aulds Rd	EBL	C	23.3	40		WBL	D	35.2	60
	EBT	D	43.2	70		WBT	D	35.5	70
	EBR	B	12.0	45		WBR	A	0.6	25
	WBL	C	28.9	40		NBL	D	39.2	25
	WBT	D	37.2	50		NBT	C	32.3	55
	WBR	D	37.2	45		NBR	A	6.6	5
	NBL	D	40.8	20		SBL	D	43.6	25
	NBT	C	29.4	35		SBT	C	25.1	45
	NBR	C	29.4	20	SBR	A	0.0	5	
	SBL	C	32.9	5					
	SBT	C	22.0	25					
	SBR	C	22.0	15					

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.



The Nanaimo Parkway / Aulds Road intersection has multiple existing movements at failing levels of service (LOS E) during the AM peak hour. All other intersection in the study area operate at LOS D or better during the AM peak hour. The 95<sup>th</sup> percentile eastbound left queues at Calinda Street / Hammond Bay Road exceeds the existing storage; however, there are some physical constraints in extending the storage length and the intersection operates at LOS A for the eastbound movements even with the queues spilling out into the through lane. The northbound and southbound 95<sup>th</sup> percentile left turn queue lengths extend beyond the existing storage capacity at Turner Road / Island Highway.

#### 2.3.4 2020 PM EXISTING TRAFFIC CONDITIONS

The existing 2020 PM peak hour traffic volume data was analyzed within the study area. See **Figure 3** and **Table 2** for the existing 2020 PM peak hour conditions.

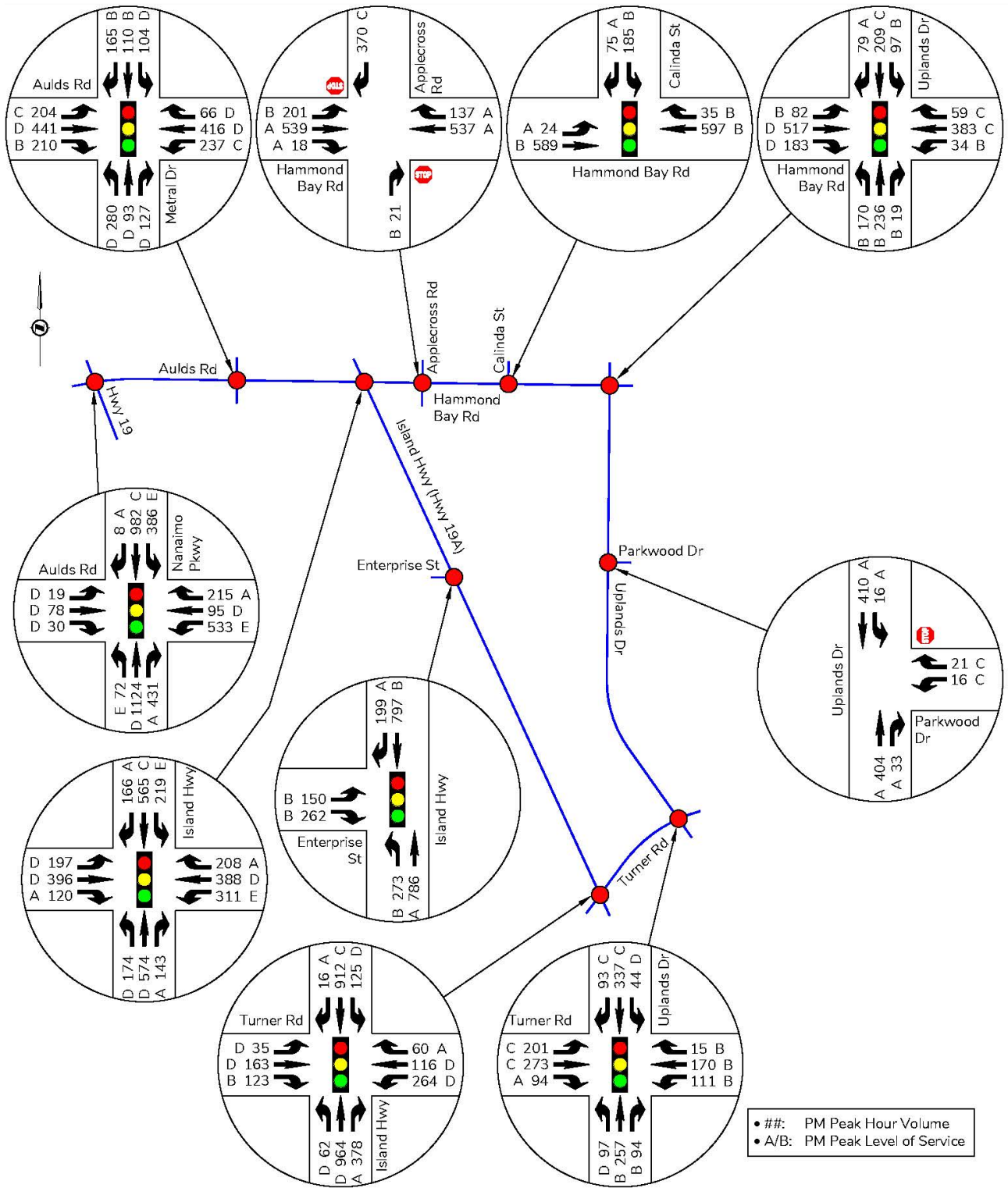


Figure 3: 2020 PM Existing Peak Hour Traffic Conditions

**TABLE 2: 2020 PM EXISTING PEAK HOUR TRAFFIC CONDITIONS**

Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Nanaimo Pkwy / Aulds Rd	EBL	D	43.9	15	Island Hwy / Aulds Rd / Hammond Bay Rd	EBL	D	54.1	60
	EBT	D	52.7	35		EBT	D	48.3	105
	EBR	D	52.7	35		EBR	A	4.4	30
	WBL	E	67.9	70		WBL	E	56.0	90
	WBT	D	43.1	35		WBT	D	47.6	85
	WBR	A	9.2	25		WBR	A	8.4	35
	NBL	E	74.8	25		NBL	D	49.5	30
	NBT	D	49.5	90		NBT	D	38.9	65
	NBR	A	7.1	0		NBR	A	5.6	15
	SBL	E	74.2	125		SBL	E	58.6	65
	SBT	C	26.3	85		SBT	C	29.2	55
Island Hwy / Enterprise St	SBR	A	0.0	0	Calinda St / Hammond Bay Rd	SBR	A	5.2	0
	EB L/R	B	13.3	30		EBL	A	8.8	20
	NBL	B	11.1	50		EBT	B	12.0	45
	NBT	A	5.0	125		WBT	B	19.1	55
	SBT	B	15.8	55		SBL	B	15.3	35
Uplands Dr / Hammond Bay Rd	SBR	A	3.4	0	Turner Rd / Uplands Dr	SBR	A	4.9	25
	EBL	B	15.3	30		EBL	C	20.3	45
	EB T/R	D	37.5	60		EBT	C	27.1	55
	WBL	B	13.6	20		EBR	A	1.1	20
	WB T/R	C	23.0	50		WBL	B	15.6	35
	NBL	B	16.2	30		WB T/R	B	19.5	40
	NB T/R	B	18.8	40		NBL	D	45.8	35
	SBL	B	14.6	25		NB T/R	B	18.5	45
Marlin Way / Hammond Bay Rd	SBT	C	24.0	45	Applecross Rd / Hammond Bay Rd	SBL	D	36.1	25
	SBR	A	1.0	25		SB T/R	C	21.1	40
	EB T/R	A	0.0	0		EBL	B	12.1	35
	WBL	A	8.8	10		EB T/R	A	0.0	25
	WBT	A	0.0	0		WBT	A	0.0	10
Parkwood Dr / Uplands Dr	NBL	C	24.9	15	Island Hwy / Turner Rd	WBR	A	0.0	15
	NBR	B	10.8	15		NBR	B	10.4	5
	WB	C	15.9	15		SBR	C	20.0	35
	NB T/R	A	0.0	0		EBL	D	38.5	25
Metral Dr / Aulds Rd	SBL	A	8.5	10	EBT	D	51.3	65	
	SBT	A	0.0	5	EBR	B	10.2	40	
	EBL	C	32.4	55	WBL	D	50.6	70	
	EBT	D	47.7	65	WBT	D	49.3	80	
	EBR	B	12.8	50	WBR	A	1.2	0	
	WBL	C	34.7	65	NBL	D	50.4	40	
	WBT	D	51.2	65	NBT	D	44.4	100	
	WBR	D	51.2	65	NBR	A	5.7	50	
	NBL	D	53.0	45	SBL	D	52.2	55	
	NBT	D	35.7	50	SBT	C	30.8	80	
	NBR	D	35.7	45	SBR	A	0.1	15	
	SBL	D	39.0	35					
SBT	B	16.8	55						
SBR	B	16.8	45						

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.



The Nanaimo Parkway / Aulds Road and Island Highway / Aulds Road intersections have multiple existing movements at failing levels of service (LOS E) during the PM peak hour. Both of those intersections and the Tuner Road / Island Highway intersection have many other movements that are approaching the LOS D / E threshold. All the other intersections in the study area operate at LOS D or better during the PM peak hour. The northbound and southbound 95<sup>th</sup> percentile left turn queue lengths extend past the existing storage at Turner Road / Island Highway. The eastbound left queue lengths extend beyond the existing storage at Calinda Street / Hammond Bay Road, Uplands Drive / Hammond Bay Road, and Applecross Road / Hammond Bay Road during the PM peak; however, the queues do not seem to significantly affect the traffic operations at the intersections.

### 3.0 PROPOSED DEVELOPMENT

#### 3.1 LAND USE

The preliminary site plan was used to generate the trips for the proposed development. While the development's specific land use may change the amount of traffic added to the surrounding road network represents a conservative amount of traffic for a property of this size. The preliminary plan includes 2500 units of multi-family dwellings and a significant portion of retail / office space. See Section 3.3 for specific land use numbers.

#### 3.2 SITE ACCESS

There were six access points to the surrounding road network analyzed for this development. The two main accesses are proposed to be located at existing three-leg intersections: Calinda Street / Hammond Bay Road and Enterprise Street / Island Highway. Another access is proposed to connect to Marlin Way and the three remaining accesses are to be located on Uplands Drive. One of the Upland Drive accesses is proposed to be across from Parkwood Drive; however, the new access would be physically restricted to right in / right out operation. The existing Parkwood Drive leg of the intersection would remain unchanged.

Adding an additional leg onto the Enterprise Street / Island Highway intersection would have an overall benefit to the general public as well as the new development. The split-phased intersections along the Island Highway at Hammond Bay Road and Turner Road have additional capacity in the northbound / southbound directions; however, in order for local traffic to gain access to the Island Highway they need to utilize one of the eastbound / westbound split-phased approaches. Those existing split-phased approaches are either at or approaching failing levels of service. Adding a fourth leg at Enterprise Street / Island Highway has potential to offer access to the additional northbound / southbound capacity on the Island Highway





without impacting the already strained split phased movements at the adjacent intersections. The new development would gain access to Island Highway without further deteriorating the side road level of service at the split-phased intersections. There is also great potential for an active transportation connection through this intersection linking the predominantly residential area to the east with the commercial region to the west.

There are no sight distance deficiencies at the proposed access locations. There is over 175m of sight distance in both directions at all locations which exceeds the Transportation Association of Canada's (TAC) requirements:

- 50km/h design speed;
  - 105m;
- 80km/h design speed;
  - 170m.

See **Figure 4** for the preliminary development site plan.

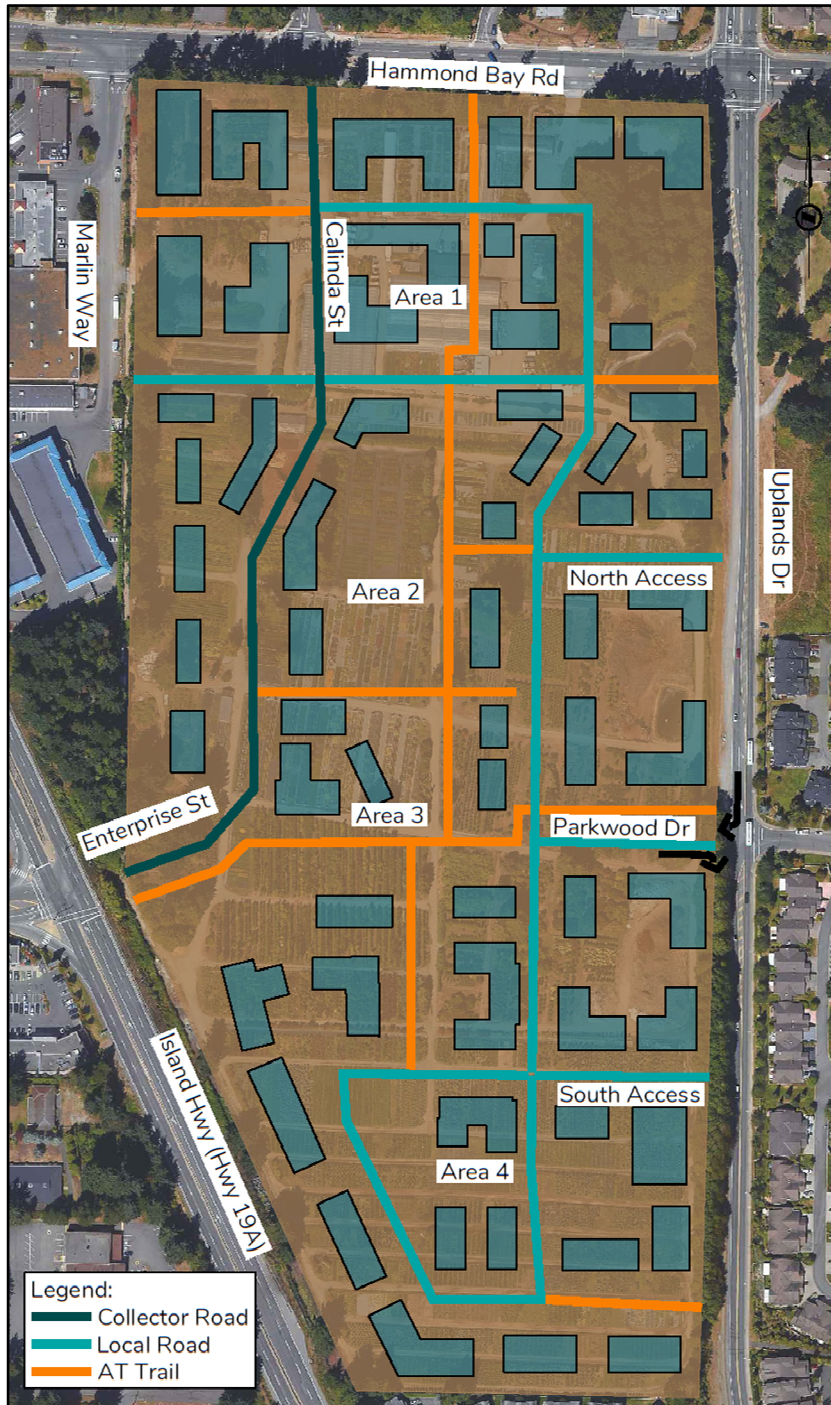


Figure 4: Preliminary Site Plan / Site Accesses

### 3.3 TRIP GENERATION

Trip generation for the proposed development was calculated using the Institute of Transportation Engineers' (ITE) *Trip Generation Manual (10<sup>th</sup> Edition)*. The *Trip Generation Manual* provides trip rates for a wide variety of land uses gathered from actual sites across North America over the past 40 years. The proposed development will generate 1441 trips



during the AM peak hour and 2036 trips during the PM peak hour. The AM and PM peak hour trip generation for the proposed development are shown in **Table 3**.

**TABLE 3: AM AND PM PEAK HOUR SITE TRIP GENERATION**

Area	Time	ITE Code	Land Use	Units	Trip Rate (Trips / Unit)	Total Trips	Trips In	Trips Out	
1	AM	221	MF – Mid-Rise	590	0.36	213	55	158	
	PM	221	MF – Mid-Rise	590	0.44	260	159	101	
	AM	222	MF – High-Rise	180	0.31	56	13	43	
	PM	222	MF – High-Rise	180	0.36	65	40	25	
	AM	710	Office	350,000 ft <sup>2</sup>	1.16	406	349	57	
	PM	710	Office	350,000 ft <sup>2</sup>	1.15	403	64	339	
2	AM	220	MF – Low Rise	35	0.46	17	4	13	
	PM	220	MF – Low Rise	35	0.56	20	13	7	
	AM	221	MF – Mid Rise	900	0.36	324	84	240	
	PM	221	MF – Mid Rise	900	0.44	396	242	154	
3	AM	221	MF – Mid Rise	75	0.36	27	7	20	
	PM	221	MF – Mid Rise	75	0.44	33	20	13	
	AM	820	Retail	140,000 ft <sup>2</sup>	0.94	132	82	50	
	PM	820	Retail	140,000 ft <sup>2</sup>	3.81	534	256	278	
4	AM	220	MF – Low Rise	60	0.46	28	6	22	
	PM	220	MF – Low Rise	60	0.56	34	21	13	
	AM	221	MF – Mid Rise	660	0.36	238	62	176	
	PM	221	MF – Mid Rise	660	0.44	291	178	113	
					<b>AM</b>	<b>Total</b>	<b>1441</b>	<b>662</b>	<b>779</b>
					<b>PM</b>	<b>Total</b>	<b>2036</b>	<b>993</b>	<b>1043</b>

### 3.4 INTERNAL AND PASS-BY TRIPS

Mixed-use developments will have some internal or shared trips between onsite land uses. Therefore an internal capture rate was applied to the various land uses for this development site. The internal capture rate is a percentage reduction to the trip generation estimates for individual land uses to account for internal trips on the site. The internal trips are subtracted from the total trips to determine the external trips to / from the site.

The ITE Trip Generation Manual: User’s Guide and Handbook Volume 1 provides the methodology for estimating internal capture rates for mixed-use sites. This methodology utilizes the internal trip percentages for the land uses from ITE and the National Cooperative Highway Research Program (NCHRP) to estimate the number of internal trips between various



land uses. The internal capture rate is estimated to be 7.2% (104 internal trips) during the AM peak hour: 1337 total trips, 610 trips inbound, and 727 trips outbound. The internal capture rate is estimated to be 14.5% (296 internal trips) during the PM peak hour. The PM peak hour also has pass-by trips to consider.

There are two types of external trips that access a commercial / retail development: primary trips and pass-by trips. Primary trips are new trips to / from the site which represent vehicles that would not otherwise be on the adjacent roads. Pass-by trips are made by vehicles already travelling by the site on the adjacent roadway. ITE's *Trip Generation Manual* identifies a 34% pass-by trip rate for the PM peak hour for the retail portion of the development. The AM peak hour retail does not have any pass-by trips.

**TABLE 4: PASS-BY TRIPS AFTER INTERNAL REDUCTION DURING THE PM PEAK HOUR**

<b>Trip Type</b>	<b>Inbound</b>	<b>Outbound</b>	<b>Total</b>
Total Trips	845	895	1740
Pass-By Trips	(-) 87	(-) 95	(-) 182
<b>Total New Trips</b>	<b>758</b>	<b>800</b>	<b>1558</b>

### **3.5 TRIP ASSIGNMENT**

The trip assignment is based on the existing trip distribution and key origins / destinations for traffic in the area. See **Figures 5 to 10** for the proposed development's trip assignment.

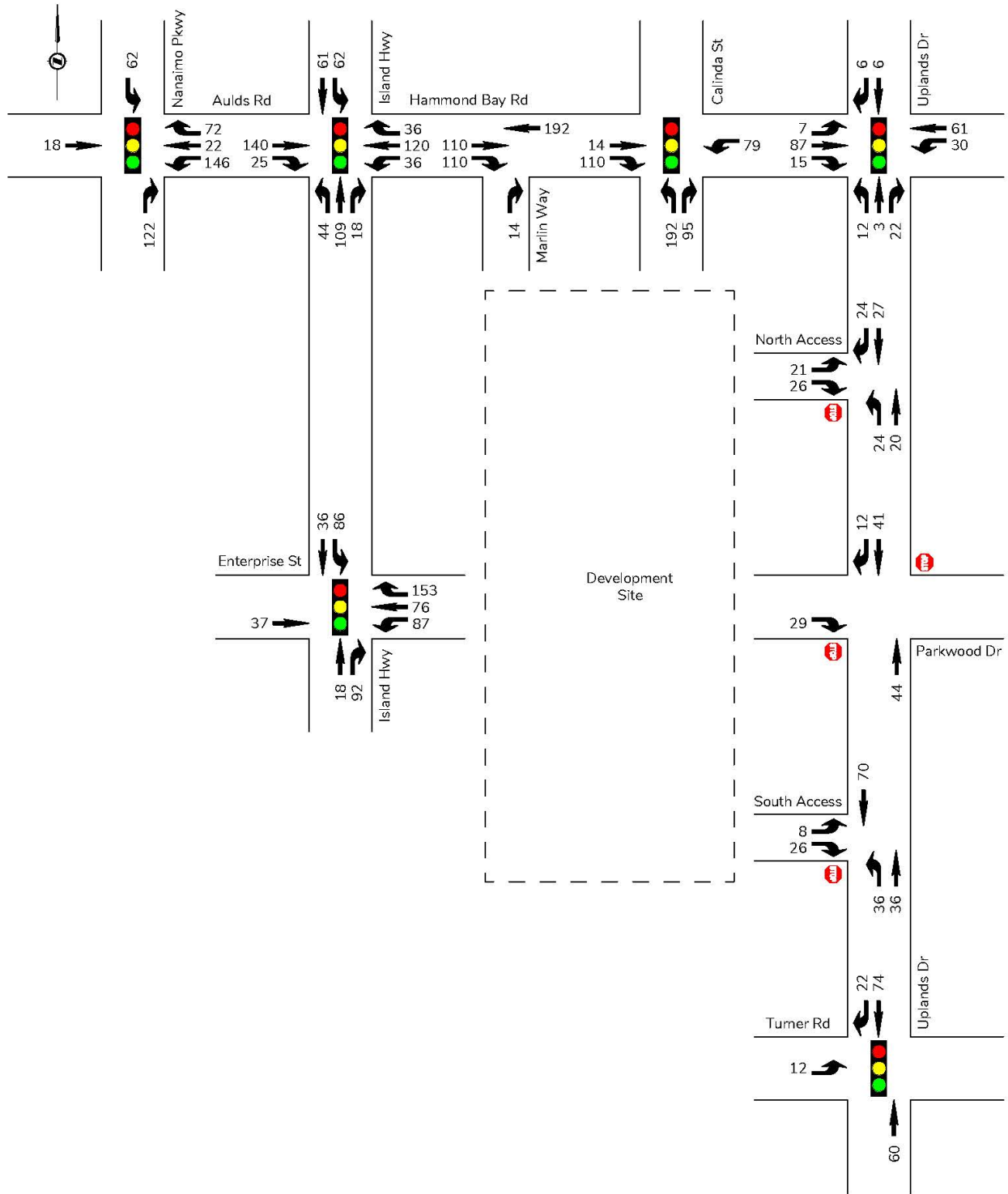


Figure 5: AM Trip Assignment

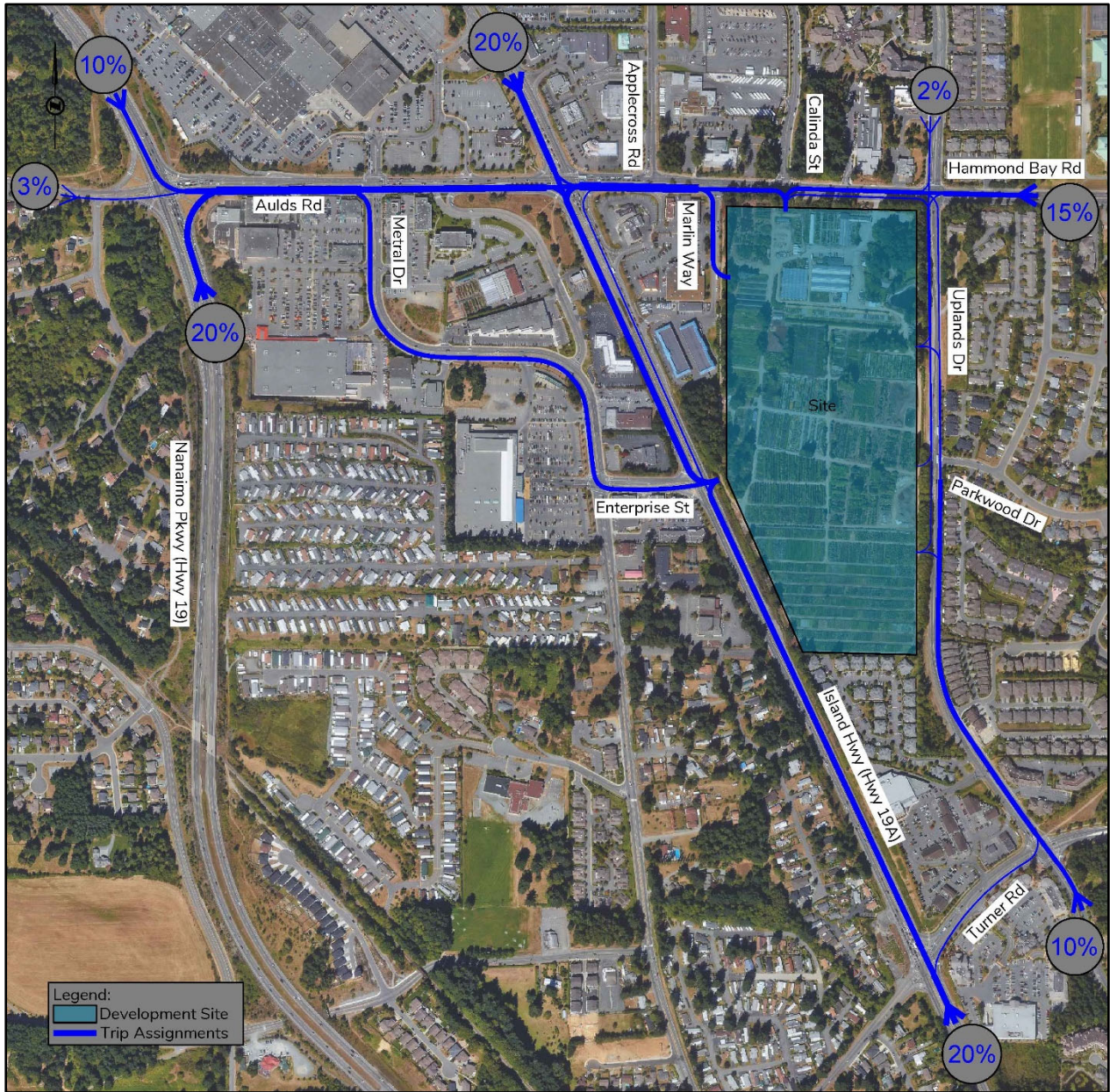


Figure 6: AM Trip Assignment – Percent Entering

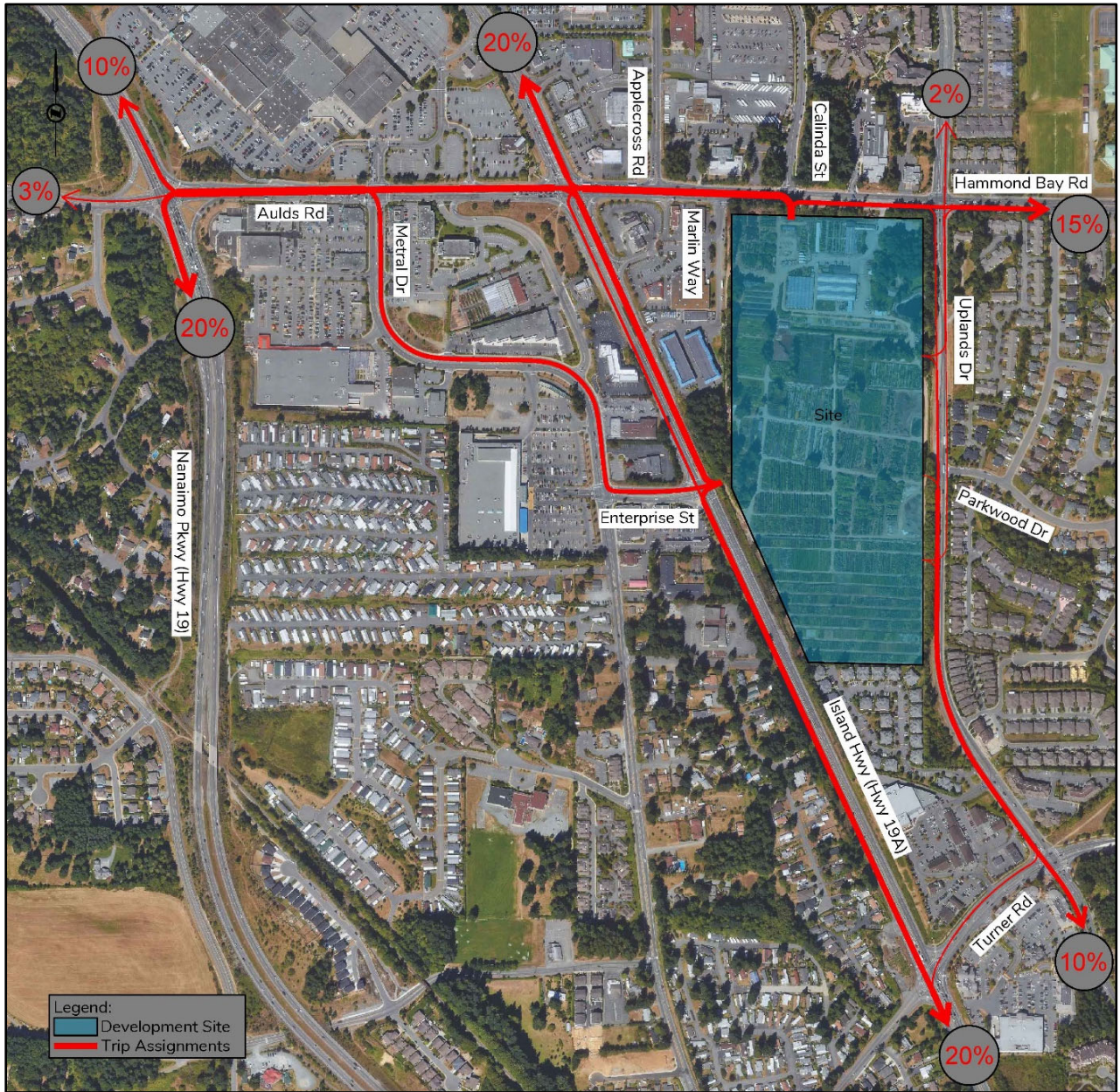


Figure 7: AM Trip Assignment – Percent Exiting

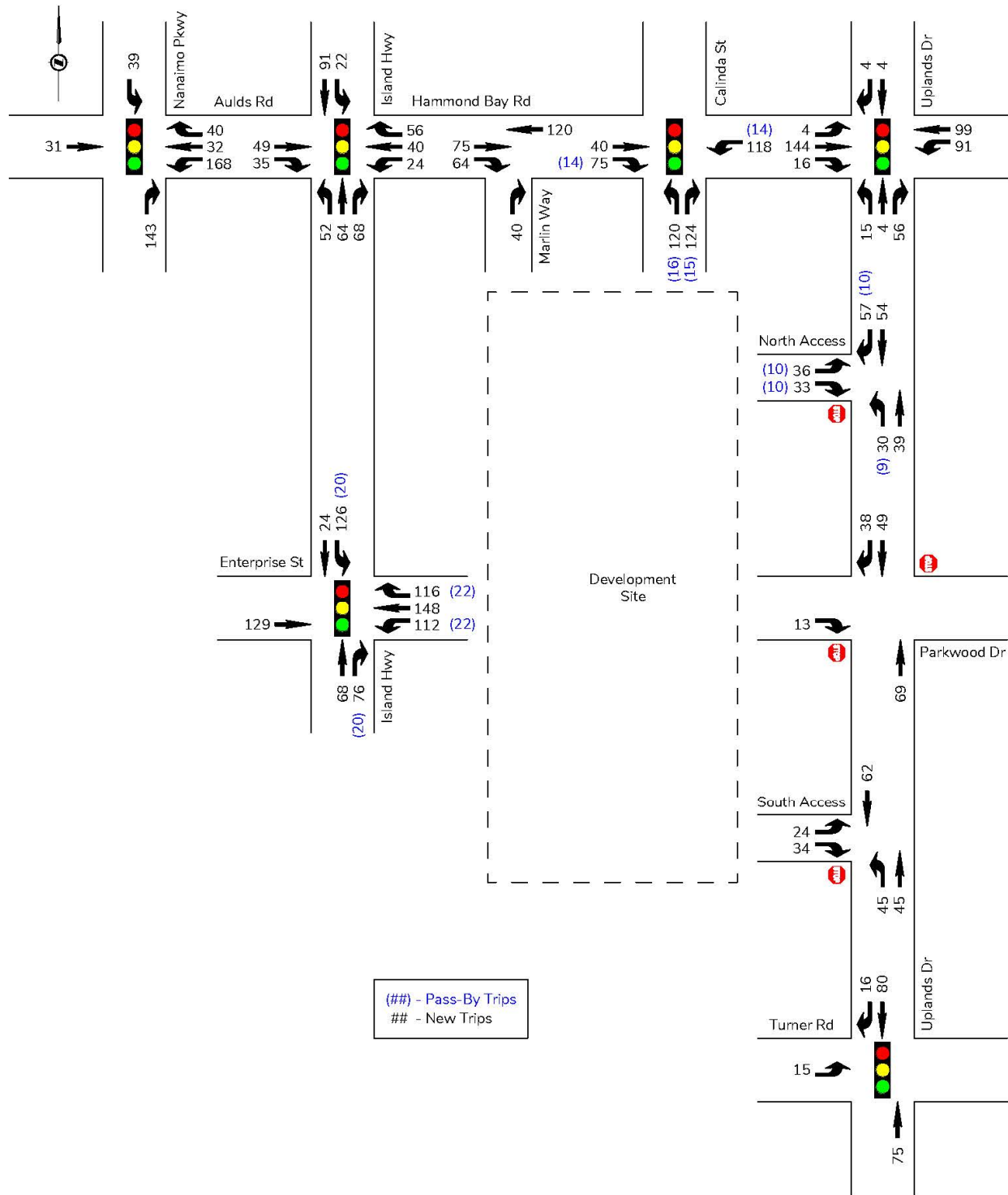


Figure 8: PM Trip Assignment



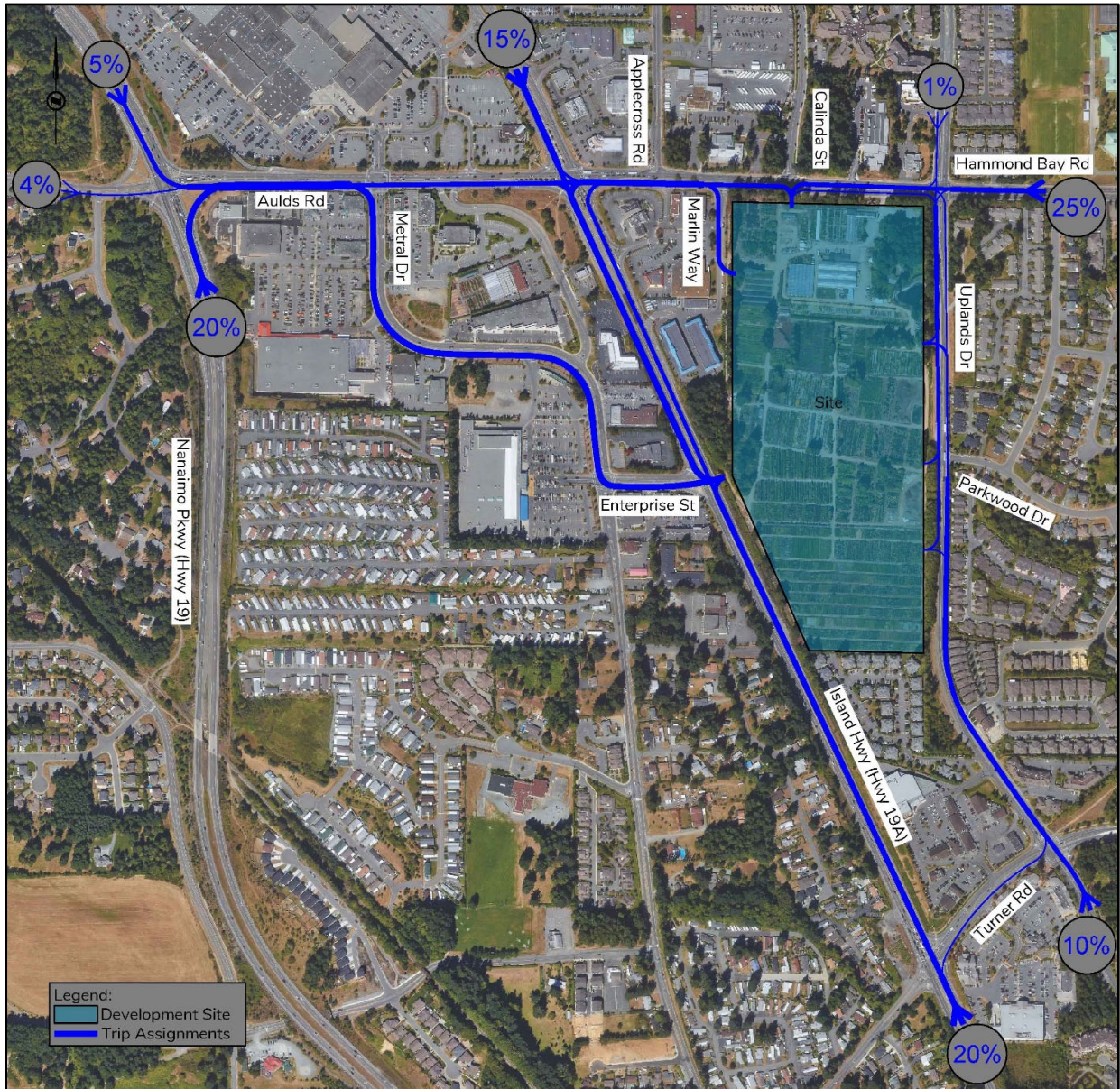


Figure 9: PM Trip Assignment – Percent Entering

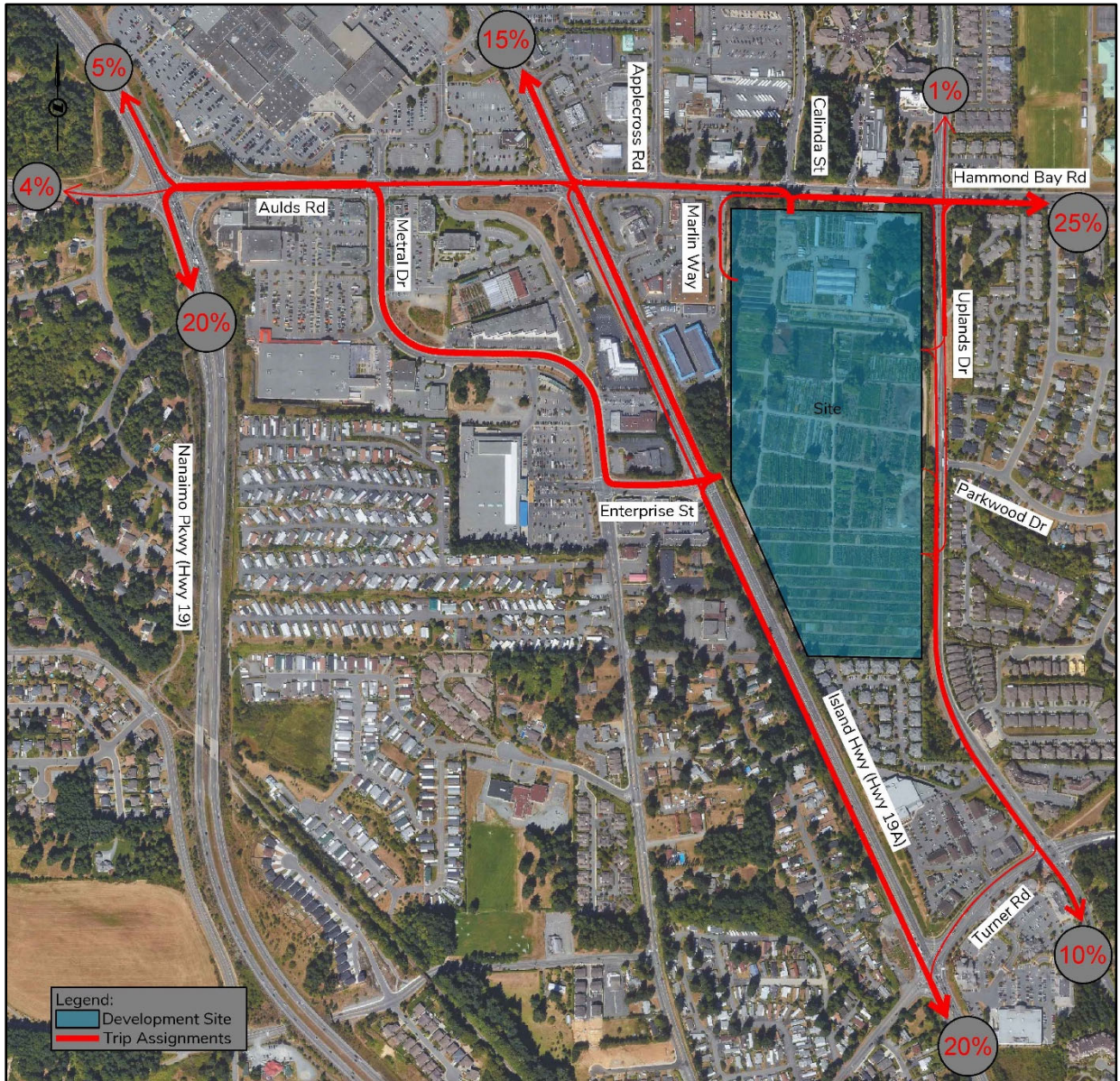
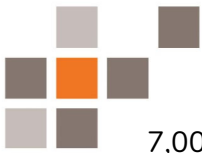


Figure 10: PM Trip Assignment – Percent Exiting

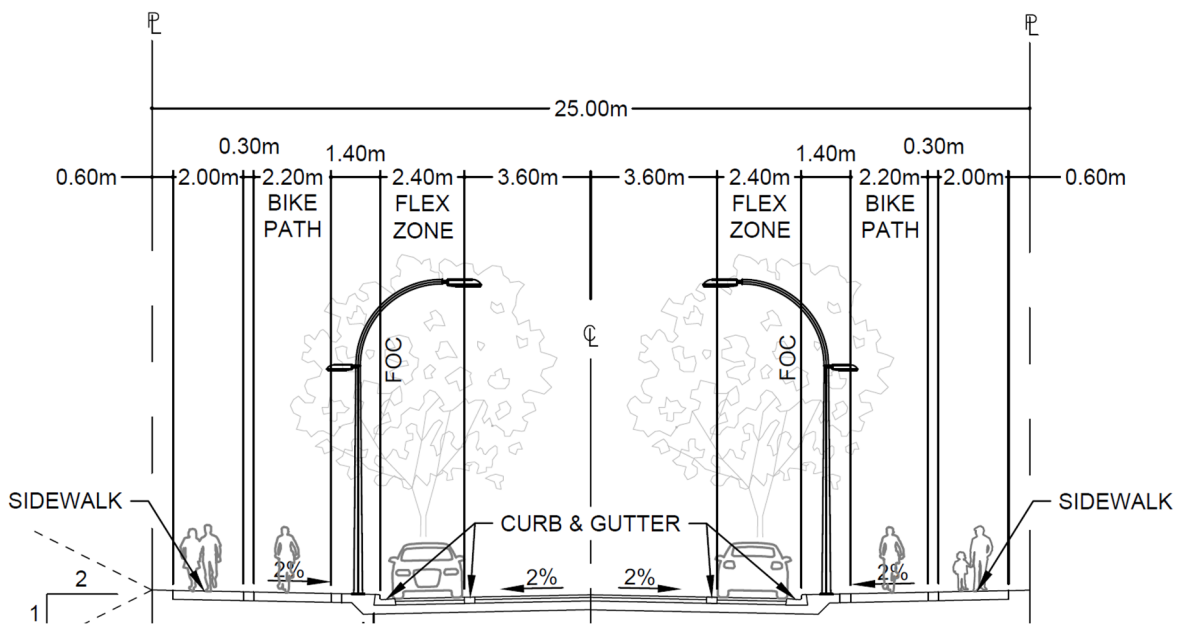
### 3.6 INTERNAL ROAD CLASSIFICATIONS

As the development’s site accesses and internal roadways begin to take shape it is important to consider how the road classification will fit into the surrounding network safely and efficiently for all users. TAC outlines urban local roads to have under 1,000 vehicles per day (vpd) on residential roads and under 3,000 vpd on commercial roads. TAC also identifies urban collector roads to have under 8,000 vpd on residential roads and under 12,000 vpd on commercial roads. This development proposes a mix of commercial, office, and residential land uses. The site accesses to Uplands Drive are estimated to have between 1,000 vpd and 2,000 vpd. While the Calinda Street and Enterprise Street are estimated to have approximately 5, 000 vpd and



7,000 vpd respectively. The Calinda Street and Enterprise Street both meet the requirements for an urban collector roadway. One or two of the site access to Uplands Drive could also function as collector roads. The other internal roads will likely function as local roads providing land access to / from specific lots or sections in the development.

The City of Nanaimo has placed emphasis on ensuring all road users have a safe and comfortable experience (pedestrians, cyclists, and drivers). On many urban local roads special cycling facilities are not warranted. The lower traffic volume and slower speeds on local roads create a safer experience for cyclists. Sidewalks are required on both sides of local roads. Cycling facilities can be considered on urban collector roads; however, it is important to consider the surrounding network before committing to more infrastructure. This development is committed to providing an active transportation network throughout the site. Sidewalks are provided on both sides of urban collector roads. It is recommended that the developer work with the City to integrate its internal road and active transportation network with the City's planned network. The below figures show the typical City of Nanaimo cross sections for urban collector and local roadways.



**Figure 11: Typical Urban Collector Cross Section**

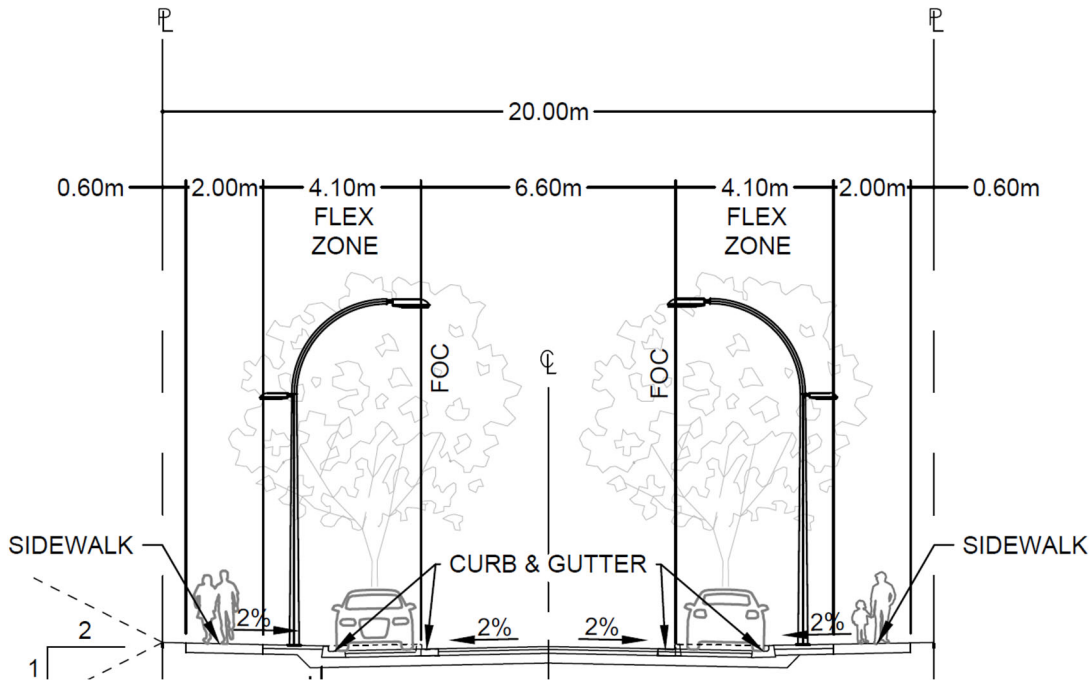


Figure 12: Typical Urban Local Cross Section

#### 4.0 BACKGROUND & POST DEVELOPMENT TRAFFIC CONDITIONS

The background and post development peak hour traffic volume data were analyzed within the study area to determine if any mitigation measures are required. The AM and PM peak hours were analyzed during two timeframes: Opening Day (2020) and Ten-Year Post Development (2030). The Opening Day (2020) background traffic operations are in Section 2.3.

#### 4.1 2020 OPENING DAY POST DEVELOPMENT TRAFFIC CONDITIONS

##### 4.1.1 2020 AM POST DEVELOPMENT TRAFFIC CONDITIONS

The 2020 post development traffic volumes were analyzed during the AM peak hour of travel within the study area. See **Figure 13** and **Table 5** for 2020 post development AM peak hour traffic conditions.

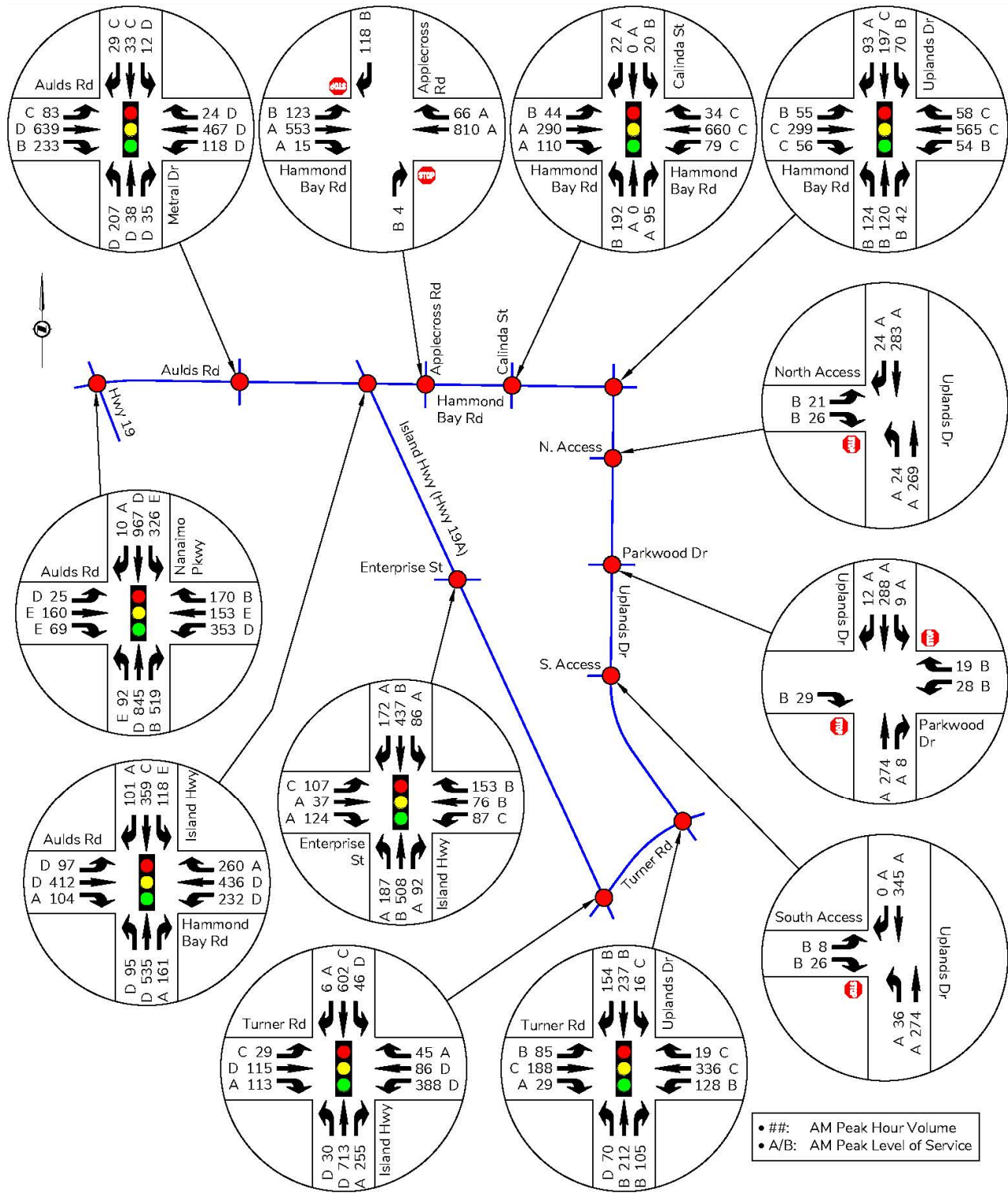


Figure 13: 2020 AM Post Development Peak Hour Traffic Conditions



**TABLE 5: 2020 AM POST DEVELOPMENT PEAK HOUR TRAFFIC CONDITIONS**

Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Nanaimo Pkwy / Aulds Rd	EBL	D	40.8	20	Island Hwy / Aulds Rd / Hammond Bay Rd	EBL	D	37.8	25
	EBT	E	67.1	60		EBT	D	51.4	55
	EBR	E	67.1	60		EBR	A	8.2	30
	WBL	D	51.0	55		WBL	D	53.6	50
	WBT	E	64.9	100		WBT	D	44.5	75
	WBR	B	15.4	35		WBR	A	7.4	25
	NBL	E	71.0	30		NBL	D	49.7	20
	NBT	D	40.9	65		NBT	D	38.1	55
	NBR	B	14.4	15		NBR	A	6.4	0
	SBL	E	65.0	100		SBL	E	62.9	40
	SBT	D	35.6	85		SBT	C	28.4	40
SBR	A	0.1	0	SBR	A	4.2	0		
Uplands Dr / Hammond Bay Rd	EBL	B	14.0	20	Turner Rd / Uplands Dr	EBL	B	16.3	30
	EB T/R	C	20.3	35		EBT	C	28.2	45
	WBL	B	13.3	25		EBR	A	0.3	15
	WB T/R	C	26.1	60		WBL	B	18.0	30
	NBL	B	14.2	25		WB T/R	C	23.3	45
	NB T/R	B	13.5	25		NBL	D	41.1	25
	SBL	B	13.5	25		NB T/R	B	15.8	30
	SBT	C	22.9	45		SBL	C	30.5	15
SBR	A	1.9	25	SB T/R	B	18.8	40		
Parkwood Dr / Uplands Dr (Right In / Right Out of Development)	EBR	B	10.5	15	Applecross Rd / Hammond Bay Rd	EBL	B	11.5	25
	WB	B	14.5	15		EB T/R	A	0.0	15
	NB T/R	A	0.0	0		WBT	A	0.0	5
	SBL	A	7.9	5		WBR	A	0.0	5
	SB T/R	A	0.0	0		NBR	B	10.3	5
EBL	C	33.0	25	SBR	B	13.5	5		
Island Hwy / Enterprise St	EB T/R	A	8.3	15	Calinda St / Hammond Bay Rd	EBL	B	11.8	20
	WBL	C	21.1	25		EB T/R	A	8.4	40
	WB T/R	B	10.5	35		WBL	C	20.3	25
	NBL	A	8.8	40		WB T/R	C	22.6	70
	NBT	B	12.7	45		NBL	B	17.1	25
	NBR	A	0.0	0		NB T/R	A	4.7	35
	SBL	A	7.6	20		SBL	B	14.7	15
	SBT	B	16.0	30		SB T/R	A	7.4	15
	SBR	A	4.3	0	North Access / Uplands Dr	EB	B	13.0	15
EB T/R	A	0.0	5	NB		A	8.1	15	
Marlin Way / Hammond Bay Rd	WBL	A	8.8	10	South Access / Uplands Dr	SB	A	0.0	0
	WBT	A	0.0	5		EB	B	12.4	15
	NBL	C	22.0	15		NB	A	8.3	15
	NBR	B	10.5	15		SB	A	0.0	0

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.



Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Metral Dr / Aulds Rd	EBL	C	23.5	50	Island Hwy / Turner Rd	EBL	C	28.9	20
	EBT	D	45.3	90		EBT	D	36.1	40
	EBR	B	16.1	55		EBR	A	6.7	25
	WBL	C	31.3	40		WBL	D	36.5	65
	WBT	D	38.8	70		WBT	D	36.2	75
	WBR	D	38.8	60		WBR	A	0.6	0
	NBL	D	46.8	35		NBL	D	39.3	25
	NBT	D	37.9	45		NBT	D	40.3	70
	NBR	D	37.9	20		NBR	A	6.7	10
	SBL	D	35.5	5		SBL	D	43.9	20
SBT	C	23.6	30	SBT	C	27.6	50		
SBR	C	23.6	15	SBR	A	0.0	10		

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.

The failing levels of service at Nanaimo Parkway / Aulds Road are further strained with the added development traffic. The cycle length at Nanaimo Parkway / Aulds Road and Island Highway / Aulds Road signals is longer than usual due to the protected left phases and the eastbound / westbound split phasing. Most of the time traffic signals have through movements operating at the same time. With split phasing only one direction of travel is permitted at a time. For example, the eastbound movements would operate and then the westbound movements would operate. The longer time for the protected and split phase movements to occur means that these movements reach failing levels of service; however, most of the vehicles will get through the intersection in one cycle length. All other intersections operate at LOS D or better with the added development traffic during the AM peak hour. The 95<sup>th</sup> percentile queue lengths stay within the provided storage except where previously noted in the existing AM peak hour conditions (Section 2.3.3).

All the other intersections operate at a LOS C or better except the northbound left turn lane at Uplands Drive / Turner Road which operates at a LOS D.

#### 4.1.2 2020 PM POST DEVELOPMENT TRAFFIC CONDITIONS

The 2020 post development traffic volumes were analyzed during the PM peak hour of travel within the study area. See **Figure 14** and **Table 6** for 2020 post development PM peak hour traffic conditions.

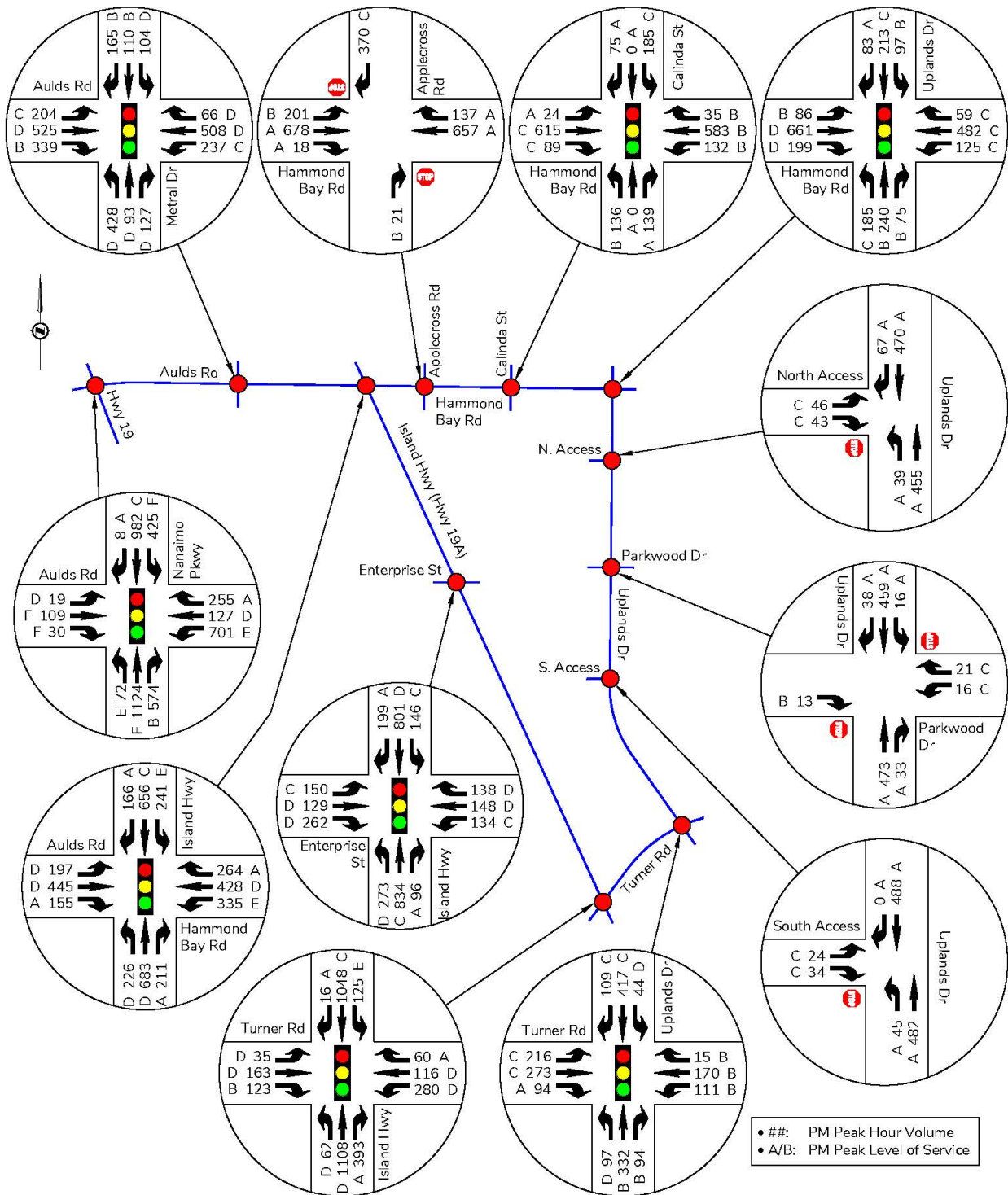


Figure 14: 2020 PM Post Development Peak Hour Traffic Conditions





**TABLE 6: 2020 PM POST DEVELOPMENT PEAK HOUR TRAFFIC CONDITIONS**

Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Nanaimo Pkwy / Aulds Rd	EBL	D	51.3	15	Island Hwy / Aulds Rd / Hammond Bay Rd	EBL	D	52.3	60
	EBT	F	113.3	50		EBT	D	52.3	65
	EBR	F	113.3	50		EBR	A	8.3	50
	WBL	E	74.5	215		WBL	E	61.7	95
	WBT	D	40.3	220		WBT	D	51.7	85
	WBR	A	7.7	35		WBR	A	8.5	40
	NBL	E	64.8	30		NBL	D	49.6	35
	NBT	E	58.4	100		NBT	D	45.5	70
	NBR	B	12.9	50		NBR	A	7.0	20
	SBL	F	89.7	285		SBL	E	64.0	75
	SBT	C	29.4	325		SBT	C	34.1	65
SBR	A	0.0	0	SBR	A	5.5	0		
Uplands Dr / Hammond Bay Rd	EBL	B	15.7	40	Turner Rd / Uplands Dr	EBL	C	21.6	45
	EB T/R	D	39.4	90		EBT	C	27.1	50
	WBL	C	21.4	30		EBR	A	1.1	20
	WB T/R	C	24.1	55		WBL	B	15.6	30
	NBL	C	20.3	30		WB T/R	B	19.5	35
	NB T/R	B	19.2	45		NBL	D	45.8	35
	SBL	B	15.2	25		NB T/R	B	19.1	45
	SBT	C	26.0	50		SBL	D	36.1	20
SBR	A	1.6	25	SB T/R	C	22.0	45		
Parkwood Dr / Uplands Dr (Right In / Right Out of Development)	EBR	B	11.7	15	Applecross Rd / Hammond Bay Rd	EBL	B	13.6	30
	WB	C	21.5	20		EB T/R	A	0.0	30
	NB T/R	A	0.0	0		WBT	A	0.0	10
	SBL	A	8.7	10		WBR	A	0.0	10
	SB T/R	A	0.0	0		NBR	B	11.1	5
Island Hwy / Enterprise St	EBL	C	31.0	40	Calinda St / Hammond Bay Rd	SBR	C	24.9	35
	EB T/R	D	52.5	75		EBL	A	9.5	20
	WBL	C	34.1	30		EB T/R	C	24.4	65
	WB T/R	D	38.7	160(85*)		WBL	B	13.4	30
	NBL	D	45.4	60		WB T/R	B	16.6	55
	NBT	C	31.2	160		NBL	B	18.7	25
	NBR	A	0.0	0		NB T/R	A	4.5	35
	SBL	C	30.1	35		SBL	C	21.8	40
SBT	D	36.9	70	SB T/R	A	5.2	25		
SBR	A	5.4	15	North Access / Uplands Dr	EB	C	24.9	20	
Marlin Way / Hammond Bay Rd	EB T/R	A	0.0		5	NB	A	8.8	25
	WBL	A	9.5	15	SB	A	0.0	05	
	WBT	A	0.0	0	South Access / Uplands Dr	EB	C	19.4	20
	NBL	D	34.1	15		NB	A	8.7	20
NBR	B	12.6	20	SB	A	0.0	0		

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.

\*WBT queue drops to 85m with the addition of a WBR lane at Enterprise Street / Island Highway.



Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Metral Dr / Aulds Rd	EBL	C	31.8	60	Island Hwy / Turner Rd	EBL	D	40.3	30
	EBT	D	37.9	80		EBT	D	53.8	65
	EBR	B	13.5	50		EBR	B	10.4	40
	WBL	C	31.2	55		WBL	D	54.2	70
	WBT	D	37.6	70		WBT	D	52.5	80
	WBR	D	37.6	70		WBR	A	1.7	0
	NBL	D	52.7	55		NBL	D	53.0	40
	NBT	D	36.8	60		NBT	D	52.8	135
	NBR	D	36.8	50		NBR	A	7.9	95
	SBL	D	47.1	25		SBL	E	60.3	65
SBT	B	19.0	50	SBT	C	34.4	105		
SBR	B	19.0	45	SBR	A	0.1	20		

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.

There continues to be multiple failing levels of service (LOS E / F) at Nanaimo Parkway / Aulds Road with the addition of the development traffic. The Island Highway / Aulds Road intersection also has two movements that drop to LOS E: the westbound left and the southbound left. Many of the movements with failing levels of service at these two intersections are due to the longer cycle length (as discussed in Section 4.1.1) and existing traffic volumes. Adding a dual southbound left movement at Nanaimo Parkway / Aulds Road was investigated and the overall level of service at the intersection improved; however, there were still some movements at LOS E and many other movements on the LOS D / E threshold. The southbound left at Turner Road / Island Highway drops to a LOS E with the development traffic. All other intersections in the study area operate at LOS D or better during the PM peak hour.

The 95<sup>th</sup> percentile queue issues identified in the existing conditions section continue to extend past the provided storage with the addition of the development traffic. The queue length for the southbound left at Nanaimo Parkway / Aulds Road is at capacity. The queue length for the eastbound left at Uplands Drive / Hammond Bay Road extends past the existing storage with or without the added development traffic. There is potential to increase this storage length after the existing site access to the Green Thumb Nursery is closed. There is approximately 125m of storage capacity for westbound traffic at Enterprise Street / Island Highway. The westbound 95<sup>th</sup> percentile queues at the intersection are approximately 160m with one shared through / right lane and a 30m left turn lane. If a westbound right turn lane was added at Enterprise Street the westbound queue length would drop to 85m. The average queue length for the westbound through traffic with the addition of the westbound lane is 42m.



## 4.2 2030 TEN YEAR HORIZON TRAFFIC CONDITIONS

The 2030 background traffic was generated by growing the 2020 traffic volumes by 1.21% per year. The growth rate for this area was provided by the City of Nanaimo.

### 4.2.1 2030 AM BACKGROUND TRAFFIC CONDITIONS

The 2030 background traffic volumes were analyzed during the AM peak hour of travel within the study area. See **Figure 15** and **Table 7** for 2030 background AM peak hour traffic conditions.

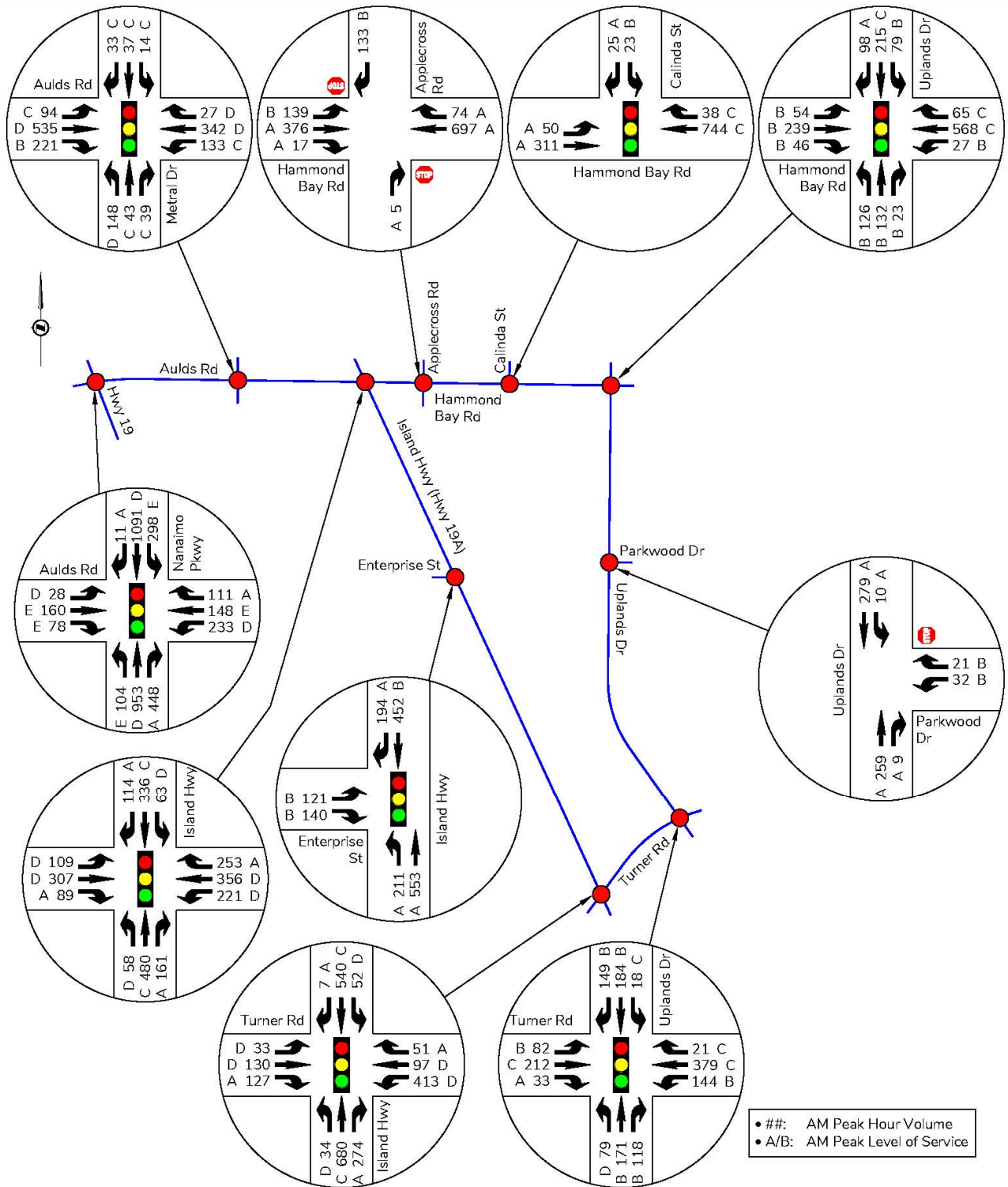


Figure 15: 2030 AM Background Peak Hour Traffic Conditions



**TABLE 7: 2030 AM BACKGROUND PEAK HOUR TRAFFIC CONDITIONS**

Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Nanaimo Pkwy / Aulds Rd	EBL	D	38.6	20	Island Hwy / Aulds Rd / Hammond Bay Rd	EBL	D	38.9	25
	EBT	E	70.9	65		EBT	D	42.4	45
	EBR	E	70.9	65		EBR	A	6.1	10
	WBL	D	45.0	40		WBL	D	45.2	45
	WBT	E	64.9	50		WBT	D	38.8	65
	WBR	A	5.2	35		WBR	A	7.3	20
	NBL	E	78.5	30		NBL	D	48.1	15
	NBT	D	43.3	70		NBT	C	29.8	55
	NBR	A	7.4	15		NBR	A	5.6	0
	SBL	E	72.7	85		SBL	D	52.5	25
	SBT	D	51.9	105		SBT	C	24.7	40
Island Hwy / Enterprise St	SBR	A	0.1	0	Calinda St / Hammond Bay Rd	SBR	A	5.3	0
	EB L/R	B	15.0	25		EBL	A	9.7	20
	NBL	A	5.8	35		EBT	A	9.1	35
	NBT	A	4.0	30		WBT	C	20.5	70
	SBT	B	11.5	35		SBL	B	16.8	15
Uplands Dr / Hammond Bay Rd	SBR	A	2.9	0	Turner Rd / Uplands Dr	SBR	A	7.4	15
	EBL	B	14.6	20		EBL	B	15.8	25
	EB T/R	B	17.8	35		EBT	C	30.8	50
	WBL	B	12.6	15		EBR	A	0.4	15
	WB T/R	C	28.4	65		WBL	B	19.7	35
	NBL	B	13.8	25		WB T/R	C	22.6	55
	NB T/R	B	15.2	25		NBL	D	48.0	30
	SBL	B	13.1	25		NB T/R	B	16.2	30
Marlin Way / Hammond Bay Rd	SBT	C	22.5	40	Applecross Rd / Hammond Bay Rd	SBL	C	31.4	15
	SBR	A	2.1	20		SB T/R	B	19.0	35
	EB T/R	A	0.0	5		EBL	B	10.9	30
	WBL	A	8.2	10		EB T/R	A	0.0	25
	WBT	A	0.0	0		WBT	A	0.0	5
Parkwood Dr / Uplands Dr	NBL	C	17.7	15	Island Hwy / Turner Rd	WBR	A	0.0	10
	NBR	A	9.6	15		NBR	A	9.6	0
	WB	B	12.9	15		SBR	B	12.9	10
	NB T/R	A	0.0	0		EBL	D	37.3	25
Metral Dr / Aulds Rd	SBL	A	7.9	5	EBT	D	51.1	45	
	SBT	A	0.0	0	EBR	A	9.7	30	
	EBL	C	23.8	50	WBL	D	50.5	75	
	EBT	D	43.3	75	WBT	D	51.3	85	
	EBR	B	13.1	50	WBR	A	2.5	0	
	WBL	C	31.8	40	NBL	D	51.8	30	
	WBT	D	37.3	60	NBT	C	34.2	65	
	WBR	D	37.3	55	NBR	A	5.8	10	
	NBL	D	42.5	25	SBL	D	51.8	25	
	NBT	C	30.9	35	SBT	C	26.0	45	
	NBR	C	30.9	25	SBR	A	0.0	10	
SBL	C	34.0	30						
SBT	C	22.5	30						
SBR	C	22.5	20						

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.



The Nanaimo Parkway / Aulds Road intersection continues to operate with multiple failing movements (LOS E) for the background traffic during the 2030 AM peak hour. There are also a few movements at Island Highway / Aulds Road that are nearing the LOS D / E threshold. All other intersections continue to operate at LOS D or better during the background 2030 AM peak hour. The previously identified queue lengths continue to extend beyond the existing storage.

#### 4.2.2 2030 AM POST DEVELOPMENT TRAFFIC CONDITIONS

The 2030 post development traffic volumes were analyzed during the AM peak hour of travel within the study area. See **Figure 16** and **Table 8** for 2030 post development AM peak hour traffic conditions.

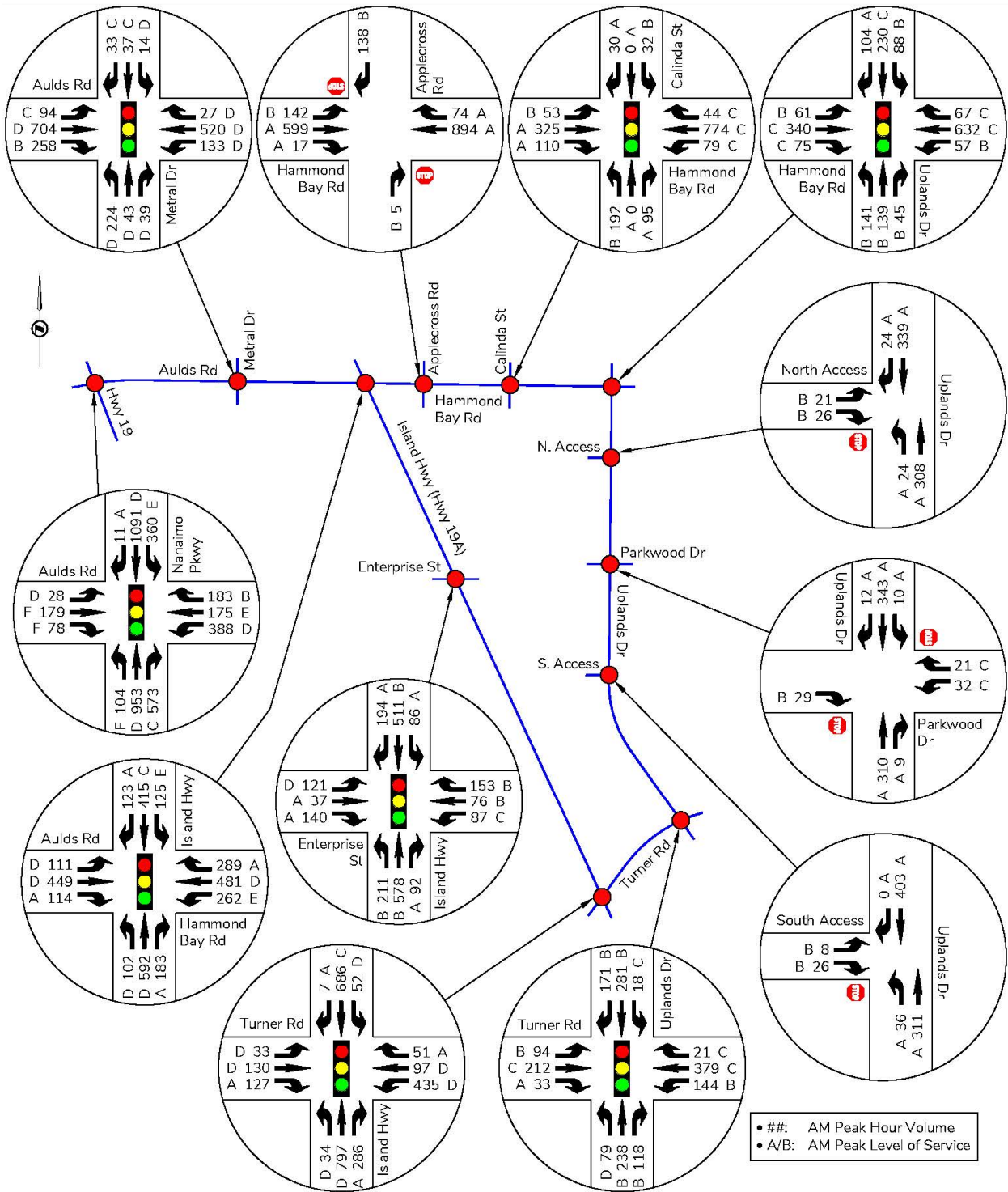


Figure 16: 2030 AM Post Development Peak Hour Traffic Conditions



**TABLE 8: 2030 AM POST DEVELOPMENT PEAK HOUR TRAFFIC CONDITIONS**

Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	
Nanaimo Pkwy / Aulds Rd	EBL	D	40.9	30	Island Hwy / Aulds Rd / Hammond Bay Rd	EBL	D	37.4	25	
	EBT	F	112.8	80		EBT	D	52.8	55	
	EBR	F	112.8	80		EBR	A	9.4	35	
	WBL	D	53.2	55		WBL	E	58.8	60	
	WBT	E	74.3	70		WBT	D	48.1	80	
	WBR	B	17.8	45		WBR	A	7.4	40	
	NBL	F	81.3	35		NBL	D	50.9	15	
	NBT	D	48.4	75		NBT	D	44.7	65	
	NBR	C	25.2	20		NBR	A	6.7	20	
	SBL	E	74.6	105		SBL	E	66.6	40	
	SBT	D	44.8	100		SBT	C	30.2	45	
Uplands Dr / Hammond Bay Rd	SBR	A	0.1	0	Turner Rd / Uplands Dr	SBR	A	5.7	0	
	EBL	B	14.2	20		EBL	B	16.6	30	
	EB T/R	C	21.5	40		EBT	C	30.8	50	
	WBL	B	13.1	30		EBR	A	0.4	15	
	WB T/R	C	30.1	65		WBL	B	19.7	45	
	NBL	B	16.3	25		WB T/R	C	22.6	55	
	NB T/R	B	14.4	25		NBL	D	48.0	30	
	SBL	B	14.8	25		NB T/R	B	16.3	35	
Parkwood Dr / Uplands Dr (Right In / Right Out of Development)	SBT	C	25.3	50	Applecross Rd / Hammond Bay Rd	SBL	C	31.4	15	
	SBR	A	2.6	25		SB T/R	B	19.6	35	
	EBR	B	11.0	15		EBL	B	12.4	30	
	WB	C	16.6	15		EB T/R	A	0.0	20	
	NB T/R	A	0.0	0		WBT	A	0.0	5	
Island Hwy / Enterprise St	SBL	A	8.0	5	Calinda St / Hammond Bay Rd	WBR	A	0.0	10	
	SB T/R	A	0.0	0		NBR	B	10.5	0	
	EBL	D	35.3	30		SBR	B	14.7	15	
	EB T/R	A	7.9	15		EBL	B	12.0	20	
	WBL	C	21.4	25		EB T/R	A	8.7	45	
	WB T/R	B	10.2	40		WBL	C	20.6	30	
	NBL	B	10.4	40		WB T/R	C	25.0	75	
	NBT	B	13.7	55		NBL	B	19.0	25	
	NBR	A	0.0	0		NB T/R	A	4.8	40	
Marlin Way / Hammond Bay Rd	SBL	A	8.0	20	North Access / Uplands Dr	SBL	B	15.3	15	
	SBT	B	17.0	35		SB T/R	A	7.1	15	
	SBR	A	4.4	5		EB	B	14.2	15	
	EB T/R	A	0.0	0		NB	A	8.3	10	
	WBL	A	8.9	10		SB	A	0.0	0	
	WBT	A	0.0	0		South Access / Uplands Dr	EB	B	13.4	15
	NBL	D	25.1	15			NB	A	8.5	15
	NBR	B	10.7	15			SB	A	0.0	0

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.





Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Metral Dr / Aulds Rd	EBL	C	24.7	55	Island Hwy / Turner Rd	EBL	D	37.3	20
	EBT	D	47.9	95		EBT	D	51.3	45
	EBR	B	18.0	55		EBR	A	9.7	25
	WBL	D	40.9	50		WBL	D	53.6	75
	WBT	D	40.3	75		WBT	D	52.9	85
	WBR	D	40.3	70		WBR	A	2.5	0
	NBL	D	49.5	40		NBL	D	51.9	25
	NBT	D	40.0	45		NBT	D	39.2	75
	NBR	D	40.0	25		NBR	A	5.8	10
	SBL	D	36.1	10		SBL	D	51.9	30
SBT	C	23.8	30	SBT	C	27.7	60		
SBR	C	23.8	20	SBR	A	0.0	10		

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.

The longer cycle length at the Nanaimo Parkway / Aulds Road and Island Highway / Aulds Road intersections continue to contribute to failing levels of service. The Turner Road / Island Highway intersection has multiple movements approaching the LOS D / E threshold. All other intersections continue to operate at LOS D or better during the post development 2030 AM peak hour. The 95<sup>th</sup> percentile queue lengths previously identified continue to extend beyond the existing storage.

#### 4.2.3 2030 PM BACKGROUND TRAFFIC CONDITIONS

The 2030 background traffic volumes were analyzed during the PM peak hour of travel within the study area. See **Figure 17** and **Table 9** for 2030 background PM peak hour traffic conditions.

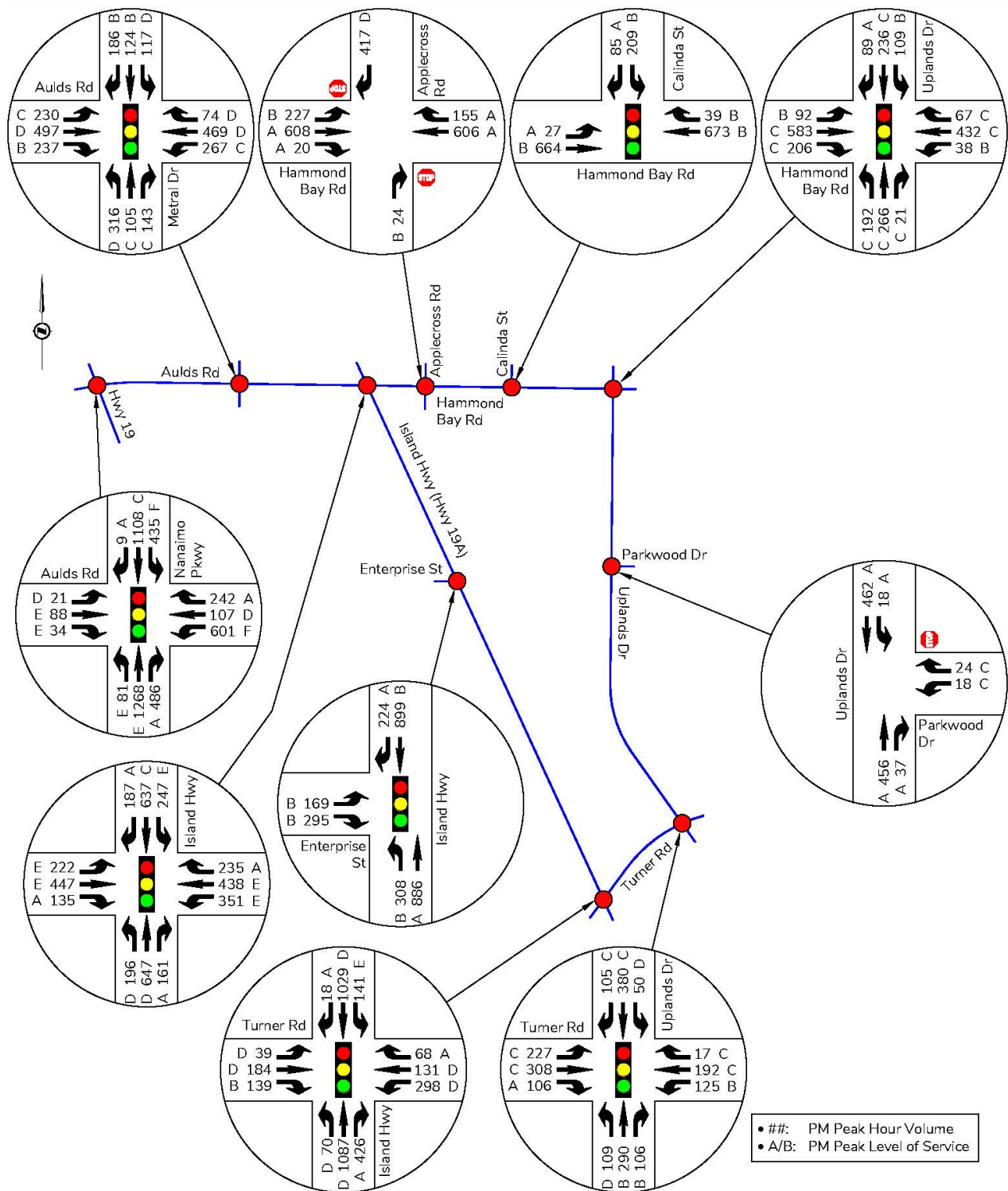


Figure 17: 2030 PM Background Peak Hour Traffic Conditions



**TABLE 9: 2030 PM BACKGROUND PEAK HOUR TRAFFIC CONDITIONS**

Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Nanaimo Pkwy / Aulds Rd	EBL	D	46.2	15	Island Hwy / Aulds Rd / Hammond Bay Rd	EBL	E	64.1	50
	EBT	E	58.8	45		EBT	E	58.1	65
	EBR	E	58.8	45		EBR	A	6.1	40
	WBL	F	97.7	110		WBL	E	70.6	60
	WBT	D	46.0	95		WBT	E	59.2	125
	WBR	A	9.4	35		WBR	A	8.6	70
	NBL	E	76.3	30		NBL	D	48.2	35
	NBT	E	68.0	115		NBT	D	42.1	75
	NBR	A	7.3	20		NBR	A	6.6	25
	SBL	F	99.4	230		SBL	E	66.3	80
	SBT	C	31.9	160		SBT	C	31.2	65
	SBR	A	0.0	0		SBR	A	5.1	10
Island Hwy / Enterprise St	EB L/R	B	13.7	35	Calinda St / Hammond Bay Rd	EBL	A	8.7	20
	NBL	B	19.4	60		EBT	B	12.0	55
	NBT	A	5.4	210		WBT	B	19.3	60
	SBT	B	18.3	65		SBL	B	16.8	35
	SBR	A	3.5	10		SBR	A	5.0	20
Uplands Dr / Hammond Bay Rd	EBL	B	14.3	35	Turner Rd / Uplands Dr	EBL	C	23.9	50
	EB T/R	C	33.1	70		EBT	C	29.9	60
	WBL	B	12.6	25		EBR	A	1.9	20
	WB T/R	C	21.2	55		WBL	B	17.7	35
	NBL	C	23.3	30		WB T/R	C	20.1	40
	NB T/R	C	23.3	45		NBL	D	53.7	35
	SBL	B	19.3	30		NB T/R	B	18.7	45
	SBT	C	29.5	55		SBL	D	39.0	25
Marlin Way / Hammond Bay Rd	EB T/R	A	0.0	5	Applecross Rd / Hammond Bay Rd	EBL	B	13.8	35
	WBL	A	9.1	15		EB T/R	A	0.0	20
	WBT	A	0.0	5		WBT	A	0.0	15
	NBL	D	31.5	15		WBR	A	0.0	15
	NBR	B	11.3	20		NBR	B	10.8	0
Parkwood Dr / Uplands Dr	WB	C	18.1	15	Island Hwy / Turner Rd	SBR	D	27.3	50
	NB T/R	A	0.0	5		EBL	D	38.2	30
	SBL	A	8.7	10		EBT	D	53.5	95
	SBT	A	0.0	5		EBR	B	11.0	50
Metral Dr / Aulds Rd	EBL	C	34.6	65		WBL	D	54.4	80
	EBT	D	38.3	80		WBT	D	52.9	90
	EBR	B	12.2	50		WBR	A	2.4	0
	WBL	C	34.2	65		NBL	D	51.9	45
	WBT	D	37.1	70		NBT	D	52.3	195
	WBR	D	37.1	65		NBR	A	6.4	130
	NBL	D	48.0	50		SBL	E	72.2	65
	NBT	C	29.9	55		SBT	D	37.1	155
	NBR	C	29.9	45	SBR	A	0.1	25	
	SBL	D	50.7	30					
	SBT	B	19.9	55					
	SBR	B	19.9	45					

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.



There continues to be multiple failing levels of service (LOS E / F) at Nanaimo Parkway / Aulds Road with the addition of the development traffic. The Island Highway / Aulds Road intersection also has multiple movements that drop to LOS E. The southbound left drops to LOS E at Turner Road / Island Highway and other movements approaching the LOS D / E threshold. Many of the movements with failing levels of service at the above three intersections are due to longer cycle lengths associated with split phasing. All other intersections in the study area operate at LOS D or better during the PM peak hour. The existing 95<sup>th</sup> percentile queue issues identified in the existing conditions section continue to extend past the provided storages.

#### 4.2.4 2030 PM POST DEVELOPMENT TRAFFIC CONDITIONS

The 2030 post development traffic volumes were analyzed during the PM peak hour. See **Figure 18** and **Table 10** for 2030 post development PM peak hour traffic conditions.

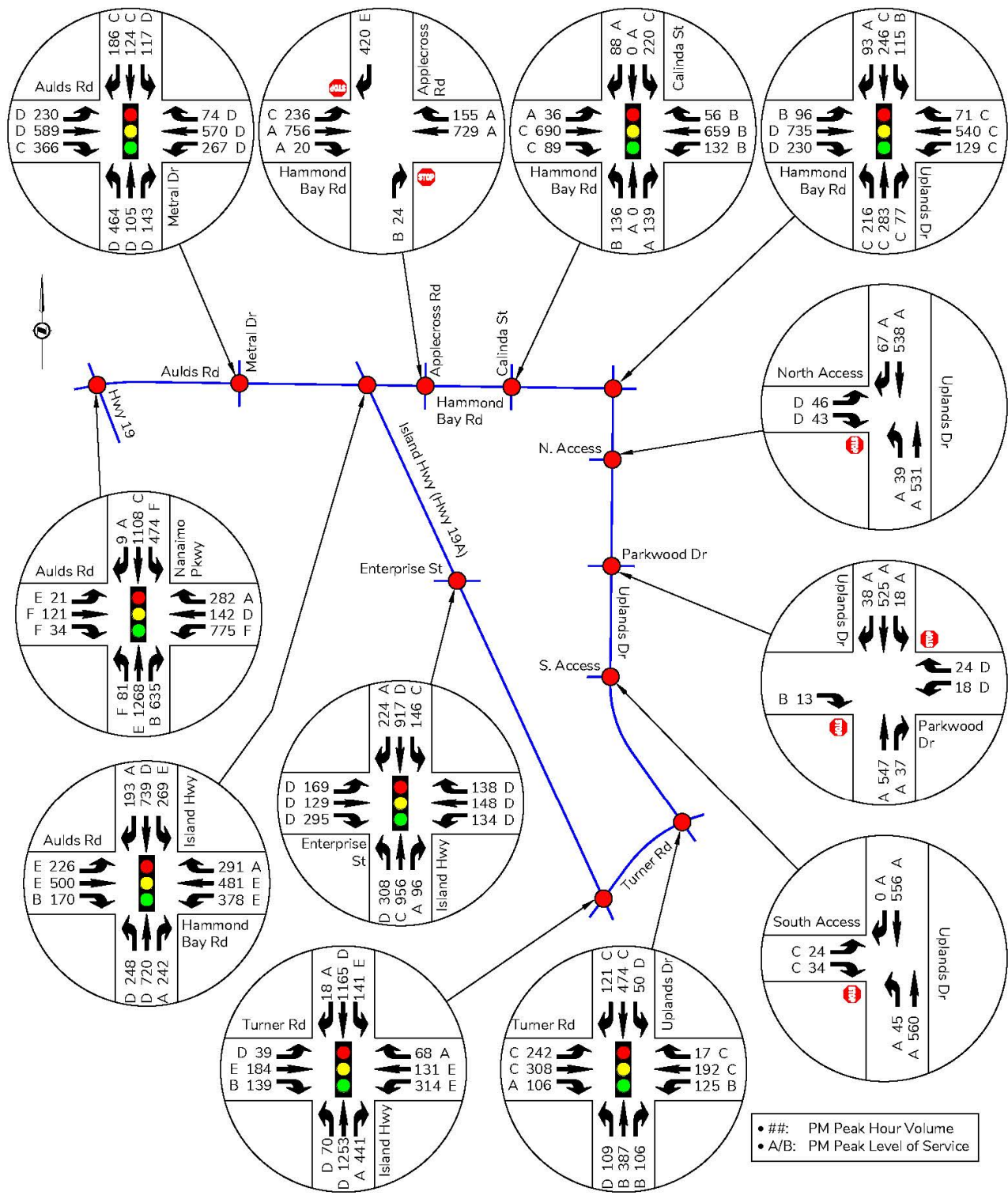


Figure 18: 2030 PM Post Development Peak Hour Traffic Conditions



**TABLE 10: 2030 PM POST DEVELOPMENT PEAK HOUR TRAFFIC CONDITIONS**

Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Nanaimo Pkwy / Aulds Rd	EBL	E	55.9	30	Island Hwy / Aulds Rd / Hammond Bay Rd	EBL	E	63.3	55
	EBT	F	195.5	70		EBT	E	70.8	80
	EBR	F	195.5	70		EBR	B	10.8	60
	WBL	F	103.2	225		WBL	E	72.9	60
	WBT	D	42.6	105		WBT	E	60.8	125
	WBR	A	7.9	45		WBR	A	8.4	70
	NBL	F	81.0	35		NBL	D	52.2	50
	NBT	E	70.3	150		NBT	D	54.3	90
	NBR	B	19.5	50		NBR	A	6.9	55
	SBL	F	118.2	360		SBL	E	75.2	75
	SBT	C	31.1	565		SBT	D	36.0	80
SBR	A	0.0	545	SBR	A	5.3	0		
Uplands Dr / Hammond Bay Rd	EBL	B	15.9	35	Turner Rd / Uplands Dr	EBL	C	26.3	55
	EB T/R	D	42.3	90		EBT	C	29.9	60
	WBL	C	26.4	40		EBR	A	1.9	20
	WB T/R	C	22.9	55		WBL	B	17.7	35
	NBL	C	32.1	30		WB T/R	C	20.1	40
	NB T/R	C	23.8	55		NBL	D	53.7	40
	SBL	B	19.3	30		NB T/R	B	19.3	55
	SBT	C	30.6	55		SBL	D	39.0	25
SBR	A	2.8	25	SB T/R	C	24.0	50		
Parkwood Dr / Uplands Dr (Right In / Right Out of Development)	EBR	B	12.4	15	Applecross Rd / Hammond Bay Rd	EBL	C	15.9	40
	WB	D	27.6	15		EB T/R	A	0.0	30
	NB T/R	A	0.0	0		WBT	A	0.0	15
	SBL	A	9.0	10		WBR	A	0.0	20
	SB T/R	A	0.0	5		NBR	B	11.5	5
Island Hwy / Enterprise St	EBL	D	36.6	45	Calinda St / Hammond Bay Rd	SBR	E	37.3	50
	EB T/R	D	49.5	85		EBL	A	9.7	20
	WBL	D	50.7	30		EB T/R	C	25.6	70
	WB T/R	D	39.8	200(75*)		WBL	B	14.1	30
	NBL	D	54.2	70		WB T/R	B	17.3	65
	NBT	C	34.4	205		NBL	B	19.2	25
	NBR	A	0.0	0		NB T/R	A	4.5	40
	SBL	C	34.5	35		SBL	C	24.0	40
SBT	D	46.3	90	SB T/R	A	5.1	20		
SBR	A	5.6	40	North Access / Uplands Dr	EB	D	32.7	25	
Marlin Way / Hammond Bay Rd	EB T/R	A	0.0		5	NB	A	9.1	35
	WBL	A	9.8	15	SB	A	0.0	5	
	WBT	A	0.0	0	South Access / Uplands Dr	EB	C	24.6	20
	NBL	E	45.3	20		NB	A	9.0	25
	NBR	B	13.4	25		SB	A	0.0	0

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.

\*WBT queue drops to 75m with the addition of a WBR lane at Enterprise Street / Island Highway.



Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>	Intersection	Direction	LOS	Delay (s)	Queue (m) 95 <sup>th</sup>
Metral Dr / Aulds Rd	EBL	D	54.1	75	Island Hwy / Turner Rd	EBL	D	42.5	30
	EBT	D	48.0	120		EBT	E	67.2	105
	EBR	C	21.3	55		EBR	B	13.9	50
	WBL	D	52.4	75		WBL	E	62.2	80
	WBT	D	50.0	100		WBT	E	60.3	95
	WBR	D	50.0	95		WBR	A	2.5	0
	NBL	D	53.3	60		NBL	D	54.0	45
	NBT	D	37.5	75		NBT	D	51.3	230
	NBR	D	37.5	50		NBR	A	6.2	130
	SBL	D	52.9	35		SBL	E	79.5	65
SBT	C	20.6	60	SBT	D	36.2	120		
SBR	C	20.6	50	SBR	A	0.1	25		

The 95<sup>th</sup> percentile queue lengths were averaged from multiple SimTraffic Simulations and rounded up to nearest 5m.

There continues to be multiple failing levels of service (LOS E / F) at Nanaimo Parkway / Aulds Road with the addition of the development traffic. The Island Highway / Aulds Road and Island Highway / Turner Road intersections also have multiple movements that drop to LOS E. Many movements with failing levels of service at these three intersections are due to the longer cycle length (as discussed in Section 4.1.1). Adding a dual southbound left movement at Nanaimo Parkway / Aulds Road was investigated and the overall level of service at the intersection improved; however, there were still many movements at LOS E / F. The Turner Road / Island Highway intersection has two eastbound receiving lanes but only one approach lane. If an additional eastbound approach lane was added to Tuner Road / Island Highway all movements at the intersection would operate at LOS D or better except for the southbound left which would operate at LOS E (as is the case with only the background traffic).

All other intersections in the study area operate at LOS D or better during the PM peak hour. The existing 95<sup>th</sup> percentile queue issues previously identified continue to extend past the provided storage.

### 4.3 SUSTAINABLE TRANSPORTATION REVIEW

The Bowers District development is well situated to access sustainable transportation options in the region. The proximity to the active transportation network on Metral Drive and E & N Trail are ideal for viable long-term transportation options. There are also multiple existing and proposed bus routes nearby the site. The site is also within walking distance of many commercial and service options in the area.



### 4.3.1 PEDESTRIAN AND CYCLING NETWORK

There is existing sidewalk on the east side of Uplands Drive and on both sides of Hammond Bay Road within the study area. Island Highway does not have sidewalk on either side of the road within the study area. It is recommended that the developer maintain sidewalk on the Hammond Bay Road frontage and provide new sidewalk along the Uplands Drive site frontage. It is also recommended to provide sidewalk in proximity to the Enterprise Street / Island Highway intersection to help pedestrians access the development. Section 3.6 identifies the need for sidewalk to be included on both sides of new City of Nanaimo roads.

The Island Highway has paved shoulders that accommodate cyclists; however, there are no existing bicycle facilities on any of the adjacent roads. The City's *Medium / Long Term Bicycle Network Plan* identifies Upland Drive and Hammond Bay Road as having bicycle lanes. It is recommended that the developer work with the City to ensure future bicycle network plans are incorporated along the Uplands Drive site frontage, Hammond Bay site frontage, and throughout the development.

There is also great potential for active transportation accommodation through the site by adding a fourth leg at Enterprise Street / Island Highway. This additional leg could connect the predominantly residential area to the east with the commercial region to the west. If the E & N Rail Trail is continued north the active transportation network could be connected through Enterprise Street.

### 4.3.2 TRANSIT NETWORK

There are seven existing bus routes in close proximity to the development site. Nanaimo's *Transportation Master Plan* also identifies a Frequent / Rapid Transit Networks along Uplands Drive / Hammond Bay Road in the medium term. Rapid / Frequent Transit Networks provide service at least every 15 minutes between 7:00am and 10:00pm. **Table 11** summarizes the existing transit routes.





**TABLE 11: TRANSIT ROUTE SUMMARY**

Route	Destination	Nearest Road to Development
Route 11	Loops between Superior Road in Lantzville and Hammond Bay Road in Nanaimo	Hammond Bay Rd
Route 15	Travels between Woodgrove Centre and Vancouver Island University	Metral Rd
Route 20 / 25	Travels between Woodgrove Centre and Downtown Nanaimo	Hammond Bay Rd
Route 30	Travels between Woodgrove Centre and Downtown Nanaimo	Metral Dr
Route 40	Travels between Woodgrove Centre, Vancouver Island University, and Downtown Nanaimo	Uplands Dr
Route 50	Travels between Woodgrove Centre and Downtown Nanaimo	Island Hwy

The closest bus stops on Hammond Bay Road are located on the site frontage near the Uplands Drive intersection. Uplands Drive has two locations for bus stops along the site frontage: south of Hammond Bay Road and north of Parkwood Drive. The closest bus stops on Metral Drive is located approximately 215m west of the development site.

There are existing benches at the bus stop along the site frontage on Uplands Drive (near Parkwood Drive) and on Hammond Bay Road. It is recommended that the developer work with RDN Transit and the City to provide for future transit needs as the site development continues.

## 5.0 SENSITIVITY ANALYSIS

### 5.1 OTHER POTENTIAL DEVELOPMENTS IN THE AREA

Some potential developments were identified after the initial report submission. A sensitivity analysis was conducted to determine if additional mitigation measures were required within the study area due to development in the McRobb Avenue vicinity. The City of Nanaimo provided the approximate land use for the proposed developments in the area. **Table 12** summarizes the trips generated from the region during the peak travel times.



**TABLE 12: AM AND PM PEAK HOUR SITE TRIP GENERATION**

Phase	Time	ITE Code	Land Use	Units	Trip Rate (Trips / Unit)	Total Trips	Trips In	Trips Out	
1	AM	221	MF – Mid-Rise	66	0.36	24	6	18	
	PM	221	MF – Mid-Rise	66	0.44	30	18	12	
2	AM	222	MF – High-Rise	308	0.31	96	23	73	
	PM	222	MF – High-Rise	308	0.36	111	68	43	
					<b>AM</b>	<b>Total</b>	<b>120</b>	<b>29</b>	<b>91</b>
					<b>PM</b>	<b>Total</b>	<b>141</b>	<b>86</b>	<b>55</b>

The development trips were assigned to the road network in a consistent manner as previously described in this report. During the AM peak hour there was only one movement at one of the intersections that saw a drop in the level of service. The eastbound right at Island Highway / Turner Road drop from LOS A to LOS B with an additional 1.1 seconds added for the entire intersection. Throughout the 13 intersections in the study area there was a combined 20 seconds of delay time added due to the McRobb Avenue development. During the PM peak hour there were a few movements that dropped in level of service; however, these movements were already close to the LOS thresholds. The McRobb Avenue development added a combined 50 seconds of delay throughout the 13-intersection study area. No additional mitigation measures are required due to the McRobb Avenue development.

## 5.2 NO ENTERPRISE STREET CONNECTION

Another sensitivity analysis was conducted to determine the impacts to the road network if there were no connection to the Enterprise Street / Island Highway intersection. The Ministry has indicated that there is potential to upgrade the Turner Road / Island Highway intersection; therefore, the proposed development trips were transferred from the Enterprise Street intersection to the Turner Road intersection via Uplands Drive. The PM peak hour was analyzed in the 2030 horizon because the affected intersections represented the worst case scenario.

Multiple intersections would require significant upgrades to operate during the 2030 PM peak hour. The following intersection upgrades would be required:

- Tuner Road / Island Highway.
  - Eastbound / westbound split phase to be removed.
  - Dual southbound left turn lanes.
  - Dual westbound left turn lanes.
  - Convert the westbound right lane into a through / right lane.
  - Widen the road on the westbound receiving lane.



- Additional eastbound approach lane.
- Turner Road / Uplands Drive.
  - Dual eastbound left turn lanes.
- Uplands Drive / Full Movement Access (not the Parkwood Drive intersection).
  - Upgrade to a signalized intersection.
  - Protected / permitted phasing for the northbound left turn.

Even with the upgrades the Turner Road / Island Highway will operate at LOS E for three movements: westbound through, northbound left, and southbound left. All other movements operate at LOS D or better at Turner Road / Island Highway during the 2030 PM peak hour. Turner Road / Uplands Drive operates at LOS D or better for all movements during the 2030 PM peak hour with the intersection improvements. Uplands Drive / Full Movement Access operates at LOS D or better during the 2030 PM peak hour as a signalized intersection.

### 5.3 BENEFITS TO ENTERPRISE STREET CONNECTION

A majority of the existing residents to the east of the development use Hammond Bay Road as their main connection point to the Highway 19 and 19A. The new development would provide an additional access point to Highway 19A. The new collector road within the development would connect Hammond Bay Road at Calinda Street to Enterprise Street. Without the new Enterprise Street connection all the existing Hammond Bay Road traffic and the new development traffic would use the already stressed split-phased Hammond Bay Road / Highway 19A intersection.

## 6.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation demand management (TDM) is the application of strategies and policies to influence individual travel choice, most commonly to reduce single-occupant vehicle travel. TDM measures typically aim to encourage sustainable travel, enhance travel options and decrease parking demand. The following sections present a number of TDM measures that could be pursued to reduce the amount of vehicles associated with the development. All of the TDM measures would help decrease vehicles to / from the site but the developer will ultimately need to decide what to implement. More specific TDM measures will be investigated as the development process continues.

### 6.1 CARSHARING

A recent 2018 study from Metro Vancouver analyzed 3,405 survey respondents from carsharing users in the region and found that users of Car2go and Modo reported reduced



vehicle ownership after joining a carsharing service. The impact was larger for Modo users; households joining Modo reduced their ownership from an average of 0.68 to 0.36 vehicles. Further, Modo members were close to five times more likely to reduce car ownership compared to Car2go users. Additional research has found the following:

- A 2016 study in San Francisco reported that the potential for carsharing to reduce vehicle ownership is strongly tied to the built environment, housing density, transit accessibility, and the availability of parking.<sup>1</sup>
- A 2013 study from the City of Toronto looked at the relationship between the presence of carsharing in a residential building and its impact on vehicle ownership. The study surveyed residents of buildings with and without dedicated carshare vehicles. The study found that the presence of dedicated carshare vehicles had a statistically significant impact on reduced vehicle ownership and parking demand. Specifically, 29% of carshare users gave up a vehicle after becoming a member and 55% of carshare users forgone purchasing a car as a result of carsharing participation.<sup>2</sup>

While a study has not yet been completed in Nanaimo to understand the impacts of carsharing on vehicle ownership, the results would likely be similar especially for households living in more urban areas such as Nanaimo where there is greater access to multiple transportation options.

Previous carshare companies on the Island did not have immediate success and were forced to shut down operations; however, there have been some successful smaller scale companies in the region. The developer could consider a small scale car share program within the development.

## 6.2 SHARED ELECTRIC BIKE PROGRAM

E-bikes are electric bicycles with an electric motor of 500 watts or less and functioning pedals that are limited to a top speed of 32 km/h without pedalling. They are an emerging transportation phenomenon that are gaining popularity worldwide. With supportive cycling infrastructure in place, E-bikes have the potential to substitute for, or completely replace, almost all trips taken by a gasoline powered car, which could address congestion issues and mitigate parking challenges within urban areas.

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<sup>1</sup> Clewlow, R.R. (2016). Carsharing and sustainable travel behaviour: Results from the San Francisco Bay Area. *Transport Policy*, 51, 158-164.

<sup>2</sup> Engel-Yan, D., & D. Passmore. (2013). Carsharing and Car Ownership at the Building Scale. *Journal of the American Planning Association*, 79(1), 82-91.



The developer could consider the provision of a shared electric bike program in the proposed development, which will make cycling more attractive for residents and help them complete a variety of trips that would otherwise be done by car, transit, or another mode.

The provision of electric bikes would have an impact on vehicle ownership at the site; however, as electric bikes are an emerging form of mobility, there is limited research that has quantified the impact of these bikes on vehicle ownership. A recent study presented results of a North American survey of electric bike owners. The study reported that e-bikes have the capacity to replace various modes of transportation commonly used for utilitarian and recreational trips including motor vehicles, public transit, and regular bicycles.

The study reported that 62% of e-bike trips replaced trips that otherwise would have been taken by car. Of these trips previously taken by car, 45.8% were commute trips to work or school, 44.7% were other utilitarian trips (entertainment, personal errands, visiting friends and family, or other), and 9.4% were recreation or exercise trips. The average length of these previous car trips was 15 kilometres.<sup>3</sup> A more recent study found that approximately 39 kilometres of driving per week is displaced by the average e-bike adopter along with 14 kilometres of travel by conventional bicycle.<sup>4</sup>

A shared e-bike program could provide a transportation option to residents who may not own a vehicle or for residents who own a vehicle but may not require it for all trip purposes. The e-bike program could include the following:

- The e-bikes would be owned and maintained by the strata corporation(s);
- The cost to use (i.e., reserve) an e-bike will be determined by the strata;
- The process to reserve an e-bike will most likely be on a first come first serve basis, but will be determined by the strata.

### 6.3 ELECTRIC BIKE PARKING

As stated previously, electric bicycles can displace trips made by private vehicles and in some cases, substitute for private vehicles altogether. Equally important, though, is the provision of parking facilities to accommodate electric bike users. According to research completed in Greater Victoria, one of the top barriers facing prospective e-bike users is the fear that their

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<sup>3</sup> MacArthur, J., Harpool, M., & D. Scheppke. (2018). A North American Survey of Electric Bicycle Owners. National Institute for Transportation and Communities, NITC-RR-1041.

<sup>4</sup> Bigazzi, A & E Berjisan. (2019). Electric Bicycles: Can they reduce driving and emissions in Canada. Plan Canada Fall 2019.



bicycle might be stolen.<sup>5</sup> That same research found that prospective e-bike users would feel more comfortable if they could park their bicycle in a locked or supervised area.

Many guides in similar jurisdictions recommend that new developments provide 50% of the long-term bicycle parking with access to an 110-120V wall outlet. Further, 10% of the long-term spaces are recommended to be provided as cargo racks to accommodate e-bikes.

## 6.4 TRANSIT PASSES

As discussed in **Section 4.3.2**, this site has excellent transit access, which will make transit appealing to future residents, visitors, and employees. The traffic impact of this development could be reduced if the applicant is able to secure and administer a transit pass program for residents and employees. RDN Transit currently offers their ProPASS program which is a permanent bus pass purchased by an employee through payroll deductions. The program's primary goal is to reduce peak hour traffic by encouraging employees to use transit whenever possible. As the applicant secures commercial and retail tenants at the site, it is recommended that they work with and encourage them to enroll in the ProPASS program. The applicant could work with RDN Transit to obtain information and resources about the program (e.g., brochures) and provide directly to the commercial tenants. Other transit pass programs could be implemented in the region in the near future. As this development process continues it is recommended that the developer work to encourage transit usage.

## 7.0 CONCLUSIONS

The proposed development is on the Green Thumb Garden Centre site which is located between Hammond Bay Road, Uplands Drive, Island Highway, and Turner Road. The development is to contain a mix of multi-family, office, and retail land uses. There are two intersections in the study area that have existing failing levels of service (LOS E / F) for some movements with and without the development traffic: Nanaimo Parkway / Aulds Road and Island Highway / Aulds Road. Both of these intersections have split phasing for the eastbound and westbound movements. Split phasing requires these directions of travel to operate one after the other without overlapping. The split phasing combined with the protected left phases creates a longer cycle length for the traffic signal. The longer cycle lengths create larger delay times for individual movements, especially protected or split phase movements. While the delay

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<sup>5</sup> WATT Consulting Group. (2018). Capital Region Local Government Electric Vehicle + Electric Bike Infrastructure Backgrounder. Available online at: [https://www.crd.bc.ca/docs/default-source/climate-action-pdf/reports/electric-vehicle-and-e-bike-infrastructure-backgrounder-sept-2018.pdf?sfvrsn=a067c5ca\\_2](https://www.crd.bc.ca/docs/default-source/climate-action-pdf/reports/electric-vehicle-and-e-bike-infrastructure-backgrounder-sept-2018.pdf?sfvrsn=a067c5ca_2)



times are increased, often most vehicles are still able to get through an intersection within one cycle length. The post development traffic at the Turner Road / Island Highway intersection starts to reach some failing LOS at the ten-year horizon during the PM peak. The addition of another eastbound lane on the approach side of the intersection would allow all movements to operate at LOS D or better except for the southbound left. The southbound left operates at LOS E with or without the development traffic at Turner Road / Island Highway. All other intersections within the study area operate at LOS D or better into the ten-year horizon. The addition of the development does not significantly impact any intersection.

The development proposes to connect to two existing three-leg, signalized intersections: Calinda Street / Hammond Bay Road and Enterprise Street / Island Highway. A new eastbound leg at Enterprise Street / Island Highway would allow local traffic to access the additional northbound / southbound capacity on Island Highway without further impacting the sideroads at the split-phased intersections nearby. The internal road between Hammond Bay Road / Calinda Street and Highway 19A / Enterprise Street would also allow existing traffic with another connection to the Island Highway. There are also four stop-controlled locations proposed: three on Uplands Drive and one on Marlin Way. All access locations operate at LOS D or better into the ten-year horizon with the recommended improvements.

The eastbound 95<sup>th</sup> percentile queue lengths at Uplands Drive / Hammond Bay Road extend beyond the existing storage capacity with or without the development traffic. The storage capacity is physically restricted with the existing Green Thumb Nursery's access; however, there is an opportunity to extend the eastbound left storage once the existing access is removed. At Enterprise Street / Island Highway the 95<sup>th</sup> percentile queues will extend back to the internal roads of the development during the PM peak with one shared through / right lane and a 30m left lane for the westbound approach. If an additional westbound right lane was added the queues would be significantly reduced.

A sensitivity analysis determined that no additional mitigation was required due to development in the McRobb Avenue area. There was not a significant amount of delay time added to the intersections in the study area.

It is recommended that the developer provide sidewalk along the Uplands Drive site frontage and sidewalk is required on both sides of new roads in the development. It is also recommended that the developer work with the City to provide bike lanes along Uplands Drive / Hammond Bay Road along the site frontage and to provide an active transportation



connection through the site. The developer is recommended to work with RDN Transit and the City of Nanaimo to determine the future transit needs in the area.

There are multiple transportation demand management measures that could be pursued by the developer to reduce vehicle travel and encourage sustainable travel options. As this development proceeds further investigation into effective TDM measures is recommended.

## 8.0 RECOMMENDATIONS

- Ministry of Transportation and Infrastructure;
  - To investigate the feasibility to remove split phasing at the Nanaimo Parkway / Aulds Road and Island Highway / Aulds Road intersections;
- City of Nanaimo;
  - Increase the eastbound left storage at 40m at the Uplands Drive / Hammond Bay Road intersection;
- Developer;
  - Upgrade the Calinda Street / Hammond Bay Road intersection traffic signal and laning to include a northbound approach leg;
    - Northbound left lane (25m storage);
    - Northbound through / right lane;
    - Westbound left lane (25m storage and protected / permitted phase);
    - Convert southbound right lane into a through / right lane;
  - Upgrade the Enterprise Street / Island Highway intersection traffic signal and laning to include westbound approach leg;
    - Westbound left lane (30m storage);
    - A westbound through lane;
    - Westbound right lane (40m);
    - Southbound left lane (135m storage / parallel length);
    - Northbound right lane (100m storage / parallel length);
    - Protected / permitted phasing for eastbound and westbound left turns;
    - Reconfigure eastbound approach leg to include left lane and through / right lane;
    - Install sidewalk for the westbound approach and at the Enterprise Street intersection;
  - Physically restrict the development access at Parkwood Drive to right in / right out access only.
  - Add an eastbound approach lane at Tuner Road / Island Highway (40m);





- Install sidewalk along Uplands Drive site frontage;
- Sidewalk required on both sides of new City of Nanaimo roads.
- Work with the City to provide bike lanes along the Hammond Bay Road and Uplands Drive site frontages;
- Work with the City to provide an active transportation connection through the site;
- Work with RDN Transit and the City to determine the future transit needs in the area.



## APPENDIX A: SYNCHRO BACKGROUND



## SYNCHRO MODELLING SOFTWARE DESCRIPTION

The traffic analysis was completed using Synchro and SimTraffic traffic modelling software. Results were measured in delay, level of service (LOS), 95th percentile queue length and volume to capacity ratio. Synchro is based on the Highway Capacity Manual (HCM) methodology. SimTraffic integrates established driver behaviours and characteristics to simulate actual conditions by randomly “seeding” or positioning vehicles travelling throughout the network. The simulation is run ten times (ten different random seedings of vehicle types, behaviours and arrivals) to obtain statistical significance of the results.

### Levels of Service

Traffic operations are typically described in terms of levels of service, which rates the amount of delay per vehicle for each movement and the entire intersection. Levels of service range from LOS A (representing best operations) to LOS E/F (LOS E being poor operations and LOS F being unpredictable/disruptive operations). LOS E/F are generally unacceptable levels of service under normal everyday conditions. A LOS C or better is considered acceptable operations, while D is considered to be on the threshold between acceptable and unacceptable operations. Highway operations will typically need to operate at LOS C or better for through movements and LOS E or better for other traffic movements with lower order roads.

The hierarchy of criteria for grading an intersection or movement not only includes delay times, but also takes into account traffic control type (stop signs or traffic signal). For example, if a vehicle is delayed for 19 seconds at an un-signalized intersection, it is considered to have an average operation, and would therefore be graded as an LOS C. However, at a signalized intersection, a 19 second delay would be considered a good operation and therefore it would be given an LOS B. The table below indicates the range of delay for LOS for signalized and un-signalized intersections.

**Table A1: LOS Criteria, by Intersection Traffic Control**

Level of Service (LOS)	Un-signalized Intersection Average Vehicle Delay (s/v)	Signalized Intersection Average Vehicle Delay (s/v)
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80



## APPENDIX B: EXISTING CONDITIONS

Lanes, Volumes, Timings  
 1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	212	41	24	504	58	112	117	20	70	191	87
Future Volume (vph)	48	212	41	24	504	58	112	117	20	70	191	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	40.0		0.0	95.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.97	0.99		0.98	0.99		0.99	1.00		0.99		0.98
Frt		0.977			0.981			0.968				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3396	0	1752	3398	0	1752	3398	0	1787	1845	1568
Flt Permitted	0.235			0.544			0.581			0.635		
Satd. Flow (perm)	422	3396	0	982	3398	0	1064	3398	0	1185	1845	1534
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			23			40				187
Link Speed (k/h)		50			50			50				50
Link Distance (m)		214.8			492.5			48.5				315.6
Travel Time (s)		15.5			35.5			3.5				22.7
Confl. Peds. (#/hr)	65		17	17		65	8		8	8		8
Peak Hour Factor	0.84	0.72	0.77	0.82	0.88	0.68	0.94	0.80	0.50	0.65	0.86	0.77
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	0%	1%	3%	3%
Adj. Flow (vph)	57	294	53	29	573	85	119	146	40	108	222	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	347	0	29	658	0	119	186	0	108	222	113
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings  
 1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	7.0		6.0	7.0	7.0
Minimum Split (s)	11.0	23.0		11.0	23.0		11.0	23.0		11.0	23.0	23.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	24.0
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	34.3%
Maximum Green (s)	6.0	19.0		6.0	19.0		6.0	19.0		6.0	19.0	19.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		10.0			10.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effect Green (s)	19.8	17.7		18.9	15.8		24.5	20.0		24.5	20.0	20.0
Actuated g/C Ratio	0.33	0.29		0.31	0.26		0.41	0.33		0.41	0.33	0.33
v/c Ratio	0.21	0.34		0.07	0.73		0.24	0.16		0.20	0.36	0.18
Control Delay	14.2	17.5		12.5	26.0		13.0	15.2		12.6	21.5	1.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	14.2	17.5		12.5	26.0		13.0	15.2		12.6	21.5	1.4
LOS	B	B		B	C		B	B		B	C	A
Approach Delay		17.0			25.4			14.3			14.2	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	4.5	13.9		2.2	41.3		9.3	7.7		8.4	24.6	0.0
Queue Length 95th (m)	10.0	22.4		6.0	57.4		19.3	13.4		12.4	42.0	0.0
Internal Link Dist (m)		190.8			468.5			24.5			291.6	
Turn Bay Length (m)	25.0			50.0			40.0			95.0		
Base Capacity (vph)	277	1243		388	1144		504	1155		544	612	634
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	0.21	0.28		0.07	0.58		0.24	0.16		0.20	0.36	0.18

Intersection Summary









Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	60.3
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	19.0
Intersection Capacity Utilization:	58.3%
Intersection LOS:	B
ICU Level of Service:	B

Lanes, Volumes, Timings  
 1: Uplands Dr & Hammond Bay Rd

05-06-2020

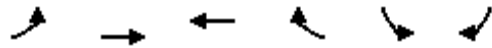
Analysis Period (min) 15

Splits and Phases: 1: Uplands Dr & Hammond Bay Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	24 s	11 s	24 s

## Lanes, Volumes, Timings 2: Hammond Bay Rd & Calinda

05-06-2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	44	276	660	34	20	22
Future Volume (vph)	44	276	660	34	20	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor	0.99		1.00			
Frt			0.989			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1787	3438	3460	0	1752	1568
Flt Permitted	0.177				0.950	
Satd. Flow (perm)	331	3438	3460	0	1752	1568
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			13			29
Link Speed (k/h)		50	50		50	
Link Distance (m)		98.1	214.8		219.0	
Travel Time (s)		7.1	15.5		15.8	
Confl. Peds. (#/hr)	15			15		
Peak Hour Factor	0.65	0.91	0.93	0.63	0.60	0.75
Heavy Vehicles (%)	1%	5%	3%	0%	3%	3%
Adj. Flow (vph)	68	303	710	54	33	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	303	764	0	33	29
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			



## Lanes, Volumes, Timings 2: Hammond Bay Rd & Calinda

05-06-2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Detector Phase	7	4	8		6	6
Switch Phase						
Minimum Initial (s)	6.0	10.0	10.0		7.0	7.0
Minimum Split (s)	11.0	22.5	22.5		22.5	22.5
Total Split (s)	12.0	44.0	32.0		26.0	26.0
Total Split (%)	17.1%	62.9%	45.7%		37.1%	37.1%
Maximum Green (s)	7.0	39.0	27.0		21.0	21.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)			7.0		7.0	7.0
Flash Dont Walk (s)			8.0		8.0	8.0
Pedestrian Calls (#/hr)			5		5	5
Act Effct Green (s)	24.1	24.1	17.8		21.9	21.9
Actuated g/C Ratio	0.43	0.43	0.32		0.39	0.39
v/c Ratio	0.21	0.21	0.69		0.05	0.05
Control Delay	9.6	9.3	20.6		15.9	7.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	9.6	9.3	20.6		15.9	7.5
LOS	A	A	C		B	A
Approach Delay		9.4	20.6		11.9	
Approach LOS		A	C		B	
Queue Length 50th (m)	4.0	9.6	41.5		2.6	0.0
Queue Length 95th (m)	6.4	15.4	58.5		5.9	4.0
Internal Link Dist (m)		74.1	190.8		195.0	
Turn Bay Length (m)	15.0				40.0	
Base Capacity (vph)	329	2479	1733		680	626
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.21	0.12	0.44		0.05	0.05

### Intersection Summary

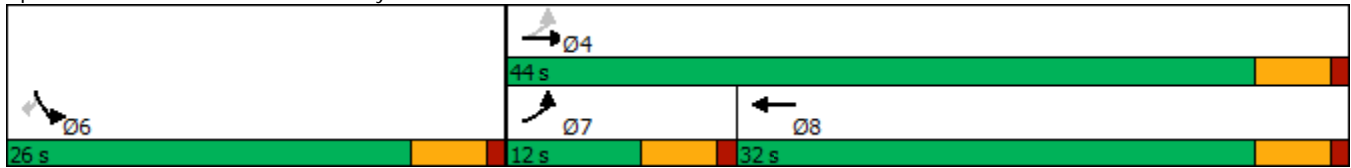
Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	56.4
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.69
Intersection Signal Delay:	16.7
Intersection Capacity Utilization:	42.7%
Intersection LOS:	B
ICU Level of Service:	A

Lanes, Volumes, Timings  
2: Hammond Bay Rd & Calinda

05-06-2020

Analysis Period (min) 15

Splits and Phases: 2: Hammond Bay Rd & Calinda



# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	272	79	196	316	224	51	426	143	56	298	101
Future Volume (vph)	97	272	79	196	316	224	51	426	143	56	298	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		0.0
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	1.00	0.91	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950	0.999		0.950	0.995		0.950			0.950		
Satd. Flow (prot)	1643	3455	1583	1626	3407	1615	3502	3574	1599	1787	3574	1615
Flt Permitted	0.950	0.999		0.950	0.995		0.950			0.950		
Satd. Flow (perm)	1643	3455	1583	1626	3407	1615	3502	3574	1599	1787	3574	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			270			223			131
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		585.6			123.8			115.7			860.7	
Travel Time (s)		42.2			8.9			5.2			38.7	
Peak Hour Factor	0.94	0.78	0.83	0.74	0.78	0.83	0.72	0.80	0.64	0.71	0.82	0.90
Heavy Vehicles (%)	0%	0%	2%	1%	1%	0%	0%	1%	1%	1%	1%	0%
Adj. Flow (vph)	103	349	95	265	405	270	71	533	223	79	363	112
Shared Lane Traffic (%)	10%			18%								
Lane Group Flow (vph)	93	359	95	217	453	270	71	533	223	79	363	112
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	

Lanes, Volumes, Timings

9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	23.0	23.0	23.0	26.0	26.0	26.0	11.0	23.0	23.0	11.0	23.0	23.0
Total Split (s)	24.0	24.0	24.0	29.0	29.0	29.0	11.0	32.0	32.0	15.0	36.0	36.0
Total Split (%)	24.0%	24.0%	24.0%	29.0%	29.0%	29.0%	11.0%	32.0%	32.0%	15.0%	36.0%	36.0%
Maximum Green (s)	19.0	19.0	19.0	24.0	24.0	24.0	6.0	27.0	27.0	10.0	31.0	31.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				14.0	14.0	14.0		8.0	8.0		8.0	8.0
Pedestrian Calls (#/hr)				5	5	5		5	5		5	5
Act Effct Green (s)	14.3	14.3	14.3	18.1	18.1	18.1	6.1	29.2	29.2	8.6	31.6	31.6
Actuated g/C Ratio	0.16	0.16	0.16	0.21	0.21	0.21	0.07	0.33	0.33	0.10	0.36	0.36
v/c Ratio	0.35	0.64	0.26	0.65	0.65	0.49	0.29	0.45	0.33	0.45	0.28	0.17
Control Delay	38.5	40.8	4.6	42.7	37.1	7.4	46.0	27.3	5.5	49.2	23.1	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	40.8	4.6	42.7	37.1	7.4	46.0	27.3	5.5	49.2	23.1	4.0
LOS	D	D	A	D	D	A	D	C	A	D	C	A
Approach Delay		34.1			29.9			23.0			23.0	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	16.8	34.2	0.0	40.1	41.8	0.0	6.5	41.7	0.0	13.8	25.2	0.0
Queue Length 95th (m)	34.5	44.5	4.8	54.8	52.0	14.7	11.5	57.5	2.1	23.8	38.1	9.2
Internal Link Dist (m)		561.6			99.8			91.7			836.7	
Turn Bay Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		
Base Capacity (vph)	363	764	451	454	951	645	244	1189	680	208	1289	666
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	0.26	0.47	0.21	0.48	0.48	0.42	0.29	0.45	0.33	0.38	0.28	0.17

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	87.7
Natural Cycle:	85
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	27.4
Intersection LOS:	C
Intersection Capacity Utilization:	50.6%
ICU Level of Service:	A
Analysis Period (min):	15

# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020

Splits and Phases: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

↙ Ø1	↑ Ø2	↘ Ø4	↙ Ø8
15 s	32 s	24 s	29 s
↙ Ø5	↓ Ø6		
11 s	36 s		

Lanes, Volumes, Timings  
10: Island Hwy (Hwy 19A) & Enterprise Way

05-06-2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	107	124	187	490	401	172
Future Volume (vph)	107	124	187	490	401	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	200.0			75.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor	0.98		1.00			0.98
Frt	0.917					0.850
Flt Protected	0.978		0.950			
Satd. Flow (prot)	3259	0	1752	3438	3471	1599
Flt Permitted	0.978		0.419			
Satd. Flow (perm)	3251	0	772	3438	3471	1574
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	151					236
Link Speed (k/h)	50			80	80	
Link Distance (m)	149.2			779.3	349.5	
Travel Time (s)	10.7			35.1	15.7	
Confl. Peds. (#/hr)	2	2	2			2
Peak Hour Factor	0.87	0.82	0.80	0.91	0.86	0.73
Heavy Vehicles (%)	0%	0%	3%	5%	4%	1%
Adj. Flow (vph)	123	151	234	538	466	236
Shared Lane Traffic (%)						
Lane Group Flow (vph)	274	0	234	538	466	236
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Enterprise Way

05-06-2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases			2			6
Detector Phase	4		5	2	6	6
Switch Phase						
Minimum Initial (s)	7.0		6.0	10.0	10.0	10.0
Minimum Split (s)	23.0		11.0	23.0	23.0	23.0
Total Split (s)	33.0		21.0	52.0	31.0	31.0
Total Split (%)	38.8%		24.7%	61.2%	36.5%	36.5%
Maximum Green (s)	28.0		16.0	47.0	26.0	26.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	Max
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	8.0				8.0	8.0
Pedestrian Calls (#/hr)	5				5	5
Act Effct Green (s)	9.1		47.1	47.1	33.5	33.5
Actuated g/C Ratio	0.14		0.71	0.71	0.51	0.51
v/c Ratio	0.47		0.35	0.22	0.27	0.26
Control Delay	14.8		5.1	3.9	10.8	2.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	14.8		5.1	3.9	10.8	2.8
LOS	B		A	A	B	A
Approach Delay	14.8			4.2	8.1	
Approach LOS	B			A	A	
Queue Length 50th (m)	7.4		7.2	8.8	15.8	0.0
Queue Length 95th (m)	16.1		17.2	20.5	31.5	5.6
Internal Link Dist (m)	125.2			755.3	325.5	
Turn Bay Length (m)			200.0			75.0
Base Capacity (vph)	1467		786	2445	1755	912
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.19		0.30	0.22	0.27	0.26

Intersection Summary

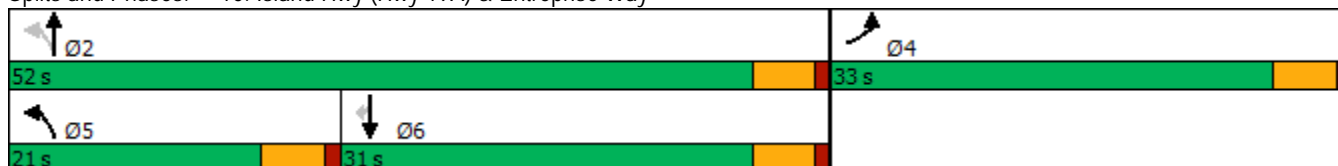
Area Type:	Other
Cycle Length:	85
Actuated Cycle Length:	66.2
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.47
Intersection Signal Delay:	7.4
Intersection Capacity Utilization:	42.8%
Intersection LOS:	A
ICU Level of Service:	A

Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Enterprise Way

05-06-2020

Analysis Period (min) 15




























Splits and Phases: 10: Island Hwy (Hwy 19A) & Enterprise Way





Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				  			 	
Traffic Volume (vph)	25	142	69	207	131	98	92	845	397	264	967	10
Future Volume (vph)	25	142	69	207	131	98	92	845	397	264	967	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	130.0		30.0	190.0		150.0	280.0		160.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt		0.945				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1751	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1805	1751	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				187			432			132
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		438.4			585.6			838.6			910.0	
Travel Time (s)		31.6			42.2			37.7			41.0	
Peak Hour Factor	0.65	0.82	0.70	0.93	0.65	0.76	0.65	0.95	0.92	0.90	0.95	0.63
Heavy Vehicles (%)	0%	4%	0%	2%	1%	2%	2%	5%	3%	2%	5%	2%
Adj. Flow (vph)	38	173	99	223	202	129	142	889	432	293	1018	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	272	0	223	202	129	142	889	432	293	1018	16
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8			5	2		1	6

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	23.4	23.4		23.4	23.4	23.4	11.5	23.5	23.5	11.5	23.5	23.5
Total Split (s)	25.8	25.8		23.4	23.4	23.4	17.8	32.4	32.4	28.4	43.0	43.0
Total Split (%)	23.5%	23.5%		21.3%	21.3%	21.3%	16.2%	29.5%	29.5%	25.8%	39.1%	39.1%
Maximum Green (s)	20.4	20.4		18.0	18.0	18.0	12.3	26.9	26.9	22.9	37.5	37.5
Yellow Time (s)	4.4	4.4		4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5
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	3.0
Recall Mode	None	None		None	None	None	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	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	2	2		2	2	2		2	2		2	2
Act Effct Green (s)	18.2	18.2		15.2	15.2	15.2	11.5	28.7	28.7	20.5	37.7	37.7
Actuated g/C Ratio	0.17	0.17		0.15	0.15	0.15	0.11	0.27	0.27	0.20	0.36	0.36
v/c Ratio	0.12	0.84		0.45	0.74	0.33	0.73	0.66	0.58	0.84	0.82	0.02
Control Delay	38.3	61.6		44.2	60.0	3.8	68.7	37.8	6.8	63.2	38.2	0.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	61.6		44.2	60.0	3.8	68.7	37.8	6.8	63.2	38.2	0.1
LOS	D	E		D	E	A	E	D	A	E	D	A
Approach Delay		58.7			40.5			31.6			43.2	
Approach LOS		E			D			C			D	
Queue Length 50th (m)	7.1	53.6		23.5	43.3	0.0	31.1	66.9	0.0	62.4	110.4	0.0
Queue Length 95th (m)	11.9	#79.5		35.7	47.1	0.0	37.1	84.0	26.8	#105.9	#143.5	0.0
Internal Link Dist (m)		414.4			561.6			814.6			886.0	
Turn Bay Length (m)	40.0			130.0		30.0	190.0		150.0	280.0		160.0
Base Capacity (vph)	354	361		593	325	428	209	1353	743	389	1239	655
Starvation Cap Reductn	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
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.75		0.38	0.62	0.30	0.68	0.66	0.58	0.75	0.82	0.02

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	104.6
Natural Cycle:	95
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	39.5
Intersection LOS:	D
Intersection Capacity Utilization:	67.6%
ICU Level of Service:	C
Analysis Period (min):	15

# 95th percentile volume exceeds capacity, queue may be longer.

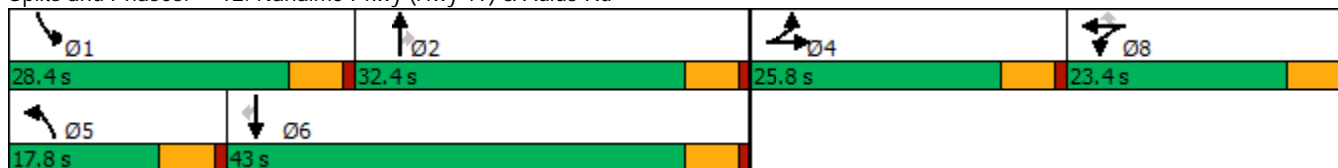
# Lanes, Volumes, Timings

## 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

Queue shown is maximum after two cycles.

Splits and Phases: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd



Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	188	29	128	336	19	70	152	105	16	163	132
Future Volume (vph)	73	188	29	128	336	19	70	152	105	16	163	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	55.0		0.0	45.0		10.0	45.0		10.0
Storage Lanes	1		1	2		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00		1.00		0.97	1.00		0.98
Fr <sub>t</sub>			0.850		0.989				0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1863	1568	1787	3562	0	1752	3539	1599	1805	3505	1599
Fl <sub>t</sub> Permitted	0.419			0.468			0.950			0.950		
Satd. Flow (perm)	766	1863	1544	880	3562	0	1745	3539	1556	1799	3505	1569
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187		12				187			187
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.5			398.6			321.2			163.3	
Travel Time (s)		17.2			28.7			23.1			11.8	
Confl. Peds. (#/hr)	13		1	1		13	4		2	2		4
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.71	0.75	0.66	0.79	0.84	0.60	0.78	0.90	0.65	0.67	0.82	0.76
Heavy Vehicles (%)	3%	2%	3%	1%	0%	0%	3%	2%	1%	0%	3%	1%
Adj. Flow (vph)	103	251	44	162	400	32	90	169	162	24	199	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	251	44	162	432	0	90	169	162	24	199	174
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8					2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		6.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	22.5	22.5	11.0	22.5	22.5
Total Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (%)	15.7%	34.3%	34.3%	15.7%	34.3%		15.7%	34.3%	34.3%	15.7%	34.3%	34.3%
Maximum Green (s)	6.0	19.0	19.0	6.0	19.0		6.0	19.0	19.0	6.0	19.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		8.0	8.0		8.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	18.6	14.2	14.2	18.6	14.2		6.3	24.1	24.1	6.3	19.9	19.9
Actuated g/C Ratio	0.31	0.23	0.23	0.31	0.23		0.10	0.40	0.40	0.10	0.33	0.33
v/c Ratio	0.31	0.58	0.09	0.45	0.51		0.50	0.12	0.22	0.13	0.17	0.27
Control Delay	15.5	28.2	0.3	18.0	23.3		41.1	15.8	3.6	30.5	18.5	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	28.2	0.3	18.0	23.3		41.1	15.8	3.6	30.5	18.5	4.5
LOS	B	C	A	B	C		D	B	A	C	B	A
Approach Delay		21.9			21.9			16.6			13.1	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	8.3	29.1	0.0	13.4	25.1		11.1	6.0	0.0	2.9	9.8	0.0
Queue Length 95th (m)	13.1	40.0	0.0	21.6	34.7		#24.4	16.6	1.6	7.3	17.2	6.7
Internal Link Dist (m)		214.5			374.6			297.2			139.3	
Turn Bay Length (m)	65.0			55.0			45.0		10.0	45.0		10.0
Base Capacity (vph)	336	610	631	363	1174		181	1404	730	186	1148	639
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.41	0.07	0.45	0.37		0.50	0.12	0.22	0.13	0.17	0.27

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 60.7

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 18.7

Intersection LOS: B

# Lanes, Volumes, Timings

## 18: Uplands Dr & Turner Rd









05-06-2020

Intersection Capacity Utilization 52.1% ICU Level of Service A

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 18: Uplands Dr & Turner Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	24 s	11 s	24 s

**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	R
Maximum Queue (m)	23.6	28.9	33.0	15.3	57.4	57.4	24.8	35.3	23.1	25.3	51.1	22.6
Average Queue (m)	7.4	10.2	14.3	4.4	26.6	32.2	13.9	10.7	8.3	10.1	22.4	9.2
95th Queue (m)	16.7	23.8	28.5	12.6	45.6	51.8	23.2	23.9	19.5	18.8	41.4	18.2
Link Distance (m)		190.2	190.2		478.4	478.4		26.1	26.1		301.2	301.2
Upstream Blk Time (%)							0	0	0			
Queuing Penalty (veh)							0	0	0			
Storage Bay Dist (m)	25.0			50.0			40.0			95.0		
Storage Blk Time (%)	0	1			0		0	0				
Queuing Penalty (veh)	0	0			0		0	0				

**Intersection: 2: Hammond Bay Rd & Calinda**

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (m)	21.9	40.0	38.8	55.4	68.6	11.7	11.6
Average Queue (m)	8.2	12.4	16.2	27.6	38.2	2.6	2.7
95th Queue (m)	17.7	27.8	30.6	47.7	63.3	9.6	10.0
Link Distance (m)		76.9	76.9	190.2	190.2		205.1
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	15.0					40.0	
Storage Blk Time (%)	1	5					
Queuing Penalty (veh)	2	2					

**Intersection: 4: Marlin Way & Hammond Bay Rd**

Movement	EB	WB	NB	NB
Directions Served	T	L	L	R
Maximum Queue (m)	1.3	10.2	12.0	10.2
Average Queue (m)	0.0	1.0	3.7	3.3
95th Queue (m)	0.9	5.9	11.1	10.2
Link Distance (m)	72.0			172.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0	15.0	
Storage Blk Time (%)		0	0	0
Queuing Penalty (veh)		0	0	0

**Intersection: 6: Applecross Rd & Hammond Bay Rd**

Movement	EB	WB	WB	SB
Directions Served	L	T	R	R
Maximum Queue (m)	30.0	2.8	10.8	13.7
Average Queue (m)	10.4	0.2	1.2	0.7
95th Queue (m)	23.4	2.6	6.2	5.6
Link Distance (m)		72.0		73.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	30.0		15.0	
Storage Blk Time (%)	0	0	0	
Queuing Penalty (veh)	1	0	0	

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	LT	T	L	LT	T	R	L	L	T	T	L
Maximum Queue (m)	24.8	37.3	37.3	44.1	62.5	68.9	23.1	12.6	15.3	46.2	45.4	26.5
Average Queue (m)	8.6	22.3	16.3	11.9	30.2	24.2	1.8	2.2	5.0	22.9	22.8	10.3
95th Queue (m)	18.9	35.1	29.9	31.0	50.8	47.8	12.3	7.6	12.3	40.9	40.8	22.8
Link Distance (m)		541.8	541.8		94.4	94.4				87.5	87.5	
Upstream Blk Time (%)						0						
Queuing Penalty (veh)						0						
Storage Bay Dist (m)	65.0			40.0			60.0	115.0	115.0			135.0
Storage Blk Time (%)			0	0	3							
Queuing Penalty (veh)			0	0	3							

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	SB	SB
Directions Served	T	T
Maximum Queue (m)	28.3	34.0
Average Queue (m)	14.2	16.1
95th Queue (m)	25.2	30.7
Link Distance (m)	841.6	841.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		



**Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way**

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LR	L	T	T	T	T
Maximum Queue (m)	24.3	16.7	38.1	23.7	28.7	29.5	26.3
Average Queue (m)	11.9	4.9	15.0	4.9	10.3	11.9	10.1
95th Queue (m)	22.2	13.2	29.6	16.8	26.2	25.4	23.4
Link Distance (m)	133.2	133.2		757.4	757.4	323.8	323.8
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	200.0						
Storage Blk Time (%)							
Queuing Penalty (veh)							

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	L	T	R	L	T	T	T	L	T
Maximum Queue (m)	35.7	72.2	31.0	33.6	152.5	32.0	38.6	59.9	66.3	60.9	83.5	80.7
Average Queue (m)	5.3	28.5	13.9	18.7	22.5	3.6	11.4	39.5	40.2	29.8	45.7	46.9
95th Queue (m)	20.0	57.8	27.6	30.8	95.9	20.7	28.3	57.5	59.3	55.4	78.4	72.8
Link Distance (m)		421.4		541.8	541.8			815.9	815.9	815.9		894.3
Upstream Blk Time (%)	0											
Queuing Penalty (veh)	0											
Storage Bay Dist (m)	40.0		130.0			30.0	190.0				280.0	
Storage Blk Time (%)		6			3	0						
Queuing Penalty (veh)		2			3	0						

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	SB
Directions Served	T
Maximum Queue (m)	87.2
Average Queue (m)	49.5
95th Queue (m)	76.5
Link Distance (m)	894.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	T	L	T	T	R	L	T	T	R
Maximum Queue (m)	23.6	59.3	79.1	41.7	29.0	63.1	54.0	3.1	19.1	35.9	42.4	16.3
Average Queue (m)	5.8	26.8	43.2	12.1	7.2	32.5	23.9	0.2	6.7	16.4	18.8	0.7
95th Queue (m)	17.0	52.9	68.8	28.2	20.5	53.8	45.3	3.1	15.5	32.6	36.2	8.0
Link Distance (m)		385.5		207.1		527.5	527.5			757.4	757.4	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		75.0		30.0			85.0	45.0			20.0
Storage Blk Time (%)	0	16	0		0	10				0	8	0
Queuing Penalty (veh)	1	4	0		0	3				0	0	0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	T	R	L	T
Maximum Queue (m)	27.2	48.0	13.0	49.7	58.4	65.6	30.7	32.5	13.2	16.5	16.2	25.1
Average Queue (m)	12.4	23.7	4.7	16.4	30.4	12.6	12.8	13.5	1.0	9.8	4.3	10.7
95th Queue (m)	22.7	39.9	12.5	32.9	50.3	34.3	24.4	25.9	7.1	17.3	12.4	20.6
Link Distance (m)		207.1	207.1			382.0		307.3	307.3			141.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	65.0			55.0	55.0		45.0			10.0	45.0	
Storage Blk Time (%)		0		0	1				0	1		
Queuing Penalty (veh)		0		0	1				0	0		

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	35.9	17.9
Average Queue (m)	10.9	13.2
95th Queue (m)	25.6	17.2
Link Distance (m)	141.4	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		10.0
Storage Blk Time (%)	17	2
Queuing Penalty (veh)	22	1

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Intersection: 21: Uplands Dr & Parkwood Dr

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Movement	WB	SB
Directions Served	LR	L
Maximum Queue (m)	15.8	7.3
Average Queue (m)	8.1	0.5
95th Queue (m)	14.4	4.0
Link Distance (m)	254.6	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		35.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Network Summary

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Network wide Queuing Penalty: 49

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HCM 2010 TWSC  
4: Marlin Way & Hammond Bay Rd

05-05-2020

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	303	34	12	670	14	17
Future Vol, veh/h	303	34	12	670	14	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	89	60	95	75	85
Heavy Vehicles, %	3	0	0	3	0	0
Mvmt Flow	326	38	20	705	19	20

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	364	0	738	182
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	393	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1206	-	358	836
Stage 1	-	-	-	-	694	-
Stage 2	-	-	-	-	657	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1206	-	352	836
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	694	-
Stage 2	-	-	-	-	646	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	352	836	-	-	1206	-
HCM Lane V/C Ratio	0.053	0.024	-	-	0.017	-
HCM Control Delay (s)	15.8	9.4	-	-	8	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0.1	-

HCM 2010 TWSC  
6: Applecross Rd & Hammond Bay Rd

05-05-2020

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗			↖↗	↖			↖			↖
Traffic Vol, veh/h	123	333	15	0	618	66	0	0	4	0	0	118
Future Vol, veh/h	123	333	15	0	618	66	0	0	4	0	0	118
Conflicting Peds, #/hr	12	0	3	3	0	12	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	300	-	-	-	-	150	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	93	80	25	95	65	25	25	50	25	25	85
Heavy Vehicles, %	3	3	0	0	3	1	0	0	0	0	0	2
Mvmt Flow	138	358	19	0	651	102	0	0	8	0	0	139

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	765	0	0	-	-	0	-	-	192	-	-	338
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.16	-	-	-	-	-	-	-	6.9	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.23	-	-	-	-	-	-	-	3.3	-	-	3.32
Pot Cap-1 Maneuver	837	-	-	0	-	-	0	0	823	0	0	658
Stage 1	-	-	-	0	-	-	0	0	-	0	0	-
Stage 2	-	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	828	-	-	-	-	-	-	-	821	-	-	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	2.7		0		9.4		12	
HCM LOS					A		B	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	821	828	-	-	-	-	651
HCM Lane V/C Ratio	0.01	0.167	-	-	-	-	0.213
HCM Control Delay (s)	9.4	10.2	-	-	-	-	12
HCM Lane LOS	A	B	-	-	-	-	B
HCM 95th %tile Q(veh)	0	0.6	-	-	-	-	0.8

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T		T	T
Traffic Vol, veh/h	28	19	230	8	9	247
Future Vol, veh/h	28	19	230	8	9	247
Conflicting Peds, #/hr	0	1	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	350	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	91	60	75	85
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	33	22	253	13	12	291






















Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	580	266	0	0	271
Stage 1	265	-	-	-	-
Stage 2	315	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	480	778	-	-	1304
Stage 1	784	-	-	-	-
Stage 2	744	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	474	774	-	-	1298
Mov Cap-2 Maneuver	474	-	-	-	-
Stage 1	781	-	-	-	-
Stage 2	737	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	562	1298
HCM Lane V/C Ratio	-	-	0.098	0.009
HCM Control Delay (s)	-	-	12.1	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0

Lanes, Volumes, Timings  
1: Uplands Dr & Hammond Bay Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	517	183	34	383	59	170	236	19	97	209	79
Future Volume (vph)	82	517	183	34	383	59	170	236	19	97	209	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	40.0		0.0	95.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.97	0.99		0.99	0.98		0.99	1.00		0.99		0.98
Frt		0.963			0.975			0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3330	0	1752	3366	0	1752	3448	0	1787	1845	1568
Flt Permitted	0.334			0.213			0.495			0.551		
Satd. Flow (perm)	595	3330	0	391	3366	0	907	3448	0	1030	1845	1534
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			33			20				187
Link Speed (k/h)		50			50			50				50
Link Distance (m)		214.8			492.5			48.5				315.6
Travel Time (s)		15.5			35.5			3.5				22.7
Confl. Peds. (#/hr)	65		17	17		65	8		8	8		8
Peak Hour Factor	0.84	0.72	0.77	0.82	0.88	0.68	0.94	0.80	0.50	0.65	0.86	0.77
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	0%	1%	3%	3%
Adj. Flow (vph)	98	718	238	41	435	87	181	295	38	149	243	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	956	0	41	522	0	181	333	0	149	243	103
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings  
1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	7.0		6.0	7.0	7.0
Minimum Split (s)	11.0	23.0		11.0	23.0		11.0	23.0		11.0	23.0	23.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	24.0
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	34.3%
Maximum Green (s)	6.0	19.0		6.0	19.0		6.0	19.0		6.0	19.0	19.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		10.0			10.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effect Green (s)	23.5	20.1		22.5	17.8		26.3	21.6		25.1	19.1	19.1
Actuated g/C Ratio	0.35	0.30		0.34	0.27		0.39	0.32		0.38	0.29	0.29
v/c Ratio	0.31	0.91		0.16	0.56		0.42	0.29		0.33	0.46	0.18
Control Delay	15.3	37.5		13.6	23.0		16.2	18.8		14.6	24.0	1.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.3	37.5		13.6	23.0		16.2	18.8		14.6	24.0	1.0
LOS	B	D		B	C		B	B		B	C	A
Approach Delay		35.5			22.3			17.9			16.4	
Approach LOS		D			C			B			B	
Queue Length 50th (m)	7.9	~66.1		3.2	30.2		15.3	18.1		12.3	28.0	0.0
Queue Length 95th (m)	15.3	#65.0		7.7	43.7		28.1	25.0		16.1	45.8	0.0
Internal Link Dist (m)		190.8			468.5			24.5			291.6	
Turn Bay Length (m)	25.0			50.0			40.0			95.0		
Base Capacity (vph)	314	1049		255	988		434	1131		457	529	573
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	0.31	0.91		0.16	0.53		0.42	0.29		0.33	0.46	0.18

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	66.6
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	25.6
Intersection Capacity Utilization:	65.8%
Intersection LOS:	C
ICU Level of Service:	C



# Lanes, Volumes, Timings

## 1: Uplands Dr & Hammond Bay Rd

05-06-2020

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: 1: Uplands Dr & Hammond Bay Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	24 s	11 s	24 s

## Lanes, Volumes, Timings 2: Hammond Bay Rd & Calinda

05-06-2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	589	597	35	185	75
Future Volume (vph)	24	589	597	35	185	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor	0.98		0.99		1.00	0.98
Frt			0.992			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1805	3574	3493	0	1805	1538
Flt Permitted	0.185				0.950	
Satd. Flow (perm)	344	3574	3493	0	1802	1509
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			10			107
Link Speed (k/h)		50	50		50	
Link Distance (m)		98.1	214.8		219.0	
Travel Time (s)		7.1	15.5		15.8	
Confl. Peds. (#/hr)	40			40	1	5
Peak Hour Factor	0.75	0.94	0.85	0.88	0.82	0.70
Heavy Vehicles (%)	0%	1%	2%	0%	0%	5%
Adj. Flow (vph)	32	627	702	40	226	107
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	627	742	0	226	107
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

## Lanes, Volumes, Timings 2: Hammond Bay Rd & Calinda

05-06-2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Detector Phase	7	4	8		6	6
Switch Phase						
Minimum Initial (s)	6.0	10.0	10.0		7.0	7.0
Minimum Split (s)	11.0	22.5	22.5		22.5	22.5
Total Split (s)	12.0	44.0	32.0		26.0	26.0
Total Split (%)	17.1%	62.9%	45.7%		37.1%	37.1%
Maximum Green (s)	7.0	39.0	27.0		21.0	21.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)			7.0		7.0	7.0
Flash Dont Walk (s)			8.0		8.0	8.0
Pedestrian Calls (#/hr)			5		5	5
Act Effct Green (s)	20.5	20.5	16.7		21.9	21.9
Actuated g/C Ratio	0.39	0.39	0.32		0.41	0.41
v/c Ratio	0.10	0.45	0.67		0.30	0.16
Control Delay	8.8	12.0	19.1		15.3	4.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	8.8	12.0	19.1		15.3	4.9
LOS	A	B	B		B	A
Approach Delay		11.9	19.1		12.0	
Approach LOS		B	B		B	
Queue Length 50th (m)	1.8	22.2	27.1		11.2	0.0
Queue Length 95th (m)	4.4	31.8	52.3		37.5	5.2
Internal Link Dist (m)		74.1	190.8		195.0	
Turn Bay Length (m)	15.0				40.0	
Base Capacity (vph)	335	2751	1866		747	688
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.10	0.23	0.40		0.30	0.16

### Intersection Summary

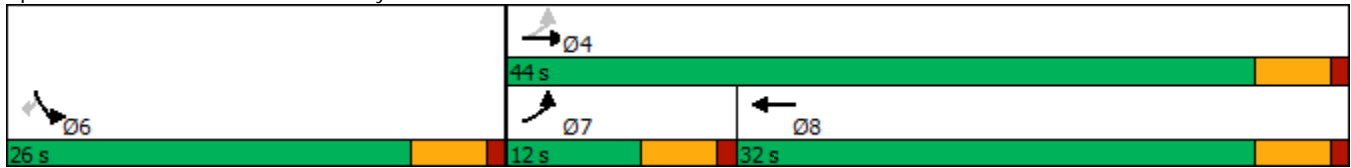
Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	52.8
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	15.0
Intersection Capacity Utilization:	40.8%
Intersection LOS:	B
ICU Level of Service:	A

Lanes, Volumes, Timings  
2: Hammond Bay Rd & Calinda

05-06-2020

Analysis Period (min) 15

Splits and Phases: 2: Hammond Bay Rd & Calinda



Lanes, Volumes, Timings

9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	396	120	311	388	208	174	574	143	219	565	166
Future Volume (vph)	197	396	120	311	388	208	174	574	143	219	565	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		0.0
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	1.00	0.91	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	1.00	0.99	1.00	1.00	0.96	0.99		0.97	0.99		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950	0.998		0.950	0.992		0.950			0.950		
Satd. Flow (prot)	1626	3417	1615	1643	3373	1583	3502	3574	1583	1770	3539	1568
Fl <sub>t</sub> Permitted	0.950	0.998		0.950	0.992		0.950			0.950		
Satd. Flow (perm)	1605	3415	1593	1641	3373	1523	3473	3574	1543	1759	3539	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			185			217			185			182
Link Speed (k/h)		50			50			80				80
Link Distance (m)		585.6			123.8			115.7				860.7
Travel Time (s)		42.2			8.9			5.2				38.7
Confl. Peds. (#/hr)	15		1	1		15	6		7	7		6
Peak Hour Factor	0.89	0.93	0.86	0.96	0.89	0.96	0.89	0.90	0.85	0.87	0.87	0.91
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	0%	1%	2%	2%	2%	3%
Adj. Flow (vph)	221	426	140	324	436	217	196	638	168	252	649	182
Shared Lane Traffic (%)	10%			24%								
Lane Group Flow (vph)	199	448	140	246	514	217	196	638	168	252	649	182
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings

9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	23.0	23.0	23.0	22.0	22.0	22.0	11.0	23.0	23.0	11.0	23.0	23.0
Total Split (s)	23.0	23.0	23.0	25.0	25.0	25.0	15.0	28.0	28.0	24.0	37.0	37.0
Total Split (%)	23.0%	23.0%	23.0%	25.0%	25.0%	25.0%	15.0%	28.0%	28.0%	24.0%	37.0%	37.0%
Maximum Green (s)	18.0	18.0	18.0	20.0	20.0	20.0	10.0	23.0	23.0	19.0	32.0	32.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				10.0	10.0	10.0		8.0	8.0		8.0	8.0
Pedestrian Calls (#/hr)				5	5	5		5	5		5	5
Act Effect Green (s)	16.4	16.4	16.4	18.5	18.5	18.5	9.4	24.4	24.4	17.1	32.1	32.1
Actuated g/C Ratio	0.17	0.17	0.17	0.19	0.19	0.19	0.10	0.25	0.25	0.18	0.33	0.33
v/c Ratio	0.72	0.77	0.33	0.78	0.80	0.46	0.57	0.70	0.32	0.81	0.55	0.29
Control Delay	54.1	48.3	4.4	56.0	47.6	8.4	49.5	38.9	5.6	58.6	29.2	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	48.3	4.4	56.0	47.6	8.4	49.5	38.9	5.6	58.6	29.2	5.2
LOS	D	D	A	E	D	A	D	D	A	E	C	A
Approach Delay		42.0			41.0			35.4			32.0	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	42.0	47.8	0.0	52.3	54.7	0.0	20.0	64.5	0.0	49.0	57.6	0.0
Queue Length 95th (m)	#72.5	66.3	6.2	#92.3	73.7	19.3	31.2	85.3	11.1	#80.2	72.9	15.1
Internal Link Dist (m)		561.6			99.8			91.7			836.7	
Turn Bay Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		
Base Capacity (vph)	304	640	448	341	701	488	364	905	529	349	1178	631
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	0.65	0.70	0.31	0.72	0.73	0.44	0.54	0.70	0.32	0.72	0.55	0.29

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	96.4
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	37.2
Intersection LOS:	D
Intersection Capacity Utilization:	69.3%
ICU Level of Service:	C

# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

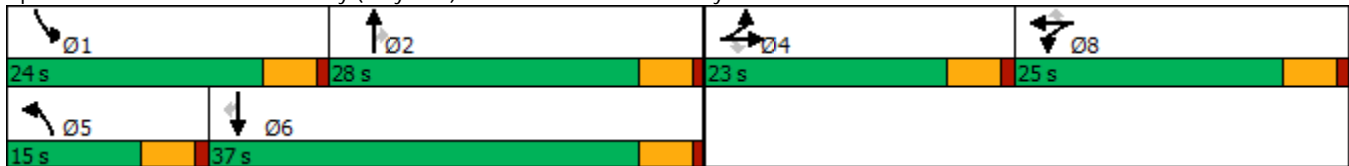
05-06-2020

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd



Lanes, Volumes, Timings  
10: Island Hwy (Hwy 19A) & Enterprise Way

05-06-2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	150	262	273	786	797	199
Future Volume (vph)	150	262	273	786	797	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	200.0			75.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor	0.98					0.99
Frt	0.907					0.850
Flt Protected	0.981		0.950			
Satd. Flow (prot)	3217	0	1770	3574	3574	1615
Flt Permitted	0.981		0.213			
Satd. Flow (perm)	3212	0	397	3574	3574	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	308					240
Link Speed (k/h)	50			80	80	
Link Distance (m)	149.2			779.3	349.5	
Travel Time (s)	10.7			35.1	15.7	
Confl. Peds. (#/hr)	2	2	2			2
Peak Hour Factor	0.80	0.85	0.90	0.93	0.94	0.83
Heavy Vehicles (%)	1%	0%	2%	1%	1%	0%
Adj. Flow (vph)	188	308	303	845	848	240
Shared Lane Traffic (%)						
Lane Group Flow (vph)	496	0	303	845	848	240
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	



Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Enterprise Way

05-06-2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases			2			6
Detector Phase	4		5	2	6	6
Switch Phase						
Minimum Initial (s)	7.0		6.0	10.0	10.0	10.0
Minimum Split (s)	23.0		11.0	23.0	23.0	23.0
Total Split (s)	23.0		18.0	47.0	29.0	29.0
Total Split (%)	32.9%		25.7%	67.1%	41.4%	41.4%
Maximum Green (s)	18.0		13.0	42.0	24.0	24.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	Max
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	8.0				8.0	8.0
Pedestrian Calls (#/hr)	5				5	5
Act Effct Green (s)	9.9		42.1	42.1	27.0	27.0
Actuated g/C Ratio	0.16		0.68	0.68	0.44	0.44
v/c Ratio	0.64		0.61	0.35	0.54	0.29
Control Delay	13.3		11.1	5.0	15.8	3.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	13.3		11.1	5.0	15.8	3.4
LOS	B		B	A	B	A
Approach Delay	13.3			6.6	13.1	
Approach LOS	B			A	B	
Queue Length 50th (m)	10.5		10.8	17.1	36.3	0.0
Queue Length 95th (m)	17.7		32.1	34.3	66.8	10.1
Internal Link Dist (m)	125.2			755.3	325.5	
Turn Bay Length (m)			200.0			75.0
Base Capacity (vph)	1154		558	2427	1556	828
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.43		0.54	0.35	0.54	0.29

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	62
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	10.4
Intersection Capacity Utilization	62.4%
Intersection LOS:	B
ICU Level of Service	B

Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Entreprise Way

05-06-2020




























Analysis Period (min) 15

Splits and Phases: 10: Island Hwy (Hwy 19A) & Entreprise Way



Lanes, Volumes, Timings  
12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				  			 	
Traffic Volume (vph)	19	78	30	533	95	215	72	1124	431	386	982	8
Future Volume (vph)	19	78	30	533	95	215	72	1124	431	386	982	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	130.0		30.0	190.0		150.0	280.0		160.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt		0.960				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1772	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1805	1772	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				226			463			126
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		438.4			585.6			838.6			910.0	
Travel Time (s)		31.6			42.2			37.7			41.0	
Peak Hour Factor	0.88	0.85	0.89	0.93	0.89	0.95	0.95	0.95	0.93	0.95	0.95	0.58
Heavy Vehicles (%)	0%	4%	0%	2%	1%	2%	2%	5%	3%	2%	5%	2%
Adj. Flow (vph)	22	92	34	573	107	226	76	1183	463	406	1034	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	126	0	573	107	226	76	1183	463	406	1034	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8			5	2		1	6

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	23.4	23.4		23.4	23.4	23.4	11.5	23.5	23.5	11.5	23.5	23.5
Total Split (s)	23.4	23.4		25.0	25.0	25.0	13.1	34.6	34.6	32.0	53.5	53.5
Total Split (%)	20.3%	20.3%		21.7%	21.7%	21.7%	11.4%	30.1%	30.1%	27.8%	46.5%	46.5%
Maximum Green (s)	18.0	18.0		19.6	19.6	19.6	7.6	29.1	29.1	26.5	48.0	48.0
Yellow Time (s)	4.4	4.4		4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5
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	3.0
Recall Mode	None	None		None	None	None	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	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	2	2		2	2	2		2	2		2	2
Act Effct Green (s)	12.3	12.3		19.6	19.6	19.6	7.4	29.1	29.1	26.5	50.8	50.8
Actuated g/C Ratio	0.11	0.11		0.18	0.18	0.18	0.07	0.27	0.27	0.24	0.46	0.46
v/c Ratio	0.11	0.60		0.93	0.32	0.48	0.64	0.90	0.61	0.95	0.65	0.02
Control Delay	43.9	52.7		67.9	43.1	9.2	74.8	49.5	7.1	74.2	26.3	0.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	52.7		67.9	43.1	9.2	74.8	49.5	7.1	74.2	26.3	0.0
LOS	D	D		E	D	A	E	D	A	E	C	A
Approach Delay		51.4			50.3			39.2			39.4	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	4.5	24.2		65.8	21.1	0.0	16.9	93.8	0.0	89.8	95.4	0.0
Queue Length 95th (m)	11.9	41.0		#107.2	39.6	21.8	#40.2	#131.0	27.9	#161.9	130.9	0.0
Internal Link Dist (m)		414.4			561.6			814.6			886.0	
Turn Bay Length (m)	40.0			130.0		30.0	190.0		150.0	280.0		160.0
Base Capacity (vph)	297	303		616	337	469	123	1315	757	429	1596	802
Starvation Cap Reductn	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
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.42		0.93	0.32	0.48	0.62	0.90	0.61	0.95	0.65	0.02

**Intersection Summary**

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 109.4

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 42.1      Intersection LOS: D

Intersection Capacity Utilization 78.6%      ICU Level of Service D

Analysis Period (min) 15

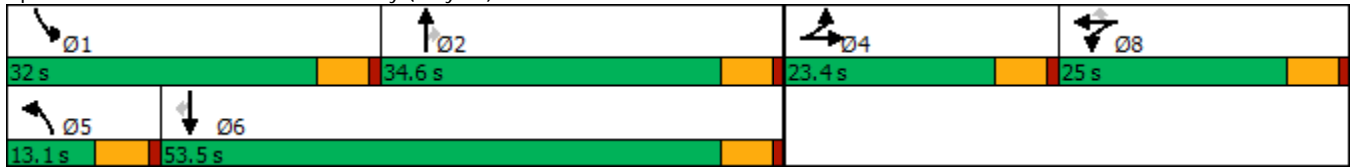
# 95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

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





















Queue shown is maximum after two cycles.

Splits and Phases: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd



Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	273	94	111	170	15	97	257	94	44	337	93
Future Volume (vph)	201	273	94	111	170	15	97	257	94	44	337	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	55.0		0.0	45.0		10.0	45.0		10.0
Storage Lanes	1		1	2		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00		1.00		0.97	0.99		0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1900	1599	1719	3503	0	1805	3505	1615	1752	3539	1615
Flt Permitted	0.566			0.445			0.950			0.950		
Satd. Flow (perm)	1049	1900	1566	802	3503	0	1798	3505	1561	1740	3539	1582
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187		16				187			187
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.5			398.6			321.2			163.3	
Travel Time (s)		17.2			28.7			23.1			11.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.83	0.89	0.90	0.95	0.88	0.72	0.81	0.83	0.74	0.75	0.90	0.84
Heavy Vehicles (%)	2%	0%	1%	5%	1%	4%	0%	3%	0%	3%	2%	0%
Adj. Flow (vph)	242	307	104	117	193	21	120	310	127	59	374	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	242	307	104	117	214	0	120	310	127	59	374	111
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8					2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		6.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	22.5	22.5	11.0	22.5	22.5
Total Split (s)	11.0	24.0	24.0	11.0	24.0		12.0	24.0	24.0	11.0	23.0	23.0
Total Split (%)	15.7%	34.3%	34.3%	15.7%	34.3%		17.1%	34.3%	34.3%	15.7%	32.9%	32.9%
Maximum Green (s)	6.0	19.0	19.0	6.0	19.0		7.0	19.0	19.0	6.0	18.0	18.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		8.0	8.0		8.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	22.5	17.9	17.9	21.2	15.1		6.9	21.5	21.5	6.1	18.5	18.5
Actuated g/C Ratio	0.35	0.28	0.28	0.33	0.24		0.11	0.34	0.34	0.10	0.29	0.29
v/c Ratio	0.55	0.58	0.18	0.33	0.26		0.62	0.26	0.20	0.36	0.37	0.19
Control Delay	20.3	27.1	1.1	15.6	19.5		45.8	18.5	2.1	36.1	21.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	27.1	1.1	15.6	19.5		45.8	18.5	2.1	36.1	21.1	1.5
LOS	C	C	A	B	B		D	B	A	D	C	A
Approach Delay		20.4			18.1			20.6			18.7	
Approach LOS		C			B			C			B	
Queue Length 50th (m)	21.2	36.7	0.0	9.5	11.0		15.4	16.6	0.0	7.4	20.9	0.0
Queue Length 95th (m)	33.5	60.2	1.5	19.2	18.8		#32.8	25.8	0.5	15.6	34.4	1.0
Internal Link Dist (m)		214.5			374.6			297.2			139.3	
Turn Bay Length (m)	65.0			55.0			45.0		10.0	45.0		10.0
Base Capacity (vph)	437	587	613	352	1065		200	1175	647	166	1023	590
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.52	0.17	0.33	0.20		0.60	0.26	0.20	0.36	0.37	0.19

Intersection Summary

Area Type: Other  
 Cycle Length: 70  
 Actuated Cycle Length: 64.1  
 Natural Cycle: 70  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.62  
 Intersection Signal Delay: 19.7  
 Intersection LOS: B

# Lanes, Volumes, Timings

## 18: Uplands Dr & Turner Rd









05-06-2020

Intersection Capacity Utilization 55.9% ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 18: Uplands Dr & Turner Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	23 s	11 s	24 s



**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B28	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	T	L	T
Maximum Queue (m)	32.4	61.0	70.5	20.8	46.1	54.6	25.9	46.2	32.1	18.3	32.5	51.7
Average Queue (m)	13.0	29.8	37.1	7.1	21.7	28.8	18.0	18.3	16.4	0.6	13.3	24.3
95th Queue (m)	27.4	52.8	58.9	16.5	38.3	47.0	27.5	36.5	29.1	8.4	24.4	42.1
Link Distance (m)		190.2	190.2		478.4	478.4		26.1	26.1	322.3		301.2
Upstream Blk Time (%)							1	2	1			
Queuing Penalty (veh)							0	4	3			
Storage Bay Dist (m)	25.0			50.0			40.0				95.0	
Storage Blk Time (%)	0	11			0		1	2				
Queuing Penalty (veh)	1	9			0		1	3				

**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	SB
Directions Served	R
Maximum Queue (m)	24.8
Average Queue (m)	9.7
95th Queue (m)	20.1
Link Distance (m)	301.2
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 2: Hammond Bay Rd & Calinda**

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (m)	19.6	39.2	47.2	49.8	57.0	38.7	23.4
Average Queue (m)	5.6	19.1	26.3	23.9	30.2	18.5	9.8
95th Queue (m)	15.7	37.7	43.4	40.8	50.1	32.8	20.4
Link Distance (m)		76.9	76.9	190.2	190.2		205.1
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	15.0					40.0	
Storage Blk Time (%)	1	9				0	
Queuing Penalty (veh)	2	2				0	

**Intersection: 4: Marlin Way & Hammond Bay Rd**

Movement	WB	NB	NB
Directions Served	L	L	R
Maximum Queue (m)	13.0	12.6	14.6
Average Queue (m)	2.3	5.6	7.8
95th Queue (m)	9.3	12.8	14.5
Link Distance (m)			172.7
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	15.0	15.0	
Storage Blk Time (%)	0	0	1
Queuing Penalty (veh)	1	0	0

**Intersection: 6: Applecross Rd & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	TR	T	T	R	R
Maximum Queue (m)	35.0	17.7	21.3	9.8	4.7	16.8	46.2
Average Queue (m)	15.9	0.6	1.5	0.5	0.2	2.5	9.0
95th Queue (m)	31.9	12.4	21.0	5.6	2.5	10.1	30.6
Link Distance (m)		94.4	94.4	72.0	72.0		73.6
Upstream Blk Time (%)			0				
Queuing Penalty (veh)			0				
Storage Bay Dist (m)	30.0					15.0	
Storage Blk Time (%)	1				0	0	
Queuing Penalty (veh)	3				0	0	

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	LT	T	R	L	LT	T	R	L	L	T	T
Maximum Queue (m)	56.6	64.9	152.4	47.3	47.4	91.6	99.3	57.2	31.8	28.5	66.8	71.0
Average Queue (m)	23.2	39.4	35.3	4.1	34.8	54.0	43.2	6.0	12.8	14.2	39.2	40.3
95th Queue (m)	45.2	58.0	104.7	25.9	57.2	85.4	80.5	32.5	27.3	25.8	62.3	63.3
Link Distance (m)		541.8	541.8			94.4	94.4				87.5	87.5
Upstream Blk Time (%)						0	1					0
Queuing Penalty (veh)						2	3					0
Storage Bay Dist (m)	65.0			40.0	40.0			60.0	115.0	115.0		
Storage Blk Time (%)		0	3	0	2	19	1	0				0
Queuing Penalty (veh)		0	4	0	7	30	2	0				0

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	NB	SB	SB	SB
Directions Served	R	L	T	T
Maximum Queue (m)	23.0	69.2	55.0	59.4
Average Queue (m)	0.8	38.2	34.4	37.2
95th Queue (m)	12.3	62.3	52.6	54.2
Link Distance (m)			841.6	841.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	70.0	135.0		
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			

**Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way**

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LR	L	T	T	T	T
Maximum Queue (m)	31.6	29.1	56.5	172.9	180.3	58.1	52.6
Average Queue (m)	16.3	6.5	27.0	15.8	21.4	29.9	27.7
95th Queue (m)	28.3	20.0	45.3	116.2	121.7	51.0	48.6
Link Distance (m)	133.2	133.2		757.4	757.4	323.8	323.8
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					0		
Storage Bay Dist (m)			200.0				
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	L	T	R	L	T	T	T	L	T
Maximum Queue (m)	19.8	37.8	69.5	72.1	46.0	33.3	29.8	92.6	96.0	93.7	143.4	88.4
Average Queue (m)	4.0	14.9	44.2	47.8	14.2	4.3	10.4	61.0	61.4	53.0	78.3	50.5
95th Queue (m)	12.9	30.7	63.4	67.7	33.6	21.5	24.8	84.2	85.8	80.7	121.5	77.4
Link Distance (m)		421.4		541.8	541.8			815.9	815.9	815.9		894.3
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	40.0		130.0			30.0	190.0					280.0
Storage Blk Time (%)		1			2	0						
Queuing Penalty (veh)		0			4	0						

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	SB
Directions Served	T
Maximum Queue (m)	91.2
Average Queue (m)	53.1
95th Queue (m)	82.5
Link Distance (m)	894.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	T	L	T	T	R	L	T	T	R
Maximum Queue (m)	27.4	101.2	76.9	57.8	37.3	105.5	104.3	54.4	52.2	85.6	350.8	27.2
Average Queue (m)	8.9	48.8	42.6	20.0	18.8	58.6	47.7	4.8	27.1	43.6	53.8	3.9
95th Queue (m)	24.4	90.1	72.2	49.3	39.3	91.6	83.9	31.0	52.4	74.8	192.4	19.4
Link Distance (m)		385.5		207.1		527.5	527.5			757.4	757.4	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		75.0		30.0			85.0	45.0			20.0
Storage Blk Time (%)	1	40	2		1	29	1	0	1	7	25	0
Queuing Penalty (veh)	3	14	2		3	18	2	0	5	8	4	0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	T	R	L	T
Maximum Queue (m)	52.9	61.4	19.4	37.0	46.3	18.1	40.7	50.6	34.4	16.3	24.1	38.6
Average Queue (m)	24.5	32.4	9.2	16.1	20.1	8.1	17.2	23.5	4.7	9.7	10.5	19.6
95th Queue (m)	42.9	54.5	18.0	31.0	36.6	17.5	31.1	40.2	17.9	16.4	21.2	31.8
Link Distance (m)		207.1	207.1			382.0		307.3	307.3			141.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	65.0			55.0	55.0		45.0			10.0	45.0	
Storage Blk Time (%)		0			0		0	0	1	1		0
Queuing Penalty (veh)		0			0		0	0	1	1		0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	43.8	17.5
Average Queue (m)	21.5	12.5
95th Queue (m)	37.8	19.6
Link Distance (m)	141.4	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		10.0
Storage Blk Time (%)	34	1
Queuing Penalty (veh)	32	2

**Intersection: 21: Uplands Dr & Parkwood Dr**

Movement	WB	SB	SB
Directions Served	LR	L	T
Maximum Queue (m)	11.7	7.4	3.1
Average Queue (m)	6.8	1.5	0.1
95th Queue (m)	13.1	6.9	2.2
Link Distance (m)	254.6		322.3
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)		35.0	
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Network Summary**

Network wide Queuing Penalty: 179
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HCM 2010 TWSC  
4: Marlin Way & Hammond Bay Rd

05-05-2020

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	555	5	27	645	29	58
Future Vol, veh/h	555	5	27	645	29	58
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	63	70	85	83	70
Heavy Vehicles, %	1	0	0	3	0	0
Mvmt Flow	590	8	39	759	35	83

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	600	0	1054
Stage 1	-	-	-	-	596
Stage 2	-	-	-	-	458
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	987	-	225
Stage 1	-	-	-	-	519
Stage 2	-	-	-	-	609
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	985	-	216
Mov Cap-2 Maneuver	-	-	-	-	216
Stage 1	-	-	-	-	518
Stage 2	-	-	-	-	585

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	216	700	-	-	985	-
HCM Lane V/C Ratio	0.162	0.118	-	-	0.039	-
HCM Control Delay (s)	24.9	10.8	-	-	8.8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0.4	-	-	0.1	-

HCM 2010 TWSC  
6: Applecross Rd & Hammond Bay Rd

05-05-2020

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	201	539	18	0	537	137	0	0	21	0	0	370
Future Vol, veh/h	201	539	18	0	537	137	0	0	21	0	0	370
Conflicting Peds, #/hr	40	0	5	5	0	40	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	300	-	-	-	-	150	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	94	75	25	85	90	25	25	67	25	25	95
Heavy Vehicles, %	5	1	0	0	3	2	0	0	0	0	0	1
Mvmt Flow	251	573	24	0	632	152	0	0	31	0	0	389

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	824	0	0	-	-	0	-	-	304	-	-	356
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.2	-	-	-	-	-	-	-	6.9	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.25	-	-	-	-	-	-	-	3.3	-	-	3.31
Pot Cap-1 Maneuver	783	-	-	0	-	-	0	0	698	0	0	643
Stage 1	-	-	-	0	-	-	0	0	-	0	0	-
Stage 2	-	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-				-	-	
Mov Cap-1 Maneuver	756	-	-	-	-	-	-	-	695	-	-	621
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.6	0	10.4	20
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	695	756	-	-	-	-	621
HCM Lane V/C Ratio	0.045	0.332	-	-	-	-	0.627
HCM Control Delay (s)	10.4	12.1	-	-	-	-	20
HCM Lane LOS	B	B	-	-	-	-	C
HCM 95th %tile Q(veh)	0.1	1.5	-	-	-	-	4.4

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	16	21	404	33	16	410
Future Vol, veh/h	16	21	404	33	16	410
Conflicting Peds, #/hr	0	1	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	350	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	75	89	63	60	92
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	23	28	454	52	27	446

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	985	486	0	0	511
Stage 1	485	-	-	-	-
Stage 2	500	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	277	585	-	-	1065
Stage 1	623	-	-	-	-
Stage 2	613	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	269	582	-	-	1060
Mov Cap-2 Maneuver	269	-	-	-	-
Stage 1	621	-	-	-	-
Stage 2	598	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.9	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	382	1060
HCM Lane V/C Ratio	-	-	0.133	0.025
HCM Control Delay (s)	-	-	15.9	8.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1



Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	115	113	366	86	45	30	603	243	46	479	6
Future Volume (vph)	29	115	113	366	86	45	30	603	243	46	479	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00	1.00	0.98	1.00		0.97	1.00		0.98
Frnt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (prot)	1752	1845	1615	1715	1729	1599	1770	3505	1568	1805	3539	1568
Flt Permitted	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (perm)	1750	1845	1588	1711	1727	1575	1764	3505	1527	1803	3539	1529
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			154			154			316			154
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		403.2			238.5			542.6			779.3	
Travel Time (s)		29.0			17.2			24.4			35.1	
Confl. Peds. (#/hr)	2		2	2		2	2		2	1		1
Confl. Bikes (#/hr)			2			1			1			1
Peak Hour Factor	0.60	0.65	0.83	0.72	0.80	0.60	0.91	0.87	0.77	0.73	0.94	0.75
Heavy Vehicles (%)	3%	3%	0%	0%	3%	1%	2%	3%	3%	0%	2%	3%
Adj. Flow (vph)	48	177	136	508	108	75	33	693	316	63	510	8
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	48	177	136	305	311	75	33	693	316	63	510	8
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	11.0	23.0	23.0	11.0	22.5	22.5
Total Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	11.0	23.5	23.5	11.0	23.5	23.5
Total Split (%)	26.5%	26.5%	26.5%	32.9%	32.9%	32.9%	12.9%	27.6%	27.6%	12.9%	27.6%	27.6%
Maximum Green (s)	17.5	17.5	17.5	23.0	23.0	23.0	6.0	18.5	18.5	6.0	18.5	18.5
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0	5.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0		11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1	1		1	1		1	1
Act Effct Green (s)	12.3	12.3	12.3	17.9	17.9	17.9	6.2	19.3	19.3	6.2	21.3	21.3
Actuated g/C Ratio	0.17	0.17	0.17	0.25	0.25	0.25	0.09	0.27	0.27	0.09	0.30	0.30
v/c Ratio	0.16	0.55	0.34	0.70	0.71	0.15	0.21	0.73	0.49	0.40	0.48	0.01
Control Delay	28.8	36.0	6.7	35.2	35.5	0.6	39.2	32.3	6.6	43.6	25.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.8	36.0	6.7	35.2	35.5	0.6	39.2	32.3	6.6	43.6	25.1	0.0
LOS	C	D	A	D	D	A	D	C	A	D	C	A
Approach Delay		24.0			31.6			24.7			26.7	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	6.4	25.3	0.0	44.3	45.3	0.0	4.9	52.7	0.0	9.4	28.7	0.0
Queue Length 95th (m)	10.4	31.9	9.0	58.5	68.2	0.0	14.5	#88.4	10.5	18.6	59.2	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0		30.0	75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	450	474	523	580	584	634	156	953	645	159	1064	567
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	0.11	0.37	0.26	0.53	0.53	0.12	0.21	0.73	0.49	0.40	0.48	0.01

Intersection Summary

Area Type: Other  
 Cycle Length: 85  
 Actuated Cycle Length: 70.8  
 Natural Cycle: 85  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 26.8  
 Intersection LOS: C

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd







11-27-2020

Intersection Capacity Utilization 53.2% ICU Level of Service A

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 17: Island Hwy (Hwy 19A) & Turner Rd

 Ø1	 Ø2	 Ø4	 Ø8
11 s	23.5 s	22.5 s	28 s
 Ø5	 Ø6		
11 s	23.5 s		

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↗		↘	↗	
Traffic Volume (vph)	83	474	196	118	303	24	131	38	35	12	33	29
Future Volume (vph)	83	474	196	118	303	24	131	38	35	12	33	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		35.0	95.0		0.0	45.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.91	0.91	0.95	0.91	0.91	0.95
Ped Bike Factor	1.00		0.98	1.00	1.00		0.99	0.99		0.99	0.99	
Frt			0.850		0.988			0.957			0.944	
Flt Protected	0.950			0.950			0.950	0.980		0.950	0.999	
Satd. Flow (prot)	1504	3124	1425	1533	2965	0	1395	2711	0	1137	2507	0
Flt Permitted	0.373			0.235			0.950	0.980		0.950	0.999	
Satd. Flow (perm)	589	3124	1394	378	2965	0	1386	2704	0	1129	2507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		7			42			32	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		306.3			279.2			613.3			216.7	
Travel Time (s)		22.1			20.1			44.2			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.72	0.79	0.81	0.84	0.75	0.67	0.80	0.68	0.67	0.60	0.63	0.91
Heavy Vehicles (%)	8%	4%	2%	6%	7%	20%	6%	10%	5%	30%	20%	9%
Adj. Flow (vph)	115	600	242	140	404	36	164	56	52	20	52	32
Shared Lane Traffic (%)							44%			10%		
Lane Group Flow (vph)	115	600	242	140	440	0	92	180	0	18	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.0	29.0	29.0	10.5	28.0		26.0	26.0		31.0	31.0	
Total Split (s)	29.0	41.8	41.8	16.2	29.0		26.0	26.0		31.0	31.0	
Total Split (%)	25.2%	36.3%	36.3%	14.1%	25.2%		22.6%	22.6%		27.0%	27.0%	
Maximum Green (s)	24.5	36.8	36.8	11.7	24.0		21.0	21.0		26.0	26.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
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)	4.5	5.0	5.0	4.5	5.0		5.0	5.0		5.0	5.0	
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	None	None	None	None		Max	Max		Max	Max	
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		16.0		14.0	14.0		19.0	19.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	36.6	25.6	25.6	36.5	25.5		21.1	21.1		26.1	26.1	
Actuated g/C Ratio	0.36	0.25	0.25	0.35	0.25		0.21	0.21		0.25	0.25	
v/c Ratio	0.38	0.77	0.50	0.56	0.59		0.32	0.31		0.06	0.13	
Control Delay	23.3	43.2	12.0	28.9	37.2		40.8	29.4		32.9	22.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.3	43.2	12.0	28.9	37.2		40.8	29.4		32.9	22.0	
LOS	C	D	B	C	D		D	C		C	C	
Approach Delay		32.9			35.2			33.3			23.9	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	15.3	62.6	8.8	19.0	42.2		18.4	13.6		3.1	4.8	
Queue Length 95th (m)	21.3	69.8	22.4	30.0	49.0		33.7	18.2		7.1	7.6	
Internal Link Dist (m)		282.3			255.2			589.3			192.7	
Turn Bay Length (m)	55.0		35.0	95.0			45.0			40.0		
Base Capacity (vph)	454	1122	621	270	782		285	589		288	660	
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	0.25	0.53	0.39	0.52	0.56		0.32	0.31		0.06	0.13	

Intersection Summary







Area Type:	CBD
Cycle Length:	115
Actuated Cycle Length:	102.9
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.77
Intersection Signal Delay:	33.2
Intersection LOS:	C

Lanes, Volumes, Timings  
 30: Metral Dr & Aulds Rd

11-27-2020

Intersection Capacity Utilization 54.4% ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 30: Aulds Rd

 Ø2	 Ø6	 Ø3	 Ø4
26 s	31 s	16.2 s	41.8 s
		 Ø7	 Ø8
		29 s	29 s

**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	R	L	T	T
Maximum Queue (m)	24.5	43.1	24.6	67.9	75.4	36.8	64.6	51.9	10.0	32.5	49.8	43.3
Average Queue (m)	6.6	20.1	3.4	23.7	46.9	6.6	31.1	23.2	0.5	7.9	23.2	15.6
95th Queue (m)	19.7	36.4	16.9	58.2	67.6	22.0	51.6	45.1	4.6	20.2	40.2	33.5
Link Distance (m)	385.4		220.9		527.2		527.2		764.0		764.0	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		30.0		75.0		30.0		85.0		45.0	
Storage Blk Time (%)	1	10	0	0	0	0	10			0	0	3
Queuing Penalty (veh)	2	14	0	0	0	0	3			0	0	0

**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	SB
Directions Served	R
Maximum Queue (m)	5.4
Average Queue (m)	0.2
95th Queue (m)	3.8
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	20.0
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 30: Aulds Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	L	LT
Maximum Queue (m)	62.2	80.4	78.6	42.5	46.0	52.8	55.6	30.0	36.7	22.4	6.8	26.6
Average Queue (m)	16.8	44.3	36.4	21.2	19.5	30.3	22.1	7.5	18.4	6.9	0.2	9.2
95th Queue (m)	38.0	67.2	63.8	42.9	37.6	49.4	43.7	19.7	31.2	16.5	3.0	22.9
Link Distance (m)		292.2	292.2			265.4	265.4		595.5	595.5		202.9
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0	95.0			45.0			40.0	
Storage Blk Time (%)	0	3	8	0				0	0			
Queuing Penalty (veh)	0	3	16	0				0	0			

**Intersection: 30: Aulds Rd**

Movement	SB
Directions Served	TR
Maximum Queue (m)	21.3
Average Queue (m)	4.9
95th Queue (m)	14.7
Link Distance (m)	202.9
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Network Summary**

Network wide Queuing Penalty: 39
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Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	163	123	264	116	60	62	964	378	125	912	16
Future Volume (vph)	35	163	123	264	116	60	62	964	378	125	912	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00	0.98	1.00		0.97	1.00		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.981		0.950			0.950		
Satd. Flow (prot)	1805	1863	1599	1681	1757	1599	1805	3539	1599	1787	3539	1615
Flt Permitted	0.950			0.950	0.981		0.950			0.950		
Satd. Flow (perm)	1791	1863	1573	1679	1756	1560	1801	3539	1554	1785	3539	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			162			125			411			125
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		403.2			238.5			542.6			779.3	
Travel Time (s)		29.0			17.2			24.4			35.1	
Confl. Peds. (#/hr)	7		1	1		7	2		2	2		2
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.67	0.88	0.76	0.86	0.86	0.91	0.86	0.93	0.92	0.89	0.94	0.89
Heavy Vehicles (%)	0%	2%	1%	2%	0%	1%	0%	2%	1%	1%	2%	0%
Adj. Flow (vph)	52	185	162	307	135	66	72	1037	411	140	970	18
Shared Lane Traffic (%)				29%								
Lane Group Flow (vph)	52	185	162	218	224	66	72	1037	411	140	970	18
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	11.0	23.0	23.0	11.0	22.5	22.5
Total Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	16.0	34.5	34.5	20.0	38.5	38.5
Total Split (%)	21.4%	21.4%	21.4%	26.7%	26.7%	26.7%	15.2%	32.9%	32.9%	19.0%	36.7%	36.7%
Maximum Green (s)	17.5	17.5	17.5	23.0	23.0	23.0	11.0	29.5	29.5	15.0	33.5	33.5
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0	5.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0		11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1	1		1	1		1	1
Act Effct Green (s)	13.9	13.9	13.9	16.9	16.9	16.9	8.8	30.3	30.3	12.0	36.1	36.1
Actuated g/C Ratio	0.15	0.15	0.15	0.18	0.18	0.18	0.09	0.32	0.32	0.13	0.39	0.39
v/c Ratio	0.19	0.67	0.44	0.72	0.70	0.17	0.42	0.90	0.53	0.61	0.71	0.03
Control Delay	38.5	51.3	10.2	50.6	49.3	1.2	50.4	44.4	5.7	52.2	30.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	51.3	10.2	50.6	49.3	1.2	50.4	44.4	5.7	52.2	30.8	0.1
LOS	D	D	B	D	D	A	D	D	A	D	C	A
Approach Delay		33.0			43.6			34.3			32.9	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	8.8	33.9	0.0	41.8	42.9	0.0	13.3	100.9	0.0	25.7	86.5	0.0
Queue Length 95th (m)	15.4	59.2	10.3	67.6	68.5	0.9	27.9	#169.0	23.5	48.3	#131.7	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0		30.0	75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	343	354	430	420	439	483	215	1148	782	291	1369	682
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	0.15	0.52	0.38	0.52	0.51	0.14	0.33	0.90	0.53	0.48	0.71	0.03

**Intersection Summary**

Area Type: Other  
 Cycle Length: 105  
 Actuated Cycle Length: 93.3  
 Natural Cycle: 95  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 35.0  
 Intersection LOS: D

# Lanes, Volumes, Timings

## 17: Island Hwy (Hwy 19A) & Turner Rd







11-27-2020

Intersection Capacity Utilization 70.7% 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.

Splits and Phases: 17: Island Hwy (Hwy 19A) & Turner Rd

 Ø1	 Ø2	 Ø4	 Ø8
20 s	34.5 s	22.5 s	28 s
 Ø5	 Ø6		
16 s	38.5 s		

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	441	210	237	416	66	280	93	127	104	110	165
Future Volume (vph)	204	441	210	237	416	66	280	93	127	104	110	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		35.0	95.0		0.0	45.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.91	0.91	0.95	0.91	0.91	0.95
Ped Bike Factor	1.00		0.98	1.00	1.00		1.00	0.99		0.99	0.99	
Frt			0.850		0.969			0.944			0.916	
Flt Protected	0.950			0.950			0.950	0.983		0.950	0.998	
Satd. Flow (prot)	1608	3185	1439	1608	3031	0	1449	2796	0	1408	2753	0
Flt Permitted	0.235			0.274			0.950	0.983		0.950	0.998	
Satd. Flow (perm)	397	3185	1407	462	3031	0	1443	2792	0	1401	2752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			205		25			83			176	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		306.3			279.2			613.3			216.7	
Travel Time (s)		22.1			20.1			44.2			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.91	0.92	0.88	0.91	0.95	0.59	0.83	0.83	0.86	0.74	0.89	0.94
Heavy Vehicles (%)	1%	2%	1%	1%	3%	5%	2%	6%	0%	5%	2%	2%
Adj. Flow (vph)	224	479	239	260	438	112	337	112	148	141	124	176
Shared Lane Traffic (%)							40%			10%		
Lane Group Flow (vph)	224	479	239	260	550	0	202	395	0	127	314	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.0	29.0	29.0	10.5	28.0		26.0	26.0		31.0	31.0	
Total Split (s)	29.0	30.6	30.6	26.4	28.0		27.0	27.0		31.0	31.0	
Total Split (%)	25.2%	26.6%	26.6%	23.0%	24.3%		23.5%	23.5%		27.0%	27.0%	
Maximum Green (s)	24.5	25.6	25.6	21.9	23.0		22.0	22.0		26.0	26.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
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)	4.5	5.0	5.0	4.5	5.0		5.0	5.0		5.0	5.0	
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	None	None	None	None		Max	Max		Max	Max	
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		16.0		14.0	14.0		19.0	19.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	38.6	21.7	21.7	40.0	22.5		22.1	22.1		26.1	26.1	
Actuated g/C Ratio	0.36	0.20	0.20	0.38	0.21		0.21	0.21		0.24	0.24	
v/c Ratio	0.68	0.74	0.53	0.73	0.84		0.67	0.61		0.37	0.39	
Control Delay	32.4	47.7	12.8	34.7	51.2		53.0	35.7		39.0	16.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.4	47.7	12.8	34.7	51.2		53.0	35.7		39.0	16.8	
LOS	C	D	B	C	D		D	D		D	B	
Approach Delay		35.2			45.9			41.6			23.2	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	32.7	52.1	6.1	39.0	57.7		45.1	34.2		25.4	13.2	
Queue Length 95th (m)	51.3	73.8	28.1	59.8	#92.1		72.4	50.2		39.4	28.3	
Internal Link Dist (m)		282.3			255.2			589.3			192.7	
Turn Bay Length (m)	55.0		35.0	95.0			45.0			40.0		
Base Capacity (vph)	441	768	494	420	701		300	645		344	807	
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	0.51	0.62	0.48	0.62	0.78		0.67	0.61		0.37	0.39	

Intersection Summary

Area Type: CBD

Cycle Length: 115

Actuated Cycle Length: 106.6

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 37.8

Intersection LOS: D

# Lanes, Volumes, Timings

## 30: Metral Dr & Aulds Rd







11-27-2020

Intersection Capacity Utilization 80.8% 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: 30: Aulds Rd

 Ø2	 Ø6	 Ø3	 Ø4
27 s	31 s	26.4 s	30.6 s
		 Ø7	 Ø8
		29 s	28 s

# Queuing and Blocking Report

11-27-2020

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	R	L	T	T
Maximum Queue (m)	27.3	76.6	37.5	71.8	84.2	37.5	109.2	102.7	91.7	52.3	88.1	88.2
Average Queue (m)	8.8	35.0	9.9	32.5	54.5	17.6	65.6	58.3	10.2	28.4	51.8	48.3
95th Queue (m)	24.2	63.7	35.9	68.9	78.1	39.7	97.9	92.4	46.7	53.4	79.3	78.2
Link Distance (m)		385.4			220.9		527.2	527.2			764.0	764.0
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		30.0	75.0		30.0			85.0	45.0		
Storage Blk Time (%)	1	31	0	0	1	1	38	1	0	1	12	29
Queuing Penalty (veh)	2	48	0	0	1	5	23	5	0	3	14	5

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	SB
Directions Served	R
Maximum Queue (m)	27.3
Average Queue (m)	2.4
95th Queue (m)	14.9
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	20.0
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	L	LT
Maximum Queue (m)	60.1	77.8	71.7	42.5	73.5	70.4	68.5	49.6	55.2	48.9	45.4	57.3
Average Queue (m)	31.2	41.5	36.1	24.7	36.5	42.5	39.6	24.1	31.9	21.8	7.6	32.2
95th Queue (m)	53.4	62.8	61.1	47.1	61.1	64.9	63.4	43.7	49.1	41.1	30.4	51.3
Link Distance (m)		292.2	292.2			265.4	265.4		595.5	595.5		202.9
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0	95.0			45.0			40.0	
Storage Blk Time (%)	0	2	10	0	0			0	2		0	4
Queuing Penalty (veh)	1	3	21	1	0			1	3		0	2

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	SB
Directions Served	TR
Maximum Queue (m)	58.0
Average Queue (m)	21.3
95th Queue (m)	41.6
Link Distance (m)	202.9
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Network Summary**

Network wide Queuing Penalty: 139
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## APPENDIX C: 2020 POST DEVELOPMENT

Lanes, Volumes, Timings  
1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	299	56	54	565	58	124	124	42	70	197	93
Future Volume (vph)	55	299	56	54	565	58	124	124	42	70	197	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	40.0		0.0	95.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.98	0.99		0.98	0.99		0.99	0.99		0.99		0.98
Frt		0.978			0.982			0.947				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3400	0	1752	3405	0	1752	3328	0	1787	1845	1568
Flt Permitted	0.238			0.396			0.568			0.603		
Satd. Flow (perm)	429	3400	0	719	3405	0	1041	3328	0	1126	1845	1534
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			21			84				187
Link Speed (k/h)		50			50			50				50
Link Distance (m)		214.8			492.5			48.5				315.6
Travel Time (s)		15.5			35.5			3.5				22.7
Confl. Peds. (#/hr)	65		17	17		65	8		8	8		8
Peak Hour Factor	0.84	0.72	0.77	0.82	0.88	0.68	0.94	0.80	0.50	0.65	0.86	0.77
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	0%	1%	3%	3%
Adj. Flow (vph)	65	415	73	66	642	85	132	155	84	108	229	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	488	0	66	727	0	132	239	0	108	229	121
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

# Lanes, Volumes, Timings

## 1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	7.0		6.0	7.0	7.0
Minimum Split (s)	11.0	23.0		11.0	23.0		11.0	23.0		11.0	23.0	23.0
Total Split (s)	11.0	25.0		11.0	25.0		11.0	23.0		11.0	23.0	23.0
Total Split (%)	15.7%	35.7%		15.7%	35.7%		15.7%	32.9%		15.7%	32.9%	32.9%
Maximum Green (s)	6.0	20.0		6.0	20.0		6.0	18.0		6.0	18.0	18.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		10.0			10.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effect Green (s)	19.9	16.8		19.9	16.8		23.5	19.0		23.5	19.0	19.0
Actuated g/C Ratio	0.33	0.28		0.33	0.28		0.39	0.32		0.39	0.32	0.32
v/c Ratio	0.23	0.50		0.19	0.75		0.28	0.22		0.21	0.39	0.20
Control Delay	14.0	20.3		13.3	26.1		14.2	13.5		13.5	22.9	1.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	14.0	20.3		13.3	26.1		14.2	13.5		13.5	22.9	1.9
LOS	B	C		B	C		B	B		B	C	A
Approach Delay		19.6			25.0			13.8			15.1	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	5.0	27.3		5.1	46.0		11.1	8.7		9.0	26.8	0.0
Queue Length 95th (m)	10.7	31.0		10.6	63.1		21.8	14.7		12.8	44.4	0.6
Internal Link Dist (m)		190.8			468.5			24.5			291.6	
Turn Bay Length (m)	25.0			50.0			40.0			95.0		
Base Capacity (vph)	280	1212		346	1208		480	1108		508	582	612
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	0.23	0.40		0.19	0.60		0.28	0.22		0.21	0.39	0.20

### Intersection Summary









Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	60.3
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.75
Intersection Signal Delay:	19.6
Intersection Capacity Utilization:	60.6%
Intersection LOS:	B
ICU Level of Service:	B

Lanes, Volumes, Timings  
 1: Uplands Dr & Hammond Bay Rd

05-06-2020

Analysis Period (min) 15

Splits and Phases: 1: Uplands Dr & Hammond Bay Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	23 s	11 s	25 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	23 s	11 s	25 s

## Lanes, Volumes, Timings

### 2: Calinda & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	290	110	79	660	34	192	5	95	20	5	22
Future Volume (vph)	44	290	110	79	660	34	192	5	95	20	5	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		1.00	1.00		0.99				0.99	
Frt		0.957			0.989			0.858				0.876
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3312	0	1805	3460	0	1805	1630	0	1752	1600	0
Flt Permitted	0.174			0.499			0.734			0.681		
Satd. Flow (perm)	325	3312	0	946	3460	0	1387	1630	0	1256	1600	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		121			12			112			29	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		98.1			214.8			174.3			219.0	
Travel Time (s)		7.1			15.5			12.5			15.8	
Confl. Peds. (#/hr)	15		2	2		15	4					4
Peak Hour Factor	0.65	0.93	0.89	0.89	0.95	0.63	0.90	0.80	0.85	0.60	0.80	0.75
Heavy Vehicles (%)	1%	5%	0%	0%	3%	0%	0%	0%	0%	3%	0%	3%
Adj. Flow (vph)	68	312	124	89	695	54	213	6	112	33	6	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	436	0	89	749	0	213	118	0	33	35	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings  
2: Calinda & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6		6
Switch Phase												
Minimum Initial (s)	6.0	10.0		10.0	10.0		7.0	7.0		7.0		7.0
Minimum Split (s)	11.0	22.5		22.5	22.5		22.5	22.5		22.5		22.5
Total Split (s)	11.0	40.0		29.0	29.0		30.0	30.0		30.0		30.0
Total Split (%)	15.7%	57.1%		41.4%	41.4%		42.9%	42.9%		42.9%		42.9%
Maximum Green (s)	6.0	35.0		24.0	24.0		25.0	25.0		25.0		25.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Recall Mode	None	None		None	None		Min	Min		Max		Max
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0		7.0
Flash Dont Walk (s)		8.0		8.0	8.0		8.0	8.0		8.0		8.0
Pedestrian Calls (#/hr)		5		5	5		5	5		5		5
Act Effect Green (s)	24.2	24.2		18.3	18.3		25.7	25.7		25.7		25.7
Actuated g/C Ratio	0.40	0.40		0.30	0.30		0.43	0.43		0.43		0.43
v/c Ratio	0.24	0.31		0.31	0.71		0.36	0.16		0.06		0.05
Control Delay	11.8	8.4		20.3	22.6		17.1	4.7		14.7		7.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	11.8	8.4		20.3	22.6		17.1	4.7		14.7		7.4
LOS	B	A		C	C		B	A		B		A
Approach Delay		8.8			22.4			12.7				10.9
Approach LOS		A			C			B				B
Queue Length 50th (m)	4.6	11.7		8.7	44.0		19.3	0.5		2.6		0.5
Queue Length 95th (m)	7.4	19.6		19.5	61.7		40.2	7.8		5.6		5.0
Internal Link Dist (m)		74.1			190.8			150.3				195.0
Turn Bay Length (m)	15.0			15.0			15.0			40.0		
Base Capacity (vph)	280	2030		388	1427		592	761		536		700
Starvation Cap Reductn	0	0		0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0	0		0		0
Reduced v/c Ratio	0.24	0.21		0.23	0.52		0.36	0.16		0.06		0.05

Intersection Summary

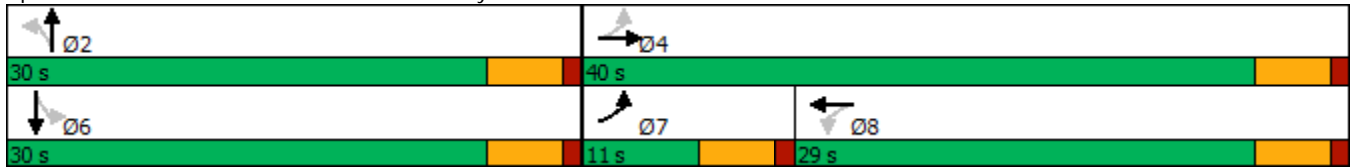
Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	60.2
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	16.2
Intersection Capacity Utilization	54.2%
Intersection LOS:	B
ICU Level of Service	A

Lanes, Volumes, Timings  
 2: Calinda & Hammond Bay Rd

05-06-2020

Analysis Period (min) 15

Splits and Phases: 2: Calinda & Hammond Bay Rd



# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	412	104	232	436	260	95	535	161	118	359	101
Future Volume (vph)	97	412	104	232	436	260	95	535	161	118	359	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		0.0
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	1.00	0.91	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98			0.98			0.98			0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950	0.999		0.950	0.997		0.950			0.950		
Satd. Flow (prot)	1643	3455	1583	1626	3413	1615	3502	3574	1599	1787	3574	1615
Flt Permitted	0.950	0.999		0.950	0.997		0.950			0.950		
Satd. Flow (perm)	1643	3455	1552	1626	3413	1584	3502	3574	1564	1787	3574	1580
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			313			252			131
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		585.6			123.8			118.1			860.7	
Travel Time (s)		42.2			8.9			5.3			38.7	
Confl. Peds. (#/hr)			5			5			5			5
Peak Hour Factor	0.94	0.78	0.83	0.74	0.78	0.83	0.72	0.80	0.64	0.71	0.82	0.90
Heavy Vehicles (%)	0%	0%	2%	1%	1%	0%	0%	1%	1%	1%	1%	0%
Adj. Flow (vph)	103	528	125	314	559	313	132	669	252	166	438	112
Shared Lane Traffic (%)	10%			10%								
Lane Group Flow (vph)	93	538	125	283	590	313	132	669	252	166	438	112
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	23.0	23.0	23.0	26.0	26.0	26.0	11.0	23.0	23.0	11.0	23.0	23.0
Total Split (s)	24.0	24.0	24.0	28.0	28.0	28.0	13.0	30.0	30.0	18.0	35.0	35.0
Total Split (%)	24.0%	24.0%	24.0%	28.0%	28.0%	28.0%	13.0%	30.0%	30.0%	18.0%	35.0%	35.0%
Maximum Green (s)	19.0	19.0	19.0	23.0	23.0	23.0	8.0	25.0	25.0	13.0	30.0	30.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				14.0	14.0	14.0		8.0	8.0		8.0	8.0
Pedestrian Calls (#/hr)				5	5	5		5	5		5	5
Act Effect Green (s)	18.1	18.1	18.1	21.3	21.3	21.3	7.7	25.7	25.7	12.1	30.1	30.1
Actuated g/C Ratio	0.19	0.19	0.19	0.22	0.22	0.22	0.08	0.26	0.26	0.12	0.31	0.31
v/c Ratio	0.30	0.84	0.32	0.79	0.79	0.53	0.48	0.71	0.42	0.75	0.40	0.19
Control Delay	37.8	51.4	8.2	53.6	44.5	7.4	49.7	38.1	6.4	62.9	28.4	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	51.4	8.2	53.6	44.5	7.4	49.7	38.1	6.4	62.9	28.4	4.2
LOS	D	D	A	D	D	A	D	D	A	E	C	A
Approach Delay		42.6			36.9			31.9			32.6	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	18.0	58.3	0.0	59.4	61.8	0.0	13.5	66.4	0.0	33.0	37.3	0.0
Queue Length 95th (m)	34.5	66.2	11.1	72.4	69.2	15.4	18.2	75.2	1.6	42.4	46.5	9.3
Internal Link Dist (m)		561.6			99.8			94.1			836.7	
Turn Bay Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		
Base Capacity (vph)	322	677	409	385	809	614	289	944	598	239	1106	579
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	0.29	0.79	0.31	0.74	0.73	0.51	0.46	0.71	0.42	0.69	0.40	0.19

### Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	97.2
Natural Cycle:	85
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	35.8
Intersection Capacity Utilization:	62.7%
Intersection LOS:	D
ICU Level of Service:	B







# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020

Analysis Period (min) 15

Splits and Phases: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

 Ø1	 Ø2	 Ø4	 Ø8
18 s	30 s	24 s	28 s
 Ø5	 Ø6		
13 s	35 s		

Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	37	124	87	76	153	187	508	92	86	437	172
Future Volume (vph)	107	37	124	87	76	153	187	508	92	86	437	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	15.0		0.0	200.0		0.0	200.0		75.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00	1.00		1.00		0.99
Frt		0.884			0.902			0.974				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1661	0	1805	1698	0	1752	3362	0	1805	3471	1599
Flt Permitted	0.473			0.623			0.364			0.396		
Satd. Flow (perm)	897	1661	0	1182	1698	0	671	3362	0	751	3471	1576
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		151			164			45				236
Link Speed (k/h)		50			50			80				80
Link Distance (m)		146.4			168.4			779.3				347.1
Travel Time (s)		10.5			12.1			35.1				15.6
Confl. Peds. (#/hr)	2		2	2		2	2		2	2		2
Peak Hour Factor	0.87	0.82	0.82	0.87	0.85	0.91	0.80	0.91	0.80	0.80	0.86	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	3%	5%	0%	0%	4%	1%
Adj. Flow (vph)	123	45	151	100	89	168	234	558	115	108	508	236
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	196	0	100	257	0	234	673	0	108	508	236
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	23.0	23.0		22.5	22.5		11.0	23.0		10.5	23.0	23.0
Total Split (s)	23.0	23.0		23.0	23.0		14.0	26.5		10.5	23.0	23.0
Total Split (%)	38.3%	38.3%		38.3%	38.3%		23.3%	44.2%		17.5%	38.3%	38.3%
Maximum Green (s)	18.0	18.0		18.5	18.5		9.0	21.5		6.0	18.0	18.0
Yellow Time (s)	4.0	4.0		3.5	3.5		4.0	4.0		3.5	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	5.0	5.0		4.5	4.5		5.0	5.0		4.5	5.0	5.0
Lead/Lag							Lead	Lag		Lead	Lag	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	None		None	None		None	Max		None	Max	Max
Walk Time (s)	7.0	7.0						7.0			7.0	7.0
Flash Dont Walk (s)	8.0	8.0						8.0			8.0	8.0
Pedestrian Calls (#/hr)	5	5						5			5	5
Act Effect Green (s)	11.9	11.9		12.4	12.4		30.2	23.6		25.0	18.5	18.5
Actuated g/C Ratio	0.22	0.22		0.23	0.23		0.56	0.44		0.47	0.34	0.34
v/c Ratio	0.62	0.40		0.37	0.50		0.43	0.45		0.23	0.43	0.34
Control Delay	33.0	8.3		21.1	10.5		8.8	12.7		7.6	16.0	4.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	33.0	8.3		21.1	10.5		8.8	12.7		7.6	16.0	4.3
LOS	C	A		C	B		A	B		A	B	A
Approach Delay		17.8			13.5			11.7			11.7	
Approach LOS		B			B			B			B	
Queue Length 50th (m)	11.4	3.7		8.6	7.8		9.5	23.7		3.9	20.6	0.0
Queue Length 95th (m)	24.7	13.8		18.6	20.8		20.9	44.2		10.3	35.8	6.7
Internal Link Dist (m)		122.4			144.4			755.3			323.1	
Turn Bay Length (m)				15.0			200.0			200.0		75.0
Base Capacity (vph)	303	661		410	696		564	1499		468	1193	697
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	0.41	0.30		0.24	0.37		0.41	0.45		0.23	0.43	0.34

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	53.7
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.62
Intersection Signal Delay:	12.8
Intersection Capacity Utilization	58.6%
Intersection LOS:	B
ICU Level of Service	B

Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

05-06-2020




























Analysis Period (min) 15

Splits and Phases: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way



Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				  			 	
Traffic Volume (vph)	25	160	29	353	153	170	92	845	519	326	967	10
Future Volume (vph)	25	160	29	353	153	170	92	845	519	326	967	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	130.0		30.0	190.0		150.0	280.0		160.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt		0.974				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1791	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1805	1791	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				187			473			132
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		438.4			585.6			838.6			910.0	
Travel Time (s)		31.6			42.2			37.7			41.0	
Peak Hour Factor	0.65	0.82	0.70	0.93	0.65	0.76	0.65	0.95	0.92	0.90	0.95	0.63
Heavy Vehicles (%)	0%	4%	0%	2%	1%	2%	2%	5%	3%	2%	5%	2%
Adj. Flow (vph)	38	195	41	380	235	224	142	889	564	362	1018	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	236	0	380	235	224	142	889	564	362	1018	16
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	



Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

Queue shown is maximum after two cycles.

Splits and Phases: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

↙ Ø1	↑ Ø2	↗ Ø4	↘ Ø8
32 s	31.2 s	23.4 s	23.4 s
↙ Ø5	↓ Ø6		
17.7 s	45.5 s		



Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	188	29	128	336	19	70	212	105	16	237	154
Future Volume (vph)	85	188	29	128	336	19	70	212	105	16	237	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	55.0		0.0	45.0		10.0	45.0		10.0
Storage Lanes	1		1	2		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00		1.00		0.97	1.00		0.98
Frt			0.850		0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1863	1568	1787	3562	0	1752	3539	1599	1805	3505	1599
Flt Permitted	0.419			0.468			0.950			0.950		
Satd. Flow (perm)	766	1863	1544	880	3562	0	1746	3539	1556	1799	3505	1569
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187		12				187			203
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.5			398.6			321.2			163.3	
Travel Time (s)		17.2			28.7			23.1			11.8	
Confl. Peds. (#/hr)	13		1	1		13	4		2	2		4
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.71	0.75	0.66	0.79	0.84	0.60	0.78	0.90	0.65	0.67	0.82	0.76
Heavy Vehicles (%)	3%	2%	3%	1%	0%	0%	3%	2%	1%	0%	3%	1%
Adj. Flow (vph)	120	251	44	162	400	32	90	236	162	24	289	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	120	251	44	162	432	0	90	236	162	24	289	203
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8					2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		6.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	22.5	22.5	11.0	22.5	22.5
Total Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (%)	15.7%	34.3%	34.3%	15.7%	34.3%		15.7%	34.3%	34.3%	15.7%	34.3%	34.3%
Maximum Green (s)	6.0	19.0	19.0	6.0	19.0		6.0	19.0	19.0	6.0	19.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		8.0	8.0		8.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	18.6	14.2	14.2	18.6	14.2		6.3	24.1	24.1	6.3	19.9	19.9
Actuated g/C Ratio	0.31	0.23	0.23	0.31	0.23		0.10	0.40	0.40	0.10	0.33	0.33
v/c Ratio	0.36	0.58	0.09	0.45	0.51		0.50	0.17	0.22	0.13	0.25	0.31
Control Delay	16.3	28.2	0.3	18.0	23.3		41.1	15.8	3.6	30.5	18.8	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	28.2	0.3	18.0	23.3		41.1	15.8	3.6	30.5	18.8	5.0
LOS	B	C	A	B	C		D	B	A	C	B	A
Approach Delay		21.8			21.9			16.4			13.9	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	9.8	29.1	0.0	13.4	25.1		11.1	8.5	0.0	2.9	14.6	0.0
Queue Length 95th (m)	14.9	40.0	0.0	21.6	34.7		#24.4	22.1	1.6	7.3	23.8	8.3
Internal Link Dist (m)		214.5			374.6			297.2			139.3	
Turn Bay Length (m)	65.0			55.0			45.0		10.0	45.0		10.0
Base Capacity (vph)	336	610	631	363	1174		181	1404	730	186	1148	650
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.41	0.07	0.45	0.37		0.50	0.17	0.22	0.13	0.25	0.31

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	60.7
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.58
Intersection Signal Delay:	18.5
Intersection LOS:	B

# Lanes, Volumes, Timings

## 18: Uplands Dr & Turner Rd









05-06-2020

Intersection Capacity Utilization 52.1% ICU Level of Service A

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 18: Uplands Dr & Turner Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	24 s	11 s	24 s

**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	R
Maximum Queue (m)	25.9	36.6	39.6	34.3	61.7	64.7	25.7	31.6	26.3	22.8	49.8	30.2
Average Queue (m)	8.4	14.0	18.6	9.5	30.6	34.5	15.0	11.3	9.8	10.5	22.8	10.8
95th Queue (m)	18.5	29.7	33.5	22.3	50.9	55.1	24.6	24.9	20.7	20.1	41.5	21.4
Link Distance (m)		189.6	189.6		478.4	478.4		26.1	26.1		301.2	301.2
Upstream Blk Time (%)							0	0	0			
Queuing Penalty (veh)							0	0	0			
Storage Bay Dist (m)	25.0			50.0			40.0			95.0		
Storage Blk Time (%)	0	2			1		0	0				
Queuing Penalty (veh)	0	1			0		0	0				

**Intersection: 2: Calinda & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	20.6	39.8	45.9	22.4	68.9	79.1	22.4	42.3	16.2	17.6
Average Queue (m)	8.8	16.1	22.3	12.7	31.7	40.4	15.5	13.4	3.1	4.3
95th Queue (m)	18.2	31.7	39.5	24.1	57.7	67.1	23.7	31.1	10.9	12.7
Link Distance (m)		76.9	76.9		189.6	189.6		160.2		205.1
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	15.0			15.0			15.0		40.0	
Storage Blk Time (%)	2	9		6	23		15	1		
Queuing Penalty (veh)	2	4		20	18		15	2		

**Intersection: 4: Marlin Way & Hammond Bay Rd**

Movement	EB	EB	WB	NB	NB
Directions Served	T	TR	L	L	R
Maximum Queue (m)	3.3	6.2	9.1	10.8	11.8
Average Queue (m)	0.1	0.2	1.5	4.3	5.6
95th Queue (m)	2.3	2.5	6.9	11.6	12.7
Link Distance (m)	72.0	72.0			172.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)			15.0	15.0	
Storage Blk Time (%)			0	0	0
Queuing Penalty (veh)			0	0	0

**Intersection: 6: Applecross Rd & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	TR	T	T	R	R
Maximum Queue (m)	32.1	27.8	42.6	1.7	2.8	9.2	9.0
Average Queue (m)	10.7	0.9	1.4	0.1	0.1	0.6	0.7
95th Queue (m)	23.3	14.9	20.7	1.7	1.5	4.3	5.0
Link Distance (m)		94.4	94.4	72.0	72.0		73.6
Upstream Blk Time (%)			0				
Queuing Penalty (veh)			0				
Storage Bay Dist (m)	30.0					15.0	
Storage Blk Time (%)	0					0	
Queuing Penalty (veh)	1					0	

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	LT	T	R	L	LT	T	R	L	L	T	T
Maximum Queue (m)	29.3	54.6	61.8	47.2	47.3	88.6	77.3	50.5	17.8	20.6	59.0	58.0
Average Queue (m)	9.2	28.7	30.2	5.0	23.3	43.1	35.0	4.1	6.1	9.2	32.1	33.7
95th Queue (m)	21.9	46.8	50.2	28.9	48.6	72.7	59.7	24.1	14.5	18.1	52.3	53.0
Link Distance (m)		541.8	541.8			94.4	94.4				89.9	89.9
Upstream Blk Time (%)						0	0					
Queuing Penalty (veh)						0	0					
Storage Bay Dist (m)	65.0			40.0	40.0			60.0	115.0	115.0		
Storage Blk Time (%)		0	3	0	0	9	0	0				0
Queuing Penalty (veh)		0	3	0	0	11	1	0				0

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	B29	SB	SB	SB
Directions Served	T	L	T	T
Maximum Queue (m)	66.6	40.3	44.2	43.6
Average Queue (m)	2.2	20.3	22.2	22.3
95th Queue (m)	47.0	36.8	38.2	39.7
Link Distance (m)	322.5		841.6	841.6
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (m)		135.0		
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way**

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	
Directions Served	L	TR	L	TR	L	T	TR	L	T	T	
Maximum Queue (m)	31.2	14.8	22.0	45.6	45.7	45.0	51.7	20.2	29.8	33.7	
Average Queue (m)	13.6	4.5	12.8	15.7	18.8	18.7	23.4	7.7	13.4	15.8	
95th Queue (m)	25.0	11.8	21.9	34.1	35.7	38.2	44.5	16.7	27.4	28.8	
Link Distance (m)	130.4	130.4		154.4		753.6	753.6		322.5	322.5	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (m)			15.0			200.0			200.0		
Storage Blk Time (%)			10			6					
Queuing Penalty (veh)			23			5					

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	L	T	R	L	T	T	T	R	L
Maximum Queue (m)	34.4	65.6	48.3	59.8	154.8	37.5	32.4	64.3	69.3	63.1	14.9	112.5
Average Queue (m)	5.9	30.8	27.9	32.3	26.0	7.9	13.3	43.4	44.4	35.1	0.5	58.0
95th Queue (m)	19.4	56.3	45.2	50.5	99.6	31.4	28.7	60.1	63.0	56.2	10.5	96.2
Link Distance (m)	421.4		541.8		541.8			815.9	815.9	815.9		
Upstream Blk Time (%)											0	
Queuing Penalty (veh)											0	
Storage Bay Dist (m)	40.0	130.0				30.0	190.0			150.0	280.0	
Storage Blk Time (%)	6				6	0						
Queuing Penalty (veh)	1				9	0						

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	SB	SB
Directions Served	T	T
Maximum Queue (m)	92.4	98.1
Average Queue (m)	52.3	55.0
95th Queue (m)	79.1	84.1
Link Distance (m)	894.3	894.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	T	L	T	T	L	T	T	R
Maximum Queue (m)	27.3	64.1	74.8	37.4	37.2	71.4	63.3	31.7	58.6	59.6	21.9
Average Queue (m)	7.0	28.7	46.8	13.3	8.2	38.8	31.4	8.8	24.9	26.6	0.9
95th Queue (m)	20.7	55.8	71.5	28.4	25.2	60.8	55.9	21.3	46.0	48.0	9.0
Link Distance (m)		385.5		207.1		527.5	527.5		753.6	753.6	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (m)	20.0		75.0		30.0			45.0			20.0
Storage Blk Time (%)	0	18	0		0	15			1	15	0
Queuing Penalty (veh)	1	5	0		1	4			0	1	0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	T	R	L	T
Maximum Queue (m)	34.8	51.2	16.0	39.6	53.2	41.1	31.0	36.5	21.1	16.7	15.4	32.0
Average Queue (m)	13.5	25.1	4.2	15.4	28.5	11.3	12.2	16.5	1.7	10.1	4.7	15.6
95th Queue (m)	25.7	43.8	12.2	29.4	44.5	25.9	24.0	29.9	10.2	16.8	13.4	26.7
Link Distance (m)		207.1	207.1			382.0		307.3	307.3			141.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	65.0			55.0	55.0		45.0			10.0	45.0	
Storage Blk Time (%)					0			0	0	1		0
Queuing Penalty (veh)					0			0	0	1		0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	47.0	17.9
Average Queue (m)	16.7	13.8
95th Queue (m)	35.4	17.7
Link Distance (m)	141.4	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		10.0
Storage Blk Time (%)	26	2
Queuing Penalty (veh)	40	3

**Intersection: 21: Uplands Dr & Parkwood Dr**

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (m)	18.7	17.2	11.9	8.8	1.2
Average Queue (m)	9.7	8.7	2.2	0.5	0.0
95th Queue (m)	15.3	15.4	9.0	3.9	0.9
Link Distance (m)	103.3	254.6			227.2
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)			35.0	35.0	
Storage Blk Time (%)					
Queuing Penalty (veh)					

**Intersection: 31: Uplands Dr & North Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	9.2	17.3
Average Queue (m)	4.7	1.6
95th Queue (m)	11.8	8.8
Link Distance (m)	97.8	227.2
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 33: Uplands Dr & South Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	10.7	14.4
Average Queue (m)	4.4	1.2
95th Queue (m)	11.8	7.4
Link Distance (m)	114.7	199.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 177



HCM 2010 TWSC  
4: Marlin Way & Hammond Bay Rd

05-06-2020

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↘
Traffic Vol, veh/h	413	144	12	862	14	31
Future Vol, veh/h	413	144	12	862	14	31
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	89	60	95	75	85
Heavy Vehicles, %	3	0	0	3	0	0
Mvmt Flow	444	162	20	907	19	36

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	608	0	1021
Stage 1	-	-	-	-	527
Stage 2	-	-	-	-	494
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	980	-	236
Stage 1	-	-	-	-	562
Stage 2	-	-	-	-	584
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	978	-	231
Mov Cap-2 Maneuver	-	-	-	-	231
Stage 1	-	-	-	-	561
Stage 2	-	-	-	-	572

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	231	696	-	-	978	-
HCM Lane V/C Ratio	0.081	0.052	-	-	0.02	-
HCM Control Delay (s)	22	10.5	-	-	8.8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0.1	-

HCM 2010 TWSC  
6: Applecross Rd & Hammond Bay Rd

05-06-2020

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	123	553	15	0	810	66	0	0	4	0	0	118
Future Vol, veh/h	123	553	15	0	810	66	0	0	4	0	0	118
Conflicting Peds, #/hr	12	0	3	3	0	12	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	300	-	-	-	-	150	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	93	80	25	95	65	25	25	50	25	25	85
Heavy Vehicles, %	3	3	0	0	3	1	0	0	0	0	0	2
Mvmt Flow	138	595	19	0	853	102	0	0	8	0	0	139

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	967	0	0	-	-	0	-	-	310	-	-	439
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.16	-	-	-	-	-	-	-	6.9	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.23	-	-	-	-	-	-	-	3.3	-	-	3.32
Pot Cap-1 Maneuver	702	-	-	0	-	-	0	0	692	0	0	566
Stage 1	-	-	-	0	-	-	0	0	-	0	0	-
Stage 2	-	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	695	-	-	-	-	-	-	-	690	-	-	560
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.1			0			10.3			13.5		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	690	695	-	-	-	-	560
HCM Lane V/C Ratio	0.012	0.199	-	-	-	-	0.248
HCM Control Delay (s)	10.3	11.5	-	-	-	-	13.5
HCM Lane LOS	B	B	-	-	-	-	B
HCM 95th %tile Q(veh)	0	0.7	-	-	-	-	1

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	29	5	51	28	5	19	36	254	8	9	277	12
Future Vol, veh/h	29	5	51	28	5	19	36	254	8	9	277	12
Conflicting Peds, #/hr	1	0	0	0	0	1	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	350	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	80	85	85	80	85	75	91	60	75	85	60
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	34	6	60	33	6	22	48	279	13	12	326	20

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	762	758	341	780	762	292	351	0	0	297	0	0
Stage 1	365	365	-	387	387	-	-	-	-	-	-	-
Stage 2	397	393	-	393	375	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	324	339	706	315	337	752	1219	-	-	1276	-	-
Stage 1	658	627	-	641	613	-	-	-	-	-	-	-
Stage 2	633	609	-	636	621	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	297	320	703	272	318	748	1214	-	-	1271	-	-
Mov Cap-2 Maneuver	297	320	-	272	318	-	-	-	-	-	-	-
Stage 1	629	619	-	613	586	-	-	-	-	-	-	-
Stage 2	583	582	-	570	613	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.1		17		1.1		0.3	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1214	-	-	457	361	1271	-
HCM Lane V/C Ratio	0.04	-	-	0.22	0.17	0.009	-
HCM Control Delay (s)	8.1	-	-	15.1	17	7.9	-
HCM Lane LOS	A	-	-	C	C	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.6	0	-

HCM 2010 TWSC  
 31: Uplands Dr & North Access

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Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	5	15	12	290	283	24
Future Vol, veh/h	5	15	12	290	283	24
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	91	85	60
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	6	18	16	319	333	40

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	709	358	378	0	-	0
Stage 1	358	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	404	691	1192	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	394	688	1187	-	-	-
Mov Cap-2 Maneuver	394	-	-	-	-	-
Stage 1	698	-	-	-	-	-
Stage 2	714	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1187	-	580	-	-
HCM Lane V/C Ratio	0.013	-	0.041	-	-
HCM Control Delay (s)	8.1	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	5	15	12	298	356	5
Future Vol, veh/h	5	15	12	298	356	5
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	91	85	60
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	6	18	16	327	419	8

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	787	428	432	0	-	0
Stage 1	428	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	363	631	1138	-	-	-
Stage 1	662	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	354	628	1133	-	-	-
Mov Cap-2 Maneuver	354	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	708	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1133	-	526	-	-
HCM Lane V/C Ratio	0.014	-	0.045	-	-
HCM Control Delay (s)	8.2	0	12.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lanes, Volumes, Timings  
1: Uplands Dr & Hammond Bay Rd

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	661	199	125	482	59	185	240	75	97	213	83
Future Volume (vph)	86	661	199	125	482	59	185	240	75	97	213	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	40.0		0.0	95.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.98	0.99		1.00	0.99		0.99	1.00		0.99		0.98
Frt		0.966			0.982			0.966				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3421	0	1805	3447	0	1770	3402	0	1805	1863	1553
Flt Permitted	0.258			0.200			0.473			0.511		
Satd. Flow (perm)	478	3421	0	378	3447	0	876	3402	0	966	1863	1519
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			21			51				187
Link Speed (k/h)		50			50			50				50
Link Distance (m)		214.8			492.5			48.5				315.6
Travel Time (s)		15.5			35.5			3.5				22.7
Confl. Peds. (#/hr)	40		15	15		40	8		8	8		8
Peak Hour Factor	0.81	0.88	0.90	0.84	0.82	0.76	0.85	0.77	0.83	0.77	0.86	0.75
Heavy Vehicles (%)	1%	1%	0%	0%	2%	3%	2%	2%	2%	0%	2%	4%
Adj. Flow (vph)	106	751	221	149	588	78	218	312	90	126	248	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	106	972	0	149	666	0	218	402	0	126	248	111
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings  
1: Uplands Dr & Hammond Bay Rd

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	7.0		6.0	7.0	7.0
Minimum Split (s)	11.0	23.0		11.0	23.0		11.0	23.0		11.0	23.0	23.0
Total Split (s)	11.0	25.0		11.0	25.0		11.0	23.0		11.0	23.0	23.0
Total Split (%)	15.7%	35.7%		15.7%	35.7%		15.7%	32.9%		15.7%	32.9%	32.9%
Maximum Green (s)	6.0	20.0		6.0	20.0		6.0	18.0		6.0	18.0	18.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		10.0			10.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	24.6	20.0		24.6	20.0		25.3	20.6		24.1	18.1	18.1
Actuated g/C Ratio	0.36	0.30		0.36	0.30		0.37	0.30		0.36	0.27	0.27
v/c Ratio	0.37	0.93		0.56	0.65		0.54	0.38		0.30	0.50	0.20
Control Delay	15.7	39.4		21.4	24.1		20.3	19.2		15.2	26.0	1.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.7	39.4		21.4	24.1		20.3	19.2		15.2	26.0	1.6
LOS	B	D		C	C		C	B		B	C	A
Approach Delay		37.0			23.7			19.6			17.6	
Approach LOS		D			C			B			B	
Queue Length 50th (m)	8.3	65.4		11.9	40.9		19.4	21.0		10.5	29.3	0.0
Queue Length 95th (m)	15.0	#101.1		20.9	51.5		31.9	27.3		17.4	47.7	0.0
Internal Link Dist (m)		190.8			468.5			24.5			291.6	
Turn Bay Length (m)	25.0			50.0			40.0			95.0		
Base Capacity (vph)	290	1054		264	1038		406	1072		419	498	542
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	0.37	0.92		0.56	0.64		0.54	0.38		0.30	0.50	0.20

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	67.7
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	26.6
Intersection LOS:	C
Intersection Capacity Utilization:	73.0%
ICU Level of Service:	C

# Lanes, Volumes, Timings

## 1: Uplands Dr & Hammond Bay Rd

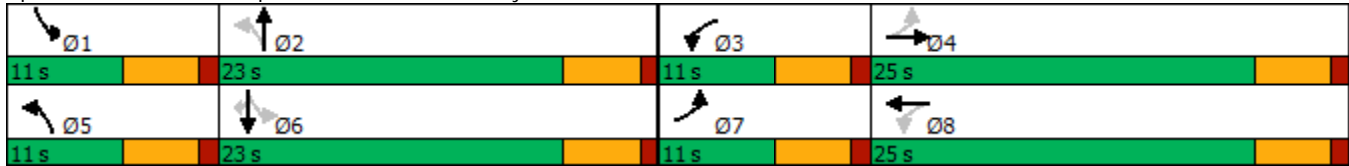
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Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Uplands Dr & Hammond Bay Rd





## Lanes, Volumes, Timings

### 2: Calinda & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	615	89	132	583	35	136	5	139	185	5	75
Future Volume (vph)	24	615	89	132	583	35	136	5	139	185	5	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97	1.00		1.00	0.99		0.99	0.99		1.00	0.98	
Frt		0.979			0.992			0.855			0.858	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3492	0	1805	3493	0	1805	1604	0	1805	1529	0
Flt Permitted	0.337			0.186			0.684			0.646		
Satd. Flow (perm)	621	3492	0	353	3493	0	1292	1604	0	1226	1529	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			9			170			107	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		98.1			214.8			174.3			219.0	
Travel Time (s)		7.1			15.5			12.5			15.8	
Confl. Peds. (#/hr)	40		2	2		40	5		1	1		5
Peak Hour Factor	0.75	0.94	0.82	0.82	0.85	0.88	0.90	0.80	0.82	0.82	0.80	0.70
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	5%
Adj. Flow (vph)	32	654	109	161	686	40	151	6	170	226	6	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	763	0	161	726	0	151	176	0	226	113	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings  
2: Calinda & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6		6
Switch Phase												
Minimum Initial (s)	6.0	10.0		5.0	10.0		7.0	7.0		7.0		7.0
Minimum Split (s)	11.0	22.5		9.5	22.5		22.5	22.5		22.5		22.5
Total Split (s)	11.0	27.2		14.2	30.4		28.6	28.6		28.6		28.6
Total Split (%)	15.7%	38.9%		20.3%	43.4%		40.9%	40.9%		40.9%		40.9%
Maximum Green (s)	6.0	22.2		9.7	25.4		23.6	23.6		23.6		23.6
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0		4.0		4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0		4.5	5.0		5.0	5.0		5.0		5.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Recall Mode	None	None		None	None		Min	Min		Max		Max
Walk Time (s)		7.0			7.0		7.0	7.0		7.0		7.0
Flash Dont Walk (s)		8.0			8.0		8.0	8.0		8.0		8.0
Pedestrian Calls (#/hr)		5			5		5	5		5		5
Act Effct Green (s)	23.0	18.5		28.7	24.7		24.1	24.1		24.1		24.1
Actuated g/C Ratio	0.37	0.29		0.46	0.39		0.38	0.38		0.38		0.38
v/c Ratio	0.09	0.73		0.45	0.53		0.31	0.24		0.48		0.17
Control Delay	9.5	24.4		13.4	16.6		18.7	4.5		21.8		5.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	9.5	24.4		13.4	16.6		18.7	4.5		21.8		5.2
LOS	A	C		B	B		B	A		C		A
Approach Delay		23.8			16.1			11.0				16.3
Approach LOS		C			B			B				B
Queue Length 50th (m)	2.0	44.6		10.7	29.1		14.0	0.5		22.7		0.5
Queue Length 95th (m)	4.8	64.5		17.9	53.1		30.1	9.2		40.5		7.9
Internal Link Dist (m)		74.1			190.8			150.3				195.0
Turn Bay Length (m)	15.0			15.0			15.0			40.0		
Base Capacity (vph)	342	1276		389	1558		495	719		469		652
Starvation Cap Reductn	0	0		0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0	0		0		0
Reduced v/c Ratio	0.09	0.60		0.41	0.47		0.31	0.24		0.48		0.17

Intersection Summary

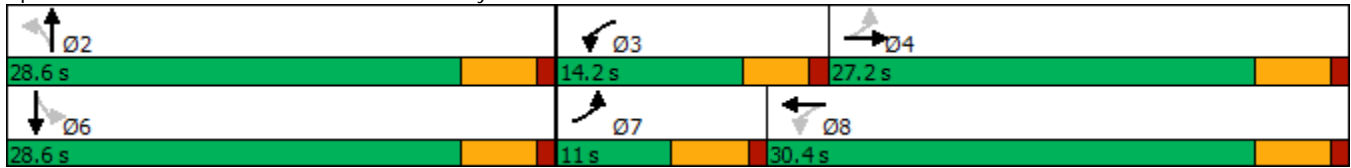
Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	63
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	18.0
Intersection Capacity Utilization	63.5%
Intersection LOS:	B
ICU Level of Service	B

Lanes, Volumes, Timings  
 2: Calinda & Hammond Bay Rd

05-06-2020

Analysis Period (min) 15

Splits and Phases: 2: Calinda & Hammond Bay Rd



# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	445	155	335	428	264	226	638	211	241	656	166
Future Volume (vph)	197	445	155	335	428	264	226	638	211	241	656	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		0.0
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	1.00	0.91	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	1.00	0.98	1.00	1.00	0.96	0.99		0.97	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950	0.998		0.950	0.993		0.950			0.950		
Satd. Flow (prot)	1626	3417	1615	1643	3376	1583	3502	3574	1583	1770	3539	1568
Flt Permitted	0.950	0.998		0.950	0.993		0.950			0.950		
Satd. Flow (perm)	1607	3415	1587	1641	3375	1520	3477	3574	1541	1760	3539	1528
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			185			275			248			182
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		585.6			123.8			118.1			860.7	
Travel Time (s)		42.2			8.9			5.3			38.7	
Confl. Peds. (#/hr)	15		1	1		15	6		7	7		6
Confl. Bikes (#/hr)			3			2			1			2
Peak Hour Factor	0.89	0.93	0.86	0.96	0.89	0.96	0.89	0.90	0.85	0.87	0.87	0.91
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	0%	1%	2%	2%	2%	3%
Adj. Flow (vph)	221	478	180	349	481	275	254	709	248	277	754	182
Shared Lane Traffic (%)	10%			23%								
Lane Group Flow (vph)	199	500	180	269	561	275	254	709	248	277	754	182
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.0	12.0	12.0	22.0	22.0	22.0	11.0	20.0	20.0	11.0	20.0	20.0
Total Split (s)	23.0	23.0	23.0	25.0	25.0	25.0	17.0	28.0	28.0	24.0	35.0	35.0
Total Split (%)	23.0%	23.0%	23.0%	25.0%	25.0%	25.0%	17.0%	28.0%	28.0%	24.0%	35.0%	35.0%
Maximum Green (s)	18.0	18.0	18.0	20.0	20.0	20.0	12.0	23.0	23.0	19.0	30.0	30.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				10.0	10.0	10.0		8.0	8.0		8.0	8.0
Pedestrian Calls (#/hr)				5	5	5		5	5		5	5
Act Effct Green (s)	17.2	17.2	17.2	19.1	19.1	19.1	11.1	23.5	23.5	17.9	30.2	30.2
Actuated g/C Ratio	0.18	0.18	0.18	0.20	0.20	0.20	0.11	0.24	0.24	0.18	0.31	0.31
v/c Ratio	0.70	0.83	0.42	0.84	0.85	0.53	0.64	0.83	0.44	0.85	0.69	0.30
Control Delay	52.3	52.3	8.3	61.7	51.7	8.5	49.6	45.5	7.0	64.0	34.1	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	52.3	8.3	61.7	51.7	8.5	49.6	45.5	7.0	64.0	34.1	5.5
LOS	D	D	A	E	D	A	D	D	A	E	C	A
Approach Delay		43.3			43.4			38.5			36.6	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	42.0	54.3	0.0	58.1	60.7	0.0	25.7	73.4	0.0	54.8	71.7	0.0
Queue Length 95th (m)	#72.5	#80.1	14.8	#104.9	#86.8	21.7	38.4	#104.2	16.0	#92.2	89.2	15.6
Internal Link Dist (m)		561.6			99.8			94.1			836.7	
Turn Bay Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		
Base Capacity (vph)	300	631	443	336	692	530	431	858	558	345	1094	598
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	0.66	0.79	0.41	0.80	0.81	0.52	0.59	0.83	0.44	0.80	0.69	0.30

### Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 97.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 40.2

Intersection LOS: D

# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020







Intersection Capacity Utilization 74.3% 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: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

 Ø1	 Ø2	 Ø4	 Ø8
24 s	28 s	23 s	25 s
 Ø5	 Ø6		
17 s	35 s		

Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	129	262	134	148	138	273	834	96	146	801	199
Future Volume (vph)	150	129	262	134	148	138	273	834	96	146	801	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	15.0		0.0	200.0		0.0	200.0		75.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99			0.99			1.00		1.00		0.98
Frt		0.902			0.930			0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1696	0	1805	1755	0	1770	3507	0	1805	3574	1615
Flt Permitted	0.267			0.170			0.122			0.154		
Satd. Flow (perm)	502	1696	0	323	1755	0	227	3507	0	292	3574	1589
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		91			43			15				240
Link Speed (k/h)		50			50			80				80
Link Distance (m)		146.4			168.4			779.3				347.1
Travel Time (s)		10.5			12.1			35.1				15.6
Confl. Peds. (#/hr)	2		2	2		2	2		2	2		2
Peak Hour Factor	0.80	0.85	0.92	0.85	0.85	0.90	0.90	0.93	0.85	0.85	0.94	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	2%	1%	0%	0%	1%	0%
Adj. Flow (vph)	188	152	285	158	174	153	303	897	113	172	852	240
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	437	0	158	327	0	303	1010	0	172	852	240
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

# Lanes, Volumes, Timings

## 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	9.5	23.0		9.5	22.5		11.0	23.0		10.5	23.0	23.0
Total Split (s)	14.2	31.0		13.6	30.4		21.0	41.4		14.0	34.4	34.4
Total Split (%)	14.2%	31.0%		13.6%	30.4%		21.0%	41.4%		14.0%	34.4%	34.4%
Maximum Green (s)	9.7	26.0		9.1	25.9		16.0	36.4		9.5	29.4	29.4
Yellow Time (s)	3.5	4.0		3.5	3.5		4.0	4.0		3.5	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	4.5	5.0		4.5	4.5		5.0	5.0		4.5	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		8.0						8.0			8.0	8.0
Pedestrian Calls (#/hr)		5						5			5	5
Act Effect Green (s)	33.5	23.6		32.3	23.5		49.9	36.5		39.6	30.0	30.0
Actuated g/C Ratio	0.35	0.24		0.33	0.24		0.51	0.38		0.41	0.31	0.31
v/c Ratio	0.63	0.91		0.65	0.71		0.85	0.76		0.66	0.77	0.37
Control Delay	31.0	52.5		34.1	38.7		45.4	31.2		30.1	36.9	5.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	31.0	52.5		34.1	38.7		45.4	31.2		30.1	36.9	5.4
LOS	C	D		C	D		D	C		C	D	A
Approach Delay		46.0			37.2			34.5			30.0	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	25.2	68.8		20.7	52.1		42.5	94.0		18.2	84.4	0.0
Queue Length 95th (m)	36.2	#110.4		33.2	76.6		#88.8	120.1		32.9	108.7	13.1
Internal Link Dist (m)		122.4			144.4			755.3			323.1	
Turn Bay Length (m)				15.0			200.0			200.0		75.0
Base Capacity (vph)	304	522		247	501		372	1328		269	1106	657
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	0.62	0.84		0.64	0.65		0.81	0.76		0.64	0.77	0.37

### Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	97
Natural Cycle:	75
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	35.2
Intersection LOS:	D
Intersection Capacity Utilization:	84.0%
ICU Level of Service:	E



# Lanes, Volumes, Timings

## 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

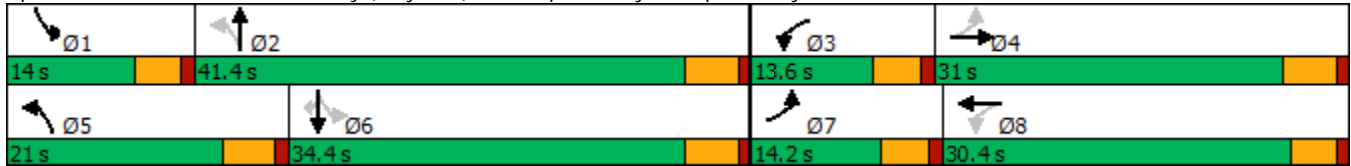
05-06-2020

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way



Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	109	30	701	127	255	72	1124	574	425	982	8
Future Volume (vph)	19	109	30	701	127	255	72	1124	574	425	982	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	130.0		30.0	190.0		150.0	280.0		160.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt		0.967				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1811	0	3433	1900	1538	1719	4893	1568	1770	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1805	1811	0	3433	1900	1538	1719	4893	1568	1770	3438	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				268			545			126
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		438.4			585.6			838.6			910.0	
Travel Time (s)		31.6			42.2			37.7			41.0	
Peak Hour Factor	0.90	0.90	0.89	0.93	0.89	0.95	0.95	0.95	0.93	0.95	0.95	0.58
Heavy Vehicles (%)	0%	1%	3%	2%	0%	5%	5%	6%	3%	2%	5%	2%
Adj. Flow (vph)	21	121	34	754	143	268	76	1183	617	447	1034	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	155	0	754	143	268	76	1183	617	447	1034	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.4	12.4		23.4	23.4	23.4	11.5	23.5	23.5	11.5	23.5	23.5
Total Split (s)	15.0	15.0		31.0	31.0	31.0	16.3	34.8	34.8	34.2	52.7	52.7
Total Split (%)	13.0%	13.0%		27.0%	27.0%	27.0%	14.2%	30.3%	30.3%	29.7%	45.8%	45.8%
Maximum Green (s)	9.6	9.6		25.6	25.6	25.6	10.8	29.3	29.3	28.7	47.2	47.2
Yellow Time (s)	4.4	4.4		4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5
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	3.0
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)				2	2	2		2	2		2	2
Act Effct Green (s)	9.6	9.6		25.6	25.6	25.6	9.4	29.3	29.3	28.7	51.0	51.0
Actuated g/C Ratio	0.08	0.08		0.22	0.22	0.22	0.08	0.25	0.25	0.25	0.44	0.44
v/c Ratio	0.14	0.97		0.99	0.34	0.49	0.54	0.95	0.77	1.01	0.68	0.02
Control Delay	51.3	113.3		74.5	40.3	7.7	64.8	58.4	12.9	89.7	29.4	0.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	113.3		74.5	40.3	7.7	64.8	58.4	12.9	89.7	29.4	0.0
LOS	D	F		E	D	A	E	E	B	F	C	A
Approach Delay		105.9			54.9			43.7			47.1	
Approach LOS		F			D			D			D	
Queue Length 50th (m)	4.7	34.9		92.2	28.7	0.0	17.4	101.2	13.4	~108.5	106.1	0.0
Queue Length 95th (m)	13.0	#78.8		#133.2	47.3	22.1	33.3	#131.3	60.3	#176.3	132.7	0.0
Internal Link Dist (m)		414.4			561.6			814.6			886.0	
Turn Bay Length (m)	40.0			130.0		30.0	190.0		150.0	280.0		160.0
Base Capacity (vph)	150	160		764	422	550	161	1246	805	441	1523	771
Starvation Cap Reductn	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
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.97		0.99	0.34	0.49	0.47	0.95	0.77	1.01	0.68	0.02

**Intersection Summary**

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 49.9      Intersection LOS: D

Intersection Capacity Utilization 91.0%      ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

# Lanes, Volumes, Timings

## 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

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: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

↙ Ø1	↑ Ø2	↗ Ø4	↘ Ø8
34.2 s	34.8 s	15 s	31 s
↙ Ø5	↓ Ø6		
16.3 s	52.7 s		

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	273	94	111	170	15	97	332	94	44	417	109
Future Volume (vph)	216	273	94	111	170	15	97	332	94	44	417	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	55.0		0.0	45.0		10.0	45.0		10.0
Storage Lanes	1		1	2		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00		1.00		0.97	0.99		0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1900	1599	1719	3503	0	1805	3505	1615	1752	3539	1615
Flt Permitted	0.566			0.445			0.950			0.950		
Satd. Flow (perm)	1049	1900	1566	802	3503	0	1799	3505	1561	1741	3539	1582
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187		16				187			187
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.5			398.6			321.2			163.3	
Travel Time (s)		17.2			28.7			23.1			11.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.83	0.89	0.90	0.95	0.88	0.72	0.81	0.83	0.74	0.75	0.90	0.84
Heavy Vehicles (%)	2%	0%	1%	5%	1%	4%	0%	3%	0%	3%	2%	0%
Adj. Flow (vph)	260	307	104	117	193	21	120	400	127	59	463	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	260	307	104	117	214	0	120	400	127	59	463	130
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8					2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		6.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	22.5	22.5	11.0	22.5	22.5
Total Split (s)	11.0	24.0	24.0	11.0	24.0		12.0	24.0	24.0	11.0	23.0	23.0
Total Split (%)	15.7%	34.3%	34.3%	15.7%	34.3%		17.1%	34.3%	34.3%	15.7%	32.9%	32.9%
Maximum Green (s)	6.0	19.0	19.0	6.0	19.0		7.0	19.0	19.0	6.0	18.0	18.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		8.0	8.0		8.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	22.5	17.9	17.9	21.2	15.1		6.9	21.5	21.5	6.1	18.5	18.5
Actuated g/C Ratio	0.35	0.28	0.28	0.33	0.24		0.11	0.34	0.34	0.10	0.29	0.29
v/c Ratio	0.59	0.58	0.18	0.33	0.26		0.62	0.34	0.20	0.36	0.45	0.22
Control Delay	21.6	27.1	1.1	15.6	19.5		45.8	19.1	2.1	36.1	22.0	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	27.1	1.1	15.6	19.5		45.8	19.1	2.1	36.1	22.0	2.4
LOS	C	C	A	B	B		D	B	A	D	C	A
Approach Delay		20.9			18.1			20.7			19.4	
Approach LOS		C			B			C			B	
Queue Length 50th (m)	23.1	36.7	0.0	9.5	11.0		15.4	22.0	0.0	7.4	26.6	0.0
Queue Length 95th (m)	35.9	60.2	1.5	19.2	18.8		#32.8	32.6	0.5	15.6	42.4	3.8
Internal Link Dist (m)		214.5			374.6			297.2			139.3	
Turn Bay Length (m)	65.0			55.0			45.0		10.0	45.0		10.0
Base Capacity (vph)	437	587	613	352	1065		200	1175	647	166	1023	590
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.52	0.17	0.33	0.20		0.60	0.34	0.20	0.36	0.45	0.22

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	64.1
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.62
Intersection Signal Delay:	20.0
Intersection LOS:	C

# Lanes, Volumes, Timings

## 18: Uplands Dr & Turner Rd









05-06-2020

Intersection Capacity Utilization 56.3% ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 18: Uplands Dr & Turner Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	23 s	11 s	24 s

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	109	30	701	127	255	72	1124	574	425	982	8
Future Volume (vph)	19	109	30	701	127	255	72	1124	574	425	982	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	130.0		30.0	190.0		150.0	280.0		160.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	1.00
Frt		0.967				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1811	0	3433	1900	1538	1719	4893	1568	3433	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1805	1811	0	3433	1900	1538	1719	4893	1568	3433	3438	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				268			617			126
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		438.4			585.6			838.6			910.0	
Travel Time (s)		31.6			42.2			37.7			41.0	
Peak Hour Factor	0.90	0.90	0.89	0.93	0.89	0.95	0.95	0.95	0.93	0.95	0.95	0.58
Heavy Vehicles (%)	0%	1%	3%	2%	0%	5%	5%	6%	3%	2%	5%	2%
Adj. Flow (vph)	21	121	34	754	143	268	76	1183	617	447	1034	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	155	0	754	143	268	76	1183	617	447	1034	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	



Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.4	12.4		23.4	23.4	23.4	11.5	23.5	23.5	11.5	23.5	23.5
Total Split (s)	18.1	18.1		34.8	34.8	34.8	13.4	35.1	35.1	27.0	48.7	48.7
Total Split (%)	15.7%	15.7%		30.3%	30.3%	30.3%	11.7%	30.5%	30.5%	23.5%	42.3%	42.3%
Maximum Green (s)	12.7	12.7		29.4	29.4	29.4	7.9	29.6	29.6	21.5	43.2	43.2
Yellow Time (s)	4.4	4.4		4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5
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	3.0
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)				2	2	2		2	2		2	2
Act Effct Green (s)	11.9	11.9		27.9	27.9	27.9	7.6	30.7	30.7	18.9	44.7	44.7
Actuated g/C Ratio	0.11	0.11		0.25	0.25	0.25	0.07	0.28	0.28	0.17	0.40	0.40
v/c Ratio	0.11	0.77		0.88	0.30	0.46	0.65	0.88	0.70	0.77	0.75	0.02
Control Delay	47.6	70.7		52.9	36.3	6.8	77.3	47.9	7.7	54.0	34.1	0.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	70.7		52.9	36.3	6.8	77.3	47.9	7.7	54.0	34.1	0.0
LOS	D	E		D	D	A	E	D	A	D	C	A
Approach Delay		67.9			40.3			35.9			39.7	
Approach LOS		E			D			D			D	
Queue Length 50th (m)	4.6	33.8		88.0	27.3	0.0	17.9	99.0	0.0	52.3	113.7	0.0
Queue Length 95th (m)	12.6	#66.4		#118.8	45.1	20.9	#40.0	#130.2	33.5	69.6	141.3	0.0
Internal Link Dist (m)		414.4			561.6			814.6			886.0	
Turn Bay Length (m)	40.0			130.0		30.0	190.0		150.0	280.0		160.0
Base Capacity (vph)	207	216		911	504	605	122	1348	879	666	1381	711
Starvation Cap Reductn	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
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.72		0.83	0.28	0.44	0.62	0.88	0.70	0.67	0.75	0.02

**Intersection Summary**

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 111.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 39.4      Intersection LOS: D

Intersection Capacity Utilization 79.6%      ICU Level of Service D

Analysis Period (min) 15







# 95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

Queue shown is maximum after two cycles.

Splits and Phases: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

 Ø1	 Ø2	 Ø4	 Ø8
27 s	35.1 s	18.1 s	34.8 s
 Ø5	 Ø6		
13.4 s	48.7 s		

**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B28	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	T	L	T
Maximum Queue (m)	32.4	89.9	95.1	39.5	49.6	59.3	25.9	46.3	34.7	17.8	32.8	62.5
Average Queue (m)	17.9	46.7	54.1	17.1	27.1	31.3	19.5	23.3	19.0	1.3	13.0	27.3
95th Queue (m)	36.5	78.9	85.8	30.0	43.1	50.6	28.4	43.6	32.3	11.1	24.3	47.2
Link Distance (m)		189.6	189.6		478.4	478.4		26.1	26.1	76.5		301.2
Upstream Blk Time (%)							3	4	2			
Queuing Penalty (veh)							0	10	5			
Storage Bay Dist (m)	25.0			50.0			40.0				95.0	
Storage Blk Time (%)	1	27			0		3	4				
Queuing Penalty (veh)	2	24			0		3	7				

**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	SB
Directions Served	R
Maximum Queue (m)	26.4
Average Queue (m)	10.6
95th Queue (m)	20.6
Link Distance (m)	301.2
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 2: Calinda & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	21.0	66.4	72.3	22.4	58.1	66.8	22.2	42.9	42.4	33.7
Average Queue (m)	6.3	34.4	41.8	17.2	27.0	30.8	13.6	16.5	21.0	10.6
95th Queue (m)	17.4	55.0	62.3	26.3	50.1	54.0	23.1	34.0	36.2	24.1
Link Distance (m)		76.9	76.9		189.6	189.6		160.2		205.1
Upstream Blk Time (%)		0	0							
Queuing Penalty (veh)		0	0							
Storage Bay Dist (m)	15.0			15.0			15.0		40.0	
Storage Blk Time (%)	1	30		12	18		13	5	1	
Queuing Penalty (veh)	2	7		35	23		19	7	1	

**Intersection: 4: Marlin Way & Hammond Bay Rd**

Movement	EB	EB	WB	NB	NB
Directions Served	T	TR	L	L	R
Maximum Queue (m)	2.0	5.8	12.0	17.5	22.7
Average Queue (m)	0.1	0.3	3.4	5.9	10.6
95th Queue (m)	1.4	3.4	10.8	14.6	17.8
Link Distance (m)	72.0	72.0			172.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)			15.0	15.0	
Storage Blk Time (%)			0	2	2
Queuing Penalty (veh)			0	2	1

**Intersection: 6: Applecross Rd & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	TR	T	T	R	R
Maximum Queue (m)	35.1	56.8	80.4	9.4	4.6	11.9	36.5
Average Queue (m)	16.4	2.3	2.7	0.7	0.2	2.0	10.8
95th Queue (m)	30.0	25.8	29.4	6.7	2.3	8.4	30.7
Link Distance (m)		94.4	94.4	72.0	72.0		73.6
Upstream Blk Time (%)		0	0				
Queuing Penalty (veh)		0	1				
Storage Bay Dist (m)	30.0					15.0	
Storage Blk Time (%)	1					0	
Queuing Penalty (veh)	4					0	

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	LT	T	R	L	LT	T	R	L	L	T	T
Maximum Queue (m)	56.0	70.6	80.4	47.5	47.4	95.2	109.1	66.9	40.8	40.3	70.6	75.2
Average Queue (m)	22.4	41.2	40.5	13.4	38.5	58.8	48.0	8.4	18.1	19.4	46.3	46.9
95th Queue (m)	41.0	58.7	64.4	48.4	58.9	90.2	84.8	36.4	33.8	34.8	69.3	69.3
Link Distance (m)		541.8	541.8			94.4	94.4				89.9	89.9
Upstream Blk Time (%)						1	1					0
Queuing Penalty (veh)						3	3					0
Storage Bay Dist (m)	65.0			40.0	40.0			60.0	115.0	115.0		
Storage Blk Time (%)		0	10	0	2	21	1	0				1
Queuing Penalty (veh)		0	15	0	7	35	3	0				2

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	NB	B29	SB	SB	SB
Directions Served	R	T	L	T	T
Maximum Queue (m)	15.3	69.9	84.0	72.8	71.9
Average Queue (m)	1.5	2.3	43.2	40.5	41.9
95th Queue (m)	19.1	49.2	70.4	62.0	63.6
Link Distance (m)		322.5		841.6	841.6
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		0			
Storage Bay Dist (m)	70.0		135.0		
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

**Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way**

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	T	R
Maximum Queue (m)	47.4	80.3	22.4	149.6	61.6	84.4	224.3	41.8	76.6	72.2	28.0
Average Queue (m)	22.2	32.4	19.5	81.5	33.2	40.5	51.8	17.4	43.0	40.4	0.9
95th Queue (m)	39.1	72.4	26.9	155.4	56.6	75.5	156.4	32.2	69.6	65.6	14.3
Link Distance (m)	130.4	130.4		154.4		753.6	753.6		322.5	322.5	
Upstream Blk Time (%)				7			0				
Queuing Penalty (veh)				0			0				
Storage Bay Dist (m)			15.0		200.0			200.0			75.0
Storage Blk Time (%)			35	50						0	
Queuing Penalty (veh)			99	67						0	

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	L	T	R	L	T	T	T	R	L
Maximum Queue (m)	18.0	57.2	120.2	313.6	444.9	37.4	34.8	106.7	102.5	94.6	83.4	215.8
Average Queue (m)	3.6	24.4	73.0	89.9	43.2	9.4	11.9	70.1	70.8	61.6	7.1	158.7
95th Queue (m)	12.4	46.8	120.8	212.6	216.1	33.4	27.9	97.3	98.5	89.8	49.6	284.7
Link Distance (m)		421.4		541.8	541.8			815.9	815.9	815.9		
Upstream Blk Time (%)				0	0							
Queuing Penalty (veh)				0	1							
Storage Bay Dist (m)	40.0		130.0			30.0	190.0				150.0	280.0
Storage Blk Time (%)		4	1	3	4	1						12
Queuing Penalty (veh)		1	3	10	11	1						57

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	SB	SB
Directions Served	T	T
Maximum Queue (m)	227.4	215.4
Average Queue (m)	113.8	107.4
95th Queue (m)	321.2	300.0
Link Distance (m)	894.3	894.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)	0	0
Queuing Penalty (veh)	1	0

**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	T	L	T	T	R	L	T	T	R
Maximum Queue (m)	27.3	123.7	79.8	59.8	37.4	120.4	116.2	77.3	52.3	354.9	624.1	26.9
Average Queue (m)	8.0	57.4	42.7	18.5	19.4	68.4	59.7	8.5	27.3	55.3	80.0	2.6
95th Queue (m)	23.6	111.2	70.2	39.5	41.7	104.3	98.1	45.4	53.7	194.6	331.6	15.8
Link Distance (m)		385.5		207.1		527.5	527.5			753.6	753.6	
Upstream Blk Time (%)										0	0	
Queuing Penalty (veh)										0	2	
Storage Bay Dist (m)	20.0		75.0		30.0			85.0	45.0			20.0
Storage Blk Time (%)	1	46	1		1	35	2	0	2	8	22	0
Queuing Penalty (veh)	2	16	2		4	22	6	0	9	9	4	0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	T	R	L	T
Maximum Queue (m)	51.5	57.4	23.1	35.0	37.5	22.3	40.2	51.9	41.4	16.5	23.7	41.7
Average Queue (m)	25.4	30.6	10.1	15.0	18.0	7.5	17.9	26.6	7.9	10.7	9.5	23.2
95th Queue (m)	43.0	48.8	18.4	28.0	32.3	18.0	31.5	43.7	26.3	15.8	19.4	37.6
Link Distance (m)		207.1	207.1			382.0		307.3	307.3			141.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	65.0			55.0	55.0		45.0			10.0	45.0	
Storage Blk Time (%)	0	0					0	1	2	1		0
Queuing Penalty (veh)	0	0					0	1	2	1		0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	49.4	17.5
Average Queue (m)	27.2	14.2
95th Queue (m)	44.3	19.0
Link Distance (m)	141.4	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		10.0
Storage Blk Time (%)	41	2
Queuing Penalty (veh)	45	3

**Intersection: 21: Uplands Dr & Parkwood Dr**

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (m)	18.0	19.3	14.2	9.0	1.1
Average Queue (m)	7.4	7.1	4.6	1.6	0.0
95th Queue (m)	15.3	15.4	12.8	7.0	0.8
Link Distance (m)	103.3	254.6			227.2
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)			35.0	35.0	
Storage Blk Time (%)					
Queuing Penalty (veh)					

**Intersection: 31: Uplands Dr & North Access**

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	19.5	30.2	2.6
Average Queue (m)	9.0	3.6	0.1
95th Queue (m)	16.1	17.8	1.3
Link Distance (m)	97.8	227.2	76.5
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 33: Uplands Dr & South Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	16.1	22.3
Average Queue (m)	8.7	2.4
95th Queue (m)	15.2	11.9
Link Distance (m)	114.7	199.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 599



HCM 2010 TWSC  
 4: Marlin Way & Hammond Bay Rd

05-06-2020

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	630	69	27	765	29	98
Future Vol, veh/h	630	69	27	765	29	98
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	63	70	85	83	70
Heavy Vehicles, %	1	0	0	3	0	0
Mvmt Flow	670	110	39	900	35	140

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	782	0	1255 392
Stage 1	-	-	-	-	727 -
Stage 2	-	-	-	-	528 -
Critical Hdwy	-	-	4.1	-	6.8 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	845	-	166 613
Stage 1	-	-	-	-	445 -
Stage 2	-	-	-	-	562 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	844	-	158 612
Mov Cap-2 Maneuver	-	-	-	-	158 -
Stage 1	-	-	-	-	444 -
Stage 2	-	-	-	-	536 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	158	612	-	-	844	-
HCM Lane V/C Ratio	0.221	0.229	-	-	0.046	-
HCM Control Delay (s)	34.1	12.6	-	-	9.5	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.8	0.9	-	-	0.1	-

HCM 2010 TWSC  
6: Applecross Rd & Hammond Bay Rd

05-06-2020

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗			↖↗	↖			↖			↖
Traffic Vol, veh/h	201	678	18	0	657	137	0	0	21	0	0	370
Future Vol, veh/h	201	678	18	0	657	137	0	0	21	0	0	370
Conflicting Peds, #/hr	40	0	5	5	0	40	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	300	-	-	-	-	150	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	94	75	25	85	90	25	25	67	25	25	95
Heavy Vehicles, %	5	1	0	0	3	2	0	0	0	0	0	1
Mvmt Flow	251	721	24	0	773	152	0	0	31	0	0	389

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	965	0	0	-	-	0	-	-	378	-	-	427
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.2	-	-	-	-	-	-	-	6.9	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.25	-	-	-	-	-	-	-	3.3	-	-	3.31
Pot Cap-1 Maneuver	691	-	-	0	-	-	0	0	625	0	0	579
Stage 1	-	-	-	0	-	-	0	0	-	0	0	-
Stage 2	-	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	668	-	-	-	-	-	-	-	622	-	-	559
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.4			0			11.1			24.9		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	622	668	-	-	-	-	559
HCM Lane V/C Ratio	0.05	0.376	-	-	-	-	0.697
HCM Control Delay (s)	11.1	13.6	-	-	-	-	24.9
HCM Lane LOS		B	B	-	-	-	C
HCM 95th %tile Q(veh)	0.2	1.8	-	-	-	-	5.5

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	20	0	23	16	0	21	54	449	33	16	449	48
Future Vol, veh/h	20	0	23	16	0	21	54	449	33	16	449	48
Conflicting Peds, #/hr	1	0	0	0	0	1	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	350	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	70	75	75	75	89	63	60	92	80
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	25	0	29	23	0	28	72	504	52	27	488	60

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1266	1282	523	1266	1286	536	553	0	0	561	0	0
Stage 1	577	577	-	679	679	-	-	-	-	-	-	-
Stage 2	689	705	-	587	607	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	147	167	558	147	166	549	1027	-	-	1020	-	-
Stage 1	506	505	-	445	454	-	-	-	-	-	-	-
Stage 2	439	442	-	499	489	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	129	150	556	129	149	546	1023	-	-	1016	-	-
Mov Cap-2 Maneuver	129	150	-	129	149	-	-	-	-	-	-	-
Stage 1	469	489	-	412	420	-	-	-	-	-	-	-
Stage 2	387	409	-	461	474	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	26.7		25.8		1		0.4	
HCM LOS	D		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1023	-	-	219	223	1016	-
HCM Lane V/C Ratio	0.07	-	-	0.245	0.228	0.026	-
HCM Control Delay (s)	8.8	-	-	26.7	25.8	8.6	-
HCM Lane LOS	A	-	-	D	D	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.9	0.9	0.1	-

HCM 2010 TWSC  
31: Uplands Dr & North Access

05-06-2020

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	26	33	15	474	480	57
Future Vol, veh/h	26	33	15	474	480	57
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	89	92	85
Heavy Vehicles, %	0	0	0	2	1	0
Mvmt Flow	31	39	20	533	522	67

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1134	561	594	0	-	0
Stage 1	561	-	-	-	-	-
Stage 2	573	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	226	531	992	-	-	-
Stage 1	575	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	218	529	988	-	-	-
Mov Cap-2 Maneuver	218	-	-	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	566	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.1	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	988	-	325	-	-
HCM Lane V/C Ratio	0.02	-	0.214	-	-
HCM Control Delay (s)	8.7	0	19.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

HCM 2010 TWSC  
 33: Uplands Dr & South Access

05-06-2020

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	24	34	15	479	488	5
Future Vol, veh/h	24	34	15	479	488	5
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	89	92	80
Heavy Vehicles, %	0	0	0	2	1	0
Mvmt Flow	28	40	20	538	530	6

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1116	538	541	0	-	0
Stage 1	538	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	232	547	1038	-	-	-
Stage 1	589	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	224	545	1034	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	570	-	-	-	-	-
Stage 2	563	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.1	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1034	-	342	-	-
HCM Lane V/C Ratio	0.019	-	0.2	-	-
HCM Control Delay (s)	8.6	0	18.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Lanes, Volumes, Timings  
17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	115	113	388	86	45	30	713	255	46	602	6
Future Volume (vph)	29	115	113	388	86	45	30	713	255	46	602	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00	1.00	0.98	1.00		0.97	1.00		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (prot)	1752	1845	1615	1715	1730	1599	1770	3505	1568	1805	3539	1568
Fl <sub>t</sub> Permitted	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (perm)	1750	1845	1588	1711	1728	1575	1765	3505	1527	1804	3539	1529
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			154			154			331			154
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		403.2			238.5			542.6			779.3	
Travel Time (s)		29.0			17.2			24.4			35.1	
Confl. Peds. (#/hr)	2		2	2		2	2		2	1		1
Confl. Bikes (#/hr)			2			1			1			1
Peak Hour Factor	0.60	0.65	0.83	0.72	0.80	0.60	0.91	0.87	0.77	0.73	0.94	0.75
Heavy Vehicles (%)	3%	3%	0%	0%	3%	1%	2%	3%	3%	0%	2%	3%
Adj. Flow (vph)	48	177	136	539	108	75	33	820	331	63	640	8
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	48	177	136	323	324	75	33	820	331	63	640	8
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	11.0	23.0	23.0	11.0	22.5	22.5
Total Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	11.0	23.5	23.5	11.0	23.5	23.5
Total Split (%)	26.5%	26.5%	26.5%	32.9%	32.9%	32.9%	12.9%	27.6%	27.6%	12.9%	27.6%	27.6%
Maximum Green (s)	17.5	17.5	17.5	23.0	23.0	23.0	6.0	18.5	18.5	6.0	18.5	18.5
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0	5.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0		11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1	1		1	1		1	1
Act Effct Green (s)	12.4	12.4	12.4	18.3	18.3	18.3	6.2	19.2	19.2	6.2	21.3	21.3
Actuated g/C Ratio	0.17	0.17	0.17	0.26	0.26	0.26	0.09	0.27	0.27	0.09	0.30	0.30
v/c Ratio	0.16	0.55	0.34	0.73	0.73	0.14	0.21	0.87	0.51	0.40	0.61	0.01
Control Delay	28.9	36.1	6.7	36.5	36.2	0.6	39.3	40.3	6.7	43.9	27.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	36.1	6.7	36.5	36.2	0.6	39.3	40.3	6.7	43.9	27.6	0.0
LOS	C	D	A	D	D	A	D	D	A	D	C	A
Approach Delay		24.1			32.6			30.9			28.8	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	6.5	25.7	0.0	47.6	47.6	0.0	4.9	66.6	0.0	9.5	38.5	0.0
Queue Length 95th (m)	10.4	31.9	9.0	62.1	71.3	0.0	14.5	#113.4	10.5	18.6	#82.4	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0		30.0	75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	447	471	520	575	580	630	154	945	653	158	1055	564
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	0.11	0.38	0.26	0.56	0.56	0.12	0.21	0.87	0.51	0.40	0.61	0.01

**Intersection Summary**

Area Type: Other  
 Cycle Length: 85  
 Actuated Cycle Length: 71.3  
 Natural Cycle: 85  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 30.0  
 Intersection LOS: C

# Lanes, Volumes, Timings

## 17: Island Hwy (Hwy 19A) & Turner Rd







11-27-2020

Intersection Capacity Utilization 56.9%      ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 17: Island Hwy (Hwy 19A) & Turner Rd

 Ø1	 Ø2	 Ø4	 Ø8
11 s	23.5 s	22.5 s	28 s
 Ø5	 Ø6		
11 s	23.5 s		



Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↔		↘	↔	
Traffic Volume (vph)	83	639	233	118	467	24	207	38	35	12	33	29
Future Volume (vph)	83	639	233	118	467	24	207	38	35	12	33	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		35.0	95.0		0.0	45.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.91	0.91	0.95	0.91	0.91	0.95
Ped Bike Factor	1.00		0.98	1.00	1.00		0.99	0.99		0.99	0.99	
Frt			0.850		0.991			0.967			0.944	
Flt Protected	0.950			0.950			0.950	0.974		0.950	0.999	
Satd. Flow (prot)	1504	3124	1425	1533	2983	0	1395	2732	0	1137	2507	0
Flt Permitted	0.275			0.171			0.950	0.974		0.950	0.999	
Satd. Flow (perm)	435	3124	1394	275	2983	0	1386	2723	0	1130	2507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180		5			26			32	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		306.3			279.2			613.3			216.7	
Travel Time (s)		22.1			20.1			44.2			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.72	0.85	0.81	0.84	0.84	0.67	0.83	0.68	0.67	0.60	0.63	0.91
Heavy Vehicles (%)	8%	4%	2%	6%	7%	20%	6%	10%	5%	30%	20%	9%
Adj. Flow (vph)	115	752	288	140	556	36	249	56	52	20	52	32
Shared Lane Traffic (%)							50%			10%		
Lane Group Flow (vph)	115	752	288	140	592	0	124	233	0	18	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.0	29.0	29.0	10.5	28.0		26.0	26.0		31.0	31.0	
Total Split (s)	29.0	41.8	41.8	16.2	29.0		26.0	26.0		31.0	31.0	
Total Split (%)	25.2%	36.3%	36.3%	14.1%	25.2%		22.6%	22.6%		27.0%	27.0%	
Maximum Green (s)	24.5	36.8	36.8	11.7	24.0		21.0	21.0		26.0	26.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
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)	4.5	5.0	5.0	4.5	5.0		5.0	5.0		5.0	5.0	
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	None	None	None	None		Max	Max		Max	Max	
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		16.0		14.0	14.0		19.0	19.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	42.4	31.3	31.3	42.2	31.3		21.1	21.1		26.1	26.1	
Actuated g/C Ratio	0.39	0.29	0.29	0.39	0.29		0.19	0.19		0.24	0.24	
v/c Ratio	0.42	0.83	0.54	0.61	0.69		0.46	0.42		0.07	0.14	
Control Delay	23.5	45.3	16.1	31.3	38.8		46.8	37.9		35.5	23.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.5	45.3	16.1	31.3	38.8		46.8	37.9		35.5	23.6	
LOS	C	D	B	C	D		D	D		D	C	
Approach Delay		35.8			37.4			41.0			25.7	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	15.3	83.5	18.8	19.0	60.7		27.9	23.0		3.5	5.3	
Queue Length 95th (m)	21.2	99.1	35.7	29.9	77.3		46.7	26.8		7.1	7.9	
Internal Link Dist (m)		282.3			255.2			589.3			192.7	
Turn Bay Length (m)	55.0		35.0	95.0			45.0			40.0		
Base Capacity (vph)	429	1063	593	246	864		270	551		273	627	
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	0.27	0.71	0.49	0.57	0.69		0.46	0.42		0.07	0.14	

Intersection Summary

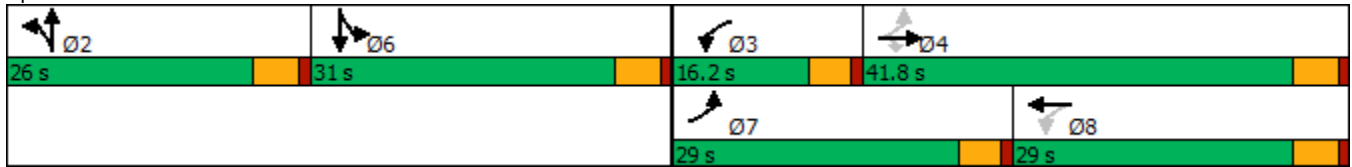
Area Type:	CBD
Cycle Length:	115
Actuated Cycle Length:	108.6
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	36.7
Intersection LOS:	D

Lanes, Volumes, Timings  
 30: Metral Dr & Aulds Rd

11-27-2020

Intersection Capacity Utilization 59.0% ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 30: Metral Dr & Aulds Rd



# Queuing and Blocking Report

11-27-2020

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	R	L	T	T
Maximum Queue (m)	21.5	47.0	36.3	76.5	78.6	37.3	77.0	75.3	14.3	30.9	60.6	52.4
Average Queue (m)	6.0	20.7	5.6	27.5	48.8	6.9	40.8	32.8	0.6	7.5	30.4	22.2
95th Queue (m)	17.8	38.5	24.1	61.7	70.9	24.1	67.5	60.1	5.4	19.4	49.3	42.7
Link Distance (m)	385.4		220.9		527.2		527.2		764.0		764.0	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		30.0		75.0		30.0		85.0		45.0	
Storage Blk Time (%)	0	12	0	0	0	0	18	0			1	8
Queuing Penalty (veh)	0	17	0	0	0	0	6	0			0	1

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	SB
Directions Served	R
Maximum Queue (m)	11.0
Average Queue (m)	0.7
95th Queue (m)	7.9
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	20.0
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	L	LT
Maximum Queue (m)	62.2	100.7	96.5	42.5	42.0	75.6	63.2	40.8	49.2	27.7	5.2	40.2
Average Queue (m)	19.0	58.9	52.6	28.6	20.6	43.8	35.2	15.1	25.3	7.9	0.2	10.0
95th Queue (m)	45.4	86.8	84.4	51.8	36.5	65.3	57.2	32.3	40.4	18.8	2.7	25.5
Link Distance (m)		292.2	292.2			265.4	265.4		595.5	595.5		202.9
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0	95.0			45.0			40.0	
Storage Blk Time (%)	0	10	18	0				0	0			0
Queuing Penalty (veh)	0	8	43	1				0	0			0

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	SB
Directions Served	TR
Maximum Queue (m)	18.0
Average Queue (m)	5.3
95th Queue (m)	14.5
Link Distance (m)	202.9
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Network Summary**

Network wide Queuing Penalty: 77
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Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	163	123	264	116	60	62	964	378	125	912	16
Future Volume (vph)	35	163	123	264	116	60	62	964	378	125	912	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00	0.98	1.00		0.97	1.00		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.981		0.950			0.950		
Satd. Flow (prot)	1805	1863	1599	1681	1757	1599	1805	3539	1599	1787	3539	1615
Flt Permitted	0.950			0.950	0.981		0.950			0.950		
Satd. Flow (perm)	1791	1863	1573	1679	1756	1560	1801	3539	1554	1785	3539	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			162			125			411			125
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		403.2			238.5			542.6			779.3	
Travel Time (s)		29.0			17.2			24.4			35.1	
Confl. Peds. (#/hr)	7		1	1		7	2		2	2		2
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.67	0.88	0.76	0.86	0.86	0.91	0.86	0.93	0.92	0.89	0.94	0.89
Heavy Vehicles (%)	0%	2%	1%	2%	0%	1%	0%	2%	1%	1%	2%	0%
Adj. Flow (vph)	52	185	162	307	135	66	72	1037	411	140	970	18
Shared Lane Traffic (%)				29%								
Lane Group Flow (vph)	52	185	162	218	224	66	72	1037	411	140	970	18
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	11.0	23.0	23.0	11.0	22.5	22.5
Total Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	16.0	34.5	34.5	20.0	38.5	38.5
Total Split (%)	21.4%	21.4%	21.4%	26.7%	26.7%	26.7%	15.2%	32.9%	32.9%	19.0%	36.7%	36.7%
Maximum Green (s)	17.5	17.5	17.5	23.0	23.0	23.0	11.0	29.5	29.5	15.0	33.5	33.5
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0	5.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0		11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1	1		1	1		1	1
Act Effct Green (s)	13.9	13.9	13.9	16.9	16.9	16.9	8.8	30.3	30.3	12.0	36.1	36.1
Actuated g/C Ratio	0.15	0.15	0.15	0.18	0.18	0.18	0.09	0.32	0.32	0.13	0.39	0.39
v/c Ratio	0.19	0.67	0.44	0.72	0.70	0.17	0.42	0.90	0.53	0.61	0.71	0.03
Control Delay	38.5	51.3	10.2	50.6	49.3	1.2	50.4	44.4	5.7	52.2	30.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	51.3	10.2	50.6	49.3	1.2	50.4	44.4	5.7	52.2	30.8	0.1
LOS	D	D	B	D	D	A	D	D	A	D	C	A
Approach Delay		33.0			43.6			34.3			32.9	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	8.8	33.9	0.0	41.8	42.9	0.0	13.3	100.9	0.0	25.7	86.5	0.0
Queue Length 95th (m)	15.4	59.2	10.3	67.6	68.5	0.9	27.9	#169.0	23.5	48.3	#131.7	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0		30.0	75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	343	354	430	420	439	483	215	1148	782	291	1369	682
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	0.15	0.52	0.38	0.52	0.51	0.14	0.33	0.90	0.53	0.48	0.71	0.03

**Intersection Summary**

Area Type: Other  
 Cycle Length: 105  
 Actuated Cycle Length: 93.3  
 Natural Cycle: 95  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 35.0  
 Intersection LOS: D

# Lanes, Volumes, Timings

## 17: Island Hwy (Hwy 19A) & Turner Rd







11-27-2020

Intersection Capacity Utilization 70.7% 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.























Splits and Phases: 17: Island Hwy (Hwy 19A) & Turner Rd

 Ø1	 Ø2	 Ø4	 Ø8
20 s	34.5 s	22.5 s	28 s
 Ø5	 Ø6		
16 s	38.5 s		



Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	441	210	237	416	66	280	93	127	104	110	165
Future Volume (vph)	204	441	210	237	416	66	280	93	127	104	110	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		35.0	95.0		0.0	45.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.91	0.91	0.95	0.91	0.91	0.95
Ped Bike Factor	1.00		0.98	1.00	1.00		1.00	0.99		0.99	0.99	
Frt			0.850		0.969			0.944			0.916	
Flt Protected	0.950			0.950			0.950	0.983		0.950	0.998	
Satd. Flow (prot)	1608	3185	1439	1608	3031	0	1449	2796	0	1408	2753	0
Flt Permitted	0.235			0.274			0.950	0.983		0.950	0.998	
Satd. Flow (perm)	397	3185	1407	462	3031	0	1443	2792	0	1401	2752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			205		25			83			176	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		306.3			279.2			613.3			216.7	
Travel Time (s)		22.1			20.1			44.2			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.91	0.92	0.88	0.91	0.95	0.59	0.83	0.83	0.86	0.74	0.89	0.94
Heavy Vehicles (%)	1%	2%	1%	1%	3%	5%	2%	6%	0%	5%	2%	2%
Adj. Flow (vph)	224	479	239	260	438	112	337	112	148	141	124	176
Shared Lane Traffic (%)							40%			10%		
Lane Group Flow (vph)	224	479	239	260	550	0	202	395	0	127	314	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.0	29.0	29.0	10.5	28.0		26.0	26.0		31.0	31.0	
Total Split (s)	29.0	30.6	30.6	26.4	28.0		27.0	27.0		31.0	31.0	
Total Split (%)	25.2%	26.6%	26.6%	23.0%	24.3%		23.5%	23.5%		27.0%	27.0%	
Maximum Green (s)	24.5	25.6	25.6	21.9	23.0		22.0	22.0		26.0	26.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
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)	4.5	5.0	5.0	4.5	5.0		5.0	5.0		5.0	5.0	
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	None	None	None	None		Max	Max		Max	Max	
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		16.0		14.0	14.0		19.0	19.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	38.6	21.7	21.7	40.0	22.5		22.1	22.1		26.1	26.1	
Actuated g/C Ratio	0.36	0.20	0.20	0.38	0.21		0.21	0.21		0.24	0.24	
v/c Ratio	0.68	0.74	0.53	0.73	0.84		0.67	0.61		0.37	0.39	
Control Delay	32.4	47.7	12.8	34.7	51.2		53.0	35.7		39.0	16.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	32.4	47.7	12.8	34.7	51.2		53.0	35.7		39.0	16.8	
LOS	C	D	B	C	D		D	D		D	B	
Approach Delay		35.2			45.9			41.6			23.2	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	32.7	52.1	6.1	39.0	57.7		45.1	34.2		25.4	13.2	
Queue Length 95th (m)	51.3	73.8	28.1	59.8	#92.1		72.4	50.2		39.4	28.3	
Internal Link Dist (m)		282.3			255.2			589.3			192.7	
Turn Bay Length (m)	55.0		35.0	95.0			45.0			40.0		
Base Capacity (vph)	441	768	494	420	701		300	645		344	807	
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	0.51	0.62	0.48	0.62	0.78		0.67	0.61		0.37	0.39	

Intersection Summary

Area Type:	CBD
Cycle Length:	115
Actuated Cycle Length:	106.6
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	37.8
Intersection LOS:	D

# Lanes, Volumes, Timings

## 30: Metral Dr & Aulds Rd







11-27-2020

Intersection Capacity Utilization 80.8% 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: 30: Aulds Rd

 Ø2	 Ø6	 Ø3	 Ø4
27 s	31 s	26.4 s	30.6 s
		 Ø7	 Ø8
		29 s	28 s

# Queuing and Blocking Report

11-27-2020

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	R	L	T	T
Maximum Queue (m)	27.3	76.6	37.5	71.8	84.2	37.5	109.2	102.7	91.7	52.3	88.1	88.2
Average Queue (m)	8.8	35.0	9.9	32.5	54.5	17.6	65.6	58.3	10.2	28.4	51.8	48.3
95th Queue (m)	24.2	63.7	35.9	68.9	78.1	39.7	97.9	92.4	46.7	53.4	79.3	78.2
Link Distance (m)		385.4			220.9		527.2	527.2			764.0	764.0
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		30.0	75.0		30.0			85.0	45.0		
Storage Blk Time (%)	1	31	0	0	1	1	38	1	0	1	12	29
Queuing Penalty (veh)	2	48	0	0	1	5	23	5	0	3	14	5

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	SB
Directions Served	R
Maximum Queue (m)	27.3
Average Queue (m)	2.4
95th Queue (m)	14.9
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	20.0
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	L	LT
Maximum Queue (m)	60.1	77.8	71.7	42.5	73.5	70.4	68.5	49.6	55.2	48.9	45.4	57.3
Average Queue (m)	31.2	41.5	36.1	24.7	36.5	42.5	39.6	24.1	31.9	21.8	7.6	32.2
95th Queue (m)	53.4	62.8	61.1	47.1	61.1	64.9	63.4	43.7	49.1	41.1	30.4	51.3
Link Distance (m)		292.2	292.2			265.4	265.4		595.5	595.5		202.9
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0	95.0			45.0			40.0	
Storage Blk Time (%)	0	2	10	0	0			0	2		0	4
Queuing Penalty (veh)	1	3	21	1	0			1	3		0	2

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	SB
Directions Served	TR
Maximum Queue (m)	58.0
Average Queue (m)	21.3
95th Queue (m)	41.6
Link Distance (m)	202.9
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Network Summary**

Network wide Queuing Penalty: 139
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Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	163	123	280	116	60	62	1108	393	125	1048	16
Future Volume (vph)	35	163	123	280	116	60	62	1108	393	125	1048	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00	0.98	1.00		0.97	1.00		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (prot)	1805	1863	1599	1681	1752	1599	1805	3539	1599	1787	3539	1615
Flt Permitted	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (perm)	1791	1863	1573	1679	1751	1559	1802	3539	1554	1785	3539	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			162			119			375			119
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		403.2			238.5			542.6			779.3	
Travel Time (s)		29.0			17.2			24.4			35.1	
Confl. Peds. (#/hr)	7		1	1		7	2		2	2		2
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.67	0.88	0.76	0.86	0.86	0.91	0.86	0.93	0.92	0.89	0.94	0.89
Heavy Vehicles (%)	0%	2%	1%	2%	0%	1%	0%	2%	1%	1%	2%	0%
Adj. Flow (vph)	52	185	162	326	135	66	72	1191	427	140	1115	18
Shared Lane Traffic (%)				30%								
Lane Group Flow (vph)	52	185	162	228	233	66	72	1191	427	140	1115	18
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	11.0	23.0	23.0	11.0	22.5	22.5
Total Split (s)	24.0	24.0	24.0	29.0	29.0	29.0	17.0	39.0	39.0	18.0	40.0	40.0
Total Split (%)	21.8%	21.8%	21.8%	26.4%	26.4%	26.4%	15.5%	35.5%	35.5%	16.4%	36.4%	36.4%
Maximum Green (s)	19.0	19.0	19.0	24.0	24.0	24.0	12.0	34.0	34.0	13.0	35.0	35.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0	5.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0		11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1	1		1	1		1	1
Act Effct Green (s)	14.6	14.6	14.6	18.1	18.1	18.1	9.2	34.4	34.4	11.5	39.4	39.4
Actuated g/C Ratio	0.15	0.15	0.15	0.18	0.18	0.18	0.09	0.35	0.35	0.12	0.40	0.40
v/c Ratio	0.20	0.68	0.44	0.74	0.73	0.17	0.43	0.97	0.54	0.67	0.79	0.03
Control Delay	40.3	53.8	10.4	54.2	52.5	1.7	53.0	52.8	7.9	60.3	34.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	53.8	10.4	54.2	52.5	1.7	53.0	52.8	7.9	60.3	34.4	0.1
LOS	D	D	B	D	D	A	D	D	A	E	C	A
Approach Delay		34.4			46.9			41.4			36.7	
Approach LOS		C			D			D			D	
Queue Length 50th (m)	9.5	36.4	0.0	47.0	47.8	0.0	14.3	128.1	7.3	27.7	109.3	0.0
Queue Length 95th (m)	15.8	61.0	10.2	73.3	74.5	1.6	28.9	#202.6	37.0	#55.4	#179.3	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0		30.0	75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	351	362	436	413	430	472	221	1232	785	238	1412	696
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	0.15	0.51	0.37	0.55	0.54	0.14	0.33	0.97	0.54	0.59	0.79	0.03

**Intersection Summary**

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 98.8  
 Natural Cycle: 95  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.97  
 Intersection Signal Delay: 39.9  
 Intersection LOS: D

# Lanes, Volumes, Timings

## 17: Island Hwy (Hwy 19A) & Turner Rd







11-27-2020

Intersection Capacity Utilization 75.0% 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: 17: Island Hwy (Hwy 19A) & Turner Rd

 Ø1	 Ø2	 Ø4	 Ø8
18 s	39 s	24 s	29 s
 Ø5	 Ø6		
17 s	40 s		



Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	525	339	237	508	66	428	93	127	104	110	165
Future Volume (vph)	204	525	339	237	508	66	428	93	127	104	110	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		35.0	95.0		0.0	45.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.91	0.91	0.95	0.91	0.91	0.95
Ped Bike Factor	1.00		0.98	1.00	1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.974			0.957			0.916	
Flt Protected	0.950			0.950			0.950	0.976		0.950	0.998	
Satd. Flow (prot)	1608	3185	1439	1608	3051	0	1449	2824	0	1408	2754	0
Flt Permitted	0.252			0.253			0.950	0.976		0.950	0.998	
Satd. Flow (perm)	426	3185	1409	427	3051	0	1443	2818	0	1402	2754	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			313		23			51			176	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		306.3			279.2			613.3			216.7	
Travel Time (s)		22.1			20.1			44.2			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.91	0.92	0.88	0.91	0.95	0.59	0.83	0.83	0.86	0.74	0.89	0.94
Heavy Vehicles (%)	1%	2%	1%	1%	3%	5%	2%	6%	0%	5%	2%	2%
Adj. Flow (vph)	224	571	385	260	535	112	516	112	148	141	124	176
Shared Lane Traffic (%)							49%			10%		
Lane Group Flow (vph)	224	571	385	260	647	0	263	513	0	127	314	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	10.5	26.0	26.0	10.5	26.0		24.0	24.0		29.0	29.0	
Total Split (s)	16.0	26.0	26.0	18.0	28.0		27.0	27.0		29.0	29.0	
Total Split (%)	16.0%	26.0%	26.0%	18.0%	28.0%		27.0%	27.0%		29.0%	29.0%	
Maximum Green (s)	11.5	21.0	21.0	13.5	23.0		22.0	22.0		24.0	24.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
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)	4.5	5.0	5.0	4.5	5.0		5.0	5.0		5.0	5.0	
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	Max	Max	None	Max		None	None		None	None	
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		16.0		14.0	14.0		19.0	19.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	33.3	21.5	21.5	36.8	23.2		19.6	19.6		13.1	13.1	
Actuated g/C Ratio	0.38	0.25	0.25	0.42	0.27		0.23	0.23		0.15	0.15	
v/c Ratio	0.70	0.73	0.66	0.73	0.78		0.81	0.76		0.60	0.56	
Control Delay	31.8	37.9	13.5	31.2	37.6		52.7	36.8		47.1	19.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.8	37.9	13.5	31.2	37.6		52.7	36.8		47.1	19.0	
LOS	C	D	B	C	D		D	D		D	B	
Approach Delay		28.8			35.8			42.2			27.1	
Approach LOS		C			D			D			C	
Queue Length 50th (m)	25.3	50.5	10.5	30.1	55.5		48.1	41.7		23.8	12.4	
Queue Length 95th (m)	#58.1	#81.5	41.4	#65.0	#92.1		#83.6	59.0		34.8	25.2	
Internal Link Dist (m)		282.3			255.2			589.3			192.7	
Turn Bay Length (m)	55.0		35.0	95.0			45.0			40.0		
Base Capacity (vph)	322	786	583	368	830		369	758		391	893	
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	0.70	0.73	0.66	0.71	0.78		0.71	0.68		0.32	0.35	

Intersection Summary

Area Type:	CBD
Cycle Length:	100
Actuated Cycle Length:	86.9
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	33.6
Intersection LOS:	C

# Lanes, Volumes, Timings

## 30: Metral Dr & Aulds Rd

11-27-2020

Intersection Capacity Utilization 73.2% 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: 30: Metral Dr & Aulds Rd



**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	R	L	T	T
Maximum Queue (m)	27.4	75.1	37.5	78.1	92.7	37.4	142.5	144.4	92.5	52.4	120.9	113.5
Average Queue (m)	10.9	34.4	10.5	34.0	54.3	16.7	85.1	81.4	27.0	33.8	64.6	61.6
95th Queue (m)	28.1	62.6	36.2	70.0	78.8	38.7	131.3	131.9	92.3	61.6	102.1	99.4
Link Distance (m)		385.4			220.9		527.2	527.2			764.0	764.0
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		30.0	75.0		30.0			85.0	45.0		
Storage Blk Time (%)	0	31	0	0	2	1	46	7	0	1	18	36
Queuing Penalty (veh)	1	48	0	0	2	7	29	26	1	7	23	6

**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	SB
Directions Served	R
Maximum Queue (m)	27.1
Average Queue (m)	3.5
95th Queue (m)	18.4
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	20.0
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	L	LT
Maximum Queue (m)	62.3	93.0	98.2	42.5	61.6	77.0	73.3	52.4	73.4	59.0	40.2	57.4
Average Queue (m)	32.9	46.0	43.8	31.2	31.1	44.7	42.3	30.3	37.7	22.4	4.8	30.3
95th Queue (m)	57.2	74.3	79.1	49.8	52.1	67.1	66.6	50.2	57.3	45.4	20.5	49.2
Link Distance (m)		292.2	292.2			265.4	265.4		595.5	595.5		202.9
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0	95.0			45.0			40.0	
Storage Blk Time (%)	1	4	12	1				1	3		0	3
Queuing Penalty (veh)	4	8	42	3				2	7		0	2

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	SB
Directions Served	TR
Maximum Queue (m)	51.0
Average Queue (m)	22.3
95th Queue (m)	40.8
Link Distance (m)	202.9
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Network Summary**

Network wide Queuing Penalty: 216
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Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

10-12-2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	129	262	134	148	138	273	834	96	146	801	199
Future Volume (vph)	150	129	262	134	148	138	273	834	96	146	801	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	15.0		0.0	200.0		0.0	200.0		75.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99				0.99		1.00		1.00		0.98
Frt		0.902				0.850		0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1696	0	1805	1900	1615	1770	3507	0	1805	3574	1615
Flt Permitted	0.517			0.175			0.122			0.154		
Satd. Flow (perm)	970	1696	0	332	1900	1592	227	3507	0	292	3574	1589
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		91				175		15				240
Link Speed (k/h)		50			50			80				80
Link Distance (m)		146.4			168.4			779.3				347.1
Travel Time (s)		10.5			12.1			35.1				15.6
Confl. Peds. (#/hr)	2		2	2		2	2		2	2		2
Peak Hour Factor	0.80	0.85	0.92	0.85	0.85	0.90	0.90	0.93	0.85	0.85	0.94	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	2%	1%	0%	0%	1%	0%
Adj. Flow (vph)	188	152	285	158	174	153	303	897	113	172	852	240
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	437	0	158	174	153	303	1010	0	172	852	240
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

10-12-2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	9.5	23.0		9.5	22.5	22.5	11.0	23.0		10.5	23.0	23.0
Total Split (s)	15.1	31.0		13.6	29.5	29.5	21.0	41.4		14.0	34.4	34.4
Total Split (%)	15.1%	31.0%		13.6%	29.5%	29.5%	21.0%	41.4%		14.0%	34.4%	34.4%
Maximum Green (s)	10.6	26.0		9.1	25.0	25.0	16.0	36.4		9.5	29.4	29.4
Yellow Time (s)	3.5	4.0		3.5	3.5	3.5	4.0	4.0		3.5	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
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)	4.5	5.0		4.5	4.5	4.5	5.0	5.0		4.5	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		8.0						8.0			8.0	8.0
Pedestrian Calls (#/hr)		5						5			5	5
Act Effct Green (s)	34.2	23.6		31.6	22.8	22.8	49.9	36.5		39.6	30.0	30.0
Actuated g/C Ratio	0.35	0.24		0.33	0.24	0.24	0.51	0.38		0.41	0.31	0.31
v/c Ratio	0.44	0.91		0.65	0.39	0.30	0.85	0.76		0.66	0.77	0.37
Control Delay	24.0	52.5		34.2	34.2	5.0	45.4	31.2		30.1	36.9	5.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	24.0	52.5		34.2	34.2	5.0	45.4	31.2		30.1	36.9	5.4
LOS	C	D		C	C	A	D	C		C	D	A
Approach Delay		43.9			25.0			34.5			30.0	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	25.2	68.8		20.7	29.4	0.0	42.5	94.0		18.2	84.4	0.0
Queue Length 95th (m)	36.2	#110.4		33.2	45.8	11.7	#88.8	120.1		32.9	108.7	13.1
Internal Link Dist (m)		122.4			144.4			755.3			323.1	
Turn Bay Length (m)				15.0			200.0			200.0		75.0
Base Capacity (vph)	437	522		247	491	541	372	1328		269	1106	657
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	0.84		0.64	0.35	0.28	0.81	0.76		0.64	0.77	0.37

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	97
Natural Cycle:	75
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	33.3
Intersection LOS:	C
Intersection Capacity Utilization:	84.0%
ICU Level of Service:	E

# Lanes, Volumes, Timings

## 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way









10-12-2021

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

 Ø1	 Ø2	 Ø3	 Ø4
14 s	41.4 s	13.6 s	31 s
 Ø5	 Ø6	 Ø7	 Ø8
21 s	34.4 s	15.1 s	29.5 s



Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB	
Directions Served	L	TR	L	T	R	L	T	TR	L	T	T	
Maximum Queue (m)	42.9	87.7	22.4	104.3	28.0	71.4	71.4	72.0	29.6	82.1	74.4	
Average Queue (m)	21.5	33.4	18.7	41.5	3.8	34.4	41.9	44.8	14.8	50.7	41.2	
95th Queue (m)	37.6	74.3	27.0	84.5	15.9	58.3	64.3	66.4	26.4	73.8	65.2	
Link Distance (m)	130.4	130.4		154.4	154.4		768.8	768.8		322.6	322.6	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)			15.0				200.0			200.0		
Storage Blk Time (%)			32	39							0	
Queuing Penalty (veh)			47	52							0	

Intersection: 29: Bend

Movement	NB
Directions Served	T
Maximum Queue (m)	136.1
Average Queue (m)	4.5
95th Queue (m)	68.9
Link Distance (m)	322.6
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 100
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## APPENDIX D: 2030 BACKGROUND

Lanes, Volumes, Timings  
1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	239	46	27	568	65	126	132	23	79	215	98
Future Volume (vph)	54	239	46	27	568	65	126	132	23	79	215	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	40.0		0.0	95.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.98	0.99		0.98	0.99		0.99	1.00		0.99		0.98
Frt		0.977			0.981			0.967				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3396	0	1752	3398	0	1752	3395	0	1787	1845	1568
Flt Permitted	0.216			0.519			0.535			0.620		
Satd. Flow (perm)	390	3396	0	939	3398	0	981	3395	0	1158	1845	1534
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			23			46				187
Link Speed (k/h)		50			50			50				50
Link Distance (m)		214.8			492.5			48.5				315.6
Travel Time (s)		15.5			35.5			3.5				22.7
Confl. Peds. (#/hr)	65		17	17		65	8		8	8		8
Peak Hour Factor	0.84	0.72	0.77	0.82	0.88	0.68	0.94	0.80	0.50	0.65	0.86	0.77
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	0%	1%	3%	3%
Adj. Flow (vph)	64	332	60	33	645	96	134	165	46	122	250	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	392	0	33	741	0	134	211	0	122	250	127
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings  
1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	7.0		6.0	7.0	7.0
Minimum Split (s)	11.0	23.0		11.0	23.0		11.0	23.0		11.0	23.0	23.0
Total Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	24.0
Total Split (%)	15.7%	34.3%		15.7%	34.3%		15.7%	34.3%		15.7%	34.3%	34.3%
Maximum Green (s)	6.0	19.0		6.0	19.0		6.0	19.0		6.0	19.0	19.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		10.0			10.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effect Green (s)	20.6	18.5		19.8	16.6		24.4	20.0		24.4	20.0	20.0
Actuated g/C Ratio	0.34	0.30		0.32	0.27		0.40	0.33		0.40	0.33	0.33
v/c Ratio	0.24	0.37		0.09	0.79		0.28	0.18		0.23	0.41	0.20
Control Delay	14.6	17.8		12.6	28.4		13.8	15.2		13.1	22.5	2.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	14.6	17.8		12.6	28.4		13.8	15.2		13.1	22.5	2.1
LOS	B	B		B	C		B	B		B	C	A
Approach Delay		17.4			27.7			14.7			15.0	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	5.0	16.2		2.6	48.1		11.0	9.1		9.9	28.9	0.0
Queue Length 95th (m)	10.9	25.4		6.6	66.0		21.4	14.8		13.7	47.3	1.3
Internal Link Dist (m)		190.8			468.5			24.5			291.6	
Turn Bay Length (m)	25.0			50.0			40.0			95.0		
Base Capacity (vph)	272	1235		388	1127		472	1141		528	603	627
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	0.24	0.32		0.09	0.66		0.28	0.18		0.23	0.41	0.20

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	61
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.79
Intersection Signal Delay:	20.2
Intersection Capacity Utilization:	61.1%
Intersection LOS:	C
ICU Level of Service:	B









# Lanes, Volumes, Timings

## 1: Uplands Dr & Hammond Bay Rd

05-06-2020

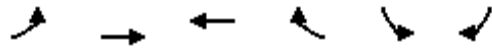
Analysis Period (min) 15

Splits and Phases: 1: Uplands Dr & Hammond Bay Rd

 Ø1 11 s	 Ø2 24 s	 Ø3 11 s	 Ø4 24 s
 Ø5 11 s	 Ø6 24 s	 Ø7 11 s	 Ø8 24 s

## Lanes, Volumes, Timings 2: Hammond Bay Rd & Calinda

05-06-2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	50	311	744	38	23	25
Future Volume (vph)	50	311	744	38	23	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor	0.99		1.00			
Frt			0.990			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1787	3438	3464	0	1752	1568
Flt Permitted	0.157				0.950	
Satd. Flow (perm)	294	3438	3464	0	1752	1568
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			13			33
Link Speed (k/h)		50	50		50	
Link Distance (m)		98.1	214.8		219.0	
Travel Time (s)		7.1	15.5		15.8	
Confl. Peds. (#/hr)	15			15		
Peak Hour Factor	0.65	0.91	0.93	0.63	0.60	0.75
Heavy Vehicles (%)	1%	5%	3%	0%	3%	3%
Adj. Flow (vph)	77	342	800	60	38	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	77	342	860	0	38	33
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

## Lanes, Volumes, Timings 2: Hammond Bay Rd & Calinda

05-06-2020



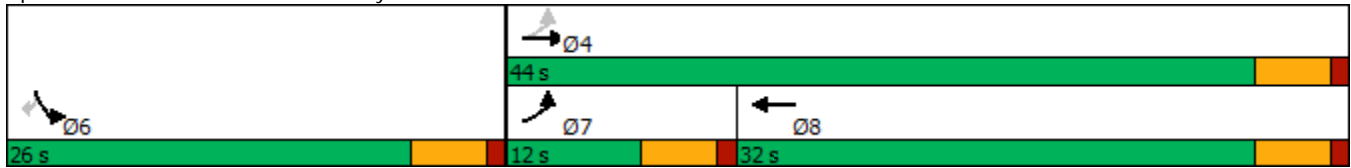
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Detector Phase	7	4	8		6	6
Switch Phase						
Minimum Initial (s)	6.0	10.0	10.0		7.0	7.0
Minimum Split (s)	11.0	22.5	22.5		22.5	22.5
Total Split (s)	12.0	44.0	32.0		26.0	26.0
Total Split (%)	17.1%	62.9%	45.7%		37.1%	37.1%
Maximum Green (s)	7.0	39.0	27.0		21.0	21.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)			7.0		7.0	7.0
Flash Dont Walk (s)			8.0		8.0	8.0
Pedestrian Calls (#/hr)			5		5	5
Act Effct Green (s)	26.8	26.8	20.5		21.8	21.8
Actuated g/C Ratio	0.45	0.45	0.35		0.37	0.37
v/c Ratio	0.25	0.22	0.71		0.06	0.06
Control Delay	9.7	9.1	20.5		16.8	7.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	9.7	9.1	20.5		16.8	7.4
LOS	A	A	C		B	A
Approach Delay		9.2	20.5		12.4	
Approach LOS		A	C		B	
Queue Length 50th (m)	4.5	11.1	48.5		3.2	0.0
Queue Length 95th (m)	7.0	17.3	67.4		6.7	4.2
Internal Link Dist (m)		74.1	190.8		195.0	
Turn Bay Length (m)	15.0				40.0	
Base Capacity (vph)	317	2357	1651		646	599
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.24	0.15	0.52		0.06	0.06

### Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	59
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	16.5
Intersection Capacity Utilization	45.2%
Intersection LOS:	B
ICU Level of Service	A

Analysis Period (min) 15

Splits and Phases: 2: Hammond Bay Rd & Calinda





























Lanes, Volumes, Timings

9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	307	89	221	356	253	58	480	161	63	336	114
Future Volume (vph)	109	307	89	221	356	253	58	480	161	63	336	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		0.0
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	1.00	0.91	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950	0.999		0.950	0.995		0.950			0.950		
Satd. Flow (prot)	1643	3455	1583	1626	3407	1615	3502	3574	1599	1787	3574	1615
Flt Permitted	0.950	0.999		0.950	0.995		0.950			0.950		
Satd. Flow (perm)	1643	3455	1583	1626	3407	1615	3502	3574	1599	1787	3574	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			305			252			131
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		585.6			123.8			115.7			860.7	
Travel Time (s)		42.2			8.9			5.2			38.7	
Peak Hour Factor	0.94	0.78	0.83	0.74	0.78	0.83	0.72	0.80	0.64	0.71	0.82	0.90
Heavy Vehicles (%)	0%	0%	2%	1%	1%	0%	0%	1%	1%	1%	1%	0%
Adj. Flow (vph)	116	394	107	299	456	305	81	600	252	89	410	127
Shared Lane Traffic (%)	10%			18%								
Lane Group Flow (vph)	104	406	107	245	510	305	81	600	252	89	410	127
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	

# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	23.0	23.0	23.0	26.0	26.0	26.0	11.0	23.0	23.0	11.0	23.0	23.0
Total Split (s)	24.0	24.0	24.0	29.0	29.0	29.0	11.0	32.0	32.0	15.0	36.0	36.0
Total Split (%)	24.0%	24.0%	24.0%	29.0%	29.0%	29.0%	11.0%	32.0%	32.0%	15.0%	36.0%	36.0%
Maximum Green (s)	19.0	19.0	19.0	24.0	24.0	24.0	6.0	27.0	27.0	10.0	31.0	31.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				14.0	14.0	14.0		8.0	8.0		8.0	8.0
Pedestrian Calls (#/hr)				5	5	5		5	5		5	5
Act Effct Green (s)	15.5	15.5	15.5	19.4	19.4	19.4	6.1	28.9	28.9	8.8	31.6	31.6
Actuated g/C Ratio	0.17	0.17	0.17	0.22	0.22	0.22	0.07	0.32	0.32	0.10	0.35	0.35
v/c Ratio	0.37	0.68	0.28	0.70	0.70	0.52	0.34	0.52	0.37	0.51	0.33	0.20
Control Delay	38.9	42.4	6.1	45.2	38.8	7.3	48.1	29.8	5.6	52.5	24.7	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.9	42.4	6.1	45.2	38.8	7.3	48.1	29.8	5.6	52.5	24.7	5.3
LOS	D	D	A	D	D	A	D	C	A	D	C	A
Approach Delay		35.5			31.2			24.8			24.7	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	19.5	40.4	0.0	47.3	49.2	0.0	7.7	51.6	0.0	16.3	30.9	0.0
Queue Length 95th (m)	38.2	50.1	7.2	61.6	58.7	15.0	12.7	65.0	1.5	26.0	42.8	12.3
Internal Link Dist (m)		561.6			99.8			91.7			836.7	
Turn Bay Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		
Base Capacity (vph)	353	742	442	441	924	660	237	1146	684	202	1252	651
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	0.29	0.55	0.24	0.56	0.55	0.46	0.34	0.52	0.37	0.44	0.33	0.20

### Intersection Summary







Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	90.2
Natural Cycle:	85
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	28.9
Intersection LOS:	C
Intersection Capacity Utilization:	54.3%
ICU Level of Service:	A
Analysis Period (min):	15

# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020

Splits and Phases: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

 Ø1 15 s	 Ø2 32 s	 Ø4 24 s	 Ø8 29 s
 Ø5 11 s	 Ø6 36 s		

Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Enterprise Way

05-06-2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	121	140	211	553	452	194
Future Volume (vph)	121	140	211	553	452	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	200.0			75.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor	0.98		1.00			0.98
Frt	0.917					0.850
Flt Protected	0.978		0.950			
Satd. Flow (prot)	3259	0	1752	3438	3471	1599
Flt Permitted	0.978		0.384			
Satd. Flow (perm)	3251	0	708	3438	3471	1574
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	171					266
Link Speed (k/h)	50			80	80	
Link Distance (m)	149.2			779.3	349.5	
Travel Time (s)	10.7			35.1	15.7	
Confl. Peds. (#/hr)	2	2	2			2
Peak Hour Factor	0.87	0.82	0.80	0.91	0.86	0.73
Heavy Vehicles (%)	0%	0%	3%	5%	4%	1%
Adj. Flow (vph)	139	171	264	608	526	266
Shared Lane Traffic (%)						
Lane Group Flow (vph)	310	0	264	608	526	266
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Enterprise Way

05-06-2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases			2			6
Detector Phase	4		5	2	6	6
Switch Phase						
Minimum Initial (s)	7.0		6.0	10.0	10.0	10.0
Minimum Split (s)	23.0		11.0	23.0	23.0	23.0
Total Split (s)	33.0		21.0	52.0	31.0	31.0
Total Split (%)	38.8%		24.7%	61.2%	36.5%	36.5%
Maximum Green (s)	28.0		16.0	47.0	26.0	26.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	Max
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	8.0				8.0	8.0
Pedestrian Calls (#/hr)	5				5	5
Act Effect Green (s)	9.3		47.1	47.1	33.0	33.0
Actuated g/C Ratio	0.14		0.71	0.71	0.50	0.50
v/c Ratio	0.52		0.41	0.25	0.30	0.29
Control Delay	15.0		5.8	4.0	11.5	2.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	15.0		5.8	4.0	11.5	2.9
LOS	B		A	A	B	A
Approach Delay	15.0			4.6	8.6	
Approach LOS	B			A	A	
Queue Length 50th (m)	8.5		8.5	10.6	18.8	0.0
Queue Length 95th (m)	17.6		19.4	23.4	36.5	5.7
Internal Link Dist (m)	125.2			755.3	325.5	
Turn Bay Length (m)			200.0			75.0
Base Capacity (vph)	1476		754	2439	1725	916
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.21		0.35	0.25	0.30	0.29

Intersection Summary

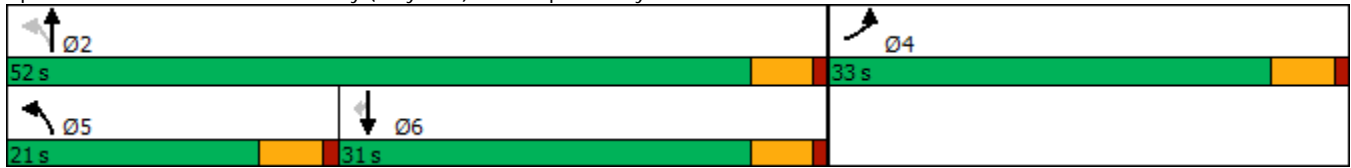
Area Type:	Other
Cycle Length:	85
Actuated Cycle Length:	66.4
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.52
Intersection Signal Delay:	7.8
Intersection Capacity Utilization	45.0%
Intersection LOS:	A
ICU Level of Service	A

Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Enterprise Way

05-06-2020



























Analysis Period (min) 15

Splits and Phases: 10: Island Hwy (Hwy 19A) & Enterprise Way



Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				 			 	
Traffic Volume (vph)	28	160	78	233	148	111	104	953	448	298	1091	11
Future Volume (vph)	28	160	78	233	148	111	104	953	448	298	1091	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	130.0		30.0	190.0		150.0	280.0		160.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt		0.946				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1753	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1805	1753	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				187			487			132
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		438.4			585.6			838.6			910.0	
Travel Time (s)		31.6			42.2			37.7			41.0	
Peak Hour Factor	0.65	0.82	0.70	0.93	0.65	0.76	0.65	0.95	0.92	0.90	0.95	0.63
Heavy Vehicles (%)	0%	4%	0%	2%	1%	2%	2%	5%	3%	2%	5%	2%
Adj. Flow (vph)	43	195	111	251	228	146	160	1003	487	331	1148	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	306	0	251	228	146	160	1003	487	331	1148	17
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8			5	2		1	6

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	23.4	23.4		23.4	23.4	23.4	11.5	23.5	23.5	11.5	23.5	23.5
Total Split (s)	25.8	25.8		23.4	23.4	23.4	17.8	32.4	32.4	28.4	43.0	43.0
Total Split (%)	23.5%	23.5%		21.3%	21.3%	21.3%	16.2%	29.5%	29.5%	25.8%	39.1%	39.1%
Maximum Green (s)	20.4	20.4		18.0	18.0	18.0	12.3	26.9	26.9	22.9	37.5	37.5
Yellow Time (s)	4.4	4.4		4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5
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	3.0
Recall Mode	None	None		None	None	None	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	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	2	2		2	2	2		2	2		2	2
Act Effct Green (s)	19.5	19.5		16.3	16.3	16.3	11.9	27.5	27.5	22.0	37.6	37.6
Actuated g/C Ratio	0.18	0.18		0.15	0.15	0.15	0.11	0.26	0.26	0.21	0.35	0.35
v/c Ratio	0.13	0.91		0.48	0.80	0.37	0.82	0.79	0.64	0.91	0.95	0.03
Control Delay	38.6	70.9		45.0	64.9	5.2	78.5	43.3	7.4	72.7	51.9	0.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	70.9		45.0	64.9	5.2	78.5	43.3	7.4	72.7	51.9	0.1
LOS	D	E		D	E	A	E	D	A	E	D	A
Approach Delay		67.0			43.0			36.1			55.9	
Approach LOS		E			D			D			E	
Queue Length 50th (m)	8.2	63.3		26.7	49.6	0.0	35.9	78.9	0.0	73.4	134.0	0.0
Queue Length 95th (m)	13.2	#96.7		39.5	52.8	2.1	41.1	96.4	28.9	#126.2	#182.1	0.0
Internal Link Dist (m)		414.4			561.6			814.6			886.0	
Turn Bay Length (m)	40.0			130.0		30.0	190.0		150.0	280.0		160.0
Base Capacity (vph)	344	352		577	316	421	203	1266	764	378	1205	640
Starvation Cap Reductn	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
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.87		0.44	0.72	0.35	0.79	0.79	0.64	0.88	0.95	0.03

**Intersection Summary**

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 107.2

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 47.0

Intersection LOS: D

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.



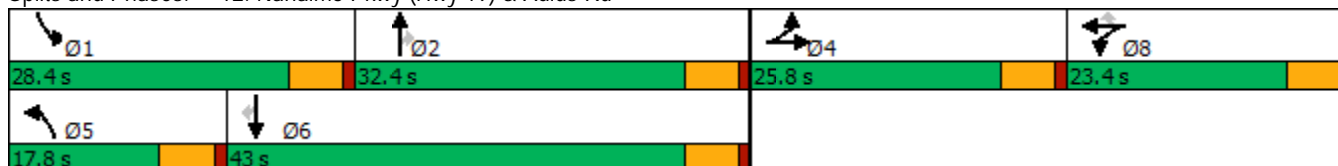
# Lanes, Volumes, Timings

## 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

Queue shown is maximum after two cycles.

Splits and Phases: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd



Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	212	33	144	379	21	79	171	118	18	184	149
Future Volume (vph)	82	212	33	144	379	21	79	171	118	18	184	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	55.0		0.0	45.0		10.0	45.0		10.0
Storage Lanes	1		1	2		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00		1.00		0.97	1.00		0.98
Frt			0.850		0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1863	1568	1787	3562	0	1752	3539	1599	1805	3505	1599
Flt Permitted	0.420			0.379			0.950			0.950		
Satd. Flow (perm)	768	1863	1544	712	3562	0	1746	3539	1556	1799	3505	1569
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187		11				187			196
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.5			398.6			321.2			163.3	
Travel Time (s)		17.2			28.7			23.1			11.8	
Confl. Peds. (#/hr)	13		1	1		13	4		2	2		4
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.71	0.75	0.66	0.79	0.84	0.60	0.78	0.90	0.65	0.67	0.82	0.76
Heavy Vehicles (%)	3%	2%	3%	1%	0%	0%	3%	2%	1%	0%	3%	1%
Adj. Flow (vph)	115	283	50	182	451	35	101	190	182	27	224	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	283	50	182	486	0	101	190	182	27	224	196
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8					2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		6.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	22.5	22.5	11.0	22.5	22.5
Total Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (%)	15.7%	34.3%	34.3%	15.7%	34.3%		15.7%	34.3%	34.3%	15.7%	34.3%	34.3%
Maximum Green (s)	6.0	19.0	19.0	6.0	19.0		6.0	19.0	19.0	6.0	19.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		8.0	8.0		8.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	20.8	14.7	14.7	22.1	17.5		6.1	23.6	23.6	6.1	19.3	19.3
Actuated g/C Ratio	0.33	0.23	0.23	0.35	0.27		0.10	0.37	0.37	0.10	0.30	0.30
v/c Ratio	0.33	0.66	0.10	0.52	0.49		0.60	0.14	0.26	0.16	0.21	0.32
Control Delay	15.8	30.8	0.4	19.7	22.6		48.0	16.2	4.6	31.4	19.0	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	30.8	0.4	19.7	22.6		48.0	16.2	4.6	31.4	19.0	5.2
LOS	B	C	A	B	C		D	B	A	C	B	A
Approach Delay		23.5			21.9			18.5			13.7	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	9.3	33.4	0.0	15.3	28.8		12.9	7.0	0.0	3.3	11.4	0.0
Queue Length 95th (m)	14.4	44.8	0.0	24.0	39.2		#28.5	18.4	3.6	7.9	19.1	8.2
Internal Link Dist (m)		214.5			374.6			297.2			139.3	
Turn Bay Length (m)	65.0			55.0			45.0		10.0	45.0		10.0
Base Capacity (vph)	344	564	598	349	1115		167	1312	694	172	1061	611
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.50	0.08	0.52	0.44		0.60	0.14	0.26	0.16	0.21	0.32

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	63.7
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	19.7
Intersection LOS:	B

# Lanes, Volumes, Timings

## 18: Uplands Dr & Turner Rd









05-06-2020

Intersection Capacity Utilization 54.2% ICU Level of Service A

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 18: Uplands Dr & Turner Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	24 s	11 s	24 s

**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	R
Maximum Queue (m)	24.4	30.8	38.8	16.3	61.4	67.2	25.5	34.1	24.7	32.0	43.1	24.5
Average Queue (m)	7.8	10.4	14.9	4.8	33.1	40.2	14.6	10.9	9.5	11.9	21.4	11.0
95th Queue (m)	17.5	24.1	31.0	13.3	53.3	62.5	24.4	24.8	20.7	23.1	38.0	19.0
Link Distance (m)		190.2	190.2		478.4	478.4		26.1	26.1		301.2	301.2
Upstream Blk Time (%)							1	1	0			
Queuing Penalty (veh)							0	1	1			
Storage Bay Dist (m)	25.0			50.0			40.0			95.0		
Storage Blk Time (%)	0	1			1		1	1				
Queuing Penalty (veh)	0	0			0		0	1				

**Intersection: 2: Hammond Bay Rd & Calinda**

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (m)	21.6	40.3	39.1	61.5	78.1	12.6	19.9
Average Queue (m)	9.9	14.4	17.8	31.8	42.5	3.0	4.4
95th Queue (m)	19.7	31.4	32.7	53.3	68.0	10.1	13.7
Link Distance (m)		76.9	76.9	190.2	190.2		205.1
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	15.0					40.0	
Storage Blk Time (%)	3	7					
Queuing Penalty (veh)	5	3					

**Intersection: 4: Marlin Way & Hammond Bay Rd**

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (m)	1.3	9.1	12.1	11.6
Average Queue (m)	0.0	1.0	4.0	4.5
95th Queue (m)	0.9	5.6	11.4	11.8
Link Distance (m)	72.0			172.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0	15.0	
Storage Blk Time (%)		0	0	0
Queuing Penalty (veh)		0	0	0

**Intersection: 6: Applecross Rd & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	TR	T	R	R
Maximum Queue (m)	31.5	36.7	40.3	1.7	10.9	16.6
Average Queue (m)	12.3	1.2	1.3	0.1	0.9	1.3
95th Queue (m)	27.4	18.6	20.4	1.2	5.4	8.6
Link Distance (m)		94.4	94.4	72.0		73.6
Upstream Blk Time (%)		0	0			
Queuing Penalty (veh)		0	0			
Storage Bay Dist (m)	30.0				15.0	
Storage Blk Time (%)	0				0	
Queuing Penalty (veh)	1				0	

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	LT	T	R	L	LT	T	R	L	L	T	T
Maximum Queue (m)	24.0	44.9	40.6	18.9	47.3	79.6	83.9	35.3	14.1	18.3	52.5	54.4
Average Queue (m)	9.1	25.6	18.8	0.6	18.2	36.5	31.3	2.8	3.2	5.3	29.1	29.5
95th Queue (m)	20.4	40.6	35.0	9.6	41.7	60.7	59.0	17.8	10.1	13.2	48.8	50.3
Link Distance (m)		541.8	541.8			94.4	94.4				87.5	87.5
Upstream Blk Time (%)						0	0					
Queuing Penalty (veh)						0	1					
Storage Bay Dist (m)	65.0			40.0	40.0			60.0	115.0	115.0		
Storage Blk Time (%)			0	0	0	5	0					
Queuing Penalty (veh)			0	0	0	5	1					

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	SB	SB	SB
Directions Served	L	T	T
Maximum Queue (m)	31.3	38.0	43.5
Average Queue (m)	10.6	17.9	21.2
95th Queue (m)	23.7	33.0	37.4
Link Distance (m)		841.6	841.6
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	135.0		
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way**

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LR	L	T	T	T	T
Maximum Queue (m)	25.6	17.5	35.7	27.5	30.7	40.5	34.2
Average Queue (m)	12.9	5.5	16.8	4.7	9.8	14.6	14.1
95th Queue (m)	22.9	13.6	30.2	17.2	25.4	31.2	29.3
Link Distance (m)	133.2	133.2		757.4	757.4	323.8	323.8
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	200.0						
Storage Blk Time (%)							
Queuing Penalty (veh)							

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	L	T	R	L	T	T	T	R	L
Maximum Queue (m)	35.2	78.8	36.6	39.7	57.4	37.4	31.1	66.8	70.5	67.6	15.2	97.0
Average Queue (m)	5.3	30.9	17.2	21.5	23.2	7.0	14.1	46.2	47.5	38.8	0.5	51.6
95th Queue (m)	18.0	61.2	32.1	35.2	46.1	30.3	28.9	63.5	66.5	62.0	10.7	83.3
Link Distance (m)		421.4		541.8	541.8			815.9	815.9	815.9		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	40.0		130.0			30.0	190.0				150.0	280.0
Storage Blk Time (%)		6			6	0						
Queuing Penalty (veh)		2			7	0						

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	SB	SB
Directions Served	T	T
Maximum Queue (m)	106.3	122.1
Average Queue (m)	62.8	67.0
95th Queue (m)	95.4	101.1
Link Distance (m)	894.3	894.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

## Queuing and Blocking Report

05-06-2020

### Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	T	L	T	T	R	L	T	T	R
Maximum Queue (m)	27.3	85.2	79.2	45.2	37.3	70.7	64.3	6.6	35.1	53.0	193.0	27.0
Average Queue (m)	9.2	35.9	48.2	13.7	9.5	41.2	33.5	0.2	8.9	24.1	30.1	1.8
95th Queue (m)	24.5	70.6	74.2	31.0	27.1	62.0	56.7	3.3	23.5	45.4	129.7	12.9
Link Distance (m)		385.5		207.1		527.5	527.5			757.4	757.4	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		75.0		30.0			85.0	45.0			20.0
Storage Blk Time (%)	0	27	1		0	18				1	13	0
Queuing Penalty (veh)	1	9	1		0	6				0	1	0

### Intersection: 18: Uplands Dr & Turner Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	T	R	L	T
Maximum Queue (m)	32.6	56.9	13.9	48.5	55.2	56.3	35.1	33.7	17.7	15.5	19.2	25.4
Average Queue (m)	13.1	27.8	4.5	18.5	32.5	13.1	14.3	14.8	1.6	10.5	5.2	12.3
95th Queue (m)	23.6	47.4	12.1	35.0	51.2	34.0	27.4	28.1	9.9	16.5	13.8	21.1
Link Distance (m)		207.1	207.1			382.0		307.3	307.3			141.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	65.0			55.0	55.0		45.0			10.0	45.0	
Storage Blk Time (%)		0		0	1		0		0	1		
Queuing Penalty (veh)		0		0	1		0		0	1		

### Intersection: 18: Uplands Dr & Turner Rd

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	36.4	18.0
Average Queue (m)	12.8	13.4
95th Queue (m)	30.7	18.0
Link Distance (m)	141.4	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		10.0
Storage Blk Time (%)	20	2
Queuing Penalty (veh)	29	2



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Intersection: 21: Uplands Dr & Parkwood Dr

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Movement	WB	SB
Directions Served	LR	L
Maximum Queue (m)	15.6	7.3
Average Queue (m)	8.0	0.5
95th Queue (m)	14.3	4.0
Link Distance (m)	254.6	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		35.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Network Summary

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Network wide Queuing Penalty: 80

HCM 2010 TWSC  
 4: Marlin Way & Hammond Bay Rd

05-06-2020

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	342	38	14	756	16	19
Future Vol, veh/h	342	38	14	756	16	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	89	60	95	75	85
Heavy Vehicles, %	3	0	0	3	0	0
Mvmt Flow	368	43	23	796	21	22

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	411	0	834	206
Stage 1	-	-	-	-	390	-
Stage 2	-	-	-	-	444	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1159	-	311	807
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	619	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1159	-	305	807
Mov Cap-2 Maneuver	-	-	-	-	305	-
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	607	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	305	807	-	-	1159	-
HCM Lane V/C Ratio	0.07	0.028	-	-	0.02	-
HCM Control Delay (s)	17.7	9.6	-	-	8.2	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0.1	-

HCM 2010 TWSC  
6: Applecross Rd & Hammond Bay Rd

05-06-2020

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗			↖↗	↖			↖			↖
Traffic Vol, veh/h	139	376	17	0	697	74	0	0	5	0	0	133
Future Vol, veh/h	139	376	17	0	697	74	0	0	5	0	0	133
Conflicting Peds, #/hr	12	0	3	3	0	12	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	300	-	-	-	-	150	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	93	80	25	95	65	25	25	50	25	25	85
Heavy Vehicles, %	3	3	0	0	3	1	0	0	0	0	0	2
Mvmt Flow	156	404	21	0	734	114	0	0	10	0	0	156

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	860	0	0	-	-	0	-	-	216	-	-	379
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.16	-	-	-	-	-	-	-	6.9	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.23	-	-	-	-	-	-	-	3.3	-	-	3.32
Pot Cap-1 Maneuver	771	-	-	0	-	-	0	0	795	0	0	619
Stage 1	-	-	-	0	-	-	0	0	-	0	0	-
Stage 2	-	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	763	-	-	-	-	-	-	-	793	-	-	613
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.9			0			9.6			12.9		
HCM LOS							A			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	793	763	-	-	-	-	613
HCM Lane V/C Ratio	0.013	0.205	-	-	-	-	0.255
HCM Control Delay (s)	9.6	10.9	-	-	-	-	12.9
HCM Lane LOS	A	B	-	-	-	-	B
HCM 95th %tile Q(veh)	0	0.8	-	-	-	-	1

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T		T	T
Traffic Vol, veh/h	32	21	259	9	10	279
Future Vol, veh/h	32	21	259	9	10	279
Conflicting Peds, #/hr	0	1	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	350	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	91	60	75	85
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	38	25	285	15	13	328






















Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	652	299	0	0	305
Stage 1	298	-	-	-	-
Stage 2	354	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	436	745	-	-	1267
Stage 1	758	-	-	-	-
Stage 2	715	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	430	741	-	-	1262
Mov Cap-2 Maneuver	430	-	-	-	-
Stage 1	755	-	-	-	-
Stage 2	708	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	516	1262
HCM Lane V/C Ratio	-	-	0.121	0.011
HCM Control Delay (s)	-	-	12.9	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0

Lanes, Volumes, Timings  
1: Uplands Dr & Hammond Bay Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	583	206	38	432	67	192	266	21	109	236	89
Future Volume (vph)	92	583	206	38	432	67	192	266	21	109	236	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	40.0		0.0	95.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.97	0.99			0.98		0.99	1.00		0.99		0.98
Frt		0.963			0.975			0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3328	0	1752	3362	0	1752	3448	0	1787	1845	1568
Flt Permitted	0.314			0.174			0.440			0.482		
Satd. Flow (perm)	561	3328	0	321	3362	0	807	3448	0	901	1845	1533
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		65			34			17				175
Link Speed (k/h)		50			50			50				50
Link Distance (m)		214.8			492.5			48.5				315.6
Travel Time (s)		15.5			35.5			3.5				22.7
Confl. Peds. (#/hr)	65		17	17		65	8		8	8		8
Peak Hour Factor	0.84	0.72	0.77	0.82	0.88	0.68	0.94	0.80	0.50	0.65	0.86	0.77
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	0%	1%	3%	3%
Adj. Flow (vph)	110	810	268	46	491	99	204	333	42	168	274	116
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	1078	0	46	590	0	204	375	0	168	274	116
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings  
1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	7.0		6.0	7.0	7.0
Minimum Split (s)	11.0	23.0		11.0	23.0		11.0	23.0		11.0	23.0	23.0
Total Split (s)	11.0	30.0		11.0	30.0		11.0	23.0		11.0	23.0	23.0
Total Split (%)	14.7%	40.0%		14.7%	40.0%		14.7%	30.7%		14.7%	30.7%	30.7%
Maximum Green (s)	6.0	25.0		6.0	25.0		6.0	18.0		6.0	18.0	18.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		10.0			10.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effect Green (s)	27.6	24.3		26.6	21.9		24.2	18.2		24.2	18.2	18.2
Actuated g/C Ratio	0.40	0.35		0.38	0.31		0.35	0.26		0.35	0.26	0.26
v/c Ratio	0.34	0.90		0.19	0.55		0.57	0.41		0.43	0.57	0.22
Control Delay	14.3	33.1		12.6	21.2		23.3	23.3		19.3	29.5	2.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	14.3	33.1		12.6	21.2		23.3	23.3		19.3	29.5	2.4
LOS	B	C		B	C		C	C		B	C	A
Approach Delay		31.4			20.6			23.3			20.8	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	8.6	76.5		3.5	34.4		20.6	23.8		16.5	36.5	0.0
Queue Length 95th (m)	15.9	72.8		7.8	48.3		36.1	31.6		20.6	57.5	1.0
Internal Link Dist (m)		190.8			468.5			24.5			291.6	
Turn Bay Length (m)	25.0			50.0			40.0			95.0		
Base Capacity (vph)	325	1244		246	1237		361	909		389	479	528
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	0.34	0.87		0.19	0.48		0.57	0.41		0.43	0.57	0.22

Intersection Summary	
Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	69.8
Natural Cycle:	75
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	25.5
Intersection Capacity Utilization:	69.6%
Intersection LOS:	C
ICU Level of Service:	C









# Lanes, Volumes, Timings

## 1: Uplands Dr & Hammond Bay Rd

05-06-2020

Analysis Period (min) 15

Splits and Phases: 1: Uplands Dr & Hammond Bay Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	23 s	11 s	30 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	23 s	11 s	30 s

## Lanes, Volumes, Timings 2: Hammond Bay Rd & Calinda

05-06-2020

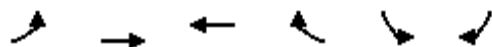


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	27	664	673	39	209	85
Future Volume (vph)	27	664	673	39	209	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor	0.98		0.99		1.00	0.98
Frt			0.992			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1805	3574	3494	0	1805	1538
Flt Permitted	0.169				0.950	
Satd. Flow (perm)	316	3574	3494	0	1802	1509
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			9			121
Link Speed (k/h)		50	50		50	
Link Distance (m)		98.1	214.8		219.0	
Travel Time (s)		7.1	15.5		15.8	
Confl. Peds. (#/hr)	40			40	1	5
Peak Hour Factor	0.75	0.94	0.85	0.88	0.82	0.70
Heavy Vehicles (%)	0%	1%	2%	0%	0%	5%
Adj. Flow (vph)	36	706	792	44	255	121
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	706	836	0	255	121
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25			15	25	15
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			



## Lanes, Volumes, Timings 2: Hammond Bay Rd & Calinda

05-06-2020



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Detector Phase	7	4	8		6	6
Switch Phase						
Minimum Initial (s)	6.0	10.0	10.0		7.0	7.0
Minimum Split (s)	11.0	22.5	22.5		22.5	22.5
Total Split (s)	12.0	44.0	32.0		26.0	26.0
Total Split (%)	17.1%	62.9%	45.7%		37.1%	37.1%
Maximum Green (s)	7.0	39.0	27.0		21.0	21.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)			7.0		7.0	7.0
Flash Dont Walk (s)			8.0		8.0	8.0
Pedestrian Calls (#/hr)			5		5	5
Act Effct Green (s)	22.5	22.5	18.7		21.9	21.9
Actuated g/C Ratio	0.41	0.41	0.34		0.40	0.40
v/c Ratio	0.12	0.48	0.70		0.35	0.18
Control Delay	8.7	12.0	19.3		16.8	5.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	8.7	12.0	19.3		16.8	5.0
LOS	A	B	B		B	A
Approach Delay		11.8	19.3		13.0	
Approach LOS		B	B		B	
Queue Length 50th (m)	2.1	25.7	31.6		13.8	0.0
Queue Length 95th (m)	4.6	36.1	59.9		43.4	5.5
Internal Link Dist (m)		74.1	190.8		195.0	
Turn Bay Length (m)	15.0				40.0	
Base Capacity (vph)	327	2650	1798		720	675
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.11	0.27	0.46		0.35	0.18

### Intersection Summary

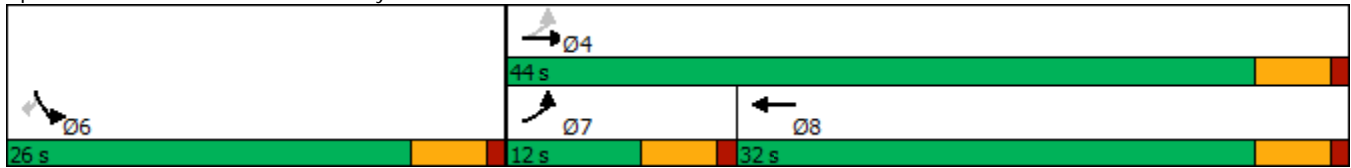
Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	54.8
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	15.3
Intersection Capacity Utilization:	43.3%
Intersection LOS:	B
ICU Level of Service:	A

Lanes, Volumes, Timings  
2: Hammond Bay Rd & Calinda

05-06-2020

Analysis Period (min) 15

Splits and Phases: 2: Hammond Bay Rd & Calinda



Lanes, Volumes, Timings

9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	447	135	351	438	235	196	647	161	247	637	187
Future Volume (vph)	222	447	135	351	438	235	196	647	161	247	637	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		0.0
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	1.00	0.91	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	1.00	0.99	1.00	1.00	0.96	0.99		0.97	0.99		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950	0.998		0.950	0.992		0.950			0.950		
Satd. Flow (prot)	1626	3417	1615	1643	3373	1583	3502	3574	1583	1770	3539	1568
Fl <sub>t</sub> Permitted	0.950	0.998		0.950	0.992		0.950			0.950		
Satd. Flow (perm)	1607	3415	1593	1641	3373	1523	3476	3574	1543	1760	3539	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			185			245			189			205
Link Speed (k/h)		50			50			80				80
Link Distance (m)		585.6			123.8			115.7				860.7
Travel Time (s)		42.2			8.9			5.2				38.7
Confl. Peds. (#/hr)	15		1	1		15	6		7	7		6
Peak Hour Factor	0.89	0.93	0.86	0.96	0.89	0.96	0.89	0.90	0.85	0.87	0.87	0.91
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	0%	1%	2%	2%	2%	3%
Adj. Flow (vph)	249	481	157	366	492	245	220	719	189	284	732	205
Shared Lane Traffic (%)	10%			24%								
Lane Group Flow (vph)	224	506	157	278	580	245	220	719	189	284	732	205
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings

9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.0	12.0	12.0	22.0	22.0	22.0	11.0	23.0	23.0	11.0	23.0	23.0
Total Split (s)	22.0	22.0	22.0	24.0	24.0	24.0	17.0	30.0	30.0	24.0	37.0	37.0
Total Split (%)	22.0%	22.0%	22.0%	24.0%	24.0%	24.0%	17.0%	30.0%	30.0%	24.0%	37.0%	37.0%
Maximum Green (s)	17.0	17.0	17.0	19.0	19.0	19.0	12.0	25.0	25.0	19.0	32.0	32.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				10.0	10.0	10.0		8.0	8.0		8.0	8.0
Pedestrian Calls (#/hr)				5	5	5		5	5		5	5
Act Effect Green (s)	16.6	16.6	16.6	18.7	18.7	18.7	10.8	25.1	25.1	18.2	32.5	32.5
Actuated g/C Ratio	0.17	0.17	0.17	0.19	0.19	0.19	0.11	0.25	0.25	0.18	0.33	0.33
v/c Ratio	0.82	0.88	0.37	0.89	0.91	0.50	0.58	0.79	0.35	0.87	0.63	0.32
Control Delay	64.1	58.1	6.1	70.6	59.2	8.6	48.2	42.1	6.6	66.3	31.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.1	58.1	6.1	70.6	59.2	8.6	48.2	42.1	6.6	66.3	31.2	5.1
LOS	E	E	A	E	E	A	D	D	A	E	C	A
Approach Delay		50.4			50.9			37.3			35.0	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	48.9	55.8	0.0	61.3	64.2	0.0	22.2	72.6	0.0	56.4	66.4	0.0
Queue Length 95th (m)	#90.4	#85.4	10.1	#113.9	#95.6	20.6	33.7	95.1	14.2	#95.6	83.5	15.7
Internal Link Dist (m)		561.6			99.8			91.7			836.7	
Turn Bay Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		
Base Capacity (vph)	280	589	428	317	650	491	426	909	533	341	1166	642
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	0.80	0.86	0.37	0.88	0.89	0.50	0.52	0.79	0.35	0.83	0.63	0.32

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	98.6
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	42.8
Intersection LOS:	D
Intersection Capacity Utilization:	75.6%
ICU Level of Service:	D

# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

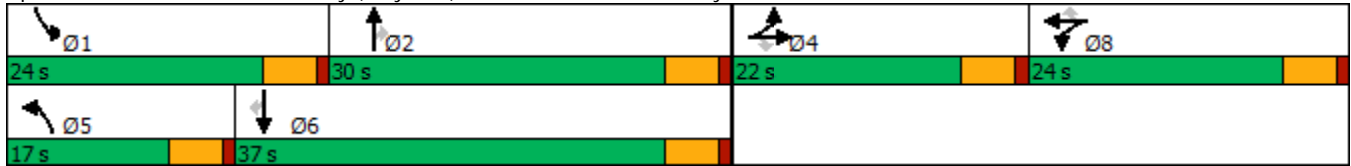
05-06-2020

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd



Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Enterprise Way

05-06-2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	169	295	308	886	899	224
Future Volume (vph)	169	295	308	886	899	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	200.0			75.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor	0.98					0.99
Frt	0.907					0.850
Flt Protected	0.981		0.950			
Satd. Flow (prot)	3217	0	1770	3574	3574	1615
Flt Permitted	0.981		0.162			
Satd. Flow (perm)	3212	0	302	3574	3574	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	347					270
Link Speed (k/h)	50			80	80	
Link Distance (m)	149.2			779.3	349.5	
Travel Time (s)	10.7			35.1	15.7	
Confl. Peds. (#/hr)	2	2	2			2
Peak Hour Factor	0.80	0.85	0.90	0.93	0.94	0.83
Heavy Vehicles (%)	1%	0%	2%	1%	1%	0%
Adj. Flow (vph)	211	347	342	953	956	270
Shared Lane Traffic (%)						
Lane Group Flow (vph)	558	0	342	953	956	270
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Enterprise Way

05-06-2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases			2			6
Detector Phase	4		5	2	6	6
Switch Phase						
Minimum Initial (s)	7.0		6.0	10.0	10.0	10.0
Minimum Split (s)	23.0		11.0	23.0	23.0	23.0
Total Split (s)	23.0		18.0	47.0	29.0	29.0
Total Split (%)	32.9%		25.7%	67.1%	41.4%	41.4%
Maximum Green (s)	18.0		13.0	42.0	24.0	24.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	Max
Walk Time (s)	7.0				7.0	7.0
Flash Dont Walk (s)	8.0				8.0	8.0
Pedestrian Calls (#/hr)	5				5	5
Act Effct Green (s)	10.2		42.1	42.1	25.7	25.7
Actuated g/C Ratio	0.16		0.68	0.68	0.41	0.41
v/c Ratio	0.68		0.73	0.39	0.65	0.33
Control Delay	13.7		19.4	5.4	18.3	3.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	13.7		19.4	5.4	18.3	3.5
LOS	B		B	A	B	A
Approach Delay	13.7			9.1	15.0	
Approach LOS	B			A	B	
Queue Length 50th (m)	11.9		16.2	21.0	48.5	0.0
Queue Length 95th (m)	19.1		#57.0	39.8	77.8	10.5
Internal Link Dist (m)	125.2			755.3	325.5	
Turn Bay Length (m)			200.0			75.0
Base Capacity (vph)	1177		511	2414	1475	815
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.47		0.67	0.39	0.65	0.33

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	62.3
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	12.3
Intersection Capacity Utilization:	68.7%
Intersection LOS:	B
ICU Level of Service:	C

# Lanes, Volumes, Timings

## 10: Island Hwy (Hwy 19A) & Entreprise Way

05-06-2020

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.




























Splits and Phases: 10: Island Hwy (Hwy 19A) & Entreprise Way





Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				  			 	
Traffic Volume (vph)	21	88	34	601	107	242	81	1268	486	435	1108	9
Future Volume (vph)	21	88	34	601	107	242	81	1268	486	435	1108	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	130.0		30.0	190.0		150.0	280.0		160.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt		0.960				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1772	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1805	1772	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				255			523			121
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		438.4			585.6			838.6			910.0	
Travel Time (s)		31.6			42.2			37.7			41.0	
Peak Hour Factor	0.88	0.85	0.89	0.93	0.89	0.95	0.95	0.95	0.93	0.95	0.95	0.58
Heavy Vehicles (%)	0%	4%	0%	2%	1%	2%	2%	5%	3%	2%	5%	2%
Adj. Flow (vph)	24	104	38	646	120	255	85	1335	523	458	1166	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	142	0	646	120	255	85	1335	523	458	1166	16
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8			5	2		1	6

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	23.4	23.4		23.4	23.4	23.4	11.5	23.5	23.5	11.5	23.5	23.5
Total Split (s)	23.4	23.4		26.0	26.0	26.0	14.4	36.6	36.6	34.0	56.2	56.2
Total Split (%)	19.5%	19.5%		21.7%	21.7%	21.7%	12.0%	30.5%	30.5%	28.3%	46.8%	46.8%
Maximum Green (s)	18.0	18.0		20.6	20.6	20.6	8.9	31.1	31.1	28.5	50.7	50.7
Yellow Time (s)	4.4	4.4		4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5
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	3.0
Recall Mode	None	None		None	None	None	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	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	2	2		2	2	2		2	2		2	2
Act Effct Green (s)	13.4	13.4		20.6	20.6	20.6	8.5	31.1	31.1	28.5	51.2	51.2
Actuated g/C Ratio	0.12	0.12		0.18	0.18	0.18	0.07	0.27	0.27	0.25	0.44	0.44
v/c Ratio	0.11	0.66		1.06	0.36	0.52	0.65	1.00	0.65	1.05	0.77	0.02
Control Delay	46.2	58.8		97.7	46.0	9.4	76.3	68.0	7.3	99.4	31.9	0.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.2	58.8		97.7	46.0	9.4	76.3	68.0	7.3	99.4	31.9	0.0
LOS	D	E		F	D	A	E	E	A	F	C	A
Approach Delay		57.0			69.5			52.0			50.4	
Approach LOS		E			E			D			D	
Queue Length 50th (m)	5.2	29.7		-87.1	25.4	0.0	20.0	-117.9	0.0	-119.2	121.8	0.0
Queue Length 95th (m)	13.3	48.1		#131.1	45.1	23.6	#44.0	#162.0	30.1	#193.9	160.1	0.0
Internal Link Dist (m)		414.4			561.6			814.6			886.0	
Turn Bay Length (m)	40.0			130.0		30.0	190.0		150.0	280.0		160.0
Base Capacity (vph)	281	287		612	335	492	136	1331	804	437	1522	768
Starvation Cap Reductn	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
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.49		1.06	0.36	0.52	0.63	1.00	0.65	1.05	0.77	0.02

Intersection Summary	
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	115.5
Natural Cycle:	145
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.06
Intersection Signal Delay:	55.4
Intersection LOS:	E
Intersection Capacity Utilization:	90.6%
ICU Level of Service:	E
Analysis Period (min):	15

~ Volume exceeds capacity, queue is theoretically infinite.

# Lanes, Volumes, Timings

## 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

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: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

↙ Ø1	↑ Ø2	↘ Ø4	↙ Ø8
34 s	36.6 s	23.4 s	26 s
↙ Ø5	↓ Ø6		
14.4 s	56.2 s		

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	227	308	106	125	192	17	109	290	106	50	380	105
Future Volume (vph)	227	308	106	125	192	17	109	290	106	50	380	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	55.0		0.0	45.0		10.0	45.0		10.0
Storage Lanes	1		1	2		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00		1.00		0.97	0.99		0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1900	1599	1719	3503	0	1805	3505	1615	1752	3539	1615
Flt Permitted	0.559			0.356			0.950			0.950		
Satd. Flow (perm)	1036	1900	1566	642	3503	0	1798	3505	1561	1741	3539	1582
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187		16				187			187
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.5			398.6			321.2			163.3	
Travel Time (s)		17.2			28.7			23.1			11.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.83	0.89	0.90	0.95	0.88	0.72	0.81	0.83	0.74	0.75	0.90	0.84
Heavy Vehicles (%)	2%	0%	1%	5%	1%	4%	0%	3%	0%	3%	2%	0%
Adj. Flow (vph)	273	346	118	132	218	24	135	349	143	67	422	125
Shared Lane Traffic (%)												
Lane Group Flow (vph)	273	346	118	132	242	0	135	349	143	67	422	125
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8					2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		6.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	22.5	22.5	11.0	22.5	22.5
Total Split (s)	11.0	24.0	24.0	11.0	24.0		12.0	24.0	24.0	11.0	23.0	23.0
Total Split (%)	15.7%	34.3%	34.3%	15.7%	34.3%		17.1%	34.3%	34.3%	15.7%	32.9%	32.9%
Maximum Green (s)	6.0	19.0	19.0	6.0	19.0		7.0	19.0	19.0	6.0	18.0	18.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		8.0	8.0		8.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	23.0	18.3	18.3	21.9	15.9		7.0	23.7	23.7	6.0	18.0	18.0
Actuated g/C Ratio	0.34	0.27	0.27	0.33	0.24		0.10	0.35	0.35	0.09	0.27	0.27
v/c Ratio	0.65	0.67	0.21	0.43	0.29		0.71	0.28	0.21	0.43	0.44	0.22
Control Delay	23.9	29.9	1.9	17.7	20.1		53.7	18.7	2.6	39.0	22.7	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.9	29.9	1.9	17.7	20.1		53.7	18.7	2.6	39.0	22.7	2.2
LOS	C	C	A	B	C		D	B	A	D	C	A
Approach Delay		23.2			19.2			22.6			20.3	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	24.4	42.3	0.0	10.8	12.7		18.0	19.6	0.0	8.7	24.8	0.0
Queue Length 95th (m)	37.7	68.5	3.5	21.2	21.0		#38.1	28.7	2.3	17.1	38.7	3.0
Internal Link Dist (m)		214.5			374.6			297.2			139.3	
Turn Bay Length (m)	65.0			55.0			45.0		10.0	45.0		10.0
Base Capacity (vph)	420	552	588	306	1007		189	1240	673	157	953	562
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.63	0.20	0.43	0.24		0.71	0.28	0.21	0.43	0.44	0.22

Intersection Summary

Area Type: Other  
 Cycle Length: 70  
 Actuated Cycle Length: 67  
 Natural Cycle: 70  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 21.6  
 Intersection LOS: C

# Lanes, Volumes, Timings

## 18: Uplands Dr & Turner Rd









05-06-2020

Intersection Capacity Utilization 59.2% ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 18: Uplands Dr & Turner Rd

 Ø1 11 s	 Ø2 24 s	 Ø3 11 s	 Ø4 24 s
 Ø5 12 s	 Ø6 23 s	 Ø7 11 s	 Ø8 24 s

**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B28	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	T	L	T
Maximum Queue (m)	32.3	68.4	69.8	33.8	53.5	62.0	25.9	44.7	42.8	23.4	31.2	62.7
Average Queue (m)	14.5	34.9	42.8	8.4	25.4	32.1	20.1	22.5	20.2	1.6	14.7	30.1
95th Queue (m)	30.8	59.7	65.4	20.8	42.5	53.4	28.6	41.1	34.4	10.6	25.8	51.8
Link Distance (m)		190.2	190.2		478.4	478.4		26.1	26.1	322.3		301.2
Upstream Blk Time (%)							3	4	3			
Queuing Penalty (veh)							0	10	7			
Storage Bay Dist (m)	25.0			50.0			40.0				95.0	
Storage Blk Time (%)	1	14			0		3	4				
Queuing Penalty (veh)	2	13			0		5	8				

**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	SB
Directions Served	R
Maximum Queue (m)	24.4
Average Queue (m)	11.2
95th Queue (m)	21.2
Link Distance (m)	301.2
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 2: Hammond Bay Rd & Calinda**

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (m)	22.1	46.9	53.1	52.4	63.7	38.1	20.0
Average Queue (m)	5.6	24.0	31.3	27.9	34.5	20.4	8.7
95th Queue (m)	15.5	43.7	50.4	46.9	55.5	34.7	17.8
Link Distance (m)		76.9	76.9	190.2	190.2		205.1
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	15.0					40.0	
Storage Blk Time (%)	1	13				0	
Queuing Penalty (veh)	2	3				0	

**Intersection: 4: Marlin Way & Hammond Bay Rd**

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (m)	1.4	16.4	5.5	16.6	18.3
Average Queue (m)	0.0	4.4	0.2	7.1	9.0
95th Queue (m)	1.0	13.1	3.9	14.6	15.3
Link Distance (m)	72.0		76.9		172.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)		15.0		15.0	
Storage Blk Time (%)		0		2	1
Queuing Penalty (veh)		1		1	0

**Intersection: 6: Applecross Rd & Hammond Bay Rd**

Movement	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	R	R
Maximum Queue (m)	36.4	42.1	25.0	21.5	15.8	55.7
Average Queue (m)	19.0	1.4	2.7	1.6	3.4	16.7
95th Queue (m)	34.0	18.3	14.0	11.8	11.6	46.1
Link Distance (m)		94.4	72.0	72.0		73.6
Upstream Blk Time (%)		0				1
Queuing Penalty (veh)		0				0
Storage Bay Dist (m)	30.0				15.0	
Storage Blk Time (%)	2	0		1	0	
Queuing Penalty (veh)	6	0		1	0	



**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	LT	T	R	L	LT	T	R	L	L	T	T
Maximum Queue (m)	61.3	73.9	71.9	47.4	47.4	102.5	117.2	67.3	33.6	43.2	78.5	86.3
Average Queue (m)	27.6	43.0	37.5	8.4	44.2	73.7	70.0	18.9	15.6	17.0	46.5	47.4
95th Queue (m)	49.3	63.3	61.0	38.1	56.8	105.5	122.0	65.8	28.8	32.4	71.3	72.9
Link Distance (m)		541.8	541.8			94.4	94.4				87.5	87.5
Upstream Blk Time (%)						3	4				0	0
Queuing Penalty (veh)						16	20				0	0
Storage Bay Dist (m)	65.0			40.0	40.0			60.0	115.0	115.0		
Storage Blk Time (%)	0	1	8	0	4	40	6	0			0	1
Queuing Penalty (veh)	0	1	10	0	16	71	15	0			0	1

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	R
Maximum Queue (m)	46.2	83.6	65.0	69.8	18.2
Average Queue (m)	2.3	45.2	35.9	40.6	0.6
95th Queue (m)	23.4	78.3	56.3	62.0	9.2
Link Distance (m)			841.6	841.6	841.6
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	70.0	135.0			
Storage Blk Time (%)	0	0			
Queuing Penalty (veh)	0	0			

**Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way**

Movement	EB	EB	NB	NB	NB	SB	SB	SB	B29
Directions Served	L	LR	L	T	T	T	T	R	
Maximum Queue (m)	34.8	17.6	68.7	328.8	333.9	69.9	63.3	18.0	3.1
Average Queue (m)	19.1	6.1	32.6	28.3	34.5	36.4	32.2	0.8	0.1
95th Queue (m)	31.2	14.8	55.7	201.4	206.7	61.5	56.4	8.5	2.2
Link Distance (m)	133.2	133.2		757.4	757.4	323.8	323.8		87.5
Upstream Blk Time (%)				0	0				
Queuing Penalty (veh)				0	0				
Storage Bay Dist (m)			200.0					75.0	
Storage Blk Time (%)							0		
Queuing Penalty (veh)							0		

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	L	T	R	L	T	T	T	R	L
Maximum Queue (m)	21.9	50.4	109.5	119.6	149.9	37.0	33.0	119.2	120.8	115.5	19.2	216.4
Average Queue (m)	4.5	19.0	64.6	69.0	18.3	9.2	11.4	81.4	82.3	74.0	1.2	135.3
95th Queue (m)	13.9	40.7	101.0	106.6	92.5	30.6	26.9	112.8	113.7	105.7	18.8	225.1
Link Distance (m)		421.4		541.8	541.8			815.9	815.9	815.9		
Upstream Blk Time (%)					0							
Queuing Penalty (veh)					0							
Storage Bay Dist (m)	40.0		130.0			30.0	190.0				150.0	280.0
Storage Blk Time (%)		2	0	0	2	0						2
Queuing Penalty (veh)		0	0	0	5	0						9

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	SB	SB
Directions Served	T	T
Maximum Queue (m)	189.0	183.5
Average Queue (m)	74.3	75.6
95th Queue (m)	159.0	157.6
Link Distance (m)	894.3	894.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	T	L	T	T	R	L	T	T	R
Maximum Queue (m)	27.4	180.2	80.1	78.7	37.4	149.4	142.2	92.5	52.3	229.8	226.0	27.4
Average Queue (m)	10.4	92.2	45.6	22.7	22.7	81.7	72.6	22.4	32.1	64.0	67.2	4.2
95th Queue (m)	28.3	186.5	75.1	55.7	44.4	130.9	126.1	79.6	57.6	202.4	234.6	20.2
Link Distance (m)		385.5		207.1		527.5	527.5			757.4	757.4	
Upstream Blk Time (%)										0	0	
Queuing Penalty (veh)										0	1	
Storage Bay Dist (m)	20.0		75.0		30.0			85.0	45.0			20.0
Storage Blk Time (%)	2	61	2	0	2	41	4	0	2	11	30	0
Queuing Penalty (veh)	5	24	3	0	12	29	19	0	11	15	5	0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	T	R	L	T
Maximum Queue (m)	64.1	70.8	24.1	38.2	42.9	30.6	46.0	50.5	32.6	16.3	27.6	45.1
Average Queue (m)	28.2	35.5	10.9	17.5	21.4	10.4	18.0	26.0	6.3	10.7	11.4	20.9
95th Queue (m)	48.1	57.8	19.1	31.8	36.4	22.5	34.3	42.6	20.9	16.4	22.9	35.5
Link Distance (m)		207.1	207.1			382.0		307.3	307.3			141.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	65.0			55.0	55.0		45.0			10.0	45.0	
Storage Blk Time (%)		0					0	0	2	1		0
Queuing Penalty (veh)		1					0	0	2	1		0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	46.6	17.5
Average Queue (m)	25.6	13.6
95th Queue (m)	43.7	18.9
Link Distance (m)	141.4	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		10.0
Storage Blk Time (%)	37	1
Queuing Penalty (veh)	39	3

**Intersection: 21: Uplands Dr & Parkwood Dr**

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (m)	18.2	9.0	9.2	1.8
Average Queue (m)	7.8	0.3	1.9	0.1
95th Queue (m)	14.3	4.1	7.9	1.3
Link Distance (m)	254.6	421.3		322.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			35.0	
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Network Summary**

Network wide Queuing Penalty: 400
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HCM 2010 TWSC  
4: Marlin Way & Hammond Bay Rd

05-06-2020

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	626	6	30	727	33	65
Future Vol, veh/h	626	6	30	727	33	65
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	63	70	85	83	70
Heavy Vehicles, %	1	0	0	3	0	0
Mvmt Flow	666	10	43	855	40	93

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	678	0	1187
Stage 1	-	-	-	-	673
Stage 2	-	-	-	-	514
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	923	-	184
Stage 1	-	-	-	-	474
Stage 2	-	-	-	-	571
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	921	-	175
Mov Cap-2 Maneuver	-	-	-	-	175
Stage 1	-	-	-	-	473
Stage 2	-	-	-	-	544

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	17.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	175	661	-	-	921	-
HCM Lane V/C Ratio	0.227	0.14	-	-	0.047	-
HCM Control Delay (s)	31.5	11.3	-	-	9.1	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.8	0.5	-	-	0.1	-

HCM 2010 TWSC  
6: Applecross Rd & Hammond Bay Rd

05-06-2020

Intersection												
Int Delay, s/veh	7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↕↘			↕↕	↘			↘			↘
Traffic Vol, veh/h	227	608	20	0	606	155	0	0	24	0	0	417
Future Vol, veh/h	227	608	20	0	606	155	0	0	24	0	0	417
Conflicting Peds, #/hr	40	0	5	5	0	40	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	300	-	-	-	-	150	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	94	75	25	85	90	25	25	67	25	25	95
Heavy Vehicles, %	5	1	0	0	3	2	0	0	0	0	0	1
Mvmt Flow	284	647	27	0	713	172	0	0	36	0	0	439

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	925	0	0	-	-	0	-	-	342	-	-	397
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.2	-	-	-	-	-	-	-	6.9	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.25	-	-	-	-	-	-	-	3.3	-	-	3.31
Pot Cap-1 Maneuver	716	-	-	0	-	-	0	0	660	0	0	605
Stage 1	-	-	-	0	-	-	0	0	-	0	0	-
Stage 2	-	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	692	-	-	-	-	-	-	-	657	-	-	585
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.1	0	10.8	27.3
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	657	692	-	-	-	-	585
HCM Lane V/C Ratio	0.055	0.41	-	-	-	-	0.75
HCM Control Delay (s)	10.8	13.8	-	-	-	-	27.3
HCM Lane LOS	B	B	-	-	-	-	D
HCM 95th %tile Q(veh)	0.2	2	-	-	-	-	6.6

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	24	456	37	18	462
Future Vol, veh/h	18	24	456	37	18	462
Conflicting Peds, #/hr	0	1	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	350	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	75	89	63	60	92
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	26	32	512	59	30	502

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1109	548	0	0	576
Stage 1	547	-	-	-	-
Stage 2	562	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	234	540	-	-	1007
Stage 1	584	-	-	-	-
Stage 2	575	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	226	537	-	-	1003
Mov Cap-2 Maneuver	226	-	-	-	-
Stage 1	582	-	-	-	-
Stage 2	558	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.1	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	333	1003
HCM Lane V/C Ratio	-	-	0.173	0.03
HCM Control Delay (s)	-	-	18.1	8.7
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1

Lanes, Volumes, Timings  
17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	130	127	413	97	51	34	680	274	52	540	7
Future Volume (vph)	33	130	127	413	97	51	34	680	274	52	540	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00	1.00	0.98	1.00		0.97	1.00		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (prot)	1752	1845	1615	1715	1729	1599	1770	3505	1568	1805	3539	1568
Fl <sub>t</sub> Permitted	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (perm)	1749	1845	1586	1711	1727	1574	1764	3505	1526	1803	3539	1529
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			153			131			356			131
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		403.2			238.5			542.6			779.3	
Travel Time (s)		29.0			17.2			24.4			35.1	
Confl. Peds. (#/hr)	2		2	2		2	2		2	1		1
Confl. Bikes (#/hr)			2			1			1			1
Peak Hour Factor	0.60	0.65	0.83	0.72	0.80	0.60	0.91	0.87	0.77	0.73	0.94	0.75
Heavy Vehicles (%)	3%	3%	0%	0%	3%	1%	2%	3%	3%	0%	2%	3%
Adj. Flow (vph)	55	200	153	574	121	85	37	782	356	71	574	9
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	55	200	153	344	351	85	37	782	356	71	574	9
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	11.0	23.0	23.0	11.0	22.5	22.5
Total Split (s)	22.5	22.5	22.5	31.0	31.0	31.0	11.0	32.5	32.5	14.0	35.5	35.5
Total Split (%)	22.5%	22.5%	22.5%	31.0%	31.0%	31.0%	11.0%	32.5%	32.5%	14.0%	35.5%	35.5%
Maximum Green (s)	17.5	17.5	17.5	26.0	26.0	26.0	6.0	27.5	27.5	9.0	30.5	30.5
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0	5.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0		11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1	1		1	1		1	1
Act Effct Green (s)	14.3	14.3	14.3	22.3	22.3	22.3	6.1	28.9	28.9	8.1	33.1	33.1
Actuated g/C Ratio	0.16	0.16	0.16	0.24	0.24	0.24	0.07	0.32	0.32	0.09	0.36	0.36
v/c Ratio	0.20	0.69	0.41	0.82	0.83	0.18	0.31	0.70	0.49	0.44	0.45	0.01
Control Delay	37.3	51.1	9.7	50.5	51.3	2.5	51.8	34.2	5.8	51.8	26.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	51.1	9.7	50.5	51.3	2.5	51.8	34.2	5.8	51.8	26.0	0.0
LOS	D	D	A	D	D	A	D	C	A	D	C	A
Approach Delay		33.7			45.6			26.1			28.4	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	9.7	38.2	0.0	66.7	68.3	0.0	7.3	76.3	0.0	13.7	49.5	0.0
Queue Length 95th (m)	13.7	42.7	13.4	77.3	90.7	0.0	17.9	97.1	9.4	22.6	68.2	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0		30.0	75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	343	362	434	499	504	551	119	1111	727	182	1287	639
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	0.16	0.55	0.35	0.69	0.70	0.15	0.31	0.70	0.49	0.39	0.45	0.01

**Intersection Summary**

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 91.1  
 Natural Cycle: 85  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 32.7  
 Intersection LOS: C



# Lanes, Volumes, Timings

## 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020

Intersection Capacity Utilization 61.5%      ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 17: Island Hwy (Hwy 19A) & Turner Rd

↙ Ø1	↑ Ø2	↖ Ø4	↘ Ø8
14 s	32.5 s	22.5 s	31 s
↙ Ø5	↓ Ø6		
11 s	35.5 s		

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	94	535	221	133	342	27	148	43	39	14	37	33
Future Volume (vph)	94	535	221	133	342	27	148	43	39	14	37	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		35.0	95.0		0.0	45.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.91	0.91	0.95	0.91	0.91	0.95
Ped Bike Factor	1.00		0.98	1.00	1.00		0.99	0.99		0.99	0.99	
Frt			0.850		0.987			0.956			0.944	
Flt Protected	0.950			0.950			0.950	0.981		0.950	0.999	
Satd. Flow (prot)	1504	3124	1425	1533	2959	0	1395	2710	0	1137	2508	0
Flt Permitted	0.361			0.227			0.950	0.981		0.950	0.999	
Satd. Flow (perm)	570	3124	1394	365	2959	0	1386	2703	0	1129	2507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		8			44			36	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		306.3			279.2			613.3			216.7	
Travel Time (s)		22.1			20.1			44.2			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.72	0.85	0.81	0.84	0.84	0.67	0.83	0.68	0.67	0.60	0.63	0.91
Heavy Vehicles (%)	8%	4%	2%	6%	7%	20%	6%	10%	5%	30%	20%	9%
Adj. Flow (vph)	131	629	273	158	407	40	178	63	58	23	59	36
Shared Lane Traffic (%)							43%			10%		
Lane Group Flow (vph)	131	629	273	158	447	0	101	198	0	21	97	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.0	29.0	29.0	10.5	28.0		26.0	26.0		31.0	31.0	
Total Split (s)	29.0	41.8	41.8	16.2	29.0		26.0	26.0		31.0	31.0	
Total Split (%)	25.2%	36.3%	36.3%	14.1%	25.2%		22.6%	22.6%		27.0%	27.0%	
Maximum Green (s)	24.5	36.8	36.8	11.7	24.0		21.0	21.0		26.0	26.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
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)	4.5	5.0	5.0	4.5	5.0		5.0	5.0		5.0	5.0	
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	None	None	None	None		Max	Max		Max	Max	
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		16.0		14.0	14.0		19.0	19.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	38.8	27.0	27.0	37.8	26.5		21.1	21.1		26.1	26.1	
Actuated g/C Ratio	0.37	0.26	0.26	0.36	0.25		0.20	0.20		0.25	0.25	
v/c Ratio	0.42	0.78	0.53	0.63	0.59		0.36	0.34		0.07	0.15	
Control Delay	23.8	43.3	13.1	31.8	37.3		42.5	30.9		34.0	22.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.8	43.3	13.1	31.8	37.3		42.5	30.9		34.0	22.5	
LOS	C	D	B	C	D		D	C		C	C	
Approach Delay		32.8			35.8			34.8			24.5	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	17.7	66.5	11.7	21.7	43.3		20.7	15.5		3.8	5.5	
Queue Length 95th (m)	23.6	80.5	26.3	33.4	57.7		39.1	20.6		7.9	8.5	
Internal Link Dist (m)		282.3			255.2			589.3			192.7	
Turn Bay Length (m)	55.0		35.0	95.0			45.0			40.0		
Base Capacity (vph)	453	1104	624	266	785		281	581		283	653	
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	0.29	0.57	0.44	0.59	0.57		0.36	0.34		0.07	0.15	

Intersection Summary

Area Type: CBD

Cycle Length: 115

Actuated Cycle Length: 104.6

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 33.5

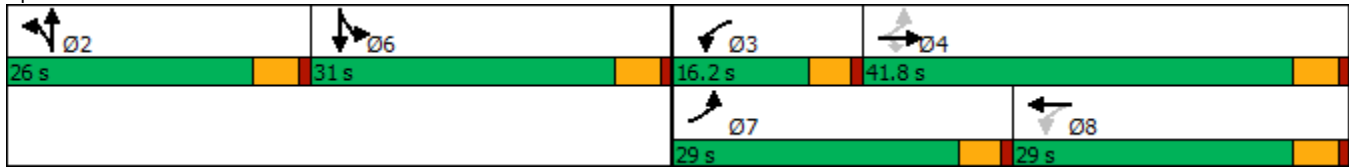
Intersection LOS: C

Lanes, Volumes, Timings  
 30: Metral Dr & Aulds Rd

11-27-2020

Intersection Capacity Utilization 56.9% ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 30: Metral Dr & Aulds Rd



**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	R	L	T	T
Maximum Queue (m)	27.4	55.4	37.0	78.1	90.2	36.7	69.7	62.0	13.3	29.4	46.6	46.9
Average Queue (m)	7.3	25.1	6.6	38.4	58.8	7.6	39.4	31.9	0.8	9.5	27.6	21.5
95th Queue (m)	21.1	44.0	26.1	73.9	84.1	25.2	63.8	55.9	6.3	21.3	44.1	40.5
Link Distance (m)		385.4			220.9		527.2	527.2			764.0	764.0
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		30.0	75.0		30.0			85.0	45.0		
Storage Blk Time (%)	1	19	0	0	2	0	17				0	9
Queuing Penalty (veh)	3	31	0	0	3	0	6				0	1

**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	SB
Directions Served	R
Maximum Queue (m)	10.8
Average Queue (m)	0.4
95th Queue (m)	5.5
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	20.0
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	LT	TR
Maximum Queue (m)	62.3	82.9	83.7	42.5	46.5	68.1	58.6	28.2	37.7	29.4	32.2	22.9
Average Queue (m)	21.2	49.5	43.4	24.7	21.4	36.9	26.5	9.1	19.3	8.6	10.6	6.3
95th Queue (m)	46.4	73.2	70.1	46.7	38.2	59.6	50.3	21.2	32.3	21.5	25.2	16.8
Link Distance (m)		292.2	292.2			265.4	265.4		595.5	595.5	202.9	202.9
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0	95.0			45.0				
Storage Blk Time (%)	0	5	12	0							0	
Queuing Penalty (veh)	0	4	26	1							0	

**Network Summary**

Network wide Queuing Penalty: 74

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	184	139	298	131	68	70	1087	426	141	1029	18
Future Volume (vph)	39	184	139	298	131	68	70	1087	426	141	1029	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00	0.98	1.00		0.97	1.00		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.980		0.950			0.950		
Satd. Flow (prot)	1805	1863	1599	1681	1755	1599	1805	3539	1599	1787	3539	1615
Flt Permitted	0.950			0.950	0.980		0.950			0.950		
Satd. Flow (perm)	1792	1863	1573	1679	1754	1560	1802	3539	1554	1785	3539	1566
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			174			125			445			125
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		403.2			238.5			542.6			779.3	
Travel Time (s)		29.0			17.2			24.4			35.1	
Confl. Peds. (#/hr)	7		1	1		7	2		2	2		2
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.67	0.88	0.76	0.86	0.86	0.91	0.86	0.96	0.92	0.89	0.95	0.89
Heavy Vehicles (%)	0%	2%	1%	2%	0%	1%	0%	2%	1%	1%	2%	0%
Adj. Flow (vph)	58	209	183	347	152	75	81	1132	463	158	1083	20
Shared Lane Traffic (%)				29%								
Lane Group Flow (vph)	58	209	183	246	253	75	81	1132	463	158	1083	20
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.0	12.0	12.0	26.0	26.0	26.0	11.0	23.0	23.0	11.0	18.0	18.0
Total Split (s)	24.0	24.0	24.0	28.0	28.0	28.0	17.0	37.0	37.0	16.0	36.0	36.0
Total Split (%)	22.9%	22.9%	22.9%	26.7%	26.7%	26.7%	16.2%	35.2%	35.2%	15.2%	34.3%	34.3%
Maximum Green (s)	19.0	19.0	19.0	23.0	23.0	23.0	12.0	32.0	32.0	11.0	31.0	31.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0	5.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0		11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1	1		1	1		1	1
Act Effct Green (s)	15.3	15.3	15.3	18.4	18.4	18.4	9.4	32.2	32.2	10.8	36.2	36.2
Actuated g/C Ratio	0.16	0.16	0.16	0.19	0.19	0.19	0.10	0.33	0.33	0.11	0.37	0.37
v/c Ratio	0.20	0.71	0.46	0.77	0.76	0.19	0.47	0.96	0.57	0.79	0.82	0.03
Control Delay	38.2	53.5	11.0	54.4	52.9	2.4	51.9	52.3	6.4	72.2	37.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	53.5	11.0	54.4	52.9	2.4	51.9	52.3	6.4	72.2	37.1	0.1
LOS	D	D	B	D	D	A	D	D	A	E	D	A
Approach Delay		34.2			46.9			39.6			40.9	
Approach LOS		C			D			D			D	
Queue Length 50th (m)	10.2	40.1	1.5	49.3	50.6	0.0	15.6	118.1	2.5	31.5	108.6	0.0
Queue Length 95th (m)	16.5	65.1	11.9	76.1	77.4	2.9	30.3	#182.2	28.8	#69.4	#174.3	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0		30.0	75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	356	368	450	402	419	468	225	1177	813	204	1323	663
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	0.16	0.57	0.41	0.61	0.60	0.16	0.36	0.96	0.57	0.77	0.82	0.03

**Intersection Summary**

Area Type: Other  
 Cycle Length: 105  
 Actuated Cycle Length: 96.9  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 40.5  
 Intersection LOS: D

# Lanes, Volumes, Timings

## 17: Island Hwy (Hwy 19A) & Turner Rd







11-27-2020

Intersection Capacity Utilization 77.1% 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: 17: Island Hwy (Hwy 19A) & Turner Rd

 Ø1	 Ø2	 Ø4	 Ø8
16 s	37 s	24 s	28 s
 Ø5	 Ø6		
17 s	36 s		



Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	230	497	237	267	469	74	316	105	143	117	124	186
Future Volume (vph)	230	497	237	267	469	74	316	105	143	117	124	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		35.0	95.0		0.0	45.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.91	0.91	0.95	0.91	0.91	0.95
Ped Bike Factor	1.00		0.98	1.00	1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.970			0.944			0.916	
Flt Protected	0.950			0.950			0.950	0.983		0.950	0.998	
Satd. Flow (prot)	1608	3185	1439	1608	3035	0	1449	2798	0	1408	2752	0
Flt Permitted	0.276			0.270			0.950	0.983		0.950	0.998	
Satd. Flow (perm)	466	3185	1408	456	3035	0	1443	2793	0	1402	2751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			221		28			98			198	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		306.3			279.2			613.3			216.7	
Travel Time (s)		22.1			20.1			44.2			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.91	0.92	0.88	0.91	0.95	0.59	0.83	0.83	0.86	0.74	0.89	0.94
Heavy Vehicles (%)	1%	2%	1%	1%	3%	5%	2%	6%	0%	5%	2%	2%
Adj. Flow (vph)	253	540	269	293	494	125	381	127	166	158	139	198
Shared Lane Traffic (%)							40%			10%		
Lane Group Flow (vph)	253	540	269	293	619	0	229	445	0	142	353	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	10.5	26.0	26.0	10.5	26.0		24.0	24.0		26.0	26.0	
Total Split (s)	17.0	27.0	27.0	19.0	29.0		33.0	33.0		26.0	26.0	
Total Split (%)	16.2%	25.7%	25.7%	18.1%	27.6%		31.4%	31.4%		24.8%	24.8%	
Maximum Green (s)	12.5	22.0	22.0	14.5	24.0		28.0	28.0		21.0	21.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
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)	4.5	5.0	5.0	4.5	5.0		5.0	5.0		5.0	5.0	
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	Max	Max	None	Max		None	None		None	None	
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		16.0		14.0	14.0		16.0	16.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	35.5	22.3	22.3	39.5	24.3		19.5	19.5		14.2	14.2	
Actuated g/C Ratio	0.39	0.25	0.25	0.44	0.27		0.22	0.22		0.16	0.16	
v/c Ratio	0.74	0.69	0.52	0.76	0.74		0.73	0.65		0.65	0.59	
Control Delay	34.6	38.3	12.2	34.2	37.1		48.0	29.9		50.7	19.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	34.6	38.3	12.2	34.2	37.1		48.0	29.9		50.7	19.9	
LOS	C	D	B	C	D		D	C		D	B	
Approach Delay		30.8			36.2			36.1			28.7	
Approach LOS		C			D			D			C	
Queue Length 50th (m)	28.8	47.7	6.9	34.4	52.5		42.8	31.5		27.1	14.1	
Queue Length 95th (m)	#75.0	#83.7	32.1	#86.2	#95.7		68.6	46.3		41.8	30.1	
Internal Link Dist (m)		282.3			255.2			589.3			192.7	
Turn Bay Length (m)	55.0		35.0	95.0			45.0			40.0		
Base Capacity (vph)	342	785	513	386	836		454	945		331	798	
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	0.74	0.69	0.52	0.76	0.74		0.50	0.47		0.43	0.44	

Intersection Summary

Area Type: CBD

Cycle Length: 105

Actuated Cycle Length: 90.5

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 33.2

Intersection LOS: C

# Lanes, Volumes, Timings

## 30: Metral Dr & Aulds Rd

11-27-2020

Intersection Capacity Utilization 74.1% 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: 30: Metral Dr & Aulds Rd

 Ø2	 Ø6	 Ø3	 Ø4
33 s	26 s	19 s	27 s
		 Ø7	 Ø8
		17 s	29 s

# Queuing and Blocking Report

11-27-2020

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	R	L	T	T
Maximum Queue (m)	27.2	116.1	37.5	75.9	95.4	37.5	206.1	206.8	92.5	52.3	149.5	149.1
Average Queue (m)	11.0	49.0	16.8	41.4	60.7	20.7	113.2	113.3	56.0	36.9	77.0	73.3
95th Queue (m)	28.5	94.4	45.8	76.1	86.7	42.7	187.9	192.9	125.2	62.7	152.8	148.9
Link Distance (m)		385.4			220.9		527.2	527.2			764.0	764.0
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		30.0	75.0		30.0			85.0	45.0		
Storage Blk Time (%)	3	39	0	0	2	2	55	19	0	5	23	40
Queuing Penalty (veh)	9	69	1	0	3	12	38	81	2	25	32	7

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	SB
Directions Served	R
Maximum Queue (m)	27.4
Average Queue (m)	4.8
95th Queue (m)	21.6
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	20.0
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	L	LT
Maximum Queue (m)	60.4	93.4	87.7	42.5	75.1	72.8	76.7	51.3	58.5	49.2	44.7	62.4
Average Queue (m)	35.7	47.9	43.9	26.2	38.7	41.3	40.7	24.1	32.8	23.6	7.7	35.1
95th Queue (m)	60.3	75.4	74.5	48.7	64.0	65.1	64.2	46.5	50.9	42.9	30.0	54.6
Link Distance (m)		292.2	292.2			265.4	265.4		595.5	595.5		202.9
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0	95.0			45.0			40.0	
Storage Blk Time (%)	1	4	13	0				0	2		0	6
Queuing Penalty (veh)	3	9	31	1				1	3		0	4

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	SB
Directions Served	TR
Maximum Queue (m)	49.4
Average Queue (m)	24.4
95th Queue (m)	43.2
Link Distance (m)	202.9
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Network Summary**

Network wide Queuing Penalty: 331
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## APPENDIX E: 2030 POST DEVELOPMENT

Lanes, Volumes, Timings  
 1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	326	61	57	629	65	138	139	45	79	221	104
Future Volume (vph)	61	326	61	57	629	65	138	139	45	79	221	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	40.0		0.0	95.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.98	0.99		0.99	0.99		0.99	0.99		0.99		0.98
Frt		0.978			0.982			0.949				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3400	0	1752	3405	0	1752	3335	0	1787	1845	1568
Flt Permitted	0.217			0.360			0.510			0.589		
Satd. Flow (perm)	393	3400	0	654	3405	0	935	3335	0	1100	1845	1534
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			21			90				187
Link Speed (k/h)		50			50			50				50
Link Distance (m)		214.8			492.5			48.5				315.6
Travel Time (s)		15.5			35.5			3.5				22.7
Confl. Peds. (#/hr)	65		17	17		65	8		8	8		8
Peak Hour Factor	0.84	0.72	0.77	0.82	0.88	0.68	0.94	0.80	0.50	0.65	0.86	0.77
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	0%	1%	3%	3%
Adj. Flow (vph)	73	453	79	70	715	96	147	174	90	122	257	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	73	532	0	70	811	0	147	264	0	122	257	135
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

# Lanes, Volumes, Timings

## 1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	7.0		6.0	7.0	7.0
Minimum Split (s)	11.0	23.0		11.0	23.0		11.0	23.0		11.0	23.0	23.0
Total Split (s)	11.0	25.0		11.0	25.0		11.0	23.0		11.0	23.0	23.0
Total Split (%)	15.7%	35.7%		15.7%	35.7%		15.7%	32.9%		15.7%	32.9%	32.9%
Maximum Green (s)	6.0	20.0		6.0	20.0		6.0	18.0		6.0	18.0	18.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		10.0			10.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	22.7	18.3		22.7	18.3		23.3	19.0		23.3	19.0	19.0
Actuated g/C Ratio	0.36	0.29		0.36	0.29		0.36	0.30		0.36	0.30	0.30
v/c Ratio	0.27	0.53		0.21	0.82		0.35	0.25		0.26	0.47	0.23
Control Delay	14.2	21.5		13.1	30.1		16.3	14.4		14.8	25.3	2.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	14.2	21.5		13.1	30.1		16.3	14.4		14.8	25.3	2.6
LOS	B	C		B	C		B	B		B	C	A
Approach Delay		20.6			28.7			15.1			16.9	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	5.6	30.5		5.4	53.2		12.5	9.8		10.2	30.5	0.0
Queue Length 95th (m)	11.7	33.9		11.1	#74.5		23.9	16.1		14.1	49.6	2.3
Internal Link Dist (m)		190.8			468.5			24.5			291.6	
Turn Bay Length (m)	25.0			50.0			40.0			95.0		
Base Capacity (vph)	274	1139		341	1136		422	1052		470	547	586
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	0.27	0.47		0.21	0.71		0.35	0.25		0.26	0.47	0.23

### Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	63.9
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	21.8
Intersection LOS:	C
Intersection Capacity Utilization:	63.4%
ICU Level of Service:	B



# Lanes, Volumes, Timings

## 1: Uplands Dr & Hammond Bay Rd









05-06-2020

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Uplands Dr & Hammond Bay Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	23 s	11 s	25 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	23 s	11 s	25 s

Lanes, Volumes, Timings  
2: Calinda & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑		↘	↑↑		↘	↑		↘	↑	
Traffic Volume (vph)	50	325	110	79	744	38	192	5	95	23	5	25
Future Volume (vph)	50	325	110	79	744	38	192	5	95	23	5	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99		1.00	1.00		0.99				0.99	
Frt		0.961			0.989			0.858				0.873
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3324	0	1805	3460	0	1805	1630	0	1752	1594	0
Flt Permitted	0.157			0.481			0.732			0.681		
Satd. Flow (perm)	295	3324	0	912	3460	0	1383	1630	0	1256	1594	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		102			12			112				33
Link Speed (k/h)		50			50			50				50
Link Distance (m)		98.1			214.8			174.3				219.0
Travel Time (s)		7.1			15.5			12.5				15.8
Confl. Peds. (#/hr)	15		2	2		15	4					4
Peak Hour Factor	0.65	0.93	0.89	0.89	0.95	0.63	0.90	0.80	0.85	0.60	0.80	0.75
Heavy Vehicles (%)	1%	5%	0%	0%	3%	0%	0%	0%	0%	3%	0%	3%
Adj. Flow (vph)	77	349	124	89	783	60	213	6	112	38	6	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	473	0	89	843	0	213	118	0	38	39	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

## Lanes, Volumes, Timings

### 2: Calinda & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6		6
Switch Phase												
Minimum Initial (s)	6.0	10.0		10.0	10.0		7.0	7.0		7.0		7.0
Minimum Split (s)	11.0	22.5		22.5	22.5		22.5	22.5		22.5		22.5
Total Split (s)	11.0	40.0		29.0	29.0		30.0	30.0		30.0		30.0
Total Split (%)	15.7%	57.1%		41.4%	41.4%		42.9%	42.9%		42.9%		42.9%
Maximum Green (s)	6.0	35.0		24.0	24.0		25.0	25.0		25.0		25.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0		5.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Recall Mode	None	None		None	None		Min	Min		Max		Max
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0		7.0
Flash Dont Walk (s)		8.0		8.0	8.0		8.0	8.0		8.0		8.0
Pedestrian Calls (#/hr)		5		5	5		5	5		5		5
Act Effect Green (s)	28.6	28.6		20.4	20.4		25.5	25.5		25.5		25.5
Actuated g/C Ratio	0.44	0.44		0.32	0.32		0.40	0.40		0.40		0.40
v/c Ratio	0.28	0.31		0.31	0.76		0.39	0.17		0.08		0.06
Control Delay	12.0	8.7		20.6	25.0		19.0	4.8		15.3		7.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	12.0	8.7		20.6	25.0		19.0	4.8		15.3		7.1
LOS	B	A		C	C		B	A		B		A
Approach Delay		9.2			24.6			13.9				11.2
Approach LOS		A			C			B				B
Queue Length 50th (m)	5.2	14.1		8.8	51.3		21.2	0.5		3.3		0.5
Queue Length 95th (m)	8.2	22.6		19.7	71.2		40.2	7.8		6.2		5.1
Internal Link Dist (m)		74.1			190.8			150.3				195.0
Turn Bay Length (m)	15.0			15.0			15.0			40.0		
Base Capacity (vph)	273	1891		347	1325		548	714		497		652
Starvation Cap Reductn	0	0		0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0	0		0		0
Reduced v/c Ratio	0.28	0.25		0.26	0.64		0.39	0.17		0.08		0.06

#### Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 64.4

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 17.7

Intersection LOS: B

Intersection Capacity Utilization 56.7%

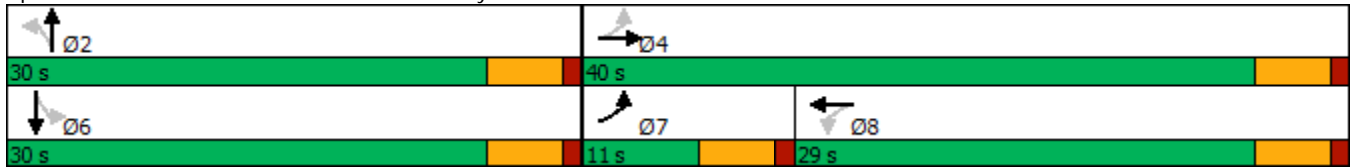
ICU Level of Service B

Lanes, Volumes, Timings  
 2: Calinda & Hammond Bay Rd

05-06-2020

Analysis Period (min) 15

Splits and Phases: 2: Calinda & Hammond Bay Rd



# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	447	114	257	476	289	102	589	179	125	397	114
Future Volume (vph)	109	447	114	257	476	289	102	589	179	125	397	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		0.0
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	1.00	0.91	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98			0.98			0.98			0.98
Fr't			0.850			0.850			0.850			0.850
Flt Protected	0.950	0.999		0.950	0.997		0.950			0.950		
Satd. Flow (prot)	1643	3455	1583	1626	3413	1615	3502	3574	1599	1787	3574	1615
Flt Permitted	0.950	0.999		0.950	0.997		0.950			0.950		
Satd. Flow (perm)	1643	3455	1553	1626	3413	1584	3502	3574	1564	1787	3574	1580
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			131			348			280			131
Link Speed (k/h)		50			50			80				80
Link Distance (m)		585.6			123.8			118.1				860.7
Travel Time (s)		42.2			8.9			5.3				38.7
Confl. Peds. (#/hr)			5			5			5			5
Peak Hour Factor	0.94	0.78	0.83	0.74	0.78	0.83	0.72	0.80	0.64	0.71	0.82	0.90
Heavy Vehicles (%)	0%	0%	2%	1%	1%	0%	0%	1%	1%	1%	1%	0%
Adj. Flow (vph)	116	573	137	347	610	348	142	736	280	176	484	127
Shared Lane Traffic (%)	10%			11%								
Lane Group Flow (vph)	104	585	137	309	648	348	142	736	280	176	484	127
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	23.0	23.0	23.0	26.0	26.0	26.0	11.0	23.0	23.0	11.0	23.0	23.0
Total Split (s)	25.0	25.0	25.0	28.0	28.0	28.0	13.0	29.0	29.0	18.0	34.0	34.0
Total Split (%)	25.0%	25.0%	25.0%	28.0%	28.0%	28.0%	13.0%	29.0%	29.0%	18.0%	34.0%	34.0%
Maximum Green (s)	20.0	20.0	20.0	23.0	23.0	23.0	8.0	24.0	24.0	13.0	29.0	29.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				14.0	14.0	14.0		8.0	8.0		8.0	8.0
Pedestrian Calls (#/hr)				5	5	5		5	5		5	5
Act Effct Green (s)	19.2	19.2	19.2	22.0	22.0	22.0	7.7	24.5	24.5	12.3	29.1	29.1
Actuated g/C Ratio	0.20	0.20	0.20	0.22	0.22	0.22	0.08	0.25	0.25	0.13	0.30	0.30
v/c Ratio	0.32	0.86	0.33	0.85	0.85	0.56	0.51	0.83	0.47	0.79	0.46	0.23
Control Delay	37.4	52.8	9.4	58.8	48.1	7.4	50.9	44.7	6.7	66.6	30.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	52.8	9.4	58.8	48.1	7.4	50.9	44.7	6.7	66.6	30.2	5.7
LOS	D	D	A	E	D	A	D	D	A	E	C	A
Approach Delay		43.7			39.8			36.3			34.4	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	20.1	63.6	1.0	66.1	69.3	0.0	14.5	75.9	0.0	35.2	42.5	0.0
Queue Length 95th (m)	37.6	71.3	13.7	79.3	76.5	15.8	19.4	84.8	0.8	44.7	52.1	12.7
Internal Link Dist (m)		561.6			99.8			94.1			836.7	
Turn Bay Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		
Base Capacity (vph)	335	706	421	381	801	638	286	891	600	237	1058	560
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	0.31	0.83	0.33	0.81	0.81	0.55	0.50	0.83	0.47	0.74	0.46	0.23

### Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	98.1
Natural Cycle:	85
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.86
Intersection Signal Delay:	38.5
Intersection LOS:	D
Intersection Capacity Utilization:	66.6%
ICU Level of Service:	C







# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020

Analysis Period (min) 15

Splits and Phases: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

 Ø1	 Ø2	 Ø4	 Ø8
18 s	29 s	25 s	28 s
 Ø5	 Ø6		
13 s	34 s		

Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	37	140	87	76	153	211	571	92	86	488	194
Future Volume (vph)	121	37	140	87	76	153	211	571	92	86	488	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	15.0		0.0	200.0		0.0	200.0		75.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00	1.00		1.00		0.99
Frt		0.881			0.902			0.977				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1655	0	1805	1698	0	1752	3371	0	1805	3471	1599
Flt Permitted	0.478			0.583			0.321			0.370		
Satd. Flow (perm)	907	1655	0	1106	1698	0	592	3371	0	702	3471	1576
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		171			164			39				266
Link Speed (k/h)		50			50			80				80
Link Distance (m)		146.4			168.4			779.3				347.1
Travel Time (s)		10.5			12.1			35.1				15.6
Confl. Peds. (#/hr)	2		2	2		2	2		2	2		2
Peak Hour Factor	0.87	0.82	0.82	0.87	0.85	0.91	0.80	0.91	0.80	0.80	0.86	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	3%	5%	0%	0%	4%	1%
Adj. Flow (vph)	139	45	171	100	89	168	264	627	115	108	567	266
Shared Lane Traffic (%)												
Lane Group Flow (vph)	139	216	0	100	257	0	264	742	0	108	567	266
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0



Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	23.0	23.0		22.5	22.5		11.0	23.0		10.5	23.0	23.0
Total Split (s)	23.0	23.0		23.0	23.0		14.0	26.5		10.5	23.0	23.0
Total Split (%)	38.3%	38.3%		38.3%	38.3%		23.3%	44.2%		17.5%	38.3%	38.3%
Maximum Green (s)	18.0	18.0		18.5	18.5		9.0	21.5		6.0	18.0	18.0
Yellow Time (s)	4.0	4.0		3.5	3.5		4.0	4.0		3.5	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	5.0	5.0		4.5	4.5		5.0	5.0		4.5	5.0	5.0
Lead/Lag							Lead	Lag		Lead	Lag	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	None		None	None		None	Max		None	Max	Max
Walk Time (s)	7.0	7.0						7.0			7.0	7.0
Flash Dont Walk (s)	8.0	8.0						8.0			8.0	8.0
Pedestrian Calls (#/hr)	5	5						5			5	5
Act Effect Green (s)	12.5	12.5		13.0	13.0		30.4	23.7		24.9	18.4	18.4
Actuated g/C Ratio	0.23	0.23		0.24	0.24		0.56	0.44		0.46	0.34	0.34
v/c Ratio	0.67	0.42		0.38	0.48		0.52	0.50		0.24	0.48	0.38
Control Delay	35.3	7.9		21.4	10.2		10.4	13.7		8.0	17.0	4.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	35.3	7.9		21.4	10.2		10.4	13.7		8.0	17.0	4.4
LOS	D	A		C	B		B	B		A	B	A
Approach Delay		18.7			13.3			12.9			12.4	
Approach LOS		B			B			B			B	
Queue Length 50th (m)	13.2	3.7		8.7	7.8		11.7	28.4		4.2	24.4	0.0
Queue Length 95th (m)	27.8	14.1		18.9	20.8		23.5	50.1		10.3	40.2	6.8
Internal Link Dist (m)		122.4			144.4			755.3			323.1	
Turn Bay Length (m)				15.0			200.0			200.0		75.0
Base Capacity (vph)	302	666		379	689		527	1488		443	1171	708
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	0.46	0.32		0.26	0.37		0.50	0.50		0.24	0.48	0.38

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	54.4
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	13.5
Intersection Capacity Utilization:	61.7%
Intersection LOS:	B
ICU Level of Service:	B

Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

05-06-2020




























Analysis Period (min) 15

Splits and Phases: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way



Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				 				  			 	
Traffic Volume (vph)	28	178	78	379	170	183	104	953	570	360	1091	11
Future Volume (vph)	28	178	78	379	170	183	104	953	570	360	1091	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	130.0		30.0	190.0		150.0	280.0		160.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt		0.949				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1757	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1805	1757	0	3433	1881	1583	1770	4940	1568	1770	3438	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20				187			450			132
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		438.4			585.6			838.6			910.0	
Travel Time (s)		31.6			42.2			37.7			41.0	
Peak Hour Factor	0.65	0.82	0.70	0.93	0.65	0.76	0.65	0.95	0.92	0.90	0.95	0.63
Heavy Vehicles (%)	0%	4%	0%	2%	1%	2%	2%	5%	3%	2%	5%	2%
Adj. Flow (vph)	43	217	111	408	262	241	160	1003	620	400	1148	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	328	0	408	262	241	160	1003	620	400	1148	17
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	23.4	23.4		23.4	23.4	23.4	11.5	23.5	23.5	11.5	23.5	23.5
Total Split (s)	23.4	23.4		23.4	23.4	23.4	17.7	31.2	31.2	32.0	45.5	45.5
Total Split (%)	21.3%	21.3%		21.3%	21.3%	21.3%	16.1%	28.4%	28.4%	29.1%	41.4%	41.4%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	12.2	25.7	25.7	26.5	40.0	40.0
Yellow Time (s)	4.4	4.4		4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5
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	3.0
Recall Mode	None	None		None	None	None	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	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	2	2		2	2	2		2	2		2	2
Act Effct Green (s)	18.0	18.0		17.3	17.3	17.3	11.9	25.9	25.9	26.0	40.0	40.0
Actuated g/C Ratio	0.17	0.17		0.16	0.16	0.16	0.11	0.24	0.24	0.24	0.37	0.37
v/c Ratio	0.14	1.07		0.75	0.88	0.59	0.83	0.86	0.87	0.95	0.91	0.03
Control Delay	40.9	112.8		53.2	74.3	17.8	81.3	48.4	25.2	74.6	44.8	0.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	112.8		53.2	74.3	17.8	81.3	48.4	25.2	74.6	44.8	0.1
LOS	D	F		D	E	B	F	D	C	E	D	A
Approach Delay		104.5			49.9			43.3			51.9	
Approach LOS		F			D			D			D	
Queue Length 50th (m)	8.4	~79.0		45.6	58.1	10.7	35.9	80.2	39.1	89.0	128.9	0.0
Queue Length 95th (m)	13.5	#117.4		62.8	60.0	22.0	41.1	#99.7	#111.1	#148.9	#172.4	0.0
Internal Link Dist (m)		414.4			561.6			814.6			886.0	
Turn Bay Length (m)	40.0			130.0		30.0	190.0		150.0	280.0		160.0
Base Capacity (vph)	298	307		566	310	417	198	1172	715	430	1262	664
Starvation Cap Reductn	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
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	1.07		0.72	0.85	0.58	0.81	0.86	0.87	0.93	0.91	0.03

Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 109  
 Natural Cycle: 105  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.07  
 Intersection Signal Delay: 52.4  
 Intersection LOS: D  
 Intersection Capacity Utilization 83.0%  
 ICU Level of Service E  
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

# Lanes, Volumes, Timings

## 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

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: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

↙ Ø1	↑ Ø2	↘ Ø4	↙ Ø8
32 s	31.2 s	23.4 s	23.4 s
↙ Ø5	↓ Ø6		
17.7 s	45.5 s		

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	212	33	144	379	21	79	231	118	18	258	171
Future Volume (vph)	94	212	33	144	379	21	79	231	118	18	258	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	55.0		0.0	45.0		10.0	45.0		10.0
Storage Lanes	1		1	2		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00		1.00		0.97	1.00		0.98
Frt			0.850		0.989				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1863	1568	1787	3562	0	1752	3539	1599	1805	3505	1599
Flt Permitted	0.420			0.379			0.950			0.950		
Satd. Flow (perm)	768	1863	1544	712	3562	0	1746	3539	1556	1799	3505	1569
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187		11				187			215
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.5			398.6			321.2			163.3	
Travel Time (s)		17.2			28.7			23.1			11.8	
Confl. Peds. (#/hr)	13		1	1		13	4		2	2		4
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.71	0.75	0.66	0.79	0.84	0.60	0.78	0.90	0.65	0.67	0.82	0.76
Heavy Vehicles (%)	3%	2%	3%	1%	0%	0%	3%	2%	1%	0%	3%	1%
Adj. Flow (vph)	132	283	50	182	451	35	101	257	182	27	315	225
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	283	50	182	486	0	101	257	182	27	315	225
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8					2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		6.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	22.5	22.5	11.0	22.5	22.5
Total Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0
Total Split (%)	15.7%	34.3%	34.3%	15.7%	34.3%		15.7%	34.3%	34.3%	15.7%	34.3%	34.3%
Maximum Green (s)	6.0	19.0	19.0	6.0	19.0		6.0	19.0	19.0	6.0	19.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		8.0	8.0		8.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	20.8	14.7	14.7	22.1	17.5		6.1	23.6	23.6	6.1	19.3	19.3
Actuated g/C Ratio	0.33	0.23	0.23	0.35	0.27		0.10	0.37	0.37	0.10	0.30	0.30
v/c Ratio	0.38	0.66	0.10	0.52	0.49		0.60	0.20	0.26	0.16	0.30	0.36
Control Delay	16.6	30.8	0.4	19.7	22.6		48.0	16.3	4.6	31.4	19.6	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.6	30.8	0.4	19.7	22.6		48.0	16.3	4.6	31.4	19.6	5.7
LOS	B	C	A	B	C		D	B	A	C	B	A
Approach Delay		23.5			21.9			18.3			14.6	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	10.8	33.4	0.0	15.3	28.8		12.9	9.7	0.0	3.3	16.5	0.9
Queue Length 95th (m)	16.1	44.8	0.0	24.0	39.2		#28.5	23.7	3.6	7.9	25.8	9.7
Internal Link Dist (m)		214.5			374.6			297.2			139.3	
Turn Bay Length (m)	65.0			55.0			45.0		10.0	45.0		10.0
Base Capacity (vph)	344	564	598	349	1115		167	1312	694	172	1061	625
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.50	0.08	0.52	0.44		0.60	0.20	0.26	0.16	0.30	0.36

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	63.7
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	19.5
Intersection LOS:	B

# Lanes, Volumes, Timings

## 18: Uplands Dr & Turner Rd









05-06-2020

Intersection Capacity Utilization 54.2% ICU Level of Service A

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 18: Uplands Dr & Turner Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	24 s	11 s	24 s



**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	R
Maximum Queue (m)	23.3	37.8	43.3	43.0	62.8	75.4	24.0	32.9	25.8	24.4	56.1	26.5
Average Queue (m)	8.4	15.4	20.0	10.4	37.1	40.7	15.0	12.2	11.4	10.6	26.6	11.4
95th Queue (m)	19.0	32.1	36.3	27.1	57.1	63.5	23.1	23.8	22.2	21.1	46.0	22.3
Link Distance (m)		189.6	189.6		478.4	478.4		26.1	26.1		301.2	301.2
Upstream Blk Time (%)							0	0	0			
Queuing Penalty (veh)							0	1	0			
Storage Bay Dist (m)	25.0			50.0			40.0			95.0		
Storage Blk Time (%)	0	3		0	2		0	0				
Queuing Penalty (veh)	0	2		0	1		0	1				

**Intersection: 2: Calinda & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	22.2	38.6	51.1	22.4	70.1	82.4	22.2	48.8	12.5	15.4
Average Queue (m)	9.1	18.6	23.4	14.9	37.3	45.1	15.9	14.7	3.8	4.5
95th Queue (m)	19.6	34.2	41.9	26.4	62.9	73.1	23.7	36.9	11.4	12.9
Link Distance (m)		76.9	76.9		189.6	189.6		160.2		205.1
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	15.0			15.0			15.0		40.0	
Storage Blk Time (%)	3	11		9	27		17	1		
Queuing Penalty (veh)	5	5		33	22		17	2		

**Intersection: 4: Marlin Way & Hammond Bay Rd**

Movement	WB	NB	NB
Directions Served	L	L	R
Maximum Queue (m)	10.6	9.9	11.8
Average Queue (m)	1.5	3.6	5.8
95th Queue (m)	7.2	10.6	12.9
Link Distance (m)			172.7
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	15.0	15.0	
Storage Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	0

**Intersection: 6: Applecross Rd & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	TR	T	R	R
Maximum Queue (m)	31.5	28.2	18.6	1.2	9.2	16.9
Average Queue (m)	13.2	1.2	0.6	0.0	1.1	2.1
95th Queue (m)	26.1	16.1	13.1	0.8	5.6	10.3
Link Distance (m)		94.4	94.4	72.0		73.6
Upstream Blk Time (%)		0	0			
Queuing Penalty (veh)		0	0			
Storage Bay Dist (m)	30.0				15.0	
Storage Blk Time (%)	0				0	
Queuing Penalty (veh)	1				0	

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	LT	T	R	L	LT	T	R	L	L	T	T
Maximum Queue (m)	29.8	58.6	63.2	47.4	47.4	87.6	84.6	60.0	19.3	19.3	65.3	71.8
Average Queue (m)	11.1	33.2	34.1	5.6	29.1	48.2	42.4	8.6	6.0	8.1	39.8	39.0
95th Queue (m)	23.4	50.7	54.6	30.8	55.4	75.1	70.2	36.8	14.8	16.7	60.4	62.1
Link Distance (m)		541.8	541.8			94.4	94.4				89.9	89.9
Upstream Blk Time (%)						0	0					
Queuing Penalty (veh)						0	0					
Storage Bay Dist (m)	65.0			40.0	40.0			60.0	115.0	115.0		
Storage Blk Time (%)		0	4	0	0	12	1	0				0
Queuing Penalty (veh)		0	5	0	0	15	3	0				1

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	NB	B29	SB	SB	SB
Directions Served	R	T	L	T	T
Maximum Queue (m)	30.9	133.8	50.3	44.0	46.4
Average Queue (m)	1.0	4.5	21.7	23.3	25.4
95th Queue (m)	15.7	67.8	39.5	38.6	42.1
Link Distance (m)		322.5		841.6	841.6
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	70.0		135.0		
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

**Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way**

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB	
Directions Served	L	TR	L	TR	L	T	TR	L	T	T	R	
Maximum Queue (m)	32.7	14.2	22.1	53.0	45.5	52.1	59.0	20.2	38.9	39.5	5.6	
Average Queue (m)	15.5	4.1	12.1	14.9	21.1	19.9	28.7	7.6	15.6	16.9	0.2	
95th Queue (m)	27.0	11.2	20.8	35.7	38.3	41.4	52.6	17.1	32.1	32.2	4.0	
Link Distance (m)	130.4	130.4		154.4		753.6	753.6		322.5	322.5		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)			15.0			200.0			200.0			75.0
Storage Blk Time (%)			8			6						
Queuing Penalty (veh)			18			5						

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	L	T	R	L	T	T	T	R	L
Maximum Queue (m)	41.0	94.6	55.1	60.1	75.6	37.5	35.0	76.8	76.7	69.7	30.4	107.4
Average Queue (m)	8.3	40.9	28.2	32.3	32.6	15.1	14.7	53.2	52.9	43.9	1.0	64.9
95th Queue (m)	28.0	79.7	47.0	50.2	65.9	44.5	30.5	71.5	73.2	66.0	15.4	101.4
Link Distance (m)	421.4		541.8		541.8		815.9		815.9		815.9	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	40.0	130.0				30.0	190.0			150.0	280.0	
Storage Blk Time (%)	0	13			11	0						
Queuing Penalty (veh)	0	4			21	1						

**Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd**

Movement	SB	SB
Directions Served	T	T
Maximum Queue (m)	103.6	106.0
Average Queue (m)	64.2	66.6
95th Queue (m)	92.9	97.1
Link Distance (m)	894.3	894.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd**

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	T	L	T	T	R	L	T	T	R
Maximum Queue (m)	27.2	85.7	80.9	94.3	37.3	78.1	71.7	6.0	23.5	194.6	196.6	16.4
Average Queue (m)	7.5	32.8	51.0	17.0	10.9	45.7	38.4	0.3	8.1	33.9	35.6	0.7
95th Queue (m)	20.7	68.6	78.0	49.6	28.9	71.0	65.4	3.8	18.4	132.2	135.4	8.0
Link Distance (m)		385.5		207.1		527.5	527.5			753.6	753.6	
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (m)	20.0		75.0		30.0			85.0	45.0			20.0
Storage Blk Time (%)	1	24	2		0	21				1	18	0
Queuing Penalty (veh)	1	8	2		0	7				0	1	0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	T	R	L	T
Maximum Queue (m)	33.0	52.6	16.0	53.4	59.6	66.5	32.7	35.2	27.0	16.9	16.8	31.2
Average Queue (m)	13.4	27.8	5.2	20.2	32.7	15.4	14.5	18.5	3.0	9.9	4.9	16.1
95th Queue (m)	25.2	47.4	13.6	42.1	52.8	37.4	26.7	31.2	14.3	17.1	13.5	27.0
Link Distance (m)		207.1	207.1			382.0		307.3	307.3			141.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	65.0			55.0	55.0		45.0			10.0	45.0	
Storage Blk Time (%)		0		0	1	0		0	0	1		
Queuing Penalty (veh)		0		0	2	0		0	1	1		

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	38.8	19.0
Average Queue (m)	18.3	14.3
95th Queue (m)	34.7	19.2
Link Distance (m)	141.4	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		10.0
Storage Blk Time (%)	28	2
Queuing Penalty (veh)	48	3

**Intersection: 21: Uplands Dr & Parkwood Dr**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (m)	16.3	15.6	10.4	8.7
Average Queue (m)	10.0	8.5	2.4	0.5
95th Queue (m)	15.9	14.1	9.0	3.9
Link Distance (m)	103.3	254.6		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			35.0	35.0
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 31: Uplands Dr & North Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	13.2	21.0
Average Queue (m)	4.7	2.2
95th Queue (m)	12.3	11.2
Link Distance (m)	97.8	227.2
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 33: Uplands Dr & South Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	9.2	13.3
Average Queue (m)	4.1	1.0
95th Queue (m)	11.3	6.4
Link Distance (m)	114.7	199.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 236

HCM 2010 TWSC  
 4: Marlin Way & Hammond Bay Rd

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Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↘
Traffic Vol, veh/h	452	148	14	948	16	33
Future Vol, veh/h	452	148	14	948	16	33
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	89	60	95	75	85
Heavy Vehicles, %	3	0	0	3	0	0
Mvmt Flow	486	166	23	998	21	39

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	654	0	1116 328
Stage 1	-	-	-	-	571 -
Stage 2	-	-	-	-	545 -
Critical Hdwy	-	-	4.1	-	6.8 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	943	-	205 674
Stage 1	-	-	-	-	534 -
Stage 2	-	-	-	-	551 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	941	-	200 673
Mov Cap-2 Maneuver	-	-	-	-	200 -
Stage 1	-	-	-	-	533 -
Stage 2	-	-	-	-	538 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	200	673	-	-	941	-
HCM Lane V/C Ratio	0.107	0.058	-	-	0.025	-
HCM Control Delay (s)	25.1	10.7	-	-	8.9	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0.1	-

HCM 2010 TWSC  
6: Applecross Rd & Hammond Bay Rd

05-06-2020

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗			↖↗	↖			↖			↖
Traffic Vol, veh/h	139	596	17	0	889	74	0	0	5	0	0	133
Future Vol, veh/h	139	596	17	0	889	74	0	0	5	0	0	133
Conflicting Peds, #/hr	12	0	3	3	0	12	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	300	-	-	-	-	150	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	93	80	25	95	65	25	25	50	25	25	85
Heavy Vehicles, %	3	3	0	0	3	1	0	0	0	0	0	2
Mvmt Flow	156	641	21	0	936	114	0	0	10	0	0	156

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	1062	0	0	-	-	0	-	-	334	-	-	480
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.16	-	-	-	-	-	-	-	6.9	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.23	-	-	-	-	-	-	-	3.3	-	-	3.32
Pot Cap-1 Maneuver	646	-	-	0	-	-	0	0	668	0	0	532
Stage 1	-	-	-	0	-	-	0	0	-	0	0	-
Stage 2	-	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-				-	-	
Mov Cap-1 Maneuver	639	-	-	-	-	-	-	-	666	-	-	527
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	2.4		0		10.5		14.7	
HCM LOS					B		B	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	666	639	-	-	-	-	527
HCM Lane V/C Ratio	0.015	0.244	-	-	-	-	0.297
HCM Control Delay (s)	10.5	12.4	-	-	-	-	14.7
HCM Lane LOS	B	B	-	-	-	-	B
HCM 95th %tile Q(veh)	0	1	-	-	-	-	1.2

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	29	5	51	32	5	21	36	283	9	10	309	12
Future Vol, veh/h	29	5	51	32	5	21	36	283	9	10	309	12
Conflicting Peds, #/hr	1	0	0	0	0	1	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	350	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	80	85	85	80	85	75	91	60	75	85	60
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	34	6	60	38	6	25	48	311	15	13	364	20

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	836	832	379	853	835	325	389	0	0	331	0	0
Stage 1	405	405	-	420	420	-	-	-	-	-	-	-
Stage 2	431	427	-	433	415	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	289	307	672	281	306	721	1181	-	-	1240	-	-
Stage 1	626	602	-	615	593	-	-	-	-	-	-	-
Stage 2	607	589	-	605	596	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	262	289	669	241	288	717	1176	-	-	1235	-	-
Mov Cap-2 Maneuver	262	289	-	241	288	-	-	-	-	-	-	-
Stage 1	598	593	-	587	566	-	-	-	-	-	-	-
Stage 2	555	562	-	539	587	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.4		19.1		1.1		0.3	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1176	-	-	416	323	1235	-
HCM Lane V/C Ratio	0.041	-	-	0.241	0.212	0.011	-
HCM Control Delay (s)	8.2	-	-	16.4	19.1	7.9	-
HCM Lane LOS	A	-	-	C	C	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.8	0	-



HCM 2010 TWSC  
 31: Uplands Dr & North Access

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Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	5	15	12	322	316	24
Future Vol, veh/h	5	15	12	322	316	24
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	91	85	60
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	6	18	16	354	372	40

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	783	397	417	0	-	0
Stage 1	397	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	365	657	1153	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	356	654	1148	-	-	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	688	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1148	-	541	-	-
HCM Lane V/C Ratio	0.014	-	0.043	-	-
HCM Control Delay (s)	8.2	0	12	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC  
 33: Uplands Dr & South Access

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Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	5	15	12	328	391	5
Future Vol, veh/h	5	15	12	328	391	5
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	91	85	60
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	6	18	16	360	460	8

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	861	469	473	0	-	0
Stage 1	469	-	-	-	-	-
Stage 2	392	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	329	598	1099	-	-	-
Stage 1	634	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	320	595	1094	-	-	-
Mov Cap-2 Maneuver	320	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	684	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1094	-	490	-	-
HCM Lane V/C Ratio	0.015	-	0.048	-	-
HCM Control Delay (s)	8.3	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lanes, Volumes, Timings  
 1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	727	222	129	531	67	207	270	77	109	240	93
Future Volume (vph)	96	727	222	129	531	67	207	270	77	109	240	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	50.0		0.0	40.0		0.0	95.0		0.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99			0.99		0.99	1.00		0.99		0.98
Frt		0.965			0.982			0.969				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3415	0	1805	3445	0	1770	3413	0	1805	1863	1553
Flt Permitted	0.261			0.153			0.419			0.404		
Satd. Flow (perm)	484	3415	0	291	3445	0	776	3413	0	764	1863	1518
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55			21			42				175
Link Speed (k/h)		50			50			50				50
Link Distance (m)		214.8			492.5			48.5				315.6
Travel Time (s)		15.5			35.5			3.5				22.7
Confl. Peds. (#/hr)	40		15	15		40	8		8	8		8
Peak Hour Factor	0.81	0.88	0.90	0.84	0.82	0.76	0.85	0.77	0.83	0.77	0.86	0.75
Heavy Vehicles (%)	1%	1%	0%	0%	2%	3%	2%	2%	2%	0%	2%	4%
Adj. Flow (vph)	119	826	247	154	648	88	244	351	93	142	279	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	1073	0	154	736	0	244	444	0	142	279	124
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings  
1: Uplands Dr & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	7.0		6.0	7.0	7.0
Minimum Split (s)	11.0	23.0		11.0	23.0		11.0	23.0		11.0	23.0	23.0
Total Split (s)	11.0	29.0		11.0	29.0		11.0	24.0		11.0	24.0	24.0
Total Split (%)	14.7%	38.7%		14.7%	38.7%		14.7%	32.0%		14.7%	32.0%	32.0%
Maximum Green (s)	6.0	24.0		6.0	24.0		6.0	19.0		6.0	19.0	19.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)		10.0			10.0			10.0			10.0	10.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effect Green (s)	30.0	24.0		31.0	26.2		25.0	19.0		25.0	19.0	19.0
Actuated g/C Ratio	0.40	0.32		0.41	0.35		0.33	0.25		0.33	0.25	0.25
v/c Ratio	0.40	0.95		0.64	0.61		0.72	0.50		0.42	0.59	0.24
Control Delay	15.9	42.3		26.4	22.9		32.1	23.8		19.3	30.6	2.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.9	42.3		26.4	22.9		32.1	23.8		19.3	30.6	2.8
LOS	B	D		C	C		C	C		B	C	A
Approach Delay		39.7			23.5			26.7			21.4	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	9.7	77.5		12.8	47.6		24.5	26.6		13.4	36.5	0.0
Queue Length 95th (m)	16.7	#114.8		#25.2	58.3		#42.9	33.2		21.1	57.2	1.5
Internal Link Dist (m)		190.8			468.5			24.5			291.6	
Turn Bay Length (m)	25.0			50.0			40.0			95.0		
Base Capacity (vph)	297	1130		241	1216		338	895		337	471	515
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	0.40	0.95		0.64	0.61		0.72	0.50		0.42	0.59	0.24

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Natural Cycle:	75
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	29.6
Intersection Capacity Utilization	77.0%
Intersection LOS:	C
ICU Level of Service	D

# Lanes, Volumes, Timings

## 1: Uplands Dr & Hammond Bay Rd









05-06-2020

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Uplands Dr & Hammond Bay Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	29 s
 Ø5	 Ø6	 Ø7	 Ø8
11 s	24 s	11 s	29 s

## Lanes, Volumes, Timings

### 2: Calinda & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	690	89	132	659	39	136	5	139	209	5	85
Future Volume (vph)	27	690	89	132	659	39	136	5	139	209	5	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	15.0		0.0	40.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	1.00		1.00	0.99		0.99	0.99		1.00	0.98	
Frt		0.981			0.992			0.855			0.857	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3500	0	1805	3494	0	1805	1604	0	1805	1526	0
Flt Permitted	0.280			0.155			0.676			0.646		
Satd. Flow (perm)	519	3500	0	294	3494	0	1277	1604	0	1226	1526	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			9			170			121	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		98.1			214.8			174.3			219.0	
Travel Time (s)		7.1			15.5			12.5			15.8	
Confl. Peds. (#/hr)	40		2	2		40	5		1	1		5
Peak Hour Factor	0.75	0.94	0.82	0.82	0.85	0.88	0.90	0.80	0.82	0.82	0.80	0.70
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	5%
Adj. Flow (vph)	36	734	109	161	775	44	151	6	170	255	6	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	843	0	161	819	0	151	176	0	255	127	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

## Lanes, Volumes, Timings

### 2: Calinda & Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6		6
Switch Phase												
Minimum Initial (s)	6.0	10.0		5.0	10.0		7.0	7.0		7.0		7.0
Minimum Split (s)	11.0	22.5		9.5	22.5		22.5	22.5		22.5		22.5
Total Split (s)	11.0	27.2		14.2	30.4		28.6	28.6		28.6		28.6
Total Split (%)	15.7%	38.9%		20.3%	43.4%		40.9%	40.9%		40.9%		40.9%
Maximum Green (s)	6.0	22.2		9.7	25.4		23.6	23.6		23.6		23.6
Yellow Time (s)	4.0	4.0		3.5	4.0		4.0	4.0		4.0		4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	5.0		4.5	5.0		5.0	5.0		5.0		5.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Recall Mode	None	None		None	None		Min	Min		Max		Max
Walk Time (s)		7.0			7.0		7.0	7.0		7.0		7.0
Flash Dont Walk (s)		8.0			8.0		8.0	8.0		8.0		8.0
Pedestrian Calls (#/hr)		5			5		5	5		5		5
Act Effect Green (s)	24.3	19.8		29.9	25.8		24.1	24.1		24.1		24.1
Actuated g/C Ratio	0.38	0.31		0.47	0.40		0.38	0.38		0.38		0.38
v/c Ratio	0.11	0.77		0.48	0.58		0.32	0.25		0.55		0.20
Control Delay	9.7	25.6		14.1	17.3		19.2	4.5		24.0		5.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	9.7	25.6		14.1	17.3		19.2	4.5		24.0		5.1
LOS	A	C		B	B		B	A		C		A
Approach Delay		24.9			16.8			11.3				17.7
Approach LOS		C			B			B				B
Queue Length 50th (m)	2.3	51.2		10.7	34.1		14.8	0.5		27.8		0.5
Queue Length 95th (m)	5.1	73.0		17.9	61.1		30.2	9.2		46.4		8.3
Internal Link Dist (m)		74.1			190.8			150.3				195.0
Turn Bay Length (m)	15.0			15.0			15.0			40.0		
Base Capacity (vph)	319	1252		370	1573		479	708		460		648
Starvation Cap Reductn	0	0		0	0		0	0		0		0
Spillback Cap Reductn	0	0		0	0		0	0		0		0
Storage Cap Reductn	0	0		0	0		0	0		0		0
Reduced v/c Ratio	0.11	0.67		0.44	0.52		0.32	0.25		0.55		0.20

#### Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 64.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 19.0

Intersection LOS: B

Intersection Capacity Utilization 66.2%

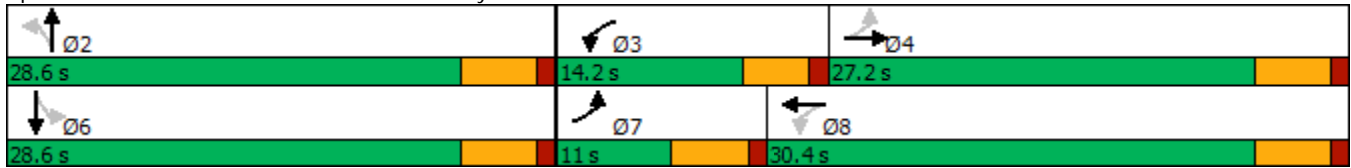
ICU Level of Service C

Lanes, Volumes, Timings  
 2: Calinda & Hammond Bay Rd

05-06-2020

Analysis Period (min) 15

Splits and Phases: 2: Calinda & Hammond Bay Rd





# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	496	170	375	478	291	248	711	229	269	728	187
Future Volume (vph)	222	496	170	375	478	291	248	711	229	269	728	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		0.0
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.91	0.91	1.00	0.91	0.91	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	1.00	0.98	1.00	1.00	0.96	0.99		0.97	1.00		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950	0.998		0.950	0.993		0.950			0.950		
Satd. Flow (prot)	1626	3417	1615	1643	3376	1583	3502	3574	1583	1770	3539	1568
Flt Permitted	0.950	0.998		0.950	0.993		0.950			0.950		
Satd. Flow (perm)	1608	3415	1587	1641	3376	1520	3480	3574	1541	1761	3539	1529
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			185			303			269			205
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		585.6			123.8			118.1			860.7	
Travel Time (s)		42.2			8.9			5.3			38.7	
Confl. Peds. (#/hr)	15		1	1		15	6		7	7		6
Confl. Bikes (#/hr)			3			2			1			2
Peak Hour Factor	0.89	0.93	0.86	0.96	0.89	0.96	0.89	0.90	0.85	0.87	0.87	0.91
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	0%	1%	2%	2%	2%	3%
Adj. Flow (vph)	249	533	198	391	537	303	279	790	269	309	837	205
Shared Lane Traffic (%)	10%			23%								
Lane Group Flow (vph)	224	558	198	301	627	303	279	790	269	309	837	205
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.0	12.0	12.0	22.0	22.0	22.0	11.0	20.0	20.0	11.0	20.0	20.0
Total Split (s)	22.0	22.0	22.0	25.0	25.0	25.0	17.0	29.0	29.0	24.0	36.0	36.0
Total Split (%)	22.0%	22.0%	22.0%	25.0%	25.0%	25.0%	17.0%	29.0%	29.0%	24.0%	36.0%	36.0%
Maximum Green (s)	17.0	17.0	17.0	20.0	20.0	20.0	12.0	24.0	24.0	19.0	31.0	31.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				10.0	10.0	10.0		8.0	8.0		8.0	8.0
Pedestrian Calls (#/hr)				5	5	5		5	5		5	5
Act Effct Green (s)	17.0	17.0	17.0	20.0	20.0	20.0	11.5	24.0	24.0	18.8	31.3	31.3
Actuated g/C Ratio	0.17	0.17	0.17	0.20	0.20	0.20	0.12	0.24	0.24	0.19	0.31	0.31
v/c Ratio	0.81	0.96	0.47	0.91	0.93	0.55	0.69	0.92	0.47	0.93	0.75	0.33
Control Delay	63.3	70.8	10.8	72.9	60.8	8.4	52.2	54.3	6.9	75.2	36.0	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.3	70.8	10.8	72.9	60.8	8.4	52.2	54.3	6.9	75.2	36.0	5.3
LOS	E	E	B	E	E	A	D	D	A	E	D	A
Approach Delay		57.0			50.9			44.3			40.3	
Approach LOS		E			D			D			D	
Queue Length 50th (m)	48.9	62.6	2.3	66.5	69.5	0.0	28.5	83.0	0.0	62.5	80.8	0.0
Queue Length 95th (m)	#90.4	#98.9	19.2	#122.3	#103.2	23.0	41.8	#119.3	16.1	#107.1	99.4	16.0
Internal Link Dist (m)		561.6			99.8			94.1			836.7	
Turn Bay Length (m)	65.0		40.0	40.0		60.0	115.0		70.0	135.0		
Base Capacity (vph)	277	581	423	329	676	546	421	859	575	337	1111	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	0.81	0.96	0.47	0.91	0.93	0.55	0.66	0.92	0.47	0.92	0.75	0.33

### Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 99.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 47.4

Intersection LOS: D

# Lanes, Volumes, Timings

## 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

05-06-2020







Intersection Capacity Utilization 81.0% 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: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

 Ø1	 Ø2	 Ø4	 Ø8
24 s	29 s	22 s	25 s
 Ø5	 Ø6		
17 s	36 s		

Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	129	295	134	148	138	308	934	96	146	903	224
Future Volume (vph)	169	129	295	134	148	138	308	934	96	146	903	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	15.0		0.0	200.0		0.0	200.0		75.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor		0.99			0.99			1.00				0.98
Frt		0.898			0.930			0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1688	0	1805	1755	0	1770	3515	0	1805	3574	1615
Flt Permitted	0.231			0.175			0.118			0.139		
Satd. Flow (perm)	435	1688	0	332	1755	0	220	3515	0	264	3574	1589
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		106			43			13				270
Link Speed (k/h)		50			50			80				80
Link Distance (m)		146.4			168.4			779.3				347.1
Travel Time (s)		10.5			12.1			35.1				15.6
Confl. Peds. (#/hr)	2		2	2		2	2		2	2		2
Peak Hour Factor	0.80	0.85	0.92	0.85	0.85	0.90	0.90	0.93	0.85	0.85	0.94	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	2%	1%	0%	0%	1%	0%
Adj. Flow (vph)	211	152	321	158	174	153	342	1004	113	172	961	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	473	0	158	327	0	342	1117	0	172	961	270
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0

Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0		6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	9.5	23.0		9.5	22.5		11.0	23.0		10.5	23.0	23.0
Total Split (s)	14.2	33.6		11.0	30.4		22.0	41.4		14.0	33.4	33.4
Total Split (%)	14.2%	33.6%		11.0%	30.4%		22.0%	41.4%		14.0%	33.4%	33.4%
Maximum Green (s)	9.7	28.6		6.5	25.9		17.0	36.4		9.5	28.4	28.4
Yellow Time (s)	3.5	4.0		3.5	3.5		4.0	4.0		3.5	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
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)	4.5	5.0		4.5	4.5		5.0	5.0		4.5	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max		None	Max	Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		8.0						8.0			8.0	8.0
Pedestrian Calls (#/hr)		5						5			5	5
Act Effect Green (s)	35.4	25.4		29.3	22.8		50.1	36.6		38.3	28.8	28.8
Actuated g/C Ratio	0.37	0.26		0.30	0.24		0.52	0.38		0.40	0.30	0.30
v/c Ratio	0.72	0.91		0.79	0.73		0.91	0.83		0.69	0.90	0.41
Control Delay	36.6	49.5		50.7	39.8		54.2	34.4		34.5	46.3	5.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	36.6	49.5		50.7	39.8		54.2	34.4		34.5	46.3	5.6
LOS	D	D		D	D		D	C		C	D	A
Approach Delay		45.5			43.3			39.1			37.0	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	28.7	72.2		20.7	52.1		52.3	108.8		18.2	100.8	0.0
Queue Length 95th (m)	40.4	#113.9		#39.9	76.6		#106.6	#140.5		#39.0	#142.1	13.7
Internal Link Dist (m)		122.4			144.4			755.3			323.1	
Turn Bay Length (m)				15.0			200.0			200.0		75.0
Base Capacity (vph)	296	576		200	503		388	1339		258	1065	663
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	0.71	0.82		0.79	0.65		0.88	0.83		0.67	0.90	0.41

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	96.5
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	40.0
Intersection Capacity Utilization:	90.8%
Intersection LOS:	D
ICU Level of Service:	E

# Lanes, Volumes, Timings

## 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

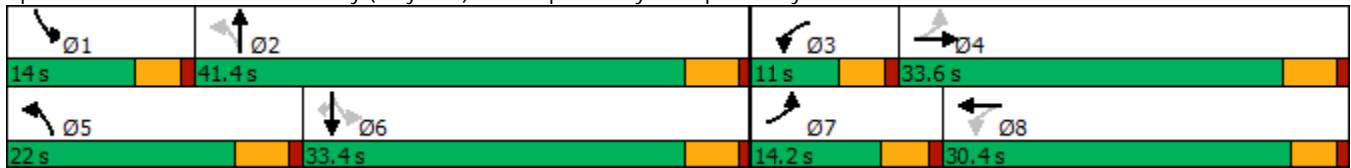
05-06-2020

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way



Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	119	34	769	139	282	81	1268	629	474	1108	9
Future Volume (vph)	21	119	34	769	139	282	81	1268	629	474	1108	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	130.0		30.0	190.0		150.0	280.0		160.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt		0.966				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1809	0	3433	1900	1538	1719	4893	1568	1770	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1805	1809	0	3433	1900	1538	1719	4893	1568	1770	3438	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				297			528			121
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		438.4			585.6			838.6			910.0	
Travel Time (s)		31.6			42.2			37.7			41.0	
Peak Hour Factor	0.90	0.90	0.89	0.93	0.89	0.95	0.95	0.95	0.93	0.95	0.95	0.58
Heavy Vehicles (%)	0%	1%	3%	2%	0%	5%	5%	6%	3%	2%	5%	2%
Adj. Flow (vph)	23	132	38	827	156	297	85	1335	676	499	1166	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	170	0	827	156	297	85	1335	676	499	1166	16
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.4	12.4		23.4	23.4	23.4	11.5	23.5	23.5	11.5	23.5	23.5
Total Split (s)	14.0	14.0		32.0	32.0	32.0	14.6	38.0	38.0	36.0	59.4	59.4
Total Split (%)	11.7%	11.7%		26.7%	26.7%	26.7%	12.2%	31.7%	31.7%	30.0%	49.5%	49.5%
Maximum Green (s)	8.6	8.6		26.6	26.6	26.6	9.1	32.5	32.5	30.5	53.9	53.9
Yellow Time (s)	4.4	4.4		4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5
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	3.0
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)				2	2	2		2	2		2	2
Act Effct Green (s)	8.6	8.6		26.6	26.6	26.6	8.7	32.5	32.5	30.5	54.3	54.3
Actuated g/C Ratio	0.07	0.07		0.22	0.22	0.22	0.07	0.27	0.27	0.25	0.45	0.45
v/c Ratio	0.18	1.23		1.09	0.37	0.52	0.68	1.01	0.84	1.11	0.75	0.02
Control Delay	55.9	195.5		103.2	42.6	7.9	81.0	70.3	19.5	118.2	31.1	0.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.9	195.5		103.2	42.6	7.9	81.0	70.3	19.5	118.2	31.1	0.0
LOS	E	F		F	D	A	F	E	B	F	C	A
Approach Delay		178.9			73.7			54.3			56.7	
Approach LOS		F			E			D			E	
Queue Length 50th (m)	5.5	~50.1		~118.7	33.0	0.0	20.8	~123.1	34.9	~141.4	124.1	0.0
Queue Length 95th (m)	14.3	#96.3		#158.6	53.1	23.7	#44.3	#157.8	#101.0	#208.9	152.0	0.0
Internal Link Dist (m)		414.4			561.6			814.6			886.0	
Turn Bay Length (m)	40.0			130.0		30.0	190.0		150.0	280.0		160.0
Base Capacity (vph)	129	138		760	421	572	130	1325	809	449	1555	782
Starvation Cap Reductn	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
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	1.23		1.09	0.37	0.52	0.65	1.01	0.84	1.11	0.75	0.02

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Natural Cycle:	120
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.23
Intersection Signal Delay:	64.4
Intersection LOS:	E
Intersection Capacity Utilization:	99.2%
ICU Level of Service:	F
Analysis Period (min):	15

~ Volume exceeds capacity, queue is theoretically infinite.



# Lanes, Volumes, Timings

## 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

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: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd



Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	242	308	106	125	192	17	109	365	106	50	460	121
Future Volume (vph)	242	308	106	125	192	17	109	365	106	50	460	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	55.0		0.0	45.0		10.0	45.0		10.0
Storage Lanes	1		1	2		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00		1.00		0.97	0.99		0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1900	1599	1719	3503	0	1805	3505	1615	1752	3539	1615
Flt Permitted	0.559			0.356			0.950			0.950		
Satd. Flow (perm)	1036	1900	1566	642	3503	0	1799	3505	1561	1742	3539	1582
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			187		16				187			187
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.5			398.6			321.2			163.3	
Travel Time (s)		17.2			28.7			23.1			11.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.83	0.89	0.90	0.95	0.88	0.72	0.81	0.83	0.74	0.75	0.90	0.84
Heavy Vehicles (%)	2%	0%	1%	5%	1%	4%	0%	3%	0%	3%	2%	0%
Adj. Flow (vph)	292	346	118	132	218	24	135	440	143	67	511	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	292	346	118	132	242	0	135	440	143	67	511	144
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8					2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		6.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0		11.0	22.5	22.5	11.0	22.5	22.5
Total Split (s)	11.0	24.0	24.0	11.0	24.0		12.0	24.0	24.0	11.0	23.0	23.0
Total Split (%)	15.7%	34.3%	34.3%	15.7%	34.3%		17.1%	34.3%	34.3%	15.7%	32.9%	32.9%
Maximum Green (s)	6.0	19.0	19.0	6.0	19.0		7.0	19.0	19.0	6.0	18.0	18.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		8.0	8.0		8.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	23.0	18.3	18.3	21.9	15.9		7.0	23.7	23.7	6.0	18.0	18.0
Actuated g/C Ratio	0.34	0.27	0.27	0.33	0.24		0.10	0.35	0.35	0.09	0.27	0.27
v/c Ratio	0.70	0.67	0.21	0.43	0.29		0.71	0.35	0.21	0.43	0.54	0.26
Control Delay	26.3	29.9	1.9	17.7	20.1		53.7	19.3	2.6	39.0	24.0	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	29.9	1.9	17.7	20.1		53.7	19.3	2.6	39.0	24.0	3.1
LOS	C	C	A	B	C		D	B	A	D	C	A
Approach Delay		24.1			19.2			22.4			21.2	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	26.5	42.3	0.0	10.8	12.7		18.0	25.5	0.0	8.7	31.0	0.0
Queue Length 95th (m)	40.4	68.5	3.5	21.2	21.0		#38.1	35.8	2.3	17.1	46.9	5.6
Internal Link Dist (m)		214.5			374.6			297.2			139.3	
Turn Bay Length (m)	65.0			55.0			45.0		10.0	45.0		10.0
Base Capacity (vph)	420	552	588	306	1007		189	1240	673	157	953	562
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.63	0.20	0.43	0.24		0.71	0.35	0.21	0.43	0.54	0.26

Intersection Summary

Area Type: Other  
 Cycle Length: 70  
 Actuated Cycle Length: 67  
 Natural Cycle: 70  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 22.1  
 Intersection LOS: C

# Lanes, Volumes, Timings

## 18: Uplands Dr & Turner Rd









05-06-2020

Intersection Capacity Utilization 59.2% ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 18: Uplands Dr & Turner Rd

 Ø1	 Ø2	 Ø3	 Ø4
11 s	24 s	11 s	24 s
 Ø5	 Ø6	 Ø7	 Ø8
12 s	23 s	11 s	24 s

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	119	34	769	139	282	81	1268	629	474	1108	9
Future Volume (vph)	21	119	34	769	139	282	81	1268	629	474	1108	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	40.0		0.0	130.0		30.0	190.0		150.0	280.0		160.0
Storage Lanes	1		0	1		1	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	0.97	0.95	1.00
Frt		0.966				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1809	0	3433	1900	1538	1719	4893	1568	3433	3438	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1805	1809	0	3433	1900	1538	1719	4893	1568	3433	3438	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				297			659			145
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		438.4			585.6			838.6			910.0	
Travel Time (s)		31.6			42.2			37.7			41.0	
Peak Hour Factor	0.90	0.90	0.89	0.93	0.89	0.95	0.95	0.95	0.93	0.95	0.95	0.58
Heavy Vehicles (%)	0%	1%	3%	2%	0%	5%	5%	6%	3%	2%	5%	2%
Adj. Flow (vph)	23	132	38	827	156	297	85	1335	676	499	1166	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	170	0	827	156	297	85	1335	676	499	1166	16
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8			5	2		1	6

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						8			2			6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.4	12.4		23.4	23.4	23.4	11.5	23.5	23.5	11.5	23.5	23.5
Total Split (s)	14.6	14.6		30.0	30.0	30.0	11.5	35.0	35.0	20.4	43.9	43.9
Total Split (%)	14.6%	14.6%		30.0%	30.0%	30.0%	11.5%	35.0%	35.0%	20.4%	43.9%	43.9%
Maximum Green (s)	9.2	9.2		24.6	24.6	24.6	6.0	29.5	29.5	14.9	38.4	38.4
Yellow Time (s)	4.4	4.4		4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4		5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5
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	3.0
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)				2	2	2		2	2		2	2
Act Effct Green (s)	9.2	9.2		24.6	24.6	24.6	6.0	29.5	29.5	14.9	38.4	38.4
Actuated g/C Ratio	0.09	0.09		0.25	0.25	0.25	0.06	0.30	0.30	0.15	0.38	0.38
v/c Ratio	0.14	0.97		0.98	0.33	0.49	0.83	0.93	0.73	0.98	0.88	0.02
Control Delay	44.0	103.7		64.9	33.4	6.8	98.9	46.2	8.1	77.9	38.2	0.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	103.7		64.9	33.4	6.8	98.9	46.2	8.1	77.9	38.2	0.1
LOS	D	F		E	C	A	F	D	A	E	D	A
Approach Delay		96.6			47.6			36.0			49.6	
Approach LOS		F			D			D			D	
Queue Length 50th (m)	4.4	32.9		86.6	26.2	0.0	17.5	96.4	2.5	52.8	114.8	0.0
Queue Length 95th (m)	12.3	#75.8		#127.1	44.0	20.7	#45.4	#125.7	37.0	#86.0	#155.6	0.0
Internal Link Dist (m)		414.4			561.6			814.6			886.0	
Turn Bay Length (m)	40.0			130.0		30.0	190.0		150.0	280.0		160.0
Base Capacity (vph)	166	176		844	467	602	103	1443	927	511	1320	697
Starvation Cap Reductn	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
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.97		0.98	0.33	0.49	0.83	0.93	0.73	0.98	0.88	0.02

**Intersection Summary**

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 45.4      Intersection LOS: D

Intersection Capacity Utilization 86.5%      ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings  
 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

05-06-2020

Queue shown is maximum after two cycles.

Splits and Phases: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

↙ Ø1	↑ Ø2	↗ Ø4	↘ Ø8
20.4 s	35 s	14.6 s	30 s
↙ Ø5	↓ Ø6		
11.5 s	43.9 s		

**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B28	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	T	L	T
Maximum Queue (m)	32.4	95.2	101.0	43.9	50.4	62.5	25.9	50.4	40.8	44.2	32.2	56.2
Average Queue (m)	17.1	50.6	59.1	20.2	31.2	34.7	21.4	31.3	22.8	7.0	15.9	31.2
95th Queue (m)	35.0	79.8	87.0	35.4	47.2	54.2	29.1	53.1	35.4	29.9	28.1	50.7
Link Distance (m)		189.6	189.6		478.4	478.4		26.1	26.1	76.5		301.2
Upstream Blk Time (%)							5	11	4	0		
Queuing Penalty (veh)							0	32	11	0		
Storage Bay Dist (m)	25.0			50.0			40.0				95.0	
Storage Blk Time (%)	1	30		0	0		5	11				
Queuing Penalty (veh)	3	29		0	0		7	23				

**Intersection: 1: Uplands Dr & Hammond Bay Rd**

Movement	SB
Directions Served	R
Maximum Queue (m)	22.1
Average Queue (m)	10.8
95th Queue (m)	20.1
Link Distance (m)	301.2
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 2: Calinda & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	22.4	67.1	74.0	22.4	61.4	73.1	22.4	46.8	42.7	20.7
Average Queue (m)	6.9	36.2	45.0	16.8	30.6	36.2	15.2	17.4	24.4	9.2
95th Queue (m)	18.9	59.4	68.0	26.0	54.8	60.6	24.5	35.7	38.7	19.1
Link Distance (m)		76.9	76.9		189.6	189.6		160.2		205.1
Upstream Blk Time (%)		0	0							
Queuing Penalty (veh)		0	1							
Storage Bay Dist (m)	15.0			15.0			15.0		40.0	
Storage Blk Time (%)	1	29		14	19		16	4	1	
Queuing Penalty (veh)	3	8		47	25		24	6	1	



**Intersection: 4: Marlin Way & Hammond Bay Rd**

Movement	EB	EB	WB	NB	NB
Directions Served	T	TR	L	L	R
Maximum Queue (m)	3.4	16.1	13.8	18.8	29.5
Average Queue (m)	0.1	0.7	3.9	7.4	11.7
95th Queue (m)	2.4	6.1	11.9	15.6	21.8
Link Distance (m)	72.0	72.0			172.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)			15.0	15.0	
Storage Blk Time (%)			1	3	3
Queuing Penalty (veh)			2	3	1

**Intersection: 6: Applecross Rd & Hammond Bay Rd**

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	TR	T	T	R	R
Maximum Queue (m)	36.6	62.1	43.8	27.0	19.2	20.6	56.1
Average Queue (m)	20.0	4.4	2.1	2.0	1.9	5.1	18.7
95th Queue (m)	36.2	29.5	26.2	12.6	10.6	15.3	46.0
Link Distance (m)		94.4	94.4	72.0	72.0		73.6
Upstream Blk Time (%)		0	0				0
Queuing Penalty (veh)		0	1				0
Storage Bay Dist (m)	30.0					15.0	
Storage Blk Time (%)	4				0	0	
Queuing Penalty (veh)	13				1	1	

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	LT	T	R	L	LT	T	R	L	L	T	T
Maximum Queue (m)	66.5	90.5	87.4	47.5	47.4	103.8	115.8	67.5	39.8	79.7	95.3	100.5
Average Queue (m)	29.6	48.6	48.0	20.1	43.5	74.9	69.8	23.4	20.4	23.3	54.3	55.6
95th Queue (m)	54.7	73.0	77.3	58.5	57.4	107.2	120.7	68.9	34.6	49.4	82.2	85.6
Link Distance (m)		541.8	541.8			94.4	94.4				89.9	89.9
Upstream Blk Time (%)						3	4			0	0	1
Queuing Penalty (veh)						17	23			0	2	4
Storage Bay Dist (m)	65.0			40.0	40.0			60.0	115.0	115.0		
Storage Blk Time (%)	0	1	16	0	4	40	6	0		0	0	3
Queuing Penalty (veh)	0	1	28	0	17	76	17	0		0	1	7

**Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd**

Movement	NB	B29	SB	SB	SB
Directions Served	R	T	L	T	T
Maximum Queue (m)	77.4	69.8	78.8	79.2	85.6
Average Queue (m)	10.2	2.3	47.6	47.9	49.8
95th Queue (m)	52.9	47.2	74.9	70.2	75.5
Link Distance (m)		322.5		841.6	841.6
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	70.0		135.0		
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

**Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way**

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	T	R
Maximum Queue (m)	57.4	94.4	22.4	158.8	80.1	221.7	233.6	37.4	107.2	107.6	65.4
Average Queue (m)	24.5	37.0	20.0	122.9	39.1	55.9	60.9	16.6	55.9	51.4	5.8
95th Queue (m)	43.9	83.6	28.2	198.3	66.2	194.9	200.2	32.3	89.9	86.4	39.5
Link Distance (m)	130.4	130.4		154.4		753.6	753.6		322.5	322.5	
Upstream Blk Time (%)				45		0	0				
Queuing Penalty (veh)				0		0	0				
Storage Bay Dist (m)			15.0		200.0			200.0			75.0
Storage Blk Time (%)			41	55						2	0
Queuing Penalty (veh)			118	74						4	0

# Queuing and Blocking Report

05-06-2020

## Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	L	T	R	L	T	T	T	R	L
Maximum Queue (m)	41.5	78.7	137.0	233.0	182.3	37.5	42.6	122.5	127.5	121.2	82.8	287.3
Average Queue (m)	7.4	36.7	113.7	138.4	33.2	14.9	13.7	86.8	86.0	75.8	7.8	231.5
95th Queue (m)	27.0	68.8	160.4	223.4	102.0	40.8	33.0	115.7	115.1	105.6	49.7	357.9
Link Distance (m)		421.4		541.8	541.8			815.9	815.9	815.9		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	40.0		130.0			30.0	190.0				150.0	280.0
Storage Blk Time (%)	0	16	5	16	5	1						44
Queuing Penalty (veh)	0	3	19	62	15	1						245

## Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

Movement	SB	SB
Directions Served	T	T
Maximum Queue (m)	465.6	439.0
Average Queue (m)	273.9	256.7
95th Queue (m)	561.8	541.4
Link Distance (m)	894.3	894.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)	1	0
Queuing Penalty (veh)	3	0

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	T	L	T	T	R	L	T	T	R
Maximum Queue (m)	27.4	301.4	82.3	120.0	37.3	176.8	182.8	92.5	52.3	234.9	365.0	27.4
Average Queue (m)	12.0	215.8	55.9	27.9	21.3	105.8	102.2	45.6	32.9	68.8	73.3	4.6
95th Queue (m)	31.5	379.0	85.1	75.6	41.1	174.4	176.6	118.0	58.8	168.8	210.7	21.1
Link Distance (m)		385.5		207.1		527.5	527.5			753.6	753.6	
Upstream Blk Time (%)		10								0	0	
Queuing Penalty (veh)		0								0	0	
Storage Bay Dist (m)	20.0		75.0		30.0			85.0	45.0			20.0
Storage Blk Time (%)	3	78	7	0	1	46	12	0	2	18	33	0
Queuing Penalty (veh)	10	30	9	0	4	33	52	1	10	25	6	0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	T	R	L	T
Maximum Queue (m)	58.6	61.2	23.2	38.5	47.7	34.2	47.3	58.5	44.0	16.8	30.3	48.1
Average Queue (m)	29.1	36.9	11.3	17.1	22.1	9.8	19.4	30.5	11.8	10.3	11.8	26.1
95th Queue (m)	50.4	59.9	19.8	31.5	38.6	23.1	36.7	50.5	35.8	17.1	24.2	42.5
Link Distance (m)		207.1	207.1			382.0		307.3	307.3			141.4
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	65.0			55.0	55.0		45.0			10.0	45.0	
Storage Blk Time (%)	0	0			0		0	1	3	1		0
Queuing Penalty (veh)	1	1			0		0	1	3	2		0

**Intersection: 18: Uplands Dr & Turner Rd**

Movement	SB	SB
Directions Served	T	R
Maximum Queue (m)	55.3	17.5
Average Queue (m)	31.9	14.8
95th Queue (m)	48.3	19.9
Link Distance (m)	141.4	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		10.0
Storage Blk Time (%)	45	2
Queuing Penalty (veh)	54	4

**Intersection: 21: Uplands Dr & Parkwood Dr**

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	15.5	17.0	14.6	1.8	11.3	13.2
Average Queue (m)	7.5	7.3	5.4	0.1	2.3	0.7
95th Queue (m)	14.9	14.9	13.3	1.2	8.9	6.5
Link Distance (m)	103.3	254.6		206.1		227.2
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			35.0		35.0	
Storage Blk Time (%)						0
Queuing Penalty (veh)						0

**Intersection: 31: Uplands Dr & North Access**

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	18.7	38.0	1.4
Average Queue (m)	8.4	5.5	0.0
95th Queue (m)	16.2	22.4	1.0
Link Distance (m)	97.8	227.2	76.5
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 33: Uplands Dr & South Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	21.0	22.6
Average Queue (m)	9.0	2.2
95th Queue (m)	16.8	11.8
Link Distance (m)	114.7	199.4
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 1225

HCM 2010 TWSC  
4: Marlin Way & Hammond Bay Rd

05-06-2020

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	701	70	30	847	33	105
Future Vol, veh/h	701	70	30	847	33	105
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	63	70	85	83	70
Heavy Vehicles, %	1	0	0	3	0	0
Mvmt Flow	746	111	43	996	40	150

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	859	0	1388
Stage 1	-	-	-	-	804
Stage 2	-	-	-	-	584
Critical Hdwy	-	-	4.1	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	791	-	136
Stage 1	-	-	-	-	406
Stage 2	-	-	-	-	526
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	790	-	128
Mov Cap-2 Maneuver	-	-	-	-	128
Stage 1	-	-	-	-	405
Stage 2	-	-	-	-	498

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	20.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	128	577	-	-	790	-
HCM Lane V/C Ratio	0.311	0.26	-	-	0.054	-
HCM Control Delay (s)	45.3	13.4	-	-	9.8	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	1.2	1	-	-	0.2	-

HCM 2010 TWSC  
6: Applecross Rd & Hammond Bay Rd

05-06-2020

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗			↖↗	↖			↖			↖
Traffic Vol, veh/h	227	747	20	0	726	155	0	0	24	0	0	417
Future Vol, veh/h	227	747	20	0	726	155	0	0	24	0	0	417
Conflicting Peds, #/hr	40	0	5	5	0	40	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	300	-	-	-	-	150	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	94	75	25	85	90	25	25	67	25	25	95
Heavy Vehicles, %	5	1	0	0	3	2	0	0	0	0	0	1
Mvmt Flow	284	795	27	0	854	172	0	0	36	0	0	439

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1066	0	0	-	-	0	-	-	416	-	-	467
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.2	-	-	-	-	-	-	-	6.9	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.25	-	-	-	-	-	-	-	3.3	-	-	3.31
Pot Cap-1 Maneuver	632	-	-	0	-	-	0	0	591	0	0	545
Stage 1	-	-	-	0	-	-	0	0	-	0	0	-
Stage 2	-	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-		-		-	-	
Mov Cap-1 Maneuver	611	-	-	-	-	-	-	-	588	-	-	527
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.1			0			11.5			37.3		
HCM LOS							B			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	588	611	-	-	-	-	527
HCM Lane V/C Ratio	0.061	0.464	-	-	-	-	0.833
HCM Control Delay (s)	11.5	15.9	-	-	-	-	37.3
HCM Lane LOS	B	C	-	-	-	-	E
HCM 95th %tile Q(veh)	0.2	2.5	-	-	-	-	8.5

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	20	0	23	18	0	24	54	501	37	18	501	48
Future Vol, veh/h	20	0	23	18	0	24	54	501	37	18	501	48
Conflicting Peds, #/hr	1	0	0	0	0	1	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	350	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	70	75	75	75	89	63	60	92	80
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	25	0	29	26	0	32	72	563	59	30	545	60

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1394	1411	580	1392	1412	599	610	0	0	627	0	0
Stage 1	640	640	-	742	742	-	-	-	-	-	-	-
Stage 2	754	771	-	650	670	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	120	140	518	121	139	505	979	-	-	965	-	-
Stage 1	467	473	-	411	425	-	-	-	-	-	-	-
Stage 2	404	413	-	461	459	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	103	125	516	105	124	502	975	-	-	961	-	-
Mov Cap-2 Maneuver	103	125	-	105	124	-	-	-	-	-	-	-
Stage 1	431	456	-	379	392	-	-	-	-	-	-	-
Stage 2	350	381	-	422	443	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	33.3		32.6		0.9		0.4	
HCM LOS	D		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	975	-	-	180	187	961	-
HCM Lane V/C Ratio	0.074	-	-	0.299	0.309	0.031	-
HCM Control Delay (s)	9	-	-	33.3	32.6	8.9	-
HCM Lane LOS	A	-	-	D	D	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.2	1.2	0.1	-



HCM 2010 TWSC  
 31: Uplands Dr & North Access

05-06-2020

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	26	33	15	554	534	57
Future Vol, veh/h	26	33	15	554	534	57
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	89	92	85
Heavy Vehicles, %	0	0	0	2	1	0
Mvmt Flow	31	39	20	622	580	67

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1281	619	652	0	-	0
Stage 1	619	-	-	-	-	-
Stage 2	662	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	184	492	944	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	176	490	940	-	-	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	521	-	-	-	-	-
Stage 2	515	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.5	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	940	-	274	-	-
HCM Lane V/C Ratio	0.021	-	0.253	-	-
HCM Control Delay (s)	8.9	0	22.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

HCM 2010 TWSC  
 33: Uplands Dr & South Access

05-06-2020

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	34	15	568	542	5
Future Vol, veh/h	24	34	15	568	542	5
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	89	92	80
Heavy Vehicles, %	0	0	0	2	1	0
Mvmt Flow	28	40	20	638	589	6

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1275	597	600	0	-	0
Stage 1	597	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	186	507	987	-	-	-
Stage 1	554	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	179	505	983	-	-	-
Mov Cap-2 Maneuver	179	-	-	-	-	-
Stage 1	534	-	-	-	-	-
Stage 2	506	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.3	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	983	-	288	-	-
HCM Lane V/C Ratio	0.02	-	0.237	-	-
HCM Control Delay (s)	8.7	0	21.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	130	127	435	97	51	34	790	286	52	663	7
Future Volume (vph)	33	130	127	435	97	51	34	790	286	52	663	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00	1.00	0.98	1.00		0.97	1.00		0.98
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (prot)	1752	1845	1615	1715	1730	1599	1770	3505	1568	1805	3539	1568
Fl <sub>t</sub> Permitted	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (perm)	1749	1845	1586	1711	1727	1574	1764	3505	1526	1804	3539	1529
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			153			131			371			131
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		403.2			238.5			542.6			779.3	
Travel Time (s)		29.0			17.2			24.4			35.1	
Confl. Peds. (#/hr)	2		2	2		2	2		2	1		1
Confl. Bikes (#/hr)			2			1			1			1
Peak Hour Factor	0.60	0.65	0.83	0.72	0.80	0.60	0.91	0.87	0.77	0.73	0.94	0.75
Heavy Vehicles (%)	3%	3%	0%	0%	3%	1%	2%	3%	3%	0%	2%	3%
Adj. Flow (vph)	55	200	153	604	121	85	37	908	371	71	705	9
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	55	200	153	362	363	85	37	908	371	71	705	9
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	22.5	22.5	22.5	28.0	28.0	28.0	11.0	23.0	23.0	11.0	22.5	22.5
Total Split (s)	22.5	22.5	22.5	31.0	31.0	31.0	11.0	32.5	32.5	14.0	35.5	35.5
Total Split (%)	22.5%	22.5%	22.5%	31.0%	31.0%	31.0%	11.0%	32.5%	32.5%	14.0%	35.5%	35.5%
Maximum Green (s)	17.5	17.5	17.5	26.0	26.0	26.0	6.0	27.5	27.5	9.0	30.5	30.5
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0	5.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0		11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1	1		1	1		1	1
Act Effct Green (s)	14.3	14.3	14.3	22.7	22.7	22.7	6.1	28.8	28.8	8.1	33.1	33.1
Actuated g/C Ratio	0.16	0.16	0.16	0.25	0.25	0.25	0.07	0.32	0.32	0.09	0.36	0.36
v/c Ratio	0.20	0.69	0.41	0.85	0.85	0.17	0.31	0.82	0.50	0.45	0.55	0.01
Control Delay	37.3	51.3	9.7	53.6	52.9	2.5	51.9	39.2	5.8	51.9	27.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	51.3	9.7	53.6	52.9	2.5	51.9	39.2	5.8	51.9	27.7	0.0
LOS	D	D	A	D	D	A	D	D	A	D	C	A
Approach Delay		33.8			47.9			30.1			29.6	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	9.7	38.2	0.0	71.1	71.1	0.0	7.3	92.8	0.0	13.7	63.6	0.0
Queue Length 95th (m)	13.7	42.7	13.4	82.0	94.1	0.0	17.9	#127.1	9.4	22.6	85.7	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0		30.0	75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	341	360	432	497	501	549	118	1105	735	181	1280	636
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	0.16	0.56	0.35	0.73	0.72	0.15	0.31	0.82	0.50	0.39	0.55	0.01

**Intersection Summary**

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 91.4  
 Natural Cycle: 85  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 34.8  
 Intersection LOS: C

# Lanes, Volumes, Timings

## 17: Island Hwy (Hwy 19A) & Turner Rd







11-27-2020

Intersection Capacity Utilization 65.1% 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.

Splits and Phases: 17: Island Hwy (Hwy 19A) & Turner Rd

 Ø1	 Ø2	 Ø4	 Ø8
14 s	32.5 s	22.5 s	31 s
 Ø5	 Ø6		
11 s	35.5 s		

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷	↷	↶	↷	↷	↶	↷	↷	↶	↷	↷
Traffic Volume (vph)	94	700	258	133	506	27	224	43	39	14	37	33
Future Volume (vph)	94	700	258	133	506	27	224	43	39	14	37	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		35.0	95.0		0.0	45.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.91	0.91	0.95	0.91	0.91	0.95
Ped Bike Factor	1.00		0.98	1.00	1.00		0.99	0.99		0.99	0.99	
Frt			0.850		0.991			0.966			0.944	
Flt Protected	0.950			0.950			0.950	0.974		0.950	0.999	
Satd. Flow (prot)	1504	3124	1425	1533	2982	0	1395	2728	0	1137	2508	0
Flt Permitted	0.243			0.144			0.950	0.974		0.950	0.999	
Satd. Flow (perm)	384	3124	1394	232	2982	0	1386	2719	0	1130	2507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182		5			27			36	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		306.3			279.2			613.3			216.7	
Travel Time (s)		22.1			20.1			44.2			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.72	0.85	0.81	0.84	0.84	0.67	0.83	0.68	0.67	0.60	0.63	0.91
Heavy Vehicles (%)	8%	4%	2%	6%	7%	20%	6%	10%	5%	30%	20%	9%
Adj. Flow (vph)	131	824	319	158	602	40	270	63	58	23	59	36
Shared Lane Traffic (%)							50%			10%		
Lane Group Flow (vph)	131	824	319	158	642	0	135	256	0	21	97	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	29.0	29.0	29.0	10.5	28.0		26.0	26.0		31.0	31.0	
Total Split (s)	29.0	41.8	41.8	16.2	29.0		26.0	26.0		31.0	31.0	
Total Split (%)	25.2%	36.3%	36.3%	14.1%	25.2%		22.6%	22.6%		27.0%	27.0%	
Maximum Green (s)	24.5	36.8	36.8	11.7	24.0		21.0	21.0		26.0	26.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
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)	4.5	5.0	5.0	4.5	5.0		5.0	5.0		5.0	5.0	
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	None	None	None	None		Max	Max		Max	Max	
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		16.0		14.0	14.0		19.0	19.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	45.5	33.7	33.7	44.5	33.1		21.1	21.1		26.1	26.1	
Actuated g/C Ratio	0.41	0.30	0.30	0.40	0.30		0.19	0.19		0.23	0.23	
v/c Ratio	0.48	0.87	0.58	0.72	0.72		0.51	0.48		0.08	0.16	
Control Delay	24.7	47.9	18.0	40.9	40.3		49.5	40.0		36.1	23.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.7	47.9	18.0	40.9	40.3		49.5	40.0		36.1	23.8	
LOS	C	D	B	D	D		D	D		D	C	
Approach Delay		38.1			40.4			43.3			26.0	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	17.7	94.5	25.4	21.7	68.1		32.0	26.9		4.3	6.3	
Queue Length 95th (m)	23.6	110.9	43.2	#41.2	86.5		50.5	29.2		8.0	8.5	
Internal Link Dist (m)		282.3			255.2			589.3			192.7	
Turn Bay Length (m)	55.0		35.0	95.0			45.0			40.0		
Base Capacity (vph)	418	1036	584	231	891		264	538		266	615	
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	0.31	0.80	0.55	0.68	0.72		0.51	0.48		0.08	0.16	

Intersection Summary

Area Type:	CBD
Cycle Length:	115
Actuated Cycle Length:	111.2
Natural Cycle:	115
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.87
Intersection Signal Delay:	39.0
Intersection LOS:	D

# Lanes, Volumes, Timings

## 30: Metral Dr & Aulds Rd







11-27-2020

Intersection Capacity Utilization 61.8% ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 30: Metral Dr & Aulds Rd

 Ø2	 Ø6	 Ø3	 Ø4
26 s	31 s	16.2 s	41.8 s
		 Ø7	 Ø8
		29 s	29 s



# Queuing and Blocking Report

11-27-2020

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	R	L	T	T
Maximum Queue (m)	25.6	54.9	32.5	77.9	91.8	37.3	79.9	80.3	12.9	46.3	68.7	61.4
Average Queue (m)	6.5	24.6	4.4	44.3	60.6	7.9	47.7	41.5	0.8	10.8	34.2	28.6
95th Queue (m)	18.8	44.8	21.2	74.7	84.2	24.8	72.1	67.1	5.8	27.6	55.2	50.9
Link Distance (m)		385.4			220.9		527.2	527.2			764.0	764.0
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		30.0	75.0		30.0			85.0	45.0		
Storage Blk Time (%)	0	18	0	0	2	0	23	0			2	14
Queuing Penalty (veh)	1	28	0	0	4	0	8	0			1	1

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	SB
Directions Served	R
Maximum Queue (m)	10.5
Average Queue (m)	0.4
95th Queue (m)	5.3
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	20.0
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	L	LT
Maximum Queue (m)	62.3	106.8	106.1	42.5	53.6	83.7	79.6	44.4	47.1	30.1	18.1	38.3
Average Queue (m)	24.9	63.6	59.1	31.9	24.1	49.3	41.5	17.6	26.0	8.6	0.6	12.7
95th Queue (m)	54.8	94.4	93.0	53.8	45.8	73.6	67.0	36.2	42.0	21.5	7.6	28.6
Link Distance (m)		292.2	292.2			265.4	265.4		595.5	595.5		202.9
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0	95.0			45.0			40.0	
Storage Blk Time (%)	0	12	21	1		0		0	0			0
Queuing Penalty (veh)	0	12	54	2		0		0	0			0

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	SB
Directions Served	TR
Maximum Queue (m)	25.9
Average Queue (m)	6.1
95th Queue (m)	17.5
Link Distance (m)	202.9
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Network Summary**

Network wide Queuing Penalty: 112
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Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	184	139	314	131	68	70	1231	441	141	1165	18
Future Volume (vph)	39	184	139	314	131	68	70	1231	441	141	1165	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00	0.98	1.00		0.97	1.00		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (prot)	1805	1863	1599	1681	1752	1599	1805	3539	1599	1787	3539	1615
Flt Permitted	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (perm)	1792	1863	1572	1679	1752	1560	1802	3539	1555	1785	3539	1567
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			166			125			443			125
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		403.2			238.5			542.6			779.3	
Travel Time (s)		29.0			17.2			24.4			35.1	
Confl. Peds. (#/hr)	7		1	1		7	2		2	2		2
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.67	0.88	0.76	0.86	0.86	0.91	0.86	0.96	0.92	0.89	0.95	0.89
Heavy Vehicles (%)	0%	2%	1%	2%	0%	1%	0%	2%	1%	1%	2%	0%
Adj. Flow (vph)	58	209	183	365	152	75	81	1282	479	158	1226	20
Shared Lane Traffic (%)				30%								
Lane Group Flow (vph)	58	209	183	255	262	75	81	1282	479	158	1226	20
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.0	12.0	12.0	26.0	26.0	26.0	11.0	23.0	23.0	11.0	18.0	18.0
Total Split (s)	20.0	20.0	20.0	26.0	26.0	26.0	17.0	43.0	43.0	16.0	42.0	42.0
Total Split (%)	19.0%	19.0%	19.0%	24.8%	24.8%	24.8%	16.2%	41.0%	41.0%	15.2%	40.0%	40.0%
Maximum Green (s)	15.0	15.0	15.0	21.0	21.0	21.0	12.0	38.0	38.0	11.0	37.0	37.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0	5.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0		11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1	1		1	1		1	1
Act Effct Green (s)	14.1	14.1	14.1	18.8	18.8	18.8	9.5	38.1	38.1	10.8	41.8	41.8
Actuated g/C Ratio	0.14	0.14	0.14	0.18	0.18	0.18	0.09	0.37	0.37	0.11	0.41	0.41
v/c Ratio	0.23	0.81	0.51	0.82	0.81	0.19	0.48	0.97	0.56	0.83	0.84	0.03
Control Delay	42.5	67.2	13.9	62.2	60.3	2.5	54.0	51.3	6.2	79.5	36.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.5	67.2	13.9	62.2	60.3	2.5	54.0	51.3	6.2	79.5	36.2	0.1
LOS	D	E	B	E	E	A	D	D	A	E	D	A
Approach Delay		42.3			53.8			39.7			40.6	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	11.2	44.0	3.2	54.8	56.2	0.0	16.8	~143.7	5.0	33.9	131.5	0.0
Queue Length 95th (m)	17.3	#77.7	14.1	#86.9	#86.9	3.0	30.3	#194.6	30.4	#69.4	#185.2	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0		30.0	75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	265	275	373	347	361	421	213	1322	858	193	1452	716
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	0.22	0.76	0.49	0.73	0.73	0.18	0.38	0.97	0.56	0.82	0.84	0.03

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	101.9
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.97
Intersection Signal Delay:	42.2
Intersection LOS:	D

# Lanes, Volumes, Timings

## 17: Island Hwy (Hwy 19A) & Turner Rd











11-27-2020

Intersection Capacity Utilization 81.4% ICU Level of Service D

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: 17: Island Hwy (Hwy 19A) & Turner Rd

 Ø1  16 s	 Ø2  43 s	 Ø4  20 s	 Ø8  26 s
 Ø5  17 s	 Ø6  42 s		

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑		↙	↑↑		↙	↑↑	
Traffic Volume (vph)	230	581	366	267	561	74	464	105	143	117	124	186
Future Volume (vph)	230	581	366	267	561	74	464	105	143	117	124	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	55.0		35.0	95.0		0.0	45.0		0.0	40.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.91	0.91	0.95	0.91	0.91	0.95
Ped Bike Factor	1.00		0.98	1.00	1.00		1.00	0.99		1.00	0.99	
Frt			0.850		0.974			0.956			0.916	
Flt Protected	0.950			0.950			0.950	0.977		0.950	0.998	
Satd. Flow (prot)	1608	3185	1439	1608	3051	0	1449	2823	0	1408	2752	0
Flt Permitted	0.184			0.184			0.950	0.977		0.950	0.998	
Satd. Flow (perm)	311	3185	1408	311	3051	0	1443	2817	0	1403	2751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			291		22			55			198	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		306.3			279.2			613.3			216.7	
Travel Time (s)		22.1			20.1			44.2			15.6	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.91	0.92	0.88	0.91	0.95	0.59	0.83	0.83	0.86	0.74	0.89	0.94
Heavy Vehicles (%)	1%	2%	1%	1%	3%	5%	2%	6%	0%	5%	2%	2%
Adj. Flow (vph)	253	632	416	293	591	125	559	127	166	158	139	198
Shared Lane Traffic (%)							48%			10%		
Lane Group Flow (vph)	253	632	416	293	716	0	291	561	0	142	353	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
30: Metral Dr & Aulds Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8								
Detector Phase	7	4	4	3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	10.5	26.0	26.0	10.5	26.0		24.0	24.0		26.0	26.0	
Total Split (s)	17.0	27.0	27.0	19.0	29.0		33.0	33.0		26.0	26.0	
Total Split (%)	16.2%	25.7%	25.7%	18.1%	27.6%		31.4%	31.4%		24.8%	24.8%	
Maximum Green (s)	12.5	22.0	22.0	14.5	24.0		28.0	28.0		21.0	21.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
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)	4.5	5.0	5.0	4.5	5.0		5.0	5.0		5.0	5.0	
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	Max	Max	None	Max		None	None		None	None	
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		16.0	16.0		16.0		14.0	14.0		16.0	16.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	35.4	22.2	22.2	39.4	24.2		23.2	23.2		14.6	14.6	
Actuated g/C Ratio	0.38	0.24	0.24	0.42	0.26		0.25	0.25		0.15	0.15	
v/c Ratio	0.88	0.84	0.75	0.89	0.90		0.82	0.76		0.65	0.60	
Control Delay	54.1	48.0	21.3	52.4	50.0		53.3	37.5		52.9	20.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	54.1	48.0	21.3	52.4	50.0		53.3	37.5		52.9	20.6	
LOS	D	D	C	D	D		D	D		D	C	
Approach Delay		40.7			50.7			42.9			29.9	
Approach LOS		D			D			D			C	
Queue Length 50th (m)	33.7	63.4	21.7	40.0	70.6		57.9	49.7		29.2	15.2	
Queue Length 95th (m)	#91.4	#107.1	#70.6	#103.0	#121.5		88.6	67.2		41.8	30.1	
Internal Link Dist (m)		282.3			255.2			589.3			192.7	
Turn Bay Length (m)	55.0		35.0	95.0			45.0			40.0		
Base Capacity (vph)	289	749	553	331	799		434	884		316	772	
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	0.88	0.84	0.75	0.89	0.90		0.67	0.63		0.45	0.46	

Intersection Summary

Area Type: CBD

Cycle Length: 105

Actuated Cycle Length: 94.4

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 42.5

Intersection LOS: D

# Lanes, Volumes, Timings

## 30: Metral Dr & Aulds Rd

11-27-2020

Intersection Capacity Utilization 77.1% 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: 30: Metral Dr & Aulds Rd

 Ø2	 Ø6	 Ø3	 Ø4
33 s	26 s	19 s	27 s
		 Ø7	 Ø8
		17 s	29 s



# Queuing and Blocking Report

11-27-2020

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	R	L	T	T
Maximum Queue (m)	27.3	109.0	37.5	82.0	101.8	37.4	216.9	222.2	92.5	52.4	137.6	133.7
Average Queue (m)	11.2	50.2	17.5	45.8	63.5	20.1	130.6	131.5	62.3	37.5	78.2	74.0
95th Queue (m)	28.2	103.2	46.8	79.8	90.5	43.1	222.2	228.2	129.1	63.7	119.9	116.3
Link Distance (m)		385.4			220.9		527.2	527.2			764.0	764.0
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0		30.0	75.0		30.0			85.0	45.0		
Storage Blk Time (%)	2	46	0	0	3	3	52	22	0	8	25	40
Queuing Penalty (veh)	5	82	0	0	5	18	36	97	2	46	35	7

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	SB
Directions Served	R
Maximum Queue (m)	27.4
Average Queue (m)	4.4
95th Queue (m)	20.7
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	20.0
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	L	LT
Maximum Queue (m)	62.5	137.4	141.6	42.5	85.5	111.9	109.4	52.4	91.6	57.1	47.2	61.9
Average Queue (m)	44.8	64.9	61.7	35.3	43.1	58.0	56.2	37.1	45.8	27.5	8.6	36.5
95th Queue (m)	71.0	115.2	116.2	52.4	74.9	95.7	92.3	57.7	71.1	49.7	31.8	57.3
Link Distance (m)		292.2	292.2			265.4	265.4		595.5	595.5		202.9
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0	95.0			45.0			40.0	
Storage Blk Time (%)	3	12	23	5	2	0		2	8		0	7
Queuing Penalty (veh)	8	27	84	14	4	1		5	19		0	4

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	SB
Directions Served	TR
Maximum Queue (m)	55.0
Average Queue (m)	28.2
95th Queue (m)	48.5
Link Distance (m)	202.9
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Network Summary**

Network wide Queuing Penalty: 501
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Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	184	139	314	131	68	70	1231	441	141	1165	18
Future Volume (vph)	39	184	139	314	131	68	70	1231	441	141	1165	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	0.99		1.00	1.00	0.98	1.00		0.98	1.00		0.97
Frt		0.930				0.850			0.850			0.850
Flt Protected	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (prot)	1805	3278	0	1681	1752	1599	1805	3539	1599	1787	3539	1615
Flt Permitted	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (perm)	1792	3278	0	1680	1752	1560	1802	3539	1572	1786	3539	1567
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		173				125			430			125
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		403.2			238.5			542.6			779.3	
Travel Time (s)		29.0			17.2			24.4			35.1	
Confl. Peds. (#/hr)	7		1	1		7	2		2	2		2
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.67	0.88	0.76	0.86	0.86	0.91	0.86	0.96	0.92	0.89	0.95	0.89
Heavy Vehicles (%)	0%	2%	1%	2%	0%	1%	0%	2%	1%	1%	2%	0%
Adj. Flow (vph)	58	209	183	365	152	75	81	1282	479	158	1226	20
Shared Lane Traffic (%)				30%								
Lane Group Flow (vph)	58	392	0	255	262	75	81	1282	479	158	1226	20
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8			2			6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.0	12.0		26.0	26.0	26.0	11.0	23.0	23.0	11.0	18.0	18.0
Total Split (s)	17.0	17.0		29.0	29.0	29.0	16.0	41.0	41.0	18.0	43.0	43.0
Total Split (%)	16.2%	16.2%		27.6%	27.6%	27.6%	15.2%	39.0%	39.0%	17.1%	41.0%	41.0%
Maximum Green (s)	12.0	12.0		24.0	24.0	24.0	11.0	36.0	36.0	13.0	38.0	38.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
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	3.0
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0	5.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0		11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1	1		1	1		1	1
Act Effct Green (s)	10.7	10.7		19.2	19.2	19.2	9.1	36.2	36.2	11.9	41.6	41.6
Actuated g/C Ratio	0.11	0.11		0.20	0.20	0.20	0.09	0.37	0.37	0.12	0.42	0.42
v/c Ratio	0.30	0.77		0.78	0.76	0.18	0.49	0.98	0.56	0.73	0.82	0.03
Control Delay	46.3	35.1		54.3	52.9	2.3	53.9	53.6	6.9	63.0	33.4	0.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	35.1		54.3	52.9	2.3	53.9	53.6	6.9	63.0	33.4	0.1
LOS	D	D		D	D	A	D	D	A	E	C	A
Approach Delay		36.5			47.1			41.5			36.2	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	11.1	22.8		52.7	54.1	0.0	16.1	~144.3	6.7	31.7	123.5	0.0
Queue Length 95th (m)	17.9	39.5		78.1	79.2	2.9	30.6	#202.6	34.8	#61.7	#181.2	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0			75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	222	554		413	431	478	203	1305	851	238	1499	736
Starvation Cap Reductn	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
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.71		0.62	0.61	0.16	0.40	0.98	0.56	0.66	0.82	0.03

**Intersection Summary**

Area Type: Other  
 Cycle Length: 105  
 Actuated Cycle Length: 98.2  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 40.0  
 Intersection LOS: D

# Lanes, Volumes, Timings

## 17: Island Hwy (Hwy 19A) & Turner Rd

11-27-2020

Intersection Capacity Utilization 81.4% ICU Level of Service D

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: 17: Island Hwy (Hwy 19A) & Turner Rd

↙ Ø1	↑ Ø2	↘ Ø4	↙ Ø8
18 s	41 s	17 s	29 s
↖ Ø5	↓ Ø6		
16 s	43 s		

# Queuing and Blocking Report

12-01-2020

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	LT	L	T	T	R	L	T	T
Maximum Queue (m)	27.0	47.4	49.4	81.0	94.3	37.4	178.5	196.2	92.5	52.3	125.0	121.2
Average Queue (m)	7.0	23.4	15.0	40.8	60.9	19.7	108.9	106.8	50.6	36.3	76.3	71.6
95th Queue (m)	19.5	39.4	35.5	77.3	86.7	41.5	163.8	171.9	124.2	63.2	113.5	107.3
Link Distance (m)		383.8	383.8		220.9		523.2	523.2			764.0	764.0
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	20.0			75.0		30.0			85.0	45.0		
Storage Blk Time (%)	0	23		0	3	3	51	15	0	2	24	39
Queuing Penalty (veh)	0	9		0	4	16	36	67	1	12	34	7

## Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	SB
Directions Served	R
Maximum Queue (m)	27.4
Average Queue (m)	3.3
95th Queue (m)	17.8
Link Distance (m)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	20.0
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	L	LT
Maximum Queue (m)	62.5	150.5	159.6	42.5	69.0	81.2	80.6	52.4	86.5	57.3	43.7	65.2
Average Queue (m)	45.5	72.6	73.1	38.8	41.0	52.3	52.1	35.6	43.7	26.3	8.6	35.5
95th Queue (m)	72.6	131.1	137.9	51.6	66.3	73.4	75.2	55.6	68.9	49.3	32.5	56.2
Link Distance (m)		292.2	292.2			265.4	265.4		595.5	595.5		202.9
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0	95.0			45.0			40.0	
Storage Blk Time (%)	3	18	29	6		0		1	7		0	7
Queuing Penalty (veh)	9	42	106	17		0		3	15		0	4

**Intersection: 30: Metral Dr & Aulds Rd**

Movement	SB
Directions Served	TR
Maximum Queue (m)	67.3
Average Queue (m)	29.2
95th Queue (m)	53.5
Link Distance (m)	202.9
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Network Summary**

Network wide Queuing Penalty: 384
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Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

10-12-2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	129	295	134	148	138	308	956	96	146	917	224
Future Volume (vph)	169	129	295	134	148	138	308	956	96	146	917	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	15.0		0.0	200.0		0.0	200.0		75.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99				0.99		1.00				0.98
Frt		0.898				0.850		0.985				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1688	0	1805	1900	1615	1770	3515	0	1805	3574	1615
Flt Permitted	0.482			0.175			0.118			0.139		
Satd. Flow (perm)	905	1688	0	332	1900	1592	220	3515	0	264	3574	1589
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		106				175		13				270
Link Speed (k/h)		50			50			80				80
Link Distance (m)		146.4			168.4			779.3				347.1
Travel Time (s)		10.5			12.1			35.1				15.6
Confl. Peds. (#/hr)	2		2	2		2	2		2	2		2
Peak Hour Factor	0.80	0.85	0.92	0.85	0.85	0.90	0.90	0.93	0.85	0.85	0.94	0.83
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	2%	1%	0%	0%	1%	0%
Adj. Flow (vph)	211	152	321	158	174	153	342	1028	113	172	976	270
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	473	0	158	174	153	342	1141	0	172	976	270
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0



Lanes, Volumes, Timings

10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

10-12-2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0		5.0	7.0	7.0	6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	9.5	23.0		9.5	22.5	22.5	11.0	23.0		10.5	23.0	23.0
Total Split (s)	14.2	33.6		11.0	30.4	30.4	22.0	41.4		14.0	33.4	33.4
Total Split (%)	14.2%	33.6%		11.0%	30.4%	30.4%	22.0%	41.4%		14.0%	33.4%	33.4%
Maximum Green (s)	9.7	28.6		6.5	25.9	25.9	17.0	36.4		9.5	28.4	28.4
Yellow Time (s)	3.5	4.0		3.5	3.5	3.5	4.0	4.0		3.5	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
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)	4.5	5.0		4.5	4.5	4.5	5.0	5.0		4.5	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		8.0						8.0			8.0	8.0
Pedestrian Calls (#/hr)		5						5			5	5
Act Effct Green (s)	35.4	25.4		29.3	22.8	22.8	50.1	36.6		38.3	28.8	28.8
Actuated g/C Ratio	0.37	0.26		0.30	0.24	0.24	0.52	0.38		0.40	0.30	0.30
v/c Ratio	0.50	0.91		0.79	0.39	0.30	0.91	0.85		0.69	0.92	0.41
Control Delay	25.6	49.5		50.7	33.6	4.9	54.2	35.5		34.5	47.9	5.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	25.6	49.5		50.7	33.6	4.9	54.2	35.5		34.5	47.9	5.6
LOS	C	D		D	C	A	D	D		C	D	A
Approach Delay		42.1			30.1			39.8			38.2	
Approach LOS		D			C			D			D	
Queue Length 50th (m)	28.7	72.2		20.7	29.0	0.0	52.3	112.5		18.2	103.0	0.0
Queue Length 95th (m)	40.4	#113.9		#39.9	45.2	11.6	#106.6	#152.6		#39.0	#145.6	13.7
Internal Link Dist (m)		122.4			144.4			755.3			323.1	
Turn Bay Length (m)				15.0			200.0			200.0		75.0
Base Capacity (vph)	422	576		200	511	556	388	1339		258	1065	663
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	0.82		0.79	0.34	0.28	0.88	0.85		0.67	0.92	0.41

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	96.5
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	38.5
Intersection LOS:	D
Intersection Capacity Utilization:	91.2%
ICU Level of Service:	F

# Lanes, Volumes, Timings

## 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way

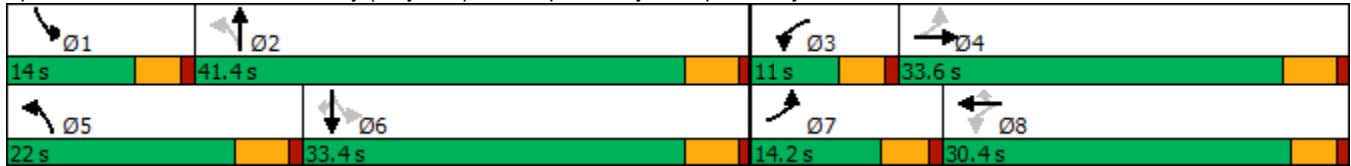
10-12-2021

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way



**Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way/Enterprise Way**

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	TR	L	T	T	R
Maximum Queue (m)	75.8	98.2	22.4	79.7	22.7	72.5	91.5	95.4	35.1	114.9	114.8	82.5
Average Queue (m)	25.7	38.2	19.3	41.0	4.9	36.1	48.3	50.1	15.6	61.9	52.9	4.4
95th Queue (m)	55.0	87.6	26.2	74.0	16.6	59.4	76.4	81.3	30.1	95.3	89.3	34.7
Link Distance (m)	130.4	130.4		154.4	154.4		768.8	768.8		322.6	322.6	
Upstream Blk Time (%)	0	0										
Queuing Penalty (veh)	0	0										
Storage Bay Dist (m)			15.0			200.0			200.0			75.0
Storage Blk Time (%)			32	37							1	0
Queuing Penalty (veh)			48	50							3	0

**Intersection: 29: Bend**

Movement	NB
Directions Served	T
Maximum Queue (m)	68.6
Average Queue (m)	2.3
95th Queue (m)	48.3
Link Distance (m)	322.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Network Summary**

Network wide Queuing Penalty: 101
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## APPENDIX F: 2030 POST DEVELOPMENT – NO ENTERPRISE CONNECTION

Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Enterprise Way

10-06-2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø4
Lane Configurations							
Traffic Volume (vph)	169	295	308	1092	1063	224	
Future Volume (vph)	169	295	308	1092	1063	224	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (m)	0.0	0.0	200.0			75.0	
Storage Lanes	2	0	1			1	
Taper Length (m)	7.5		7.5				
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00	
Ped Bike Factor	0.98					0.99	
Frt	0.909					0.850	
Flt Protected	0.981		0.950				
Satd. Flow (prot)	3225	0	1770	3574	3574	1615	
Flt Permitted	0.981		0.128				
Satd. Flow (perm)	3219	0	238	3574	3574	1591	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	321					270	
Link Speed (k/h)	50			80	80		
Link Distance (m)	146.4			779.3	347.1		
Travel Time (s)	10.5			35.1	15.6		
Confl. Peds. (#/hr)	2	2	2			2	
Peak Hour Factor	0.80	0.92	0.90	0.93	0.94	0.83	
Heavy Vehicles (%)	1%	0%	2%	1%	1%	0%	
Adj. Flow (vph)	211	321	342	1174	1131	270	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	532	0	342	1174	1131	270	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	7.2			7.2	7.2		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15	25			15	
Number of Detectors	1		1	2	2	1	
Detector Template	Left		Left	Thru	Thru	Right	
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0	
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	
Detector 2 Position(m)				9.4	9.4		
Detector 2 Size(m)				0.6	0.6		
Detector 2 Type				Cl+Ex	Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)				0.0	0.0		

Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Enterprise Way

10-06-2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø4
Turn Type	pm+pt		pm+pt	NA	NA	Perm	
Protected Phases	7		5	2	6		4
Permitted Phases	4		2			6	
Detector Phase	7		5	2	6	6	
Switch Phase							
Minimum Initial (s)	5.0		6.0	10.0	10.0	10.0	7.0
Minimum Split (s)	9.5		11.0	23.0	23.0	23.0	23.0
Total Split (s)	23.0		16.0	47.0	31.0	31.0	23.0
Total Split (%)	32.9%		22.9%	67.1%	44.3%	44.3%	33%
Maximum Green (s)	18.5		11.0	42.0	26.0	26.0	18.0
Yellow Time (s)	3.5		4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5		5.0	5.0	5.0	5.0	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	Max	None
Walk Time (s)				7.0	7.0	7.0	7.0
Flash Dont Walk (s)				8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)				5	5	5	5
Act Effct Green (s)	10.3		42.1	42.1	26.3	26.3	
Actuated g/C Ratio	0.17		0.68	0.68	0.42	0.42	
v/c Ratio	0.66		0.80	0.48	0.75	0.32	
Control Delay	13.6		28.7	6.0	19.7	3.2	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	13.6		28.7	6.0	19.7	3.2	
LOS	B		C	A	B	A	
Approach Delay	13.6			11.1	16.5		
Approach LOS	B			B	B		
Queue Length 50th (m)	11.8		21.3	27.0	56.5	0.0	
Queue Length 95th (m)	18.9		#71.0	52.8	92.4	9.9	
Internal Link Dist (m)	122.4			755.3	323.1		
Turn Bay Length (m)			200.0			75.0	
Base Capacity (vph)	1190		434	2428	1517	831	
Starvation Cap Reductn	0		0	0	0	0	
Spillback Cap Reductn	0		0	0	0	0	
Storage Cap Reductn	0		0	0	0	0	
Reduced v/c Ratio	0.45		0.79	0.48	0.75	0.32	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	61.9
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	13.7
Intersection Capacity Utilization:	72.8%
Intersection LOS:	B
ICU Level of Service:	C

Lanes, Volumes, Timings  
 10: Island Hwy (Hwy 19A) & Entreprise Way

10-06-2021

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.























Queue shown is maximum after two cycles.

Splits and Phases: 10: Island Hwy (Hwy 19A) & Entreprise Way



Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

10-06-2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	313	139	448	279	206	70	1157	537	287	1047	18
Future Volume (vph)	39	313	139	448	279	206	70	1157	537	287	1047	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		30.0	75.0		0.0	30.0		85.0	45.0		20.0
Storage Lanes	1		0	1		0	1		1	2		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00		0.98	1.00		0.97
Frt		0.949			0.938				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	3352	0	3433	1757	0	1805	3539	1599	3467	3539	1615
Flt Permitted	0.166			0.177			0.950			0.950		
Satd. Flow (perm)	314	3352	0	639	1757	0	1801	3539	1572	3463	3539	1565
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		67			30				397			155
Link Speed (k/h)		50			50			80				80
Link Distance (m)		403.2			238.5			542.6				779.3
Travel Time (s)		29.0			17.2			24.4				35.1
Confl. Peds. (#/hr)	7		1	1		7	2		2	2		2
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.67	0.88	0.76	0.86	0.86	0.91	0.86	0.96	0.92	0.89	0.95	0.89
Heavy Vehicles (%)	0%	2%	1%	2%	0%	1%	0%	2%	1%	1%	2%	0%
Adj. Flow (vph)	58	356	183	521	324	226	81	1205	584	322	1102	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	539	0	521	550	0	81	1205	584	322	1102	20
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		10.8			10.8			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												



Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

10-06-2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		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		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		6.0	10.0	10.0	6.0	10.0	10.0
Minimum Split (s)	12.0	12.0		26.0	26.0		11.0	23.0	23.0	11.0	18.0	18.0
Total Split (s)	12.0	28.0		26.0	42.0		16.0	47.0	47.0	19.0	50.0	50.0
Total Split (%)	10.0%	23.3%		21.7%	35.0%		13.3%	39.2%	39.2%	15.8%	41.7%	41.7%
Maximum Green (s)	7.0	23.0		21.0	37.0		11.0	42.0	42.0	14.0	45.0	45.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
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)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	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
Recall Mode	None	None		None	None		None	Max	Max	None	Max	Max
Walk Time (s)				5.0	5.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)				16.0	16.0			11.0	11.0		6.0	6.0
Pedestrian Calls (#/hr)				1	1			1	1		1	1
Act Effct Green (s)	30.1	23.1		45.9	36.5		9.6	42.2	42.2	13.5	48.7	48.7
Actuated g/C Ratio	0.26	0.20		0.39	0.31		0.08	0.36	0.36	0.12	0.42	0.42
v/c Ratio	0.34	0.75		0.77	0.96		0.55	0.94	0.71	0.80	0.75	0.03
Control Delay	29.2	46.1		33.9	68.2		66.6	51.8	15.6	66.7	34.7	0.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.2	46.1		33.9	68.2		66.6	51.8	15.6	66.7	34.7	0.1
LOS	C	D		C	E		E	D	B	E	C	A
Approach Delay		44.5			51.5			41.1			41.4	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	8.7	57.5		45.7	129.0		19.5	154.0	39.2	40.6	128.5	0.0
Queue Length 95th (m)	12.9	77.7		56.9	#187.5		34.5	#202.6	86.4	#60.8	158.1	0.0
Internal Link Dist (m)		379.2			214.5			518.6			755.3	
Turn Bay Length (m)	20.0			75.0			30.0		85.0	45.0		20.0
Base Capacity (vph)	170	763		756	580		170	1279	822	417	1478	743
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	0.34	0.71		0.69	0.95		0.48	0.94	0.71	0.77	0.75	0.03

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	116.6
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.96
Intersection Signal Delay:	43.8
Intersection LOS:	D

Lanes, Volumes, Timings  
 17: Island Hwy (Hwy 19A) & Turner Rd

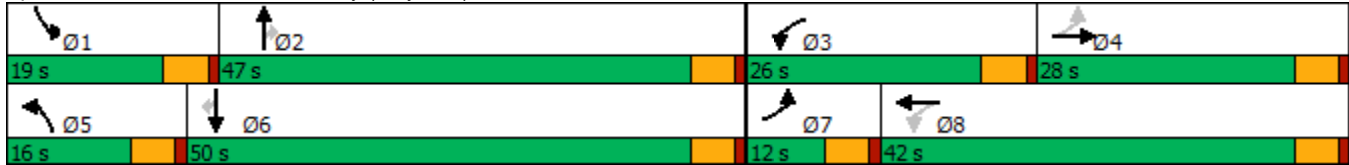
10-06-2021

Intersection Capacity Utilization 90.2% 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: 17: Island Hwy (Hwy 19A) & Turner Rd



Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

10-06-2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 				 			 			 	
Traffic Volume (vph)	613	308	106	125	192	17	109	387	106	50	474	541
Future Volume (vph)	613	308	106	125	192	17	109	387	106	50	474	541
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	65.0		0.0	55.0		0.0	45.0		10.0	45.0		10.0
Storage Lanes	2		1	2		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00	1.00		1.00		0.97	0.99		0.98
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1599	1719	3503	0	1805	3505	1615	1752	3539	1615
Flt Permitted	0.950			0.553			0.950			0.950		
Satd. Flow (perm)	3400	1900	1565	996	3503	0	1798	3505	1559	1741	3539	1581
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164		13				232			277
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		238.5			398.6			321.2			163.3	
Travel Time (s)		17.2			28.7			23.1			11.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.95	0.89	0.90	0.95	0.88	0.72	0.81	0.83	0.74	0.75	0.90	0.95
Heavy Vehicles (%)	2%	0%	1%	5%	1%	4%	0%	3%	0%	3%	2%	0%
Adj. Flow (vph)	645	346	118	132	218	24	135	466	143	67	527	569
Shared Lane Traffic (%)												
Lane Group Flow (vph)	645	346	118	132	242	0	135	466	143	67	527	569
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
18: Uplands Dr & Turner Rd

10-06-2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	pm+pt	NA		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		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		6.0	7.0	7.0	6.0	7.0	7.0
Minimum Split (s)	11.0	20.0	20.0	11.0	20.0		11.0	21.0	21.0	11.0	21.0	21.0
Total Split (s)	21.0	29.0	29.0	12.0	20.0		14.0	27.0	27.0	12.0	25.0	25.0
Total Split (%)	26.3%	36.3%	36.3%	15.0%	25.0%		17.5%	33.8%	33.8%	15.0%	31.3%	31.3%
Maximum Green (s)	16.0	24.0	24.0	7.0	15.0		9.0	22.0	22.0	7.0	20.0	20.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		8.0	8.0		8.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)		5	5		5			5	5		5	5
Act Effct Green (s)	16.0	23.0	23.0	18.4	11.5		8.6	24.1	24.1	6.8	20.0	20.0
Actuated g/C Ratio	0.21	0.30	0.30	0.24	0.15		0.11	0.32	0.32	0.09	0.26	0.26
v/c Ratio	0.89	0.60	0.20	0.43	0.45		0.66	0.42	0.22	0.43	0.57	0.92
Control Delay	47.1	29.1	2.4	19.8	30.6		50.0	23.3	1.2	42.6	27.6	37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	29.1	2.4	19.8	30.6		50.0	23.3	1.2	42.6	27.6	37.3
LOS	D	C	A	B	C		D	C	A	D	C	D
Approach Delay		36.8			26.8			23.9			33.2	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	48.3	47.0	0.0	12.1	16.8		19.5	29.6	0.0	9.6	35.6	44.2
Queue Length 95th (m)	#85.3	73.5	5.8	22.8	26.9		#37.7	42.5	0.0	18.9	55.3	#115.6
Internal Link Dist (m)		214.5			374.6			297.2			139.3	
Turn Bay Length (m)	65.0			55.0			45.0		10.0	45.0		10.0
Base Capacity (vph)	721	635	632	308	700		213	1110	652	161	929	619
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.54	0.19	0.43	0.35		0.63	0.42	0.22	0.42	0.57	0.92

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 76.2

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 31.6

Intersection LOS: C

Lanes, Volumes, Timings  
 18: Uplands Dr & Turner Rd

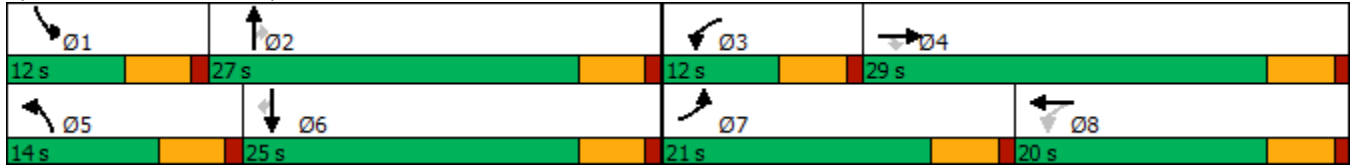
10-06-2021

Intersection Capacity Utilization 62.5% ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 18: Uplands Dr & Turner Rd



Lanes, Volumes, Timings  
21: Uplands Dr & Parkwood Dr

10-06-2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	44	0	415	18	0	24	390	523	37	18	515	48
Future Volume (vph)	44	0	415	18	0	24	390	523	37	18	515	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	0.0		0.0	35.0		0.0	35.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. 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
Ped Bike Factor		0.98			0.99			1.00		0.99	1.00	
Frt		0.878			0.926			0.986			0.985	
Flt Protected		0.995			0.978		0.950			0.950		
Satd. Flow (prot)	0	1624	0	0	1695	0	1805	1834	0	1805	1848	0
Flt Permitted		0.958			0.481		0.126			0.419		
Satd. Flow (perm)	0	1563	0	0	834	0	239	1834	0	792	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		518			89			14				8
Link Speed (k/h)		50			50			50				50
Link Distance (m)		113.5			265.2			224.6				242.9
Travel Time (s)		8.2			19.1			16.2				17.5
Confl. Peds. (#/hr)	1						1	5		5	5	5
Confl. Bikes (#/hr)			2				2		2			2
Peak Hour Factor	0.80	0.80	0.80	0.70	0.75	0.75	0.75	0.89	0.63	0.60	0.92	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	1%	0%
Parking (#/hr)			0									
Adj. Flow (vph)	55	0	519	26	0	32	520	588	59	30	560	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	574	0	0	58	0	520	647	0	30	620	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings  
21: Uplands Dr & Parkwood Dr

10-06-2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm		NA
Protected Phases		4			8		5	2				6
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6		6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		5.0	10.0		10.0		10.0
Minimum Split (s)	20.0	20.0		20.0	20.0		9.5	20.0		20.0		20.0
Total Split (s)	20.0	20.0		20.0	20.0		24.0	60.0		36.0		36.0
Total Split (%)	25.0%	25.0%		25.0%	25.0%		30.0%	75.0%		45.0%		45.0%
Maximum Green (s)	15.0	15.0		15.0	15.0		19.5	55.0		31.0		31.0
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	4.0		4.0		4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0		1.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		5.0			5.0		4.5	5.0		5.0		5.0
Lead/Lag							Lead			Lag		Lag
Lead-Lag Optimize?							Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0		3.0
Recall Mode	None	None		None	None		None	Min		Min		Min
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0		7.0
Flash Dont Walk (s)	8.0	8.0		8.0	8.0			8.0		8.0		8.0
Pedestrian Calls (#/hr)	5	5		5	5			5		5		5
Act Effct Green (s)		10.7			10.7		52.0	51.5		27.2		27.2
Actuated g/C Ratio		0.15			0.15		0.72	0.71		0.38		0.38
v/c Ratio		0.85			0.29		0.87	0.49		0.10		0.89
Control Delay		18.9			6.9		35.0	6.5		16.3		38.0
Queue Delay		0.0			0.0		0.0	0.0		0.0		0.0
Total Delay		18.9			6.9		35.0	6.5		16.3		38.0
LOS		B			A		D	A		B		D
Approach Delay		18.9			6.9			19.2				37.0
Approach LOS		B			A			B				D
Queue Length 50th (m)		7.6			0.0		54.6	31.5		2.7		78.9
Queue Length 95th (m)		22.8			2.4		#84.3	62.3		5.5		#150.5
Internal Link Dist (m)		89.5			241.2			200.6				218.9
Turn Bay Length (m)							35.0			35.0		
Base Capacity (vph)		737			245		600	1447		344		807
Starvation Cap Reductn		0			0		0	0		0		0
Spillback Cap Reductn		0			0		0	0		0		0
Storage Cap Reductn		0			0		0	0		0		0
Reduced v/c Ratio		0.78			0.24		0.87	0.45		0.09		0.77

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	72.3
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.89

Lanes, Volumes, Timings  
 21: Uplands Dr & Parkwood Dr

10-06-2021

Intersection Signal Delay: 23.6	Intersection LOS: C
Intersection Capacity Utilization 92.5%	ICU Level of Service F
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 21: Uplands Dr & Parkwood Dr





Intersection: 1: Uplands Dr & Hammond Bay Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B28	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	T	L	T
Maximum Queue (m)	32.4	92.8	102.1	41.9	55.6	57.2	26.0	49.2	33.9	52.9	36.9	58.0
Average Queue (m)	16.8	49.3	57.7	18.0	31.2	34.1	21.9	32.9	22.1	8.8	16.8	30.9
95th Queue (m)	34.5	81.5	88.7	30.5	48.9	54.0	28.8	54.7	33.7	37.7	28.8	51.4
Link Distance (m)		189.6	189.6		478.4	478.4		26.1	26.1	76.5		301.2
Upstream Blk Time (%)							6	13	4	0		
Queuing Penalty (veh)							0	39	12	2		
Storage Bay Dist (m)	25.0			50.0			40.0				95.0	
Storage Blk Time (%)	0	27		0	0		6	13				
Queuing Penalty (veh)	1	26		0	1		8	28				

Intersection: 1: Uplands Dr & Hammond Bay Rd

Movement	SB
Directions Served	R
Maximum Queue (m)	27.0
Average Queue (m)	11.3
95th Queue (m)	21.6
Link Distance (m)	301.2
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Calinda & Hammond Bay Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	22.3	64.4	74.8	22.4	77.3	74.0	22.1	53.2	45.3	30.0
Average Queue (m)	8.5	35.9	44.2	17.1	36.3	37.1	14.9	15.0	25.1	11.8
95th Queue (m)	20.2	55.6	66.1	26.0	63.4	62.1	22.1	33.9	41.5	23.0
Link Distance (m)		76.9	76.9		189.6	189.6		160.2		205.1
Upstream Blk Time (%)			0							
Queuing Penalty (veh)			0							
Storage Bay Dist (m)	15.0			15.0			15.0		40.0	
Storage Blk Time (%)	1	31		12	22		15	5	2	0
Queuing Penalty (veh)	5	11		41	29		21	7	1	0

Intersection: 4: Marlin Way & Hammond Bay Rd

Movement	EB	WB	WB	WB	NB	NB
Directions Served	TR	L	T	T	L	R
Maximum Queue (m)	10.3	19.0	37.8	34.8	19.2	28.3
Average Queue (m)	0.4	5.4	5.1	4.7	7.2	11.5
95th Queue (m)	4.4	14.4	29.9	30.4	16.1	21.3
Link Distance (m)	72.0		76.9	76.9		172.7
Upstream Blk Time (%)			1	1		
Queuing Penalty (veh)			3	3		
Storage Bay Dist (m)		15.0			15.0	
Storage Blk Time (%)		0	4		4	4
Queuing Penalty (veh)		1	1		4	1

Intersection: 6: Applecross Rd & Hammond Bay Rd

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	TR	T	T	R	R
Maximum Queue (m)	36.8	58.7	38.1	75.1	78.7	22.5	83.1
Average Queue (m)	19.3	4.2	1.9	33.1	28.5	8.8	56.1
95th Queue (m)	35.8	30.0	23.3	77.5	73.2	24.8	104.6
Link Distance (m)		94.4	94.4	72.0	72.0		73.6
Upstream Blk Time (%)		0	0	5	4		55
Queuing Penalty (veh)		0	0	21	16		0
Storage Bay Dist (m)	30.0					15.0	
Storage Blk Time (%)	4	0			16	0	
Queuing Penalty (veh)	14	1			24	1	

Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	LT	T	R	L	LT	T	R	L	L	T	T
Maximum Queue (m)	72.2	107.3	99.6	47.5	47.4	108.9	121.4	67.5	48.9	49.4	86.6	96.4
Average Queue (m)	32.4	52.7	49.9	21.6	45.7	96.3	104.5	24.4	24.1	20.5	52.8	53.5
95th Queue (m)	60.3	82.6	81.5	60.3	53.9	114.2	146.3	71.2	42.1	41.1	81.1	83.2
Link Distance (m)		245.7	245.7			94.4	94.4				89.9	89.9
Upstream Blk Time (%)						35	34				0	0
Queuing Penalty (veh)						201	194				0	2
Storage Bay Dist (m)	65.0			40.0	40.0			60.0	115.0	115.0		
Storage Blk Time (%)	0	3	19	1	6	65	10	0			0	2
Queuing Penalty (veh)	0	3	33	2	27	124	28	0			0	5

Intersection: 9: Island Hwy (Hwy 19A) & Aulds Rd/Hammond Bay Rd

Movement	NB	B29	SB	SB	SB	SB
Directions Served	R	T	L	T	T	R
Maximum Queue (m)	62.0	72.4	118.2	167.4	161.2	8.8
Average Queue (m)	7.4	4.8	55.5	56.3	57.6	0.3
95th Queue (m)	44.5	71.8	101.1	138.8	136.6	6.2
Link Distance (m)		320.8		841.5	841.5	841.5
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)	70.0		135.0			
Storage Blk Time (%)	0		0	3		
Queuing Penalty (veh)	0		0	9		

Intersection: 10: Island Hwy (Hwy 19A) & Enterprise Way

Movement	EB	EB	NB	NB	NB	SB	SB	SB	B29	B29	B29
Directions Served	L	LR	L	T	T	T	T	R	T	T	
Maximum Queue (m)	77.6	84.0	90.4	232.6	366.3	239.8	239.5	65.7	73.8	77.3	46.1
Average Queue (m)	24.3	20.9	36.1	25.0	35.3	91.2	87.1	14.2	10.9	12.4	6.2
95th Queue (m)	69.5	80.4	69.1	135.2	180.6	258.7	258.9	65.4	62.8	68.8	46.5
Link Distance (m)	128.4	128.4		753.2	753.2	320.8	320.8		89.9	89.9	89.9
Upstream Blk Time (%)	3	5			0	11	11		5	6	1
Queuing Penalty (veh)	0	0			0	71	73		22	27	3
Storage Bay Dist (m)			200.0					75.0			
Storage Blk Time (%)				0			15	0			
Queuing Penalty (veh)				1			33	0			

Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	L	T	R	L	T	T	T	R	L
Maximum Queue (m)	37.0	90.7	137.4	231.3	182.9	37.5	43.7	125.0	128.9	126.8	124.9	284.2
Average Queue (m)	9.0	43.0	112.0	144.5	60.6	14.8	14.6	87.7	89.0	79.5	27.8	254.5
95th Queue (m)	32.7	89.2	158.7	254.3	187.8	41.6	32.8	119.0	119.7	111.6	102.9	321.7
Link Distance (m)		421.4		267.3	267.3			816.0	816.0	816.0		
Upstream Blk Time (%)				2	0							
Queuing Penalty (veh)				10	3							
Storage Bay Dist (m)	40.0		130.0			30.0	190.0				150.0	280.0
Storage Blk Time (%)	0	25	6	18	5	1					0	48
Queuing Penalty (veh)	0	5	23	70	16	2					0	263

Intersection: 12: Nanaimo Pkwy (Hwy 19) & Aulds Rd

Movement	SB	SB
Directions Served	T	T
Maximum Queue (m)	426.6	416.9
Average Queue (m)	289.1	272.2
95th Queue (m)	571.8	553.6
Link Distance (m)	894.3	894.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)	1	0
Queuing Penalty (veh)	4	0

Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	TR	L	T	T	R	L	L
Maximum Queue (m)	27.4	201.6	195.8	65.4	88.0	163.4	37.3	242.2	244.8	92.5	48.7	52.4
Average Queue (m)	12.4	119.4	95.2	31.3	37.7	69.7	18.5	140.9	139.4	66.4	47.3	52.0
95th Queue (m)	31.9	241.6	231.1	52.2	65.0	124.9	41.0	239.7	246.3	129.5	50.5	53.4
Link Distance (m)		380.2	380.2		203.5	203.5		518.4	518.4			
Upstream Blk Time (%)						0						
Queuing Penalty (veh)						0						
Storage Bay Dist (m)	20.0			75.0			30.0			85.0	45.0	45.0
Storage Blk Time (%)	1	78			0		4	54	19	1	83	71
Queuing Penalty (veh)	1	31			0		23	38	105	4	432	371

Intersection: 17: Island Hwy (Hwy 19A) & Turner Rd

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (m)	756.2	775.6	27.5
Average Queue (m)	462.4	452.4	4.6
95th Queue (m)	823.2	851.7	21.3
Link Distance (m)	753.2	753.2	
Upstream Blk Time (%)	8	15	
Queuing Penalty (veh)	54	105	
Storage Bay Dist (m)			20.0
Storage Blk Time (%)	17	40	0
Queuing Penalty (veh)	48	7	0

Intersection: 18: Uplands Dr & Turner Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	TR	L	T	T	R	L
Maximum Queue (m)	68.7	72.4	220.6	239.0	43.0	39.6	34.7	45.3	71.0	60.9	16.7	47.6
Average Queue (m)	67.1	70.8	164.0	128.3	18.8	16.0	18.1	22.2	37.3	18.0	9.8	12.7
95th Queue (m)	73.8	79.4	265.4	304.0	33.0	30.2	30.6	40.6	61.8	48.0	17.6	28.4
Link Distance (m)			203.5	203.5			382.2		305.5	305.5		
Upstream Blk Time (%)			13	13								
Queuing Penalty (veh)			71	73								
Storage Bay Dist (m)	65.0	65.0			55.0	55.0		45.0			10.0	45.0
Storage Blk Time (%)	39	44	2			0		1	4	5	1	0
Queuing Penalty (veh)	120	136	12			0		2	4	5	1	0

Intersection: 18: Uplands Dr & Turner Rd

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (m)	68.0	110.2	17.5
Average Queue (m)	36.1	58.0	16.9
95th Queue (m)	56.4	91.7	18.6
Link Distance (m)	139.6	139.6	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			10.0
Storage Blk Time (%)	3	47	15
Queuing Penalty (veh)	1	255	35

Intersection: 21: Uplands Dr & Parkwood Dr

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (m)	107.9	18.0	42.4	110.0	42.2	125.3
Average Queue (m)	60.5	7.6	35.0	42.6	6.4	61.7
95th Queue (m)	104.4	15.9	48.5	85.1	24.9	102.8
Link Distance (m)	103.3	254.6		206.1		227.2
Upstream Blk Time (%)	8					
Queuing Penalty (veh)	0					
Storage Bay Dist (m)			35.0		35.0	
Storage Blk Time (%)			10	4		28
Queuing Penalty (veh)			55	17		5

Intersection: 31: Uplands Dr & North Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	21.1	42.6
Average Queue (m)	9.2	4.6
95th Queue (m)	17.3	21.1
Link Distance (m)	97.8	227.2
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 33: Uplands Dr & South Access

Movement	EB	NB	B27
Directions Served	LR	LT	T
Maximum Queue (m)	17.3	86.8	87.9
Average Queue (m)	7.6	9.3	4.7
95th Queue (m)	15.6	42.4	46.7
Link Distance (m)	114.7	199.4	139.6
Upstream Blk Time (%)			0
Queuing Penalty (veh)			1
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 37: Metral Dr & Aulds Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	TR	L	LT	TR	L	LT
Maximum Queue (m)	62.3	116.1	123.2	42.5	88.4	185.4	184.4	52.4	86.8	69.9	41.8	65.4
Average Queue (m)	39.2	54.7	61.4	36.8	42.6	56.9	55.8	36.0	41.3	25.0	12.1	32.4
95th Queue (m)	64.3	96.9	110.2	51.9	73.2	117.8	113.3	54.8	74.2	55.8	29.8	53.2
Link Distance (m)		267.3	267.3			245.7	245.7		530.9	530.9		104.8
Upstream Blk Time (%)						0	0					
Queuing Penalty (veh)						0	0					
Storage Bay Dist (m)	55.0			35.0	95.0			45.0			40.0	
Storage Blk Time (%)	1	7	26	3		1		4	5		0	5
Queuing Penalty (veh)	4	17	94	9		3		10	11		0	3

Intersection: 37: Metral Dr & Aulds Rd

Movement	SB
Directions Served	TR
Maximum Queue (m)	66.6
Average Queue (m)	28.0
95th Queue (m)	50.3
Link Distance (m)	104.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 3741
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## APPENDIX G: POST DEVELOPMENT - UPLAND DRIVE ACCESSES AFTER PARKWOOD RIGHT IN / OUT

**Intersection: 21: Uplands Dr & Parkwood Dr**

Movement	EB	WB	SB
Directions Served	R	LTR	L
Maximum Queue (m)	11.1	15.8	8.9
Average Queue (m)	5.8	7.5	0.6
95th Queue (m)	13.0	15.0	4.2
Link Distance (m)	103.3	254.5	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			35.0
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 31: Uplands Dr & North Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	15.7	21.0
Average Queue (m)	7.6	2.6
95th Queue (m)	14.5	11.8
Link Distance (m)	97.7	227.2
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 33: Uplands Dr & South Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	9.3	16.4
Average Queue (m)	6.0	4.3
95th Queue (m)	12.7	14.0
Link Distance (m)	116.5	199.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 0
---------------------------------

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↔			↘		↖	↘	
Traffic Vol, veh/h	0	0	29	28	0	19	0	266	8	9	288	12
Future Vol, veh/h	0	0	29	28	0	19	0	266	8	9	288	12
Conflicting Peds, #/hr	1	0	0	0	0	1	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	80	85	85	80	85	75	91	60	75	85	60
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	34	33	0	22	0	292	13	12	339	20

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	-	-	354	694	692	305	-	0	0	310	0	0
Stage 1	-	-	-	304	304	-	-	-	-	-	-	-
Stage 2	-	-	-	390	388	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	7.1	6.5	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	694	360	370	740	0	-	-	1262	-	-
Stage 1	0	0	-	710	667	-	0	-	-	-	-	-
Stage 2	0	0	-	638	612	-	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	691	338	363	736	-	-	-	1257	-	-
Mov Cap-2 Maneuver	-	-	-	338	363	-	-	-	-	-	-	-
Stage 1	-	-	-	710	664	-	-	-	-	-	-	-
Stage 2	-	-	-	601	603	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	10.5		14.5		0			0.3		
HCM LOS	B		B							

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	691	433	1257	-	-
HCM Lane V/C Ratio	-	-	0.049	0.128	0.01	-	-
HCM Control Delay (s)	-	-	10.5	14.5	7.9	-	-
HCM Lane LOS	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.4	0	-	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	21	26	24	271	283	24
Future Vol, veh/h	21	26	24	271	283	24
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	91	85	60
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	25	31	32	298	333	40

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	720	358	378	0	-	0
Stage 1	358	-	-	-	-	-
Stage 2	362	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	398	691	1192	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	709	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	382	688	1187	-	-	-
Mov Cap-2 Maneuver	382	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	706	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1187	-	507	-	-
HCM Lane V/C Ratio	0.027	-	0.109	-	-
HCM Control Delay (s)	8.1	0	13	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

HCM 6th TWSC  
33: Uplands Dr & South Access

11-15-2021

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	8	26	36	274	345	5
Future Vol, veh/h	8	26	36	274	345	5
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	91	85	60
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	9	31	48	301	406	8

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	812	415	419	0	0
Stage 1	415	-	-	-	-
Stage 2	397	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	351	642	1151	-	-
Stage 1	671	-	-	-	-
Stage 2	683	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	331	639	1146	-	-
Mov Cap-2 Maneuver	331	-	-	-	-
Stage 1	635	-	-	-	-
Stage 2	680	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1146	-	524	-	-
HCM Lane V/C Ratio	0.042	-	0.076	-	-
HCM Control Delay (s)	8.3	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

**Intersection: 21: Uplands Dr & Parkwood Dr**

Movement	EB	WB	SB
Directions Served	R	LTR	L
Maximum Queue (m)	11.9	16.8	10.3
Average Queue (m)	3.2	7.2	2.2
95th Queue (m)	10.4	15.1	8.7
Link Distance (m)	103.3	254.5	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			35.0
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 31: Uplands Dr & North Access**

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	23.6	39.1	4.5
Average Queue (m)	11.5	6.6	0.2
95th Queue (m)	19.4	23.2	2.7
Link Distance (m)	97.7	227.2	76.5
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 33: Uplands Dr & South Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	18.3	25.9
Average Queue (m)	8.9	5.7
95th Queue (m)	15.4	18.2
Link Distance (m)	116.5	199.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 0

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↔			↖		↗	↖	
Traffic Vol, veh/h	0	0	13	16	0	21	0	473	33	16	459	38
Future Vol, veh/h	0	0	13	16	0	21	0	473	33	16	459	38
Conflicting Peds, #/hr	1	0	0	0	0	1	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	70	75	75	75	89	63	60	92	80
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	0	0	16	23	0	28	0	531	52	27	499	48

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	-	-	528	1147	1168	563	-	0	0	588	0	0
Stage 1	-	-	-	562	562	-	-	-	-	-	-	-
Stage 2	-	-	-	585	606	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	7.1	6.5	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	554	178	195	530	0	-	-	997	-	-
Stage 1	0	0	-	515	513	-	0	-	-	-	-	-
Stage 2	0	0	-	501	490	-	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	552	168	188	527	-	-	-	993	-	-
Mov Cap-2 Maneuver	-	-	-	168	188	-	-	-	-	-	-	-
Stage 1	-	-	-	515	511	-	-	-	-	-	-	-
Stage 2	-	-	-	473	475	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Control Delay, s	11.7		21.5			0			0.4		
HCM LOS	B		C								

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	552	269	993	-	-
HCM Lane V/C Ratio	-	-	0.029	0.189	0.027	-	-
HCM Control Delay (s)	-	-	11.7	21.5	8.7	-	-
HCM Lane LOS	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.7	0.1	-	-

HCM 6th TWSC  
31: Uplands Dr & North Access

11-15-2021

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	46	43	39	455	470	67
Future Vol, veh/h	46	43	39	455	470	67
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	89	92	85
Heavy Vehicles, %	0	0	0	2	1	0
Mvmt Flow	54	51	52	511	511	79

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1171	556	595	0	-	0
Stage 1	556	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	215	534	991	-	-	-
Stage 1	578	-	-	-	-	-
Stage 2	543	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	198	532	987	-	-	-
Mov Cap-2 Maneuver	198	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.9	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	987	-	284	-	-
HCM Lane V/C Ratio	0.053	-	0.369	-	-
HCM Control Delay (s)	8.8	0	24.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.6	-	-



HCM 6th TWSC  
33: Uplands Dr & South Access

11-15-2021

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	24	34	45	449	488	5
Future Vol, veh/h	24	34	45	449	488	5
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	89	92	80
Heavy Vehicles, %	0	0	0	2	1	0
Mvmt Flow	28	40	60	504	530	6

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1162	538	541	0	-	0
Stage 1	538	-	-	-	-	-
Stage 2	624	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	218	547	1038	-	-	-
Stage 1	589	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	199	545	1034	-	-	-
Mov Cap-2 Maneuver	199	-	-	-	-	-
Stage 1	539	-	-	-	-	-
Stage 2	536	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.4	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1034	-	317	-	-
HCM Lane V/C Ratio	0.058	-	0.215	-	-
HCM Control Delay (s)	8.7	0	19.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.8	-	-

**Intersection: 21: Uplands Dr & Parkwood Dr**

Movement	EB	WB	SB
Directions Served	R	LTR	L
Maximum Queue (m)	13.2	16.9	5.2
Average Queue (m)	6.0	8.2	0.3
95th Queue (m)	13.4	14.8	3.2
Link Distance (m)	103.3	254.5	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			35.0
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 31: Uplands Dr & North Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	16.7	13.3
Average Queue (m)	7.4	2.3
95th Queue (m)	14.4	9.8
Link Distance (m)	97.7	227.2
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 33: Uplands Dr & South Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	11.8	18.8
Average Queue (m)	6.2	4.1
95th Queue (m)	13.1	14.2
Link Distance (m)	116.5	199.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 0

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↕			↘		↗	↘	
Traffic Vol, veh/h	0	0	29	32	0	21	0	302	9	10	343	12
Future Vol, veh/h	0	0	29	32	0	21	0	302	9	10	343	12
Conflicting Peds, #/hr	1	0	0	0	0	1	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	80	85	85	80	85	75	91	60	75	85	60
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	34	38	0	25	0	332	15	13	404	20

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	-	-	419	802	800	346	-	0	0	352	0	0
Stage 1	-	-	-	345	345	-	-	-	-	-	-	-
Stage 2	-	-	-	457	455	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	7.1	6.5	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	638	305	320	702	0	-	-	1218	-	-
Stage 1	0	0	-	675	640	-	0	-	-	-	-	-
Stage 2	0	0	-	587	572	-	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	635	285	314	698	-	-	-	1213	-	-
Mov Cap-2 Maneuver	-	-	-	285	314	-	-	-	-	-	-	-
Stage 1	-	-	-	675	637	-	-	-	-	-	-	-
Stage 2	-	-	-	550	563	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Control Delay, s	11		16.6			0			0.2		
HCM LOS	B		C								

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	635	372	1213	-	-
HCM Lane V/C Ratio	-	-	0.054	0.168	0.011	-	-
HCM Control Delay (s)	-	-	11	16.6	8	-	-
HCM Lane LOS	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.6	0	-	-

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	21	26	24	310	339	24
Future Vol, veh/h	21	26	24	310	339	24
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	91	85	60
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	25	31	32	341	399	40

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	829	424	444	0	-	0
Stage 1	424	-	-	-	-	-
Stage 2	405	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	343	634	1127	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	328	631	1122	-	-	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	675	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1122	-	447	-	-
HCM Lane V/C Ratio	0.029	-	0.124	-	-
HCM Control Delay (s)	8.3	0	14.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	8	26	36	311	403	5
Future Vol, veh/h	8	26	36	311	403	5
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	91	85	60
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	9	31	48	342	474	8

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	921	483	487	0	0
Stage 1	483	-	-	-	-
Stage 2	438	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	303	588	1086	-	-
Stage 1	625	-	-	-	-
Stage 2	655	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	284	586	1081	-	-
Mov Cap-2 Maneuver	284	-	-	-	-
Stage 1	588	-	-	-	-
Stage 2	652	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1081	-	469	-	-
HCM Lane V/C Ratio	0.044	-	0.085	-	-
HCM Control Delay (s)	8.5	0	13.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

**Intersection: 21: Uplands Dr & Parkwood Dr**

Movement	EB	WB	SB	SB
Directions Served	R	LTR	L	TR
Maximum Queue (m)	11.8	15.3	10.3	1.8
Average Queue (m)	3.2	7.0	2.7	0.1
95th Queue (m)	10.4	14.6	9.3	1.2
Link Distance (m)	103.3	254.5		227.2
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			35.0	
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 31: Uplands Dr & North Access**

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (m)	32.1	58.0	7.1
Average Queue (m)	12.4	9.7	0.2
95th Queue (m)	23.1	32.1	2.8
Link Distance (m)	97.7	227.2	76.5
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 33: Uplands Dr & South Access**

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (m)	18.5	26.0
Average Queue (m)	8.7	6.7
95th Queue (m)	15.4	20.6
Link Distance (m)	116.5	199.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Network Summary**

Network wide Queuing Penalty: 0
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Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↔			↘		↖	↘	
Traffic Vol, veh/h	0	0	13	18	0	24	0	547	37	18	525	38
Future Vol, veh/h	0	0	13	18	0	24	0	547	37	18	525	38
Conflicting Peds, #/hr	1	0	0	0	0	1	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	350	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	70	75	75	75	89	63	60	92	80
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	0	0	16	26	0	32	0	615	59	30	571	48

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	-	-	600	1313	1334	651	-	0	0	679	0	0
Stage 1	-	-	-	650	650	-	-	-	-	-	-	-
Stage 2	-	-	-	663	684	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	7.1	6.5	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	505	137	155	472	0	-	-	923	-	-
Stage 1	0	0	-	461	468	-	0	-	-	-	-	-
Stage 2	0	0	-	454	452	-	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	503	129	149	470	-	-	-	919	-	-
Mov Cap-2 Maneuver	-	-	-	129	149	-	-	-	-	-	-	-
Stage 1	-	-	-	461	466	-	-	-	-	-	-	-
Stage 2	-	-	-	425	435	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Control Delay, s	12.4		27.6			0			0.4		
HCM LOS	B		D								

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	503	216	919	-	-
HCM Lane V/C Ratio	-	-	0.032	0.267	0.033	-	-
HCM Control Delay (s)	-	-	12.4	27.6	9	-	-
HCM Lane LOS	-	-	B	D	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	1	0.1	-	-

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	46	43	39	531	538	67
Future Vol, veh/h	46	43	39	531	538	67
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	89	92	85
Heavy Vehicles, %	0	0	0	2	1	0
Mvmt Flow	54	51	52	597	585	79

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1331	630	669	0	-	0
Stage 1	630	-	-	-	-	-
Stage 2	701	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	172	485	931	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	156	483	927	-	-	-
Mov Cap-2 Maneuver	156	-	-	-	-	-
Stage 1	488	-	-	-	-	-
Stage 2	494	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.7	0.7	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	927	-	232	-	-
HCM Lane V/C Ratio	0.056	-	0.451	-	-
HCM Control Delay (s)	9.1	0	32.7	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.2	-	2.2	-	-



Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	24	34	45	560	556	5
Future Vol, veh/h	24	34	45	560	556	5
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	75	89	92	80
Heavy Vehicles, %	0	0	0	2	1	0
Mvmt Flow	28	40	60	629	604	6

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1361	612	615	0	0
Stage 1	612	-	-	-	-
Stage 2	749	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	165	497	974	-	-
Stage 1	545	-	-	-	-
Stage 2	471	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	148	495	970	-	-
Mov Cap-2 Maneuver	148	-	-	-	-
Stage 1	491	-	-	-	-
Stage 2	469	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.6	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	970	-	251	-	-
HCM Lane V/C Ratio	0.062	-	0.272	-	-
HCM Control Delay (s)	9	0	24.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-