

MEMORANDUM

Date: November 13, 2024
To: Kelsey Tyerman, Starlight Developments
From: MJ Oh and Andy Kading, P.Eng., P.E.
Our File No: 3734.B01
Subject: 7480 Lochside Drive TIA Addendum Number 2

1.0 INTRODUCTION

WATT Consulting Group is retained by Starlight Developments to provide an update to the previously submitted Traffic Impact Assessment (TIA) and addendum memo for the proposed development at 7480 Lochside Drive.

This memo reflects recent changes to the site plan including the removal of the proposed townhomes (12 Units). The memo provides a summary of the traffic analysis results for the short and long terms based on the recently revised site plan. The analysis also includes a concurrent development site (Marigold Phase 2: Hackett Crescent 235 Units) to identify the ultimate traffic impacts to the Highway 17 / Mt Newton Cross Road intersection and the need for any changes in mitigation. Additionally, a study of travel times along Mt. Newton Cross Road is undertaken.

See **Figure 1** for the study location and site plan.

1.1 Scope of Work

The District of Central Saanich has requested additional information and analysis on the anticipated queues and wait times for motorists as a result of the development. This addendum to the original document has the following scope of work:

- Generate traffic for the proposed developments based on the recent site information using trip generation rates from the *ITE Trip Generation Manual* (11th ed).

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- Adjust TIA analysis to remove the townhomes and rerun the results of the post development scenarios. Only queuing and related metrics will be examined.
- Build four analysis scenarios and review the analysis results including (1) background conditions, (2) with Hackett site trips, (3) with 7840 Lochside development trips, and (4) with combined two site trips for the short / long term each.
- Conduct travel time measures & on-site observation during peak time periods at the Highway 17 / Mt Newton Cross Road intersection.
- Discuss the results of the analysis and mitigation measures, and summarize the findings and recommendations.



Figure 1: Study Location and Site Plan

2.0 TRAFFIC VOLUMES

Traffic count data were taken from the previous study (7840 Lochside Drive TIA, 2023), which used 2021 collected counts as the base traffic volumes for the analysis. The opening day is assumed to be in 2026. The analysis used a 2% annual growth rate to obtain all future background volumes. 2026 background volumes also include the Marigold Phase 1 traffic which was estimated at 45 trips for the PM peak hour. See **Figure 2** for the 2026 / 2036 background volumes for the opening day / 10-year horizon post development analysis.

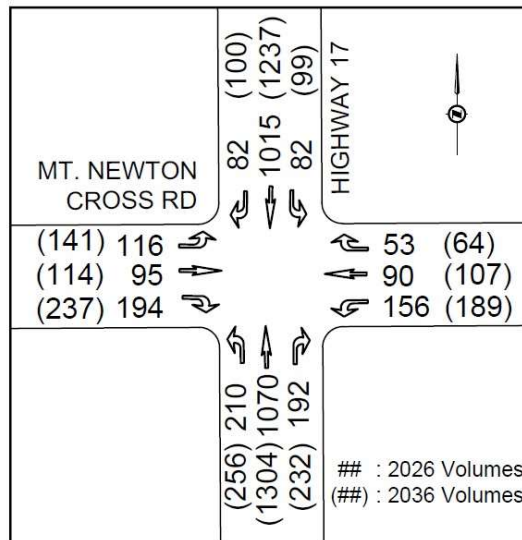


Figure 2: 2026 Opening Day / 2036 10-Year Horizon Background Volumes – PM Peak Hour

3.0 TRIP GENERATION AND ASSIGNMENT

The trip generation was based on the trip rates provided by the ITE Trip Generation Manual (11th Edition). The trip generation were conducted for the two sites: (1) Hackett Site (235 multi-family units) and (2) the proposed development: 7840 Lochside Drive site. From the previously proposed site plan (780 Lochside Drive).

12 townhomes have been removed from the 7840 Lochside Drive site and the development is currently proposing a total of 131 multi-family units and a 2,000 sq.ft of retail.

Based on the updated land use scenarios, the Hackett Site (considered a concurrent development) was expected to generate 92 trips during the PM peak hour and the 7840 Lochside Drive development to generate 64 trips. Estimated site trips are summarized in **Table 1**.

Table 1: Estimated Site Trips – PM Peak Hour

Land Use	ITE Code	Size	Trip Rate	% In	% Out	Trips In	Trips Out	Total Trips
Hackett Site (Concurrent Development)								
Residential – Multi-Family (Mid-Rise)	221	235 units	0.39 / unit	61%	39%	56	36	92
Hackett Site Trips Total (PM Peak):						56	36	92
Proposed Development - 7840 Lochside Drive								
Residential – Multi-Family (Mid-Rise)	221	131 units	0.39 / unit	61%	39%	31	20	51
Commercial – Retail Plaza	822	2000 sq. ft.	6.59 *	50%	50%	7	6	13
7840 Lochside Trips Total (PM Peak):						38	26	64

*Note: Retail trip rate is per 1000 sq.ft.

The trips generated by the proposed development and concurrent site were assigned to the local road network using the same trip assignment used in the 2023 TIA, which was based on existing traffic patterns in the area. See **Figure 3** for the trip assignments.

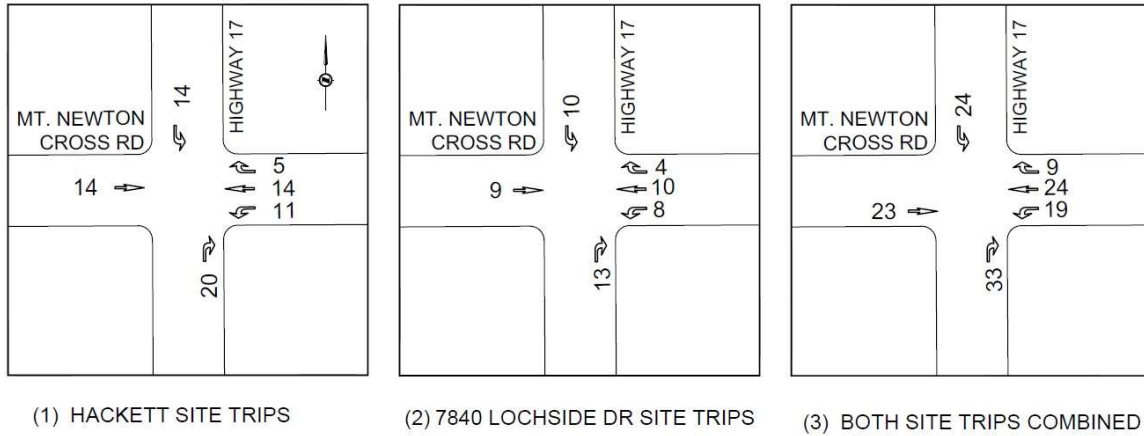


Figure 3: Trip Assignments with Three Development Scenarios

4.0 ANALYSIS RESULTS OF 2026 OPENING DAY

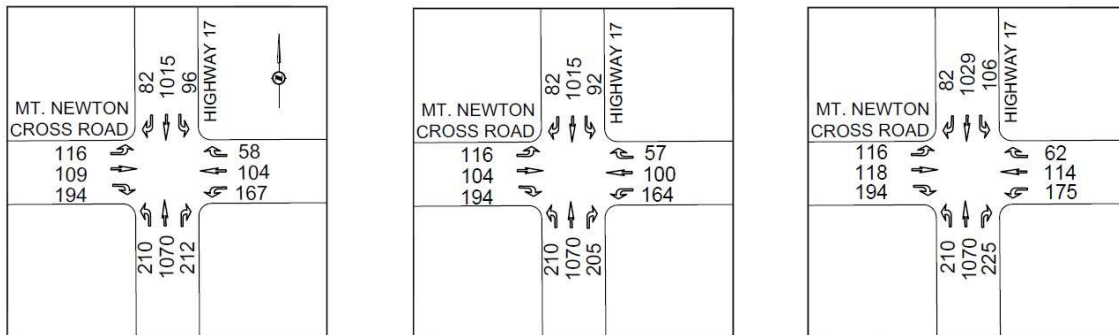
4.1 Details of Analysis

The critical peak time period for the analysis is the PM peak hour since the PM peak time was more significant than the AM based on the site observation & travel time measurement results. The analysis presented below for the Highway 17 / Mt. Newton Cross Road intersection during the PM peak hour results for the four (4) opening day analysis scenarios. These results use the Synchro/SimTraffic software package and the existing signal timing (with a PM cycle length: 168 seconds).

The four analysis scenarios are as follows:

- (1) 2026 opening day background conditions,
- (2) 2026 background with the concurrent development (Hackett site),
- (3) 2026 post development with no Hackett site, and
- (4) 2026 post development with Hackett site (both trips combined).

See **Figure 4** for opening day post development PM peak hour traffic volumes for the three future scenarios.



(1) VOLUMES WITH HACKETT SITE (2) VOLUMES WITH 7840 LOCHSIDE DR (3) VOLUMES WITH BOTH SITES

Figure 4: Opening Day Post Development Volumes – PM Peak Hour

4.2 Results

See **Table 1** and **2** for delays and queues with 4 scenarios for the opening day.

At the Highway 17 / Mt. Newton Cross Road intersection, all movements operate at LOS E or better except for scenario (4) with two sites combined, where a couple of movements will experience a failing level of service (LOS F) while the Highway through movements will still operate at a LOS C / D during the PM peak hour. Unacceptable levels of service (LOS E / F) results were primarily due to the long cycle length at the signal which gives more split times for the highway through traffic. According to the Synchro results, longest delays at the intersection will remain under 80 seconds (average) which are considered as being acceptable for a highway signal with high volumes.

In general increases in delay were small with gains of a few seconds for any given movement. Changes in LOS, including those that slip from LOS E to LOS F are the result of a few seconds changing.

Based on known issues from the westbound movements at the signal 95th percentile queue length for the westbound left and through movement results were examined. Estimated queue lengths for the westbound left movement (longer queues than through movement) on Mt Newton Cross Road are estimated to be 75m to 81m (10 vehicles) for each scenario during the post development PM peak hour, which exceeds the storage length of the turn lane. Estimated additional queue lengths by new developments are marginal with +5m due to the Hackett site, 4m due to the 7840 Lochside development, and 7.2m (10% increase from existing) due to both development sites. Therefore, neither of the development sites will significantly increase queuing for the eastbound and westbound movements on Mt Newton Cross Road.

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Estimated queues exceed the existing left turn storage (45m) but an extension of that lane is difficult due to the median and two-way left turn lane for accessing driveways on Mt Newton Cross Road. In simulation and in field observations the queues for left turns and through movements were generally cleared within the allowed green time.

The Mt. Newton Cross Road section between Lochside Drive and Highway 17 is to undergo changes that will partially address the issues related to queue storage.

Table 1: Opening Day (2026) Background Conditions – PM Peak Hour

Intersection	Movement	(1) 2026 Background with No Development			(2) 2026 Background with Hackett Site		
		LOS	Delay (s)	95 th % Queue (m)	LOS	Delay (s)	95 th % Queue (m)
Highway 17 / Mt. Newton Cross Rd	EBL	D	49.1	57.0	D	49.3	57.0
	EBT	E	76.1	54.0	E	79.2	62.0
	EBR	B	16.9	1.3	B	19.4	5.1
	WBL	E	55.1	74.0	E	57.4	79.0
	WBT	E	65.4	50.0	E	66.7	57.8
	WBR	A	1.5	0.0	A	8.3	4.0
	NBL	E	74.3	107	E	76.4	108
	NBT	C	29.3	168	C	31.0	172
	NBR	A	0.2	0.0	A	0.2	0.0
	SBL	E	77.1	45.8	E	77.9	53.2
	SBT	D	44.7	194	D	45.3	192
	SBR	A	0.1	0.0	A	0.1	0.0

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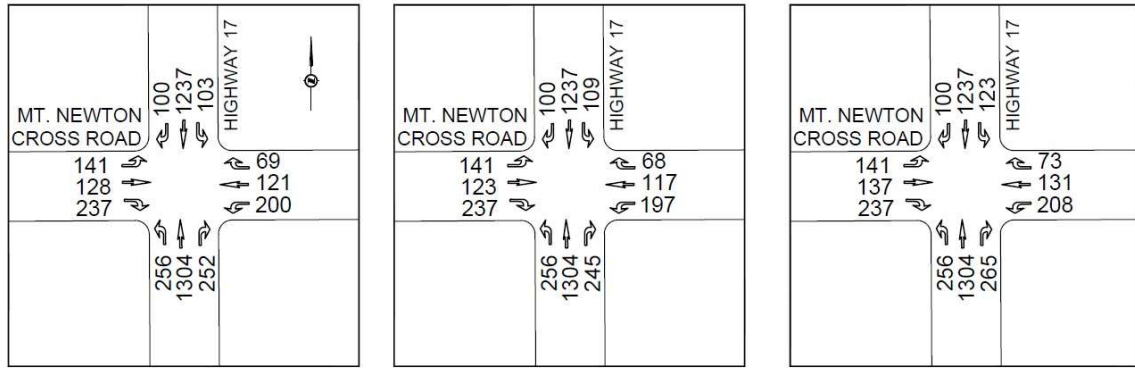
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Table 2: 2026 Post Development Conditions – PM Peak Hour

Intersection	Movement	(3) Post Development with No Hackett Site			(4) Post Development with Hackett Site		
		LOS	Delay (s)	95 th % Queue (m)	LOS	Delay (s)	95 th % Queue (m)
Highway 17 / Mt. Newton Cross Rd	EBL	D	49.4	57.0	D	48.9	56
	EBT	E	79.0	58.5	F	83.0	66
	EBR	B	19.3	4.8	C	20.2	7
	WBL	E	56.8	77.9	E	58.4	81
	WBT	E	65.9	55.5	E	65.3	62
	WBR	A	1.5	0.0	A	9.6	6
	NBL	E	76.3	108	E	79.9	113
	NBT	C	30.8	172	C	34.3	182
	NBR	A	0.2	0.0	A	0.3	0
	SBL	E	77.8	50.7	E	79.3	56
	SBT	D	45.1	192	D	47.4	194
	SBR	A	0.1	0.0	A	0.1	0

5.0 ANALYSIS RESULTS OF 2036 10-YEAR HORIZON

For the long term (10-year horizon) analysis, 2036 background traffic volumes were obtained using a 2% growth rate from 2021 existing volumes plus the Marigold phase 1 traffic. See Figure 5 for 2036 10-year horizon post development PM peak hour volumes with three scenarios.



(1) VOLUMES WITH HACKETT SITE (2) VOLUMES WITH 7840 LOCHSIDE DR (3) VOLUMES WITH BOTH SITES

Figure 5: 2036 Post Development Volumes with Three Scenarios - PM Peak Hour

Under 2036 PM peak hour background conditions, the Highway 17 / Mt Newton Cross Road intersection operates poorly with multiple movements at LOS E/F, including left turn movements from Highway 17 and the westbound left and eastbound through movements from Mt Newton Cross Road. The northbound left queue length was estimated at 155m which exceeds the existing storage (125m) during the 2036 background PM peak hour. Estimated queues from the side streets exceed 100m.

However, the addition of site traffic does not result in any significant changes to the delay/LOS when compared to background conditions. The eastbound through movement will have the longest additional delay (increase by 13 seconds) and all other movements will have a maximum of 6 seconds additional delays. The increases in delay noted for the post development scenarios are primarily the result of the background traffic increases. For the westbound left movement, estimated queue lengths will increase to 117m with developments (background queue: 99.3m) based on the modelling results, but the expected queues are considered acceptable for the corridor traffic flow overall. If estimated 2036 conditions are realized in the future, new signal timing adjustments alone will not resolve the delay / queuing issues. See Table 3 and 4 for delays and queues with 4 scenarios for the 2036 10-year horizon .

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Table 3: 2036 Background Conditions – PM Peak Hour

Intersection	Movement	(1) 2036 Background with No Development			(2) 2036 Background with Hackett Site		
		LOS	Delay (s)	95 th % Queue (m)	LOS	Delay (s)	95 th % Queue (m)
Highway 17 / Mt. Newton Cross Rd	EBL	E	68.8	69.8	E	68.2	68.9
	EBT	F	107	64.9	F	115	75.5
	EBR	D	46.7	34.6	D	46.5	35.1
	WBL	F	101	99.3	F	107	109
	WBT	E	77.4	59.5	E	77.3	66.2
	WBR	B	11.0	6.6	B	12.6	9.0
	NBL	F	105	155	F	110	157
	NBT	C	32.2	220	C	33.5	225
	NBR	A	0.3	0.0	A	0.3	0.0
	SBL	F	91.9	54.2	F	93.1	56.5
	SBT	D	54.7	243	E	57.0	247
	SBR	A	0.1	0.0	A	0.1	0.0

Table 4: 2036 Post Development Conditions – PM Peak Hour

Intersection	Movement	(3) 2036 Post Development with No Hackett Site			(4) 2036 Post Development with Hackett Site		
		LOS	Delay (s)	95 th % Queue (m)	LOS	Delay (s)	95 th % Queue (m)
Highway 17 / Mt. Newton Cross Rd	EBL	E	68.2	69.1	E	68.1	68.4
	EBT	F	113	69.7	F	120	85.8
	EBR	D	44.8	33.4	D	36.7	26.1
	WBL	F	104	105	F	107	117
	WBT	E	76.8	64.4	E	78.6	71.3
	WBR	B	12.5	8.7	B	13.8	10.6
	NBL	F	109	157	F	111	157
	NBT	C	33.5	225	D	36.6	236
	NBR	A	0.3	0.0	A	0.3	0.0
	SBL	F	92.8	60.1	F	92.9	65.7
	SBT	E	56.2	246	E	59.2	249
	SBR	A	0.1	0.0	A	0.1	0.0

6.0 TRAVEL TIME STUDY

6.1 On-site Travel Time Measure / Observation Results

The proposed developments in the area could exacerbate already existing queuing and travel time issues for the westbound movement at the Highway 17 / Mt. Newton Cross Road intersection. To examine the effects of this a travel time study was performed to measure total elapsed travel time in the AM and PM peak hour on October 24, 2024, using a floating car study method.

Peak hour travel times were measured from a stop line (start of the data run) at Lochside Drive / Mt. Newton Cross Road to the pedestrian crosswalk (end point of run) on the westbound through lane of the Highway 17 intersection, a distance of around 250m. Five

travel time runs were measured for the AM and five for the PM peak. The fastest travel time outcome of the measured five runs was excluded for each peak period in **Table 5** below.

Table 5: Summary of Measured Travel Time (sec)

Run Times	AM Peak (8:15 – 8:45)	PM Peak (4:15 – 4:45)
1	149	127
2	141	109
3	45	173
4	32	98
Average	91.8	126.8

*Note: Travel time measures conducted from the Lochside Dr stop line (starting point) to Hwy 17 signal crosswalk line of the east leg (ending point) which is a 250m interval on Mt Newton Cross Rd (Westbound).

On average the measured travel time was 35 seconds longer for the PM peak than the AM. The AM had more variability in the results with a high-low span of 117 sec, while the PM had less variability with a high-low span of 75 sec. Of the 8 listed run results only one exceeded the length of one signal cycle (168 sec), although most runs were more than 100 sec. Unsurprisingly this indicates that the signal operation heavily influenced the travel time.

6.2 Travel Time Estimates

In order to determine the effects of the proposed development on the travel time for westbound movements, from Lochside Drive to/through the Highway 17 intersection, a traffic simulation study was developed, and the results of the field observations were used to calibrate the simulation results and estimate future travel times.

6.2.1 Methodology

Synchro/SimTraffic traffic modeling software was used to produce travel time metrics given the traffic assumptions described above. The metric produced by the simulation include: Travel Time (in hours) and Vehicles Entered (i.e. number of vehicles that entered the model). The results were converted into a travel time metric of sec / veh, then

isolated for the westbound through movement starting at the Lochside Drive intersection and ending at the Highway 17 intersection. The simulation metrics were then calibrated to the measured travel time average, and the calibration ratio was then applied to the future scenarios. Finally, an estimate of the range of travel times was produced using the measured high and low time from the field measurements.

6.2.2 Results and Discussion

Results of the simulation and the estimates produced are shown in **Table 6** below. Abbreviations are as follows: TT = Travel Time, Sim = Simulation, Est. = Estimated.

Table 6 - Travel Time Estimates

PM Peak Hour Metrics	2024 Background with No Dev	(1) 2026 Background with No Dev	(2) 2026 Background w Hackett	(3) Post Dev with w/o Hackett	(4) Post Dev w Hackett Site
Sim: WB TT Total (hr)	2	2.3	2.6	2.5	3
Sim: WB Veh (veh)	391	427	459	423	521
Sim: TT (sec/veh)	18.4	19.4	20.4	21.3	20.7
Measured TT (sec/veh)	126.8	-	-	-	-
TT Ratio (measured/sim)	6.886	-	-	-	-
Est. TT (sec/veh)	-	133.5	140.4	146.5	142.7
Est. Increase in TT (sec/veh)	-	6.7	13.6	19.7	15.9
Low Measured TT	98	-	-	-	-
Low Ratio	0.77	-	-	-	-
Expected Min TT	-	103	109	113	110
High Measured TT	173	-	-	-	-
High Ratio	1.36	-	-	-	-
Expected Max TT	-	182	192	200	195

The results can be read as:

- The existing 2024 background scenario westbound through traffic saw travel times between 89 sec – 173 sec to travel from Lochside Drive through the Highway 17 intersection.

- In the 2026 Scenario 1 without the developments, travel time will range from 103 sec – 182 sec, or an increase of roughly 5 sec – 9 sec, which is due to background traffic growth in the 2024 – 2026 timeframe.
- In the 2026 Scenario 2 with the Hackett development, travel time will range from 109 sec – 192 sec, or an increase of roughly 6 sec – 10 sec compared to the non-development scenario 1.
- In the 2026 Scenario 3 with the 7840 Lochside Drive development (the focus of this report), travel time will range from 113 sec – 200 sec, or an increase of roughly 10 sec – 18 sec compared to the non-development scenario 1.
- In the 2026 Scenario 4 with the 7840 Lochside Drive and Hackett developments (representing the combined effects of the two developments), travel time will range from 110 sec – 195 sec, or an increase of roughly 7 sec – 13 sec compared to the non-development scenario 1.

The utility of these results is that they demonstrate an increase in travel time is expected, and the results generally appear to be a reasonable estimate of the increase. For the scenario 3 (7840 Lochside Drive without the Hackett site) the increase is 10 sec – 18 sec, however the background scenario 1 adds travel time which should be adjusted for, and the net result is that the 7840 Lochside Drive development could add 5 sec – 9 sec of travel time. This increase is for an addition of 22 vehicles in the PM peak hour, or about one additional vehicle in the Mt. Newton Cross Road queue every 2.72 min. The signal cycle length is 168 sec or 2.8 min. In total one additional car will join the queue from the 7840 Lochside Drive development roughly every signal cycle and add approximately 5 sec – 9 sec of additional travel time as a result. The increase in general background traffic will add the same.

Based on the above the results should be considered a very rough approximation of travel time increases expected along the Mt. Newton Cross Road as a result of the developments. In general, the increases are minor, and based on the field observations and modeling, the delay on Mt. Newton Cross Road is largely tied to the very long cycle length at the signal, rather than the volume of traffic.

The results of scenario 4 are unexpected as it contains the most traffic and logically would therefore be expected to have the most travel time. This illustrates the limitations of this study, which uses a software metric that is a very rough estimate of the travel time. To emphasise the point, the existing 2024 background SimTraffic reported an 18.4

sec travel time, while the measured average value was 126.8 sec, a considerable difference.

Finally, because of the compounding uncertainty that would go into an estimate of travel time in 2036 a travel time analysis was not undertaken for that timeframe. Assumptions in background growth, changes to the Mt, Newton Cross roadway between Highway 17 and Lochside Drive, the Rapid Bus, etc., all compound into a situation where an estimate would be grossly inaccurate and therefore should not be explored least the results be confusing and useless.

7.0 CONSIDERATIONS FOR MITIGATION MEASURES

The delays experienced at Mt. Newton Cross Road approaching Highway 17 are largely due to the long cycle length of the MoTI signal, which runs a 168 sec (2.8 min) cycle length. This requires a wait of over 2 min to be served at the signal. Changes to that signal, namely reducing the amount of green time allocated to the highway and thereby shortening the cycle length and serving the side streets quicker, would likely have a positive impact on side street travel times.

As demonstrated above the addition of the development traffic does not have a significant negative influence on either traffic performance at the study intersections or travel times along Mt. Newton Cross Road.

Forthcoming improvements to Mt. Newton Cross Road and retiming of the traffic signal will both improve the situation. Lengthening the westbound left turn lane and moving bikes to a safer Lochside Trail access will both help greatly. However, the most decrease in passenger vehicle delay and travel time can be gained by reducing overall traffic; the access to the nearby Rapid Bus stops should therefore be prioritized in future designs to facilitate the safe and timely travel of pedestrians to and from those stops. This could include sidewalk, crossings, lighting, and buffering pedestrian traffic from the adjacent vehicle lanes if possible.

Finally, the access into / out-of the McDonalds / gas station are a significant issue as they are too close to the Highway 17 intersection, draw heavy volumes, and have significant traffic volumes that desire to turn back onto the highway, which often impedes the westbound (and eastbound) Mt. Newton Cross Road traffic. This should be rectified in future designs which should explore right-in right-out restrictions (which may require a roundabout at the Mt. Newton Cross Road / Lochside Drive intersection), or turn lane reconfiguration.

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8.0 RECOMMENDATIONS

The District should:

- Pursue MoTI for a re-timing of the Highway 17 / Mt. Newton Cross Road intersection to reduce overall cycle lengths.
- Facilitate pedestrian access to the Rapid Bus stations
- Reconfigure the Mt. Newton Cross Road section

Sincerely,

WATT Consulting Group



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