County of Wellington

Anthony Pit
4454 Victoria Road South

Transportation Impact Study

Tuesday, October 7, 2025

Z0019264

CIMA+

400-3027 Harvester Road
Burlington, ON L7N 3G7
T 289 288 0287 **F** 289 288 0285
cima.ca

Contact

Jaime Garcia
jaime.garcia@cima.ca
T 905 630 2730

Engineering for **people**

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CIMA Project Z0019264

Prepared by:

Michael Jarrett, T. Dipl.

Verified by:

Jaime Garcia, P.Eng., Ph.D.

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1. Introduction

CBM Aggregates (CBM) seeks to develop a sand and gravel pit, Anthony Pit, at 4454 Victoria Road South, to extract aggregate material to be processed at CBM's nearby aggregate operations. A Traffic Impact Study (TIS) is required under the Aggregate Resources Act for new aggregate sites.

The study objective is to determine the potential impact of the additional truck volumes generated by the proposed mineral aggregate operation during the AM and PM peak hours, and to assess the impact the additional traffic may have on the existing roadway network, and – if required, to provide recommendations to accommodate the projected traffic.

The content of this TIS follows the approach and methodology presented in the Terms of Reference (ToR) submitted to the County of Wellington (the County) on December 13th, 2024. **Appendix A** contains the ToR documentation.

1.1 Study Area

Figure 1 showcases the subject site along with the surrounding lands and proposed haul route, which together represents the study area. The study area is bounded by Wellington County Road 34 on the west, Gilmour Road (Side Road 23) on the east, Victoria Road South on the north and Concession Road 7 on the south. The land use surrounding the study area is characterized by a mix of uses that includes low-density, detached residential neighbourhoods within the immediate vicinity of the study area, as well as some aggregate operations, industrial and manufacturing facilities exist along Victoria Rd S.

As per the approved content of the Terms of Reference, the following intersections were analyzed as part of the road network surrounding the development:

Intersection	Traffic Control
Victoria Road South & Access 1	Signalized
Wellington County Road 34 & Victoria Road South	Unsignalized
Wellington County Road 34 & Brock Road North	Roundabout
Wellington County Road 34 & Concession Road 7	Roundabout

Concession Road 7 & Access 2	Unsignalized

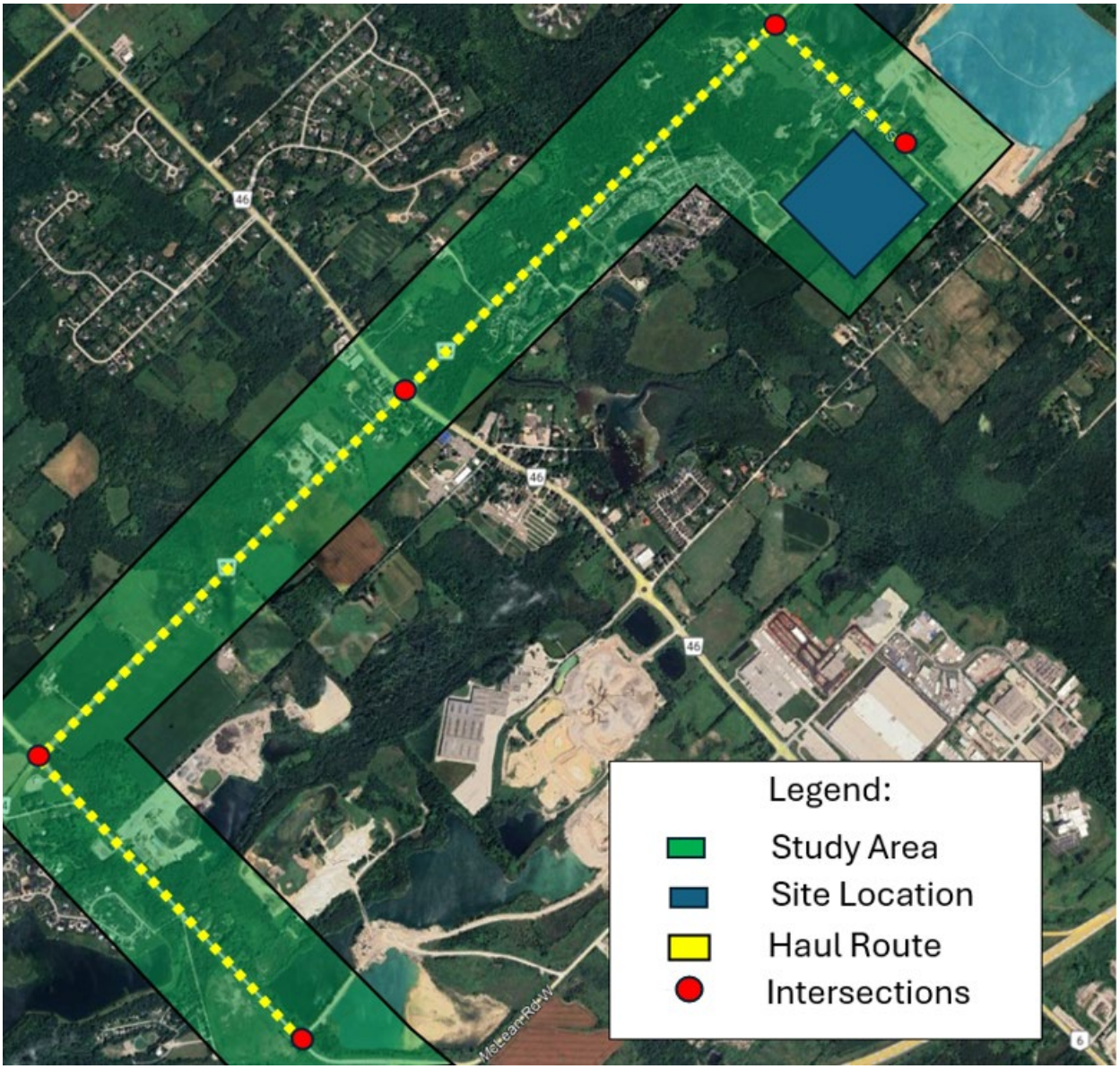

Figure 1: Study Area

1.2 Study Methodology

This study evaluates existing and future traffic operations at study area intersections for the weekday AM peak period (7:00-9:00), and weekday PM peak period (16:00-18:00), as confirmed by the County.

The study assessed traffic operations under existing/build-out (2025) conditions and the following future horizon years:

- Future (2030) Conditions (5-year horizon)
- Future (2035) Conditions (10-year horizon)

Intersection operations were assessed using the Synchro v11 software for Signalized intersections, which utilizes the Highway Capacity Manual (HCM) 2000 methodology published by the Transportation Research Board National Research Council. Synchro v11 can analyze both signalized and unsignalized intersections in a road corridor or network considering the spacing, interaction, queues, and operations between intersections. Intersection operations performance metrics are reported in terms of Level of Service (LOS) and volume to capacity (v/c) ratios.

Level of Service (LOS) is based on the average control delay per vehicle for a given movement at an intersection. Delay is an indicator of how long a vehicle must wait to complete a movement and is represented by a letter between 'A' and 'F', with 'F' representing the longest delays. The following table summarizes the LOS criteria for signalized and unsignalized intersections:

Level of Service	Average Control Delay per Vehicle (second/vehicle)	
	Signalized	Unsignalized
A	≤10	≤10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 80

SimTraffic software was used to calculate the 95th percentile queue length as part of the analysis and to assess the available storage capacity and whether queue spillback or lane blockages occur due to long queues. Criteria for critical movements at

intersections, were based upon section 3.8 (Evaluation of Impacts) of the County of Wellington's TIS Guidelines:

For Signalized Intersections;

- Volume to Capacity Ratio over 0.85 for overall intersection operations, through movements or shared through/turn movements
- Volume to Capacity Ratio over 0.90 for a dedicated left or right turn movement
- 95th percentile queues exceed the available storage length

For Unsignalized Intersections;

- Overall intersection Level of Service E or F
- 95th percentile queues exceed the available storage length

Other parameters, such as the peak hour factor (PHF) and the heavy vehicle percentage (HV%) were found on the provided turning movement counts. The PHF and HV% found were used in all existing and future scenarios.

Roundabout operations were assessed using ARCADY (Assessment of Roundabout Capacity and Delay), a software tool primarily used for the design, evaluation, and performance analysis of roundabouts. Due to the differences between the operations of a signalized/unsignalized intersection and a roundabout, the results of the analysis conducted with ARCADY are presented separately.

2. Haul Route Review

2.1 Field Investigation

CIMA+ conducted a field investigation on Thursday, November 19, 2024, to perform a sightline assessment, a route overview and collect other relevant data. Roadway measurements were recorded, and a thorough review of existing traffic control signage, pavement markings, and other environmental features for each of the proposed four trail crossing sites and the existing intersection pedestrian signal at Rossland Road East was conducted. At the time of the field observations, from 10:00 to 16:00, this segment had routine vehicular traffic and pedestrian behaviour; no instances of unordinary pedestrian or driver actions were noted.

2.2 Route Overview

Across the entire haul route, it's important to note that **no dedicated cycling lanes or sidewalks** exist, limiting pedestrian and cyclist accommodation throughout the corridor.

Victoria Road South

The segment from the Site to Wellington County Road 34 consists of a two-lane rural roadway with one lane in each direction. The shoulders are narrow gravel, measuring less than 2 meters in width, offering limited space for stopped vehicles or non-motorized users. The observed pavement was in good condition and pavement markings are present. This segment has minimal adjacent development and does not feature sidewalks or cycling lanes. During the PM peak period, rare instances of queuing were observed at the Victoria Road and Wellington County Road 34 intersection.

Wellington County Road 34

Between Victoria Road & Brock Road, the roadway maintains a single lane in each direction but is characterized by wider, paved shoulders approximately 3.5 to 3.75 meters wide. The observed pavement quality is good, and pavement markings are present, although the crosswalk at the Wellington County Road 34 and Brock Road roundabout is faded. Several private residences are located along this segment, accessed via private roads. The Puslinch Town Hall and Fire Station are also located along this portion of the route.

Observations during the site visit indicated the presence of school buses during both the AM (8:00-9:00) and PM (14:00-15:00) peak periods, likely associated with Aberfoyle Public School, located just south of the Brock Road roundabout. Despite these activities, no queuing was observed at the roundabout during the study area visit.

Between Brock Road and Wellington County Road 34 & Concession Road 7, the road continues as a two-lane route with gravel shoulders, again measuring approximately 3.5 to 3.75 meters. However, the observed pavement condition deteriorates in this section, and it may require improvement. Pavement markings are present but are also in poor condition. This stretch runs through a residential area where homes face the roadway but are significantly set back from the road.

Like the previous segment, school bus activity was observed, suggesting consistent school-related traffic patterns. The Concession Road 7 intersection, which is a single-lane roundabout with crosswalks, experienced no queuing during the site visit.

Concession Road 7

The final segment between Wellington County Road 34 and the CBM Aberfoyle Pit maintains the one-lane-per-direction configuration but lacks any shoulders. Despite the absence of shoulders, the observed pavement is in good condition and markings are clearly present. This area is predominantly rural with little roadside development or activity. There were no signs of traffic congestion or queuing observed along this final segment.

2.3 Sightline Assessment

Minimum stopping sight distance represents the minimum distance recommended a driver needs to see ahead to safely stop a vehicle without colliding with an object or obstruction. As per *Transportation Association of Canada Geometric Design Guide for Canadian Roads* (TAC, 2017), stopping sight distance allows alert, competent drivers to come to a quick stop under ordinary circumstances.

The minimum stopping distance is determined using the TAC Design Guide. In TAC Chapter 2, the minimum stopping sight distance on a level grade is a function of brake reaction time, design speed of roadway and deceleration rate.

From TAC's Table 2.5.2, the minimum stopping sight distance for 70 km/h design speeds is 105 metres.[1] Decision sight distance provides drivers time to decide on a course of action. From TAC, the minimum decision sight distance for a design speed of 70 km/h is 150 metres.

The criteria used for measuring sight distance are the top of car height in the centre of the curb lane, and the distance measured along the centre of the lane to the crossing location. For the purpose of this review, the decision point used 4.4 metres from edge of roadway. While the criteria do not consider heavy vehicles expected to access the site,

[1] The design speed was assumed to be 70 km/h based on the 60 km/h posted/assumed speeds.

the obstruction reducing the sight distance would remain consistent between both vehicle types.

Results for the sightline assessments are shown in **Table 1** and graphically in **Figure 2**.

Table 1: Sight Distance Assessment

Location	Setback Distance from Curb (m)	Maximum Sight Distance (m)	
		Distance Looking Left (D_L)	Distance Looking Right (D_R)
Victoria Road South & Access 1 (60km/h speed limit)	4.4 m	185.0 m	24.0 m

D_L (northbound) – 0 m setback	D_L (northbound) – 4.4 m setback	D_R (southbound) – 0 m setback	D_R (southbound) – 4.4 m setback

Figure 2: Sight Distance Figures

Chapter 9 of the TAC provides an intersection stopping distance calculation based on the design vehicle type. Table 9.9.3 indicates that a time gap modification of 9.5 seconds should be considered for single-unit trucks. Taking that into account, a sight distance of 185 metres would be considered the modified stopping sight distance. **Figure 3** illustrates the formula used.

As shown above, the distance looking left satisfies the stopping sight distance, while the distance looking right is 161 metres, does not meet the criteria. This is due to the

excessive foliage located adjacent to the site entrance. Removing the excess coverage located along the shoulder of the roadway should provide enough visual clearance.

The intersection sight distance along the major road (distance b in **Figure 9.9.2**) is determined by:

$$ISD = 0.278\ V_{major}\ t_g \qquad (9.9.1)$$

Where:

ISD = intersection sight distance (length of the leg of sight triangle along the major road) (m)

V_{major} = design speed of the major road (km/h)

t_g = time gap for minor road vehicle to enter the major road (s)

Figure 3: ISD Single-Unit Truck Modification

2.4 Collision Analysis

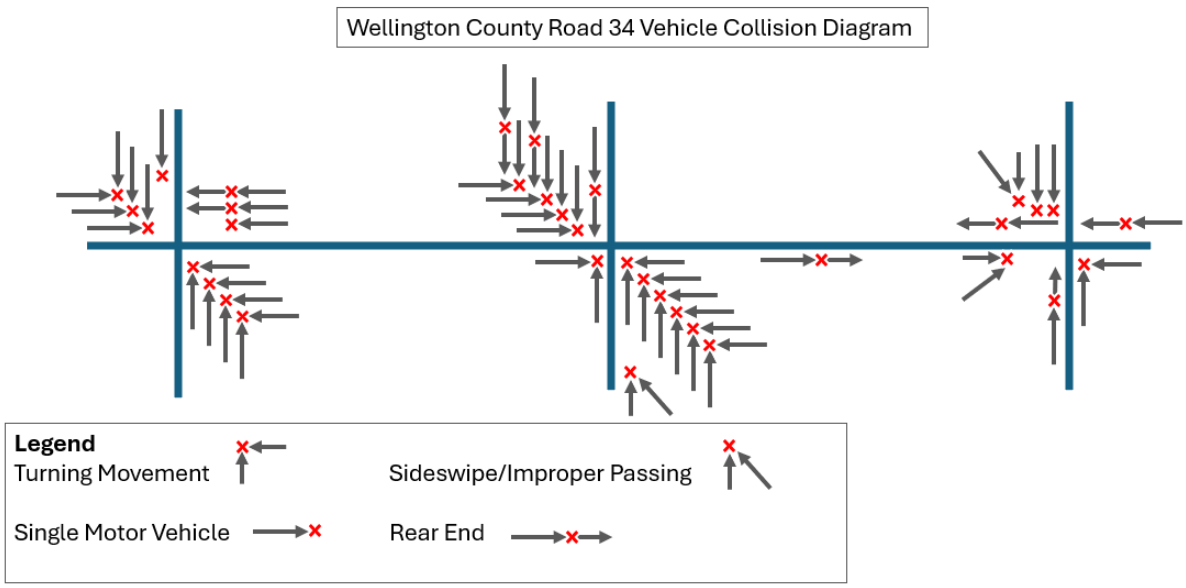

Figure 4: Collision Diagram

Using motor vehicle accident reports provided by the County of Wellington for the 2020-2024 period (see **Table 2**), a traffic collision analysis was conducted to identify any glaring issues along the road network within the study area.

The motor vehicle accident reports were reviewed, and interpretations of each collision was based on the classification indicated on each category of the report; to provide an accurate representation of the events that occurred, and to identify any steps that can be taken to mitigate potential issues.

By further investigating and understanding the dynamics, causes, and consequences of traffic collisions or accidents, the primary goals of traffic collision analysis are to

determine how and why collisions occurred, assess the severity of the collision, and recommend measures to prevent similar incidents in the future. Here are the key aspects of traffic collision analysis:

Of the 35 collisions, most collisions were observed to be caused by driver error, however issues regarding drivers losing control of their vehicles due to inclement weather was a repeated pattern, observed at; Wellington County Road 34 & Concession Road 7; and Wellington County Road 34 & Victoria Road South.

A possible solution to this issue is to warn drivers ahead of time with the implementation of installation of a “slippery when wet" road signs.

The Table below summarizes the collision details provided by the County of Wellington. While **Figure 5** illustrates the collision locations.

Table 2: Collision Summary

Collision Locations			
Latitude	**Longitude**	**Road Name**	**Type of Collision**
2024			
43.4737	-80.1538	WELLINGTON ROAD 34	Following too close
43.4874	-80.1356	WELLINGTON RD. 34	Vehicle Ran Red Light
43.4737	-80.1542	WELLINGTON RD 34	Following too close
43.4738	-80.1539	BROCK RD N	Failed to yield right of way
43.4738	-80.1538	WELLINGTON RD 34	Failed to yield right of way
2023			
43.4737	-80.154	WELLINGTON ROAD 34	Vehicle Struck Posted Sign
43.4737	-80.1538	BROCK RD S	Failed to yield right of way
43.4873	-80.1355	WELLINGTON ROAD 34	Rear End
43.4738	-80.1538	WELLINGTON ROAD 34	Failed to yield right of way
43.4738	-80.1539	WELLINGTON ROAD 34	Collision in roundabout - Side Swipe
43.4874	-80.1356	VICTORIA RD S	Vehicle Ran Red Light
2022			
43.4608	-80.1714	WELLINGTON ROAD 34	Failed to yield right of way
43.4607	-80.1713	WELLINGTON ROAD 34	Speeding too Fast for Conditions
43.4741	-80.1543	WELLINGTON ROAD 34	Rear End
43.4739	-80.1544	WELLINGTON ROAD 34	Failed to yield right of way
43.4738	-80.1542	WELLINGTON ROAD 34	Side Swiped
43.4738	-80.1539	WELLINGTON ROAD 34	Failed to yield right of way
43.4738	-80.1538	WELLINGTON ROAD 34	Failed to yield right of way
43.4736	-80.1542	WELLINGTON ROAD 34	Rear End
43.4736	-80.1541	WELLINGTON ROAD 34	Rear End
43.4874	-80.1355	WELLINGTON ROAD 34	Speeding too Fast for Conditions
2021			

Collision Locations			
Latitude	**Longitude**	**Road Name**	**Type of Collision**
43.4874	-80.1355	WELLINGTON ROAD 34	Speed too Fast for Conditions
43.4874	-80.1356	WELLINGTON ROAD 34	Rear End
43.4745	-80.1528	WELLINGTON ROAD 34	Rear End
43.474	-80.1543	WELLINGTON ROAD 34	Rear End
43.4738	-80.1539	WELLINGTON ROAD 34	Failed to yield right of way
43.4738	-80.1538	WELLINGTON ROAD 34	Failed to yield right of way
43.4736	-80.1537	WELLINGTON ROAD 34	Failed to yield right of way
43.4731	-80.1528	WELLINGTON ROAD 34	Improper Lane Change
2020			
43.4741	-80.1543	WELLINGTON ROAD 34	Side Swiped
43.4737	-80.1538	WELLINGTON ROAD 34	Failed to yield right of way
43.4737	-80.1537	WELLINGTON ROAD 34	Failed to yield right of way
43.4874	-80.1355	WELLINGTON ROAD 34	Rear End
43.4872	-80.1356	WELLINGTON ROAD 34	Side Swiped
43.4876	-80.1359	WELLINGTON ROAD 34	Improper Passing

Figure 5: Study Area Collision Locations

3. Existing Conditions

The following section outlines existing conditions for the intersection of Victoria Road South and Wellington County Road 34. Existing intersection operations were analyzed using the lane configurations which were observed in field.

3.1 Existing Traffic Volumes

As part of the analysis, a detailed signal timing plan was provided by the County of Wellington, and weekday AM and PM peak hour turning movement counts were conducted by Ontario Traffic Inc. (OTI) on Tuesday, April 22, 2025.

The counts revealed a consistent AM peak hour, from 7:30- 8:30 for the three observed intersections. For the PM peak hour, the intersections ranged in start time where Concession Road 7 and Wellington County Road 34, and Brock Road and Wellington County Road 34 saw their peak hour as 16:45-17:45; while Victoria Road South and Wellington County Road 34 saw its peak hour as 16:30-17:30. Due to the minor variances in peak hour times, no volume balancing was done.

Table 3 indicates the dates in which each traffic count was collected for the intersections.

Table 3: Turning Movement Counts

Intersection	Date Collected
Victoria Road South and Wellington County Road 34	22/04/2025
Brock Road and Wellington County Road 34	22/04/2025
Concession Road 7 and Wellington County Road 34	22/04/2025

3.2 Existing Conditions Operational Analysis

Table 4 summarizes the results of the operational analysis for the intersection of Victoria Road South and Wellington County Road 34.

It can be observed that the intersection operates well through all movements, with no observable constraints during the AM Peak Hour and PM Peak Hour. During both periods it is expected to operate at an LOS B, with little delay and reasonable queues.

The Synchro/SimTraffic outputs are provided in **Appendix B.**

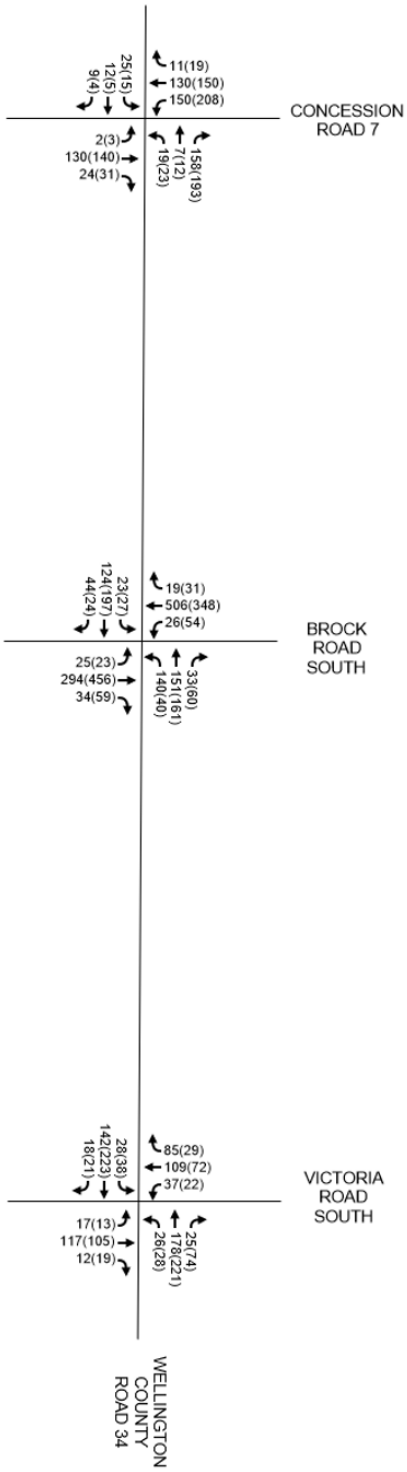

Figure 6: 2025 Existing Conditions Volume Figures

Table 4: Existing Conditions Operational Analysis

Approach/Movement		Delay (sec)	LOS	v/c	95th Q
Existing Conditions: AM Peak Hour					
EB	EBLTR	7.7	A	0.24	35.3
WB	WBLTR	7.8	A	0.26	30.2
NB	NBLTR	19.2	B	0.36	32.7
SB	SBLTR	22.2	C	0.52	53.2
Overall Intersection		**14.1**	**B**	**0.34**	**-**
Existing Conditions: PM Peak Hour					
EB	EBLTR	12.7	B	0.49	39.2
WB	WBLTR	13.1	B	0.52	36.3
NB	NBLTR	9.6	A	0.22	34.9
SB	SBLTR	9.3	A	0.18	26.4
Overall Intersection		**11.9**	**B**	**0.37**	**-**

4. Future Background Conditions

Future traffic volumes were estimated using a compound annual growth rate of 2% for the five and ten horizon years as per confirmation received as part of the review of the Terms of Reference.

Based on these assumptions, traffic volumes in 2030 are estimated to be 10% larger, while traffic volumes in 2035 are anticipated to be 22% larger than those estimated for the existing conditions (2025) scenario.

No adjacent developments, or road network alterations are anticipated for the future horizon years. However, CIMA+ was made aware that the County of Wellington is proposing an expansion of the settlement area of Aberfoyle, adjacent to the site, which may create additional traffic volumes in the future. At the time of writing this report, a draft Official Plan Amendment to this effect is proposed but not approved or in effect. Thus, no analysis of this land use proposal has been conducted within this study.

4.1 2030 Future Background

Table 5 illustrates the results of the 2030 future background operational analysis for the intersection of Victoria Road South and Wellington County Road 34.

Within this scenario, signal timing and splits were optimized. Like the existing conditions scenario, the intersection operates well through all movements, with no observable constraints during the AM Peak Hour and PM Peak Hour.

During both periods it is expected to operate at an LOS B, with little delay and reasonable queues. The Synchro/SimTraffic outputs are provided in **Appendix B.**

Table 5: 2030 Future Background Operational Analysis

Approach/Movement		Delay (sec)	LOS	v/c	95th Q
2030 Background: AM Peak Hour					
EB	EBLTR	10.9	B	0.35	40
WB	WBLTR	11.1	B	0.38	34.2
NB	NBLTR	9.9	A	0.25	30.8
SB	SBLTR	10.9	B	0.35	35.4
Overall Intersection		**10.8**	**B**	**0.37**	**-**
2030 Background: PM Peak Hour					
EB	EBLTR	12.7	B	0.49	51.4
WB	WBLTR	13.1	B	0.52	44.8
NB	NBLTR	9.6	A	0.22	27.7
SB	SBLTR	9.3	A	0.18	23.8
Overall Intersection		**11.9**	**B**	**0.37**	**-**

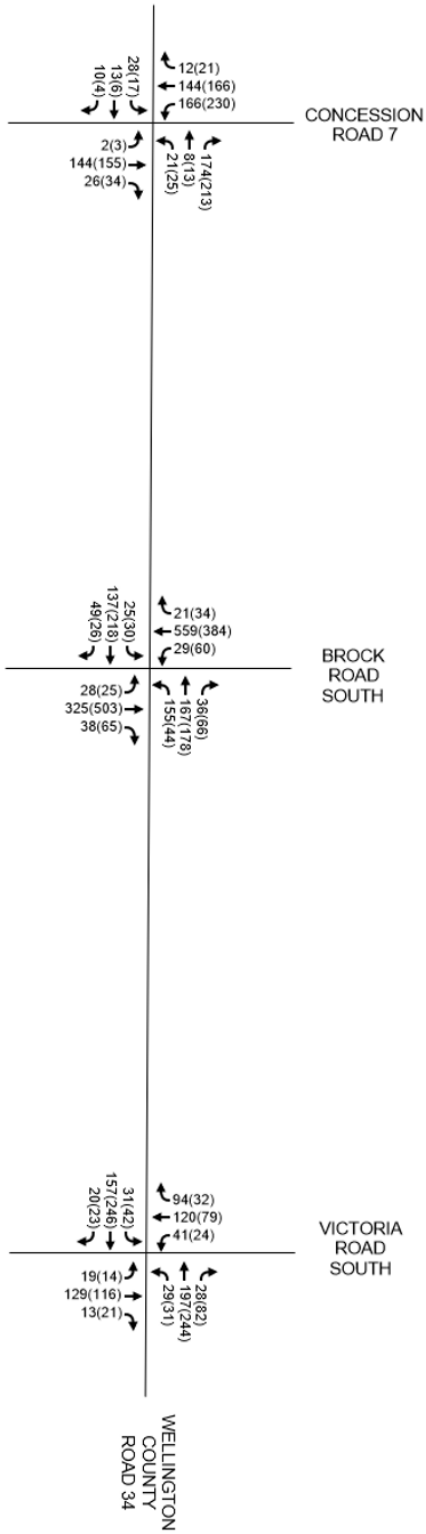

Figure 7: 2030 Future Background Volume Figures

4.2 2035 Future Background

Table 6 highlights the 2035 future background operational analysis results for the intersection of Victoria Road South and Wellington County Road 34. Within this scenario, signal timing and splits were optimized.

Similar to both the existing conditions scenario and 2030 future background scenario, the intersection operates well through all movements, with no observable constraints during the AM Peak Hour and PM Peak Hour.

During both periods it is expected to operate at an LOS B, with little delay and reasonable queues.

The Synchro/SimTraffic outputs are provided in **Appendix B.**

Table 6: 2035 Future Background Operational Analysis

Approach/Movement		Delay (sec)	LOS	v/c	95th Q
2035 Background: AM Peak Hour					
EB	EBLTR	11.4	B	0.39	39.1
WB	WBLTR	11.6	B	0.42	36.5
NB	NBLTR	10.2	B	0.28	34.2
SB	SBLTR	11.5	B	0.4	38.9
Overall Intersection		**11.3**	**B**	**0.41**	**-**
2035 Background: PM Peak Hour					
EB	EBLTR	13.5	B	0.55	56.1
WB	WBLTR	14.2	B	0.59	66.9
NB	NBLTR	9.8	A	0.24	29.6
SB	SBLTR	9.5	A	0.2	25.1
Overall Intersection		**12.6**	**B**	**0.41**	**-**

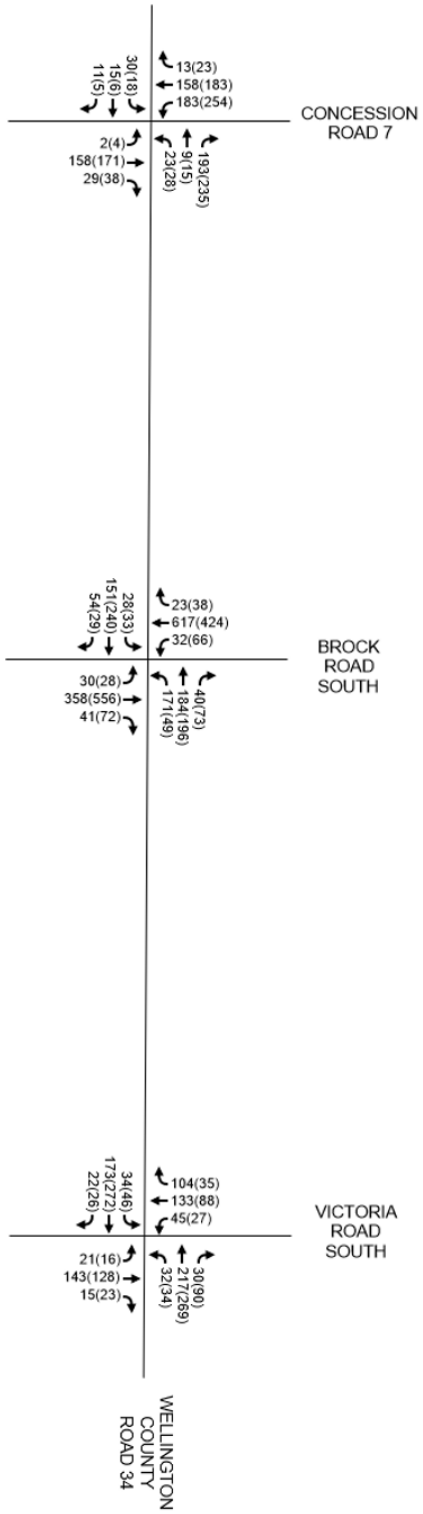

Figure 8: 2035 Future Background Figures

5. Future Total Conditions

5.1 Trip Generation

The site trip estimates were calculated based on the following assumptions.

- Up to 12 tri-axel trucks would travel between the sites, for approximately 10 hours each day.
- Each truck would carry approximately 40 tonnes per haul.
- The loading time per truck was estimated to be around 4 minutes.
- A maximum of 3 trucks at one site at each time could occur.
- Proposed hours of operation would be between 6:00–19:00, Monday to Friday.
- The build-out year was 2025.

With an estimated 10 minutes of travel time, 10-minute headway, and 10 minutes for loading/unloading, with a total of 3 trucks on site at any given time; it was an assumed that 6 trips would take place within any hour.

Within the AM, 6 trips were assumed to travel from the Victoria Road South access to the Concession Road 7 access, with the reverse taking place within the PM. **Figure 9** illustrates the site traffic volume distribution.

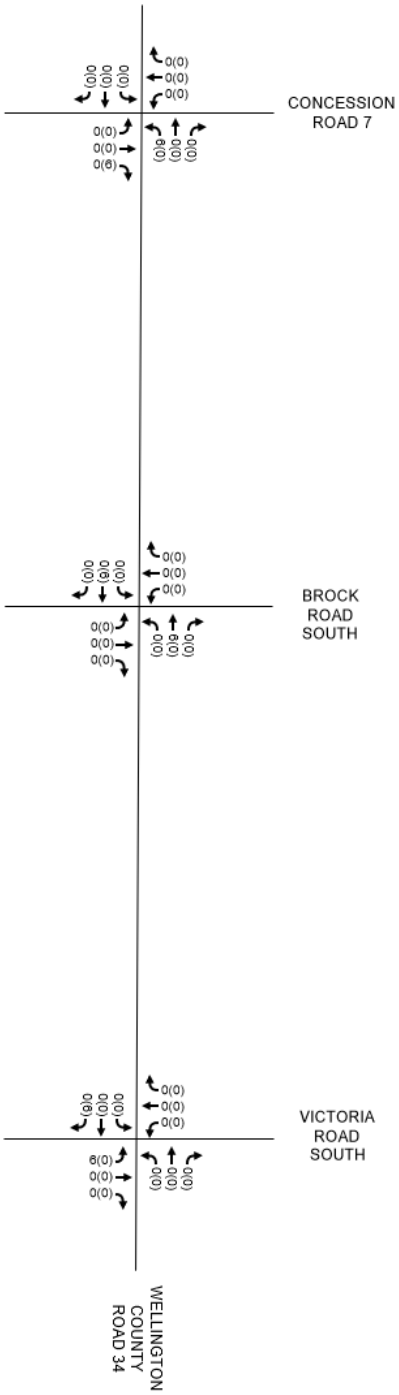

Figure 9: Site Traffic Volumes

5.2 2025 Buildout

Table 7 summarizes the results of the operational analysis for the intersection of Victoria Road South and Wellington County Road 34.

With the small volume addition expected as a result of the increased site traffic showing no significant differences.

Within this scenario, signal timing and splits were optimized. As shown, the intersection operates well through all movements, with no observable constraints during the AM Peak Hour and PM Peak Hour. During both periods it is expected to operate at an LOS B, with little delay and reasonable queues.

The Synchro/SimTraffic outputs are provided **Appendix B.**

Table 7: 2025 Buildout Operational Analysis

Approach/Movement		Delay (sec)	LOS	v/c	95th Q
2025 Buildout: AM Peak Hour					
EB	EBLTR	10.5	B	0.31	35
WB	WBLTR	10.7	B	0.34	31.6
NB	NBLTR	9.9	A	0.24	29.6
SB	SBLTR	10.5	B	0.31	33.5
Overall Intersection		**10.4**	**B**	**0.32**	**-**
2025 Buildout: PM Peak Hour					
EB	EBLTR	12	B	0.45	44.2
WB	WBLTR	12.3	B	0.47	44.4
NB	NBLTR	9.4	A	0.19	28
SB	SBLTR	9.2	A	0.17	21.6
Overall Intersection		**11.3**	**B**	**0.33**	**-**

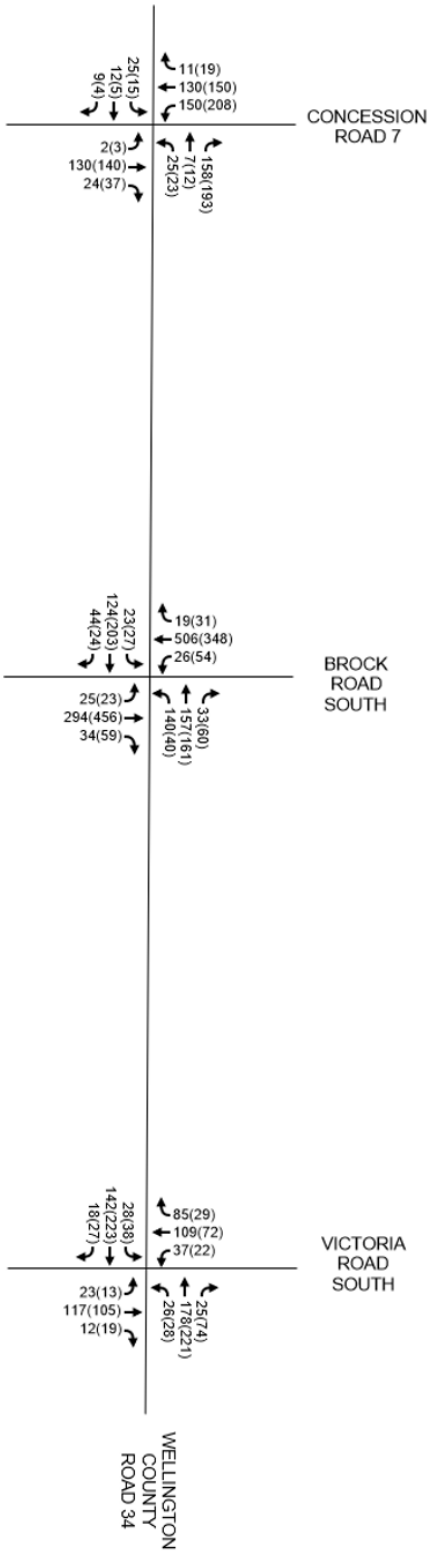

Figure 10: 2025 Buildout Volume Figures

5.3 2030 Future Total

Table 8 illustrates the results of the 2030 future total operational analysis for the intersection of Victoria Road South and Wellington County Road 34.

Within this scenario, signal timing and splits were optimized. the intersection operates well through all movements, with no observable constraints during the AM Peak Hour and PM Peak Hour.

This scenario is shown to have almost identical operational results to the 2030 future background operational analysis. During both periods it is expected to operate at an LOS B, with little delay and reasonable queues.

The Synchro/SimTraffic outputs are provided in **Appendix B.**

Table 8: 2030 Future Total Operational Analysis

Approach/Movement		Delay (sec)	LOS	v/c	95th Q
2030 Total: AM Peak Hour					
EB	EBLTR	10.9	B	0.35	40.3
WB	WBLTR	11.1	B	0.38	35.7
NB	NBLTR	10.1	B	0.27	31
SB	SBLTR	10.9	B	0.35	34.3
Overall Intersection		**10.8**	**B**	**0.37**	**-**
2030 Total: PM Peak Hour					
EB	EBLTR	12.8	B	0.5	55.1
WB	WBLTR	13.1	B	0.53	62.5
NB	NBLTR	9.6	A	0.22	29
SB	SBLTR	9.3	A	0.18	25.3
Overall Intersection		**11.9**	**B**	**0.37**	**-**

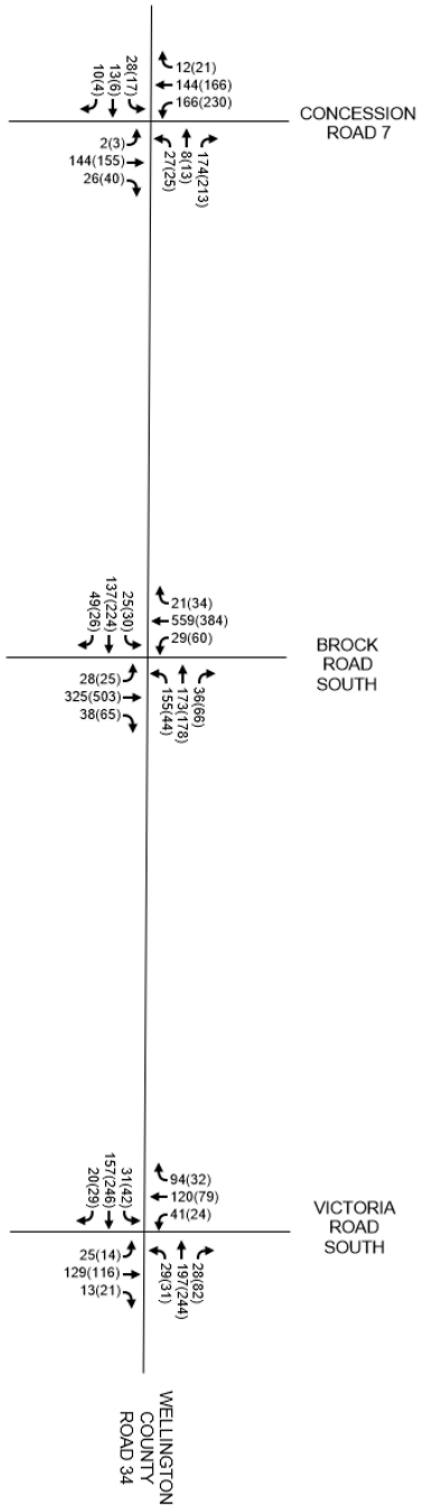

Figure 11: 2030 Future Total Volume Figures

5.4 2035 Future Total

Table 9 highlights the results of the 2035 future total operational analysis for the intersection of Victoria Road South and Wellington County Road 34. Within this scenario, signal timing and splits were optimized. The intersection operates well through all movements, with no observable constraints during the AM Peak Hour and PM Peak Hour.

This scenario is shown to have almost identical operational results to the 2035 future background operational analysis.

During both periods it is expected to operate at an LOS B, with little delay and reasonable queues. The Synchro/SimTraffic outputs are provided in **Appendix B.**

Table 9: 2035 Future Total Operational Analysis

Approach/Movement		Delay (sec)	LOS	v/c	95th Q
2035 Total: AM Peak Hour					
EB	EBLTR	11.4	B	0.39	40.9
WB	WBLTR	11.6	B	0.42	38.1
NB	NBLTR	10.4	B	0.3	35.2
SB	SBLTR	11.5	B	0.4	36.4
Overall Intersection		**11.3**	**B**	**0.41**	**-**
2035 Total: PM Peak Hour					
EB	EBLTR	13.7	B	0.56	55.1
WB	WBLTR	14.2	B	0.59	62.5
NB	NBLTR	9.8	A	0.24	29
SB	SBLTR	9.5	A	0.2	25.3
Overall Intersection		**12.7**	**B**	**0.41**	**-**

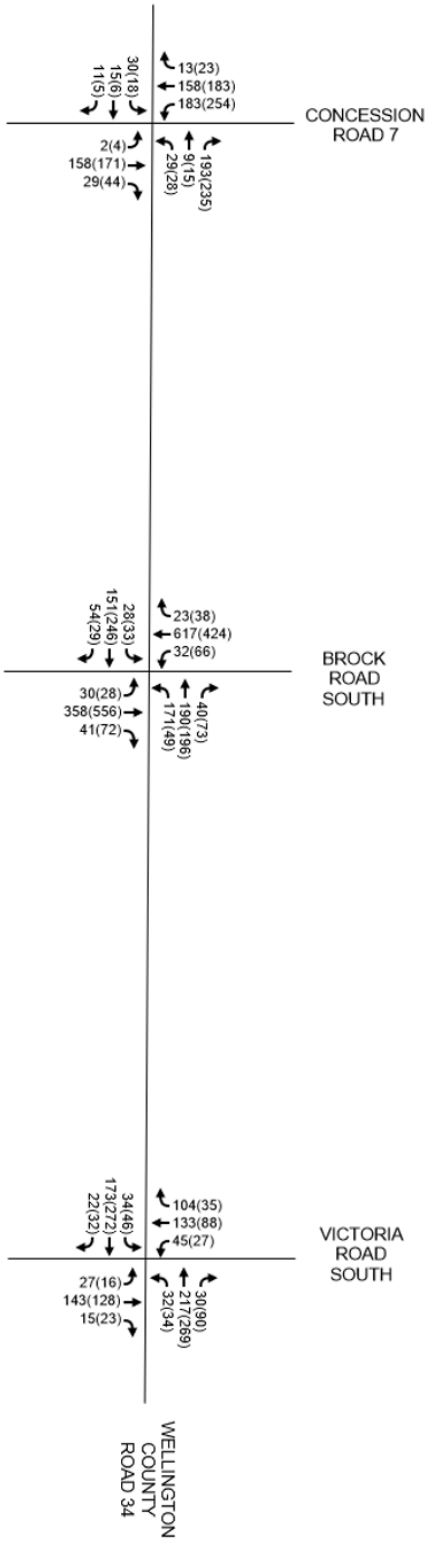

Figure 12: 2035 Future Total Volume Figures

6. ARCADY Analysis Summary

As aforementioned within this document, ARCADY was used to conduct the operational analysis for the roundabouts of; Wellington Road 34 and Concession Road 7, and Wellington Road 34 and Brock Road.

Like the Victoria Road South intersection, these roundabouts are expected to operate well, with little delay, an LOS A and reasonable queues during both the AM and PM peak periods. The Roundabout volumes, geometry and analysis results are provided below for the 2035 future total.

6.1 Wellington Road 34 and Brock Road

1 Traffic Volumes

2035 – 10 Year Total, AM Peak Hour

From \ To	1st exit	2nd exit	3rd exit	U-Turn	Total
SB - Brock Rd	23	617	32	0	672
EB - Wellington Rd 34	54	151	28	0	233
NB - Brock Rd	41	358	30	0	429
WB - Wellingotn Rd 34	40	190	171	0	401
Total	158	1316	261	0	-

2035 – 10 Year Total, PM Peak Hour

From \ To	1st exit	2nd exit	3rd exit	U-Turn	Total
SB - Brock Rd	38	424	66	0	528
EB - Wellington Rd 34	29	246	33	0	308
NB - Brock Rd	72	556	28	0	656
WB - Wellingotn Rd 34	73	196	49	0	318
Total	212	1422	176	0	-

2 Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only	Leg has bypass	Percentage intercept adjustment (%)
SB - Brock Rd	7.85	8.00	10.0	30.0	54.0	20.0	☐	☐	95.00
EB - Wellington Rd 34	3.75	4.25	10.0	25.0	54.0	20.0	☐	☐	95.00
NB - Brock Rd	7.85	8.00	10.0	30.0	54.0	20.0	☐	☐	95.00
WB - Wellingotn Rd 34	3.75	4.25	10.0	25.0	54.0	20.0	☐	☐	95.00

3 Analysis Results

	AM							PM						
	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
	3x2 Roundabout - 2035 - 10 Yr Total													
SB - Brock Rd	2.7	2.76	0.36	A	4.08	A	54 %	1.5	2.30	0.27	A	3.91	A	59 %
EB - Wellington Rd 34	2.3	7.27	0.34	A			[EB - Wellington Rd 34]	2.7	6.24	0.37	A			[WB - Wellingotn Rd 34]
NB - Brock Rd	1.0	2.09	0.22	A				2.4	2.65	0.35	A			
WB - Wellingotn Rd 34	2.7	6.58	0.45	A				2.9	6.92	0.40	A			

6.2 Wellington Road 34 and Concession Road 7

1 Traffic Volumes

2035 – 10 Year Total, AM Peak Hour

From \ To	1st exit	2nd exit	3rd exit	U-Turn	Total
SB - Concession Rd 7	13	158	183	0	354
EB - Wellington Rd 34	11	15	30	0	56
NB - Concession Rd 7	29	158	2	0	189
WB - Wellingotn Rd 34	193	9	29	0	231
Total	246	340	244	0	-

2035 – 10 Year Total, PM Peak Hour

From \ To	1st exit	2nd exit	3rd exit	U-Turn	Total
SB - Concession Rd 7	23	183	254	0	460
EB - Wellington Rd 34	5	6	18	0	29
NB - Concession Rd 7	44	171	4	0	219
WB - Wellingotn Rd 34	235	15	28	0	278
Total	307	375	304	0	-

2 Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only	Leg has bypass	Percentage intercept adjustment (%)
SB - Concession Rd 7	3.75	4.25	10.0	20.0	46.0	20.0	☐	☐	95.00
EB - Wellington Rd 34	3.75	4.25	10.0	20.0	46.0	20.0	☐	☐	95.00
NB - Concession Rd 7	3.75	4.25	10.0	20.0	46.0	20.0	☐	☐	95.00
WB - Wellingotn Rd 34	3.75	4.25	10.0	20.0	46.0	20.0	☐	☐	95.00

3 Analysis Results

	AM							PM						
	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Network Residual Capacity
3x2 Roundabout - 2035 - 10 Yr Total														
SB - Concession Rd 7	2.1	4.46	0.33	A	4.28	A	174 % [SB - Concession Rd 7]	2.5	5.25	0.42	A	4.83	A	112 % [SB - Concession Rd 7]
EB - Wellington Rd 34	0.5	3.86	0.06	A				0.5	3.99	0.03	A			
NB - Concession Rd 7	0.8	4.13	0.19	A				1.3	4.45	0.23	A			
WB - Wellingotn Rd 34	1.3	4.24	0.23	A				1.4	4.52	0.28	A			

7. Recommendations

Based on the results of our review of the Study Area as well as the operational analysis completed for existing and future scenarios, it is recommendable that the following activities should be considered as part of the Site Plan:

- Remove the excess coverage located along the shoulder of the roadway to provide enough visual clearance at the site access on Victoria Road South. Vegetation clearance is recommended to meet required stopping sight distance standards, particularly for heavy vehicles
- Install a “slippery when wet” road signs at key locations prone to adverse weather effects to warn drivers ahead of time about expected road conditions.

8. Conclusion

The Transportation Impact Study (TIS) for the proposed mineral aggregate operation at 4454 Victoria Road South evaluated the impact of additional site-generated traffic on the surrounding road network under existing, 2025 buildout, and future (2030 and 2035) total conditions. The analysis considered peak hour traffic volumes, geometric configurations, operational performance, sightline adequacy, and collision history along the designated haul route and key intersections.

The operational analyses indicate that all studied intersections, including both signalized and roundabout-controlled locations, are expected to operate at an acceptable Level of Service (LOS B or better) during both AM and PM peak periods, across all scenarios evaluated. Site-generated truck traffic is not anticipated to result in any significant degradation of intersection performance or capacity constraints. The ARCADY-based assessments of the roundabouts at Wellington Road 34 & Brock Road and Wellington Road 34 & Concession Road 7 further confirm efficient performance with minimal delays and queuing under future conditions.

Sightline assessments revealed one area of concern due to obstructive foliage at the site access on Victoria Road South. Mitigating this issue through vegetation clearance is recommended to meet required stopping sight distance standards, particularly for heavy vehicles.

Collision analysis over a five-year period did not reveal systemic safety concerns but did identify repeated weather-related incidents. As a precaution, it is recommended that “Slippery When Wet” signage be installed at key locations prone to adverse weather effects.

In summary, the proposed development can be accommodated by the existing and future road network without the need for major infrastructure improvements. With mitigative measures in place, the site traffic is expected to integrate safely and efficiently within the existing transportation system.

A

Appendix A: Terms of Reference

NOTE

TO	:	**Don Kudo (County of Wellington)**
FROM	:	**Jaime Garcia, P.Eng., Ph.D. (CIMA+)**
DATE	:	**December 13, 2024**
SUBJECT	:	**TRAFFIC IMPACT STUDY - TERMS OF REFERENCE (REVISED)**

---

1. Introduction

CBM Aggregates (CBM) seeks to expand the current property at 4454 Victoria Road South, which functions as a quarry for concrete and cement aggregates to be processed at CBM's Aberfoyle North plant. The need for a Traffic Impact Study (TIS) is a result of the *Aggregate Resources Act* and its requirement for a TIS for new aggregate sites.

The purpose of this document is to provide you with a summary of our proposed approach for the completion of the requested Traffic Impact Study for your review and comments.

2. Study Area

The following **Figure 1** outlines the preliminary boundaries of the study area. The study area will include roads under the jurisdiction of the Town of Puslinch and the County of Wellington. Under these limits, six intersections are to be analyzed. The study area follows comments provided by the County of Wellington dated December 02, 2024, with intersections of interest highlighted with a blue circle.

Figure 1 - Study Area Limits

2.1 Road Network Existing Conditions

The key properties of the existing road network will be identified in the TIS, including street names, jurisdictions, speed limits, classifications, lane configurations, and intersections (both signalized and unsignalized).

2.2 Development Land Use Type and Site Plan

The TIS will contain a detailed description of the proposed development, including existing land use, any official plan designation and the surrounding lands and their uses.

CBM plans to utilise the lands shown in **Figure 2** as another aggregate pit for their production, with CBM vehicles delivering the aggregate to the Aberfoyle North Plant.

Figure 2 – Proposed Pit Expansion

3. Data Collection

3.1 Field Work

CIMA+ will confirm existing conditions including:

- Traffic Controls
- Lane Assignments
- Non-auto mode facilities

- Adjacent Land Uses
- Queue Lengths
- Driver Behaviour

Documentation will be in the form of descriptive text and photographs when appropriate.

3.2 Collision Data

Collision data will be requested from the relevant jurisdiction(s) at signalized intersections within the study area once the need and scope of the safety analysis are confirmed. As required by the County of Wellington, collision data will analyze the last 5 years of data should it be required.

3.3 Traffic Counts and Traffic Signal Timing

As part of the analysis, weekday AM and PM peak hour turning movement counts (including vehicle classifications and non-auto volumes, taken over 3 weekdays), and a detailed signal timing plan will be required at the following intersections:

Intersection	Traffic Control	Traffic Data to be Requested	Jurisdiction/Responsible Contact
Victoria Road South @ Access to the proposed pit	Unsignalized – Minor street stop controlled	Turning Movement Counts/Vehicle quantity estimates Vehicle type	CBM
Wellington County Road 34 @ Victoria Road South	Signalized	Signal Control Plan Turning Movement Counts	County of Wellington
Wellington County Road 34 @ Brock Road South (County Road 46)	Unsignalized – Roundabout	Turning Movement Counts	County of Wellington
Wellington County Road 34 @ Concession Road 7	Unsignalized – Roundabout	Turning Movement Counts	County of Wellington
Concession Road 7 @ Access to North Plant	Unsignalized – Minor street stop controlled	Turning Movement Counts/Vehicle quantity estimates Vehicle type	CBM

Due to the COVID-19 outbreak, it is not certain if recently recorded traffic data will reflect expected historical growth. Historical counts will be requested to the extent possible and demand trends will be compared to achieve a reasonable growth rate or an ATR historical growth rate.

4. Horizon Years

As per County of Wellington TIS guidelines (Appendix G of Wellington's Road Master Action Plan), CIMA+ will assume that weekday AM and PM peak hour traffic forecasts will be developed for the following horizon years: existing condition (2024), opening/build-out date (to be determined), and 5 or 10 years after the full build-out. Horizon years will be confirmed in a pre-consultation stage with the County of Wellington.

5. Background Traffic Projections

Background traffic projections will be determined based on historical growth rates determined via:

- Historical ATR Counts
- Regional TMP data
- Or any approved growth rate assumption if appropriate data is unavailable.

The methodology behind background traffic trip generation will be confirmed in a pre-consultation stage with the County of Wellington.

Within the study area, there does not exist any other major developments that would require significant traffic consideration. Our approach considers that the Town will indicate proposed/approved developments that may need to be considered.

6. Trip Generation

In pre-consultation with the County of Wellington, the following trip generation methodologies and adjustments will be confirmed. However, the generated volumes from the proposed development will be assumed to be entirely composed of CBM vehicles accessing the new aggregate pit, following the provided haul route by CBM.

6.1 Mode Choice Assumptions

For CBM site traffic, assumptions of employee mode choice will be provided by CBM.

6.2 ITE Values

CBM site trips are not anticipated to require ITE Trip Generation manual, as vehicle site access data is expected to be provided by CBM. Land use changes outside of the CBM site will be assessed based on their corresponding ITE land use code.

6.3 Origin-Destination Data

CBM is expected to provide general locations of vehicles and employees' origins, which we will review to inform our assumption, and make modifications as necessary.

7. Trip Distribution

In a pre-consultation stage with the County of Wellington, trip distribution methodologies and variations will be confirmed as required. Projected site traffic will be allocated along the roadway network within the study area. Once CBM provides employee and vehicle origin data, our assumptions will be confirmed and modified as necessary.

8. Trip Assignment and Travel Forecasts

Trips will be assigned for the various years of the traffic forecasts as follows:

- Existing (Base Year) – Existing (2024) vehicle traffic volumes for the weekday AM and PM peak hours will be developed from available counts in the study area.
- Opening Day/Build-Out Day Background – Opening Day Background Volumes for weekday AM and PM peak hours will be forecasted by applying a growth rate to existing volumes and adding a percentage of the traffic generated by the proposed pit expansion in -.
- Opening Day/Build-Out Day Total – Opening Day Total Volumes will be generated by summing the opening day background volumes and site vehicle trips generated and distributed as described in sections 7 and 8.
- Horizon Year Background – Horizon Year Background Volumes for weekday AM and PM peak hours will be forecasted by applying a growth rate to existing volumes and adding a percentage of the traffic generated by the proposed pit expansion in -.
- Horizon Year Total – Horizon Year Total Volumes will be generated by summing the horizon year background volumes and site vehicle trips generated and distributed as described in sections 7 and 8.

9. Operational Analysis

CIMA+ will evaluate the operations of the study area intersections under all forecasted conditions. Based on said evaluation, CIMA+ will identify any existing transportation issues, as well as the overall impact of the proposed development on the surrounding road network. Road improvements and modifications (such as adding auxiliary turning lanes) may be recommended to address any determined deficiencies. An assessment of whether these measures are required due to non-site traffic or resulting from the traffic generated directly from the proposed development.

In a pre-consultation stage with the County of Wellington, the following will be confirmed:

- Analysis and Design Standard/Guidelines/Reference Materials

- Analysis Methodology and Software
- Analysis Periods

Confirmation of the software version (assumed Trafficware Synchro/Simtraffic V. 12) as well as the capacity analysis will be obtained from the County of Wellington. It will be used to assess the nine significant signalized and unsignalized intersections within the study area, providing an assessment of volume-to-capacity (v/c) ratios, Level of Service (LOS) and queuing conditions.

10. Safety

The need and scope of the Safety Analysis, or any site-specific safety concerns, will be confirmed in pre-consultation with the County of Wellington. If required, we will conduct the analysis following a Road Safety Audit approach. Collision analysis will be conducted to determine if there are any concerns in the study area. As required in the County of Wellington's TIS guidelines and in our proposal to CBM, we will also conduct a sight distance assessment to identify any potential sight distance restrictions.

11. Geometric Improvement

The need for geometric improvements will be reviewed at all locations identified by the traffic and (if required) safety analysis.

12. Assessment of Haul Route

As requested by CBM, the haul route proposed (which corresponds to the study area shown in **Figure 1**) will also be assessed for its potential impacts on traffic operations and public safety.

13. Conclusion and Recommendations

The interpretation of traffic analysis results into road improvements will follow the County of Wellington's practices and policies. The recommendations will include key findings and summaries of required infrastructure improvements.

B

Appendix B: Synchro/SimTraffic Outputs

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	143	18	26	179	25	17	117	12	37	109	85
Future Volume (vph)	28	143	18	26	179	25	17	117	12	37	109	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.95	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1675			1823			1747			1740	
Flt Permitted		0.93			0.95			0.95			0.93	
Satd. Flow (perm)		1570			1744			1672			1639	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	33	171	22	31	214	30	20	140	14	44	130	102
RTOR Reduction (vph)	0	8	0	0	10	0	0	7	0	0	47	0
Lane Group Flow (vph)	0	218	0	0	265	0	0	167	0	0	229	0
Heavy Vehicles (%)	11%	10%	20%	4%	1%	8%	29%	2%	25%	3%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		628			697			668			655	
v/s Ratio Prot												
v/s Ratio Perm		0.14			c0.15			0.10			c0.14	
v/c Ratio		0.35			0.38			0.25			0.35	
Uniform Delay, d1		9.4			9.6			9.0			9.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.5			1.6			0.9			1.5	
Delay (s)		10.9			11.1			9.9			10.9	
Level of Service		B			B			A			B	
Approach Delay (s)		10.9			11.1			9.9			10.9	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	53.1	40.7	36.6	39.9
Average Queue (m)	21.9	20.2	17.0	20.8
95th Queue (m)	40.0	34.2	30.8	35.4
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	224	21	28	222	82	13	105	19	22	72	29
Future Volume (vph)	38	224	21	28	222	82	13	105	19	22	72	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.97			0.98			0.97	
Flt Protected		0.99			1.00			1.00			0.99	
Satd. Flow (prot)		1826			1810			1788			1823	
Flt Permitted		0.91			0.95			0.97			0.94	
Satd. Flow (perm)		1679			1731			1745			1728	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	100%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	45	268	25	33	265	89	16	126	23	26	86	35
RTOR Reduction (vph)	0	7	0	0	24	0	0	13	0	0	21	0
Lane Group Flow (vph)	0	331	0	0	363	0	0	152	0	0	126	0
Heavy Vehicles (%)	3%	2%	5%	4%	1%	1%	15%	3%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		671			692			698			691	
v/s Ratio Prot												
v/s Ratio Perm		0.20			c0.21			c0.09			0.07	
v/c Ratio		0.49			0.52			0.22			0.18	
Uniform Delay, d1		10.1			10.3			8.9			8.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.6			2.8			0.7			0.6	
Delay (s)		12.7			13.1			9.6			9.3	
Level of Service		B			B			A			A	
Approach Delay (s)		12.7			13.1			9.6			9.3	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	62.3	59.0	34.3	28.2
Average Queue (m)	27.9	26.2	14.9	12.7
95th Queue (m)	51.4	44.8	27.7	23.8
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

HCM Signalized Intersection Capacity Analysis
3: Victoria Road South & Wellington County Road 34

Timing Plan: 5 YR FT AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	143	18	26	179	25	25	117	12	37	109	85
Future Volume (vph)	28	143	18	26	179	25	25	117	12	37	109	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.95	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1675			1823			1731			1740	
Flt Permitted		0.93			0.95			0.93			0.93	
Satd. Flow (perm)		1570			1744			1628			1637	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	100%	110%	110%	110%	110%	110%
Adj. Flow (vph)	33	171	22	31	214	30	27	140	14	44	130	102
RTOR Reduction (vph)	0	8	0	0	10	0	0	7	0	0	47	0
Lane Group Flow (vph)	0	218	0	0	265	0	0	174	0	0	229	0
Heavy Vehicles (%)	11%	10%	20%	4%	1%	8%	29%	2%	25%	3%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		628			697			651			654	
v/s Ratio Prot												
v/s Ratio Perm		0.14			c0.15			0.11			c0.14	
v/c Ratio		0.35			0.38			0.27			0.35	
Uniform Delay, d1		9.4			9.6			9.1			9.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.5			1.6			1.0			1.5	
Delay (s)		10.9			11.1			10.1			10.9	
Level of Service		B			B			B			B	
Approach Delay (s)		10.9			11.1			10.1			10.9	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	53.6	46.8	36.6	39.9
Average Queue (m)	21.7	20.3	17.3	20.9
95th Queue (m)	40.3	35.7	31.0	34.3
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

HCM Signalized Intersection Capacity Analysis
3: Victoria Road South & Wellington County Road 34

Timing Plan: 5 YR FT PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	224	29	28	222	82	13	105	19	22	72	29
Future Volume (vph)	38	224	29	28	222	82	13	105	19	22	72	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.97			0.98			0.97	
Flt Protected		0.99			1.00			1.00			0.99	
Satd. Flow (prot)		1820			1810			1788			1823	
Flt Permitted		0.92			0.95			0.97			0.94	
Satd. Flow (perm)		1677			1729			1745			1728	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	100%	110%	110%	100%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	45	268	32	33	265	89	16	126	23	26	86	35
RTOR Reduction (vph)	0	8	0	0	24	0	0	13	0	0	21	0
Lane Group Flow (vph)	0	337	0	0	363	0	0	152	0	0	126	0
Heavy Vehicles (%)	3%	2%	5%	4%	1%	1%	15%	3%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		670			691			698			691	
v/s Ratio Prot												
v/s Ratio Perm		0.20			c0.21			c0.09			0.07	
v/c Ratio		0.50			0.53			0.22			0.18	
Uniform Delay, d1		10.1			10.3			8.9			8.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.7			2.8			0.7			0.6	
Delay (s)		12.8			13.1			9.6			9.3	
Level of Service		B			B			A			A	
Approach Delay (s)		12.8			13.1			9.6			9.3	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	62.9	59.2	34.3	27.5
Average Queue (m)	28.3	26.1	14.4	13.1
95th Queue (m)	51.4	45.1	27.9	23.4
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	173	18	26	217	30	17	117	12	37	109	85
Future Volume (vph)	28	173	18	26	217	30	17	117	12	37	109	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.95	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1675			1823			1744			1741	
Flt Permitted		0.92			0.95			0.94			0.93	
Satd. Flow (perm)		1558			1738			1658			1630	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	100%	122%	122%	100%	100%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	37	188	24	34	236	33	23	155	16	49	145	113
RTOR Reduction (vph)	0	8	0	0	10	0	0	7	0	0	47	0
Lane Group Flow (vph)	0	241	0	0	293	0	0	187	0	0	260	0
Heavy Vehicles (%)	11%	10%	20%	4%	1%	8%	29%	2%	25%	3%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		623			695			663			652	
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.17			0.11			c0.16	
v/c Ratio		0.39			0.42			0.28			0.40	
Uniform Delay, d1		9.6			9.7			9.1			9.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.8			1.9			1.1			1.8	
Delay (s)		11.4			11.6			10.2			11.5	
Level of Service		B			B			B			B	
Approach Delay (s)		11.4			11.6			10.2			11.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	55.4	45.4	43.7	47.3
Average Queue (m)	21.9	21.3	19.7	21.9
95th Queue (m)	39.1	36.5	34.2	38.9
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	272	21	28	269	90	13	105	19	22	72	29
Future Volume (vph)	38	272	21	28	269	90	13	105	19	22	72	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.97			0.98			0.97	
Flt Protected		0.99			1.00			1.00			0.99	
Satd. Flow (prot)		1825			1810			1789			1824	
Flt Permitted		0.91			0.95			0.97			0.93	
Satd. Flow (perm)		1680			1720			1745			1719	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	100%	122%	122%	100%	100%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	50	296	28	37	292	98	17	139	25	29	95	38
RTOR Reduction (vph)	0	7	0	0	24	0	0	13	0	0	23	0
Lane Group Flow (vph)	0	367	0	0	403	0	0	168	0	0	139	0
Heavy Vehicles (%)	3%	2%	5%	4%	1%	1%	15%	3%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		672			688			698			687	
v/s Ratio Prot												
v/s Ratio Perm		0.22			c0.23			c0.10			0.08	
v/c Ratio		0.55			0.59			0.24			0.20	
Uniform Delay, d1		10.4			10.6			9.0			8.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.2			3.6			0.8			0.7	
Delay (s)		13.5			14.2			9.8			9.5	
Level of Service		B			B			A			A	
Approach Delay (s)		13.5			14.2			9.8			9.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	73.1	84.2	33.9	32.0
Average Queue (m)	29.7	35.8	16.0	13.7
95th Queue (m)	56.1	66.9	29.6	25.1
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

HCM Signalized Intersection Capacity Analysis
3: Victoria Road South & Wellington County Road 34

Timing Plan: 10 YR FT AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	173	18	26	217	30	27	117	12	37	109	85
Future Volume (vph)	28	173	18	26	217	30	27	117	12	37	109	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.95	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1675			1823			1732			1741	
Flt Permitted		0.92			0.95			0.93			0.93	
Satd. Flow (perm)		1558			1738			1621			1628	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	100%	122%	122%	100%	100%	100%	122%	122%	122%	122%	122%
Adj. Flow (vph)	37	188	24	34	236	33	29	155	16	49	145	113
RTOR Reduction (vph)	0	8	0	0	10	0	0	7	0	0	47	0
Lane Group Flow (vph)	0	241	0	0	293	0	0	193	0	0	260	0
Heavy Vehicles (%)	11%	10%	20%	4%	1%	8%	29%	2%	25%	3%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		623			695			648			651	
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.17			0.12			c0.16	
v/c Ratio		0.39			0.42			0.30			0.40	
Uniform Delay, d1		9.6			9.7			9.2			9.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.8			1.9			1.2			1.8	
Delay (s)		11.4			11.6			10.4			11.5	
Level of Service		B			B			B			B	
Approach Delay (s)		11.4			11.6			10.4			11.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	55.5	49.2	42.8	41.4
Average Queue (m)	22.6	22.2	20.8	21.3
95th Queue (m)	40.9	38.1	35.2	36.4
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

HCM Signalized Intersection Capacity Analysis
3: Victoria Road South & Wellington County Road 34

Timing Plan: 10 YR FT PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	272	32	28	269	90	13	105	19	22	72	29
Future Volume (vph)	38	272	32	28	269	90	13	105	19	22	72	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.97			0.98			0.97	
Flt Protected		0.99			1.00			1.00			0.99	
Satd. Flow (prot)		1820			1810			1789			1824	
Flt Permitted		0.92			0.95			0.97			0.93	
Satd. Flow (perm)		1678			1719			1745			1719	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	100%	100%	122%	100%	100%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	50	296	35	37	292	98	17	139	25	29	95	38
RTOR Reduction (vph)	0	8	0	0	24	0	0	13	0	0	23	0
Lane Group Flow (vph)	0	373	0	0	403	0	0	168	0	0	139	0
Heavy Vehicles (%)	3%	2%	5%	4%	1%	1%	15%	3%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		671			687			698			687	
v/s Ratio Prot												
v/s Ratio Perm		0.22			c0.23			c0.10			0.08	
v/c Ratio		0.56			0.59			0.24			0.20	
Uniform Delay, d1		10.4			10.6			9.0			8.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.3			3.6			0.8			0.7	
Delay (s)		13.7			14.2			9.8			9.5	
Level of Service		B			B			A			A	
Approach Delay (s)		13.7			14.2			9.8			9.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	73.1	78.7	34.4	32.0
Average Queue (m)	29.4	34.7	15.7	13.8
95th Queue (m)	55.1	62.5	29.0	25.3
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

HCM Signalized Intersection Capacity Analysis
3: Victoria Road South & Wellington County Road 34

Timing Plan: BO AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	142	18	26	178	25	23	117	12	37	109	85
Future Volume (vph)	28	142	18	26	178	25	23	117	12	37	109	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.95	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1675			1823			1729			1741	
Flt Permitted		0.94			0.96			0.94			0.94	
Satd. Flow (perm)		1579			1751			1633			1645	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	154	20	28	193	27	25	127	13	40	118	92
RTOR Reduction (vph)	0	8	0	0	10	0	0	7	0	0	47	0
Lane Group Flow (vph)	0	196	0	0	238	0	0	158	0	0	203	0
Heavy Vehicles (%)	11%	10%	20%	4%	1%	8%	29%	2%	25%	3%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		631			700			653			658	
v/s Ratio Prot												
v/s Ratio Perm		0.12			c0.14			0.10			c0.12	
v/c Ratio		0.31			0.34			0.24			0.31	
Uniform Delay, d1		9.2			9.4			9.0			9.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.3			1.3			0.9			1.2	
Delay (s)		10.5			10.7			9.9			10.5	
Level of Service		B			B			A			B	
Approach Delay (s)		10.5			10.7			9.9			10.5	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	38.7	39.4	45.8	42.3
Average Queue (m)	18.5	17.8	15.8	18.3
95th Queue (m)	35.0	31.6	29.6	33.5
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	223	27	28	221	74	13	105	19	22	72	29
Future Volume (vph)	38	223	27	28	221	74	13	105	19	22	72	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.97			0.98			0.97	
Flt Protected		0.99			1.00			1.00			0.99	
Satd. Flow (prot)		1820			1811			1789			1822	
Flt Permitted		0.92			0.96			0.97			0.94	
Satd. Flow (perm)		1690			1737			1750			1733	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	242	29	30	240	80	14	114	21	24	78	32
RTOR Reduction (vph)	0	8	0	0	24	0	0	13	0	0	19	0
Lane Group Flow (vph)	0	304	0	0	326	0	0	136	0	0	115	0
Heavy Vehicles (%)	3%	2%	5%	4%	1%	1%	15%	3%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			18.0			18.0	
Effective Green, g (s)		18.0			18.0			18.0			18.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Lane Grp Cap (vph)		676			694			700			693	
v/s Ratio Prot												
v/s Ratio Perm		0.18			c0.19			c0.08			0.07	
v/c Ratio		0.45			0.47			0.19			0.17	
Uniform Delay, d1		9.9			10.0			8.8			8.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.2			2.3			0.6			0.5	
Delay (s)		12.0			12.3			9.4			9.2	
Level of Service		B			B			A			A	
Approach Delay (s)		12.0			12.3			9.4			9.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	61.4	56.3	40.5	26.2
Average Queue (m)	22.8	25.1	14.9	11.6
95th Queue (m)	44.2	44.4	28.0	21.6
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	142	18	26	178	25	17	117	12	37	109	85
Future Volume (vph)	28	142	18	26	178	25	17	117	12	37	109	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.95	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1675			1823			1747			1741	
Flt Permitted		0.94			0.96			0.94			0.92	
Satd. Flow (perm)		1580			1752			1659			1612	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	154	20	28	193	27	18	127	13	40	118	92
RTOR Reduction (vph)	0	7	0	0	8	0	0	6	0	0	38	0
Lane Group Flow (vph)	0	197	0	0	240	0	0	152	0	0	212	0
Heavy Vehicles (%)	11%	10%	20%	4%	1%	8%	29%	2%	25%	3%	2%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		29.0			29.0			14.0			14.0	
Effective Green, g (s)		29.0			29.0			14.0			14.0	
Actuated g/C Ratio		0.53			0.53			0.25			0.25	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		833			923			422			410	
v/s Ratio Prot												
v/s Ratio Perm		0.12			c0.14			0.09			c0.13	
v/c Ratio		0.24			0.26			0.36			0.52	
Uniform Delay, d1		7.0			7.1			16.8			17.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			0.7			2.4			4.6	
Delay (s)		7.7			7.8			19.2			22.2	
Level of Service		A			A			B			C	
Approach Delay (s)		7.7			7.8			19.2			22.2	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	47.9	40.6	44.2	74.1
Average Queue (m)	17.6	16.8	18.1	27.8
95th Queue (m)	35.3	30.2	32.7	53.2
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	223	21	28	221	74	13	105	19	22	72	29
Future Volume (vph)	38	223	21	28	221	74	13	105	19	22	72	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0			6.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.97			0.98			0.97	
Flt Protected		0.99			1.00			1.00			0.99	
Satd. Flow (prot)		1825			1811			1789			1822	
Flt Permitted		0.92			0.96			0.96			0.92	
Satd. Flow (perm)		1692			1739			1731			1695	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	242	23	30	240	80	14	114	21	24	78	32
RTOR Reduction (vph)	0	5	0	0	19	0	0	10	0	0	21	0
Lane Group Flow (vph)	0	301	0	0	331	0	0	139	0	0	113	0
Heavy Vehicles (%)	3%	2%	5%	4%	1%	1%	15%	3%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		29.0			29.0			14.0			14.0	
Effective Green, g (s)		29.0			29.0			14.0			14.0	
Actuated g/C Ratio		0.53			0.53			0.25			0.25	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		892			916			440			431	
v/s Ratio Prot												
v/s Ratio Perm		0.18			c0.19			c0.08			0.07	
v/c Ratio		0.34			0.36			0.31			0.26	
Uniform Delay, d1		7.5			7.6			16.6			16.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			1.1			1.9			1.5	
Delay (s)		8.5			8.7			18.5			17.9	
Level of Service		A			A			B			B	
Approach Delay (s)		8.5			8.7			18.5			17.9	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 3: Victoria Road South & Wellington County Road 34

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	49.8	43.1	44.7	30.1
Average Queue (m)	20.7	21.5	18.7	15.1
95th Queue (m)	39.2	36.3	34.9	26.4
Link Distance (m)	401.3	386.2	385.0	391.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

C

Appendix C: Signal Timing Plan

TIMING PLAN [1] PHASE DATA >^v

PHASE	1	2	3	4	5	6	7	8
MAX3	0	0	0	0	0	0	0	0
DYM MAX	0	0	0	0	0	0	0	0
DYM STP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
YELLOW	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
RED CLR	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
RED MAX	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
RED RVT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ACT B4	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX INT	0	0	0	0	0	0	0	0
TIME B4	0	0	0	0	0	0	0	0
CARS WT	0	0	0	0	0	0	0	0
STPTDUC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TTREDUC	0	0	0	0	0	0	0	0

NEX DATA

NEXT SCREE

NEXT PAGE

CLEAR

G-Series
SDLC Port 1

MING PLAN [1] PHASE DATA > V

PHASE	1	2	3	4	5	6	7	8
N GRN	5	35	7	15	5	35	5	15
K MGRN	0	0	0	0	0	0	0	0
S MGRN	0	0	0	0	0	0	0	0
LY GRN	0	0	0	0	0	0	0	0
NALK	0	5	0	5	0	5	0	5
WALK2	0	0	0	0	0	0	0	0
WLK MAX	0	0	0	0	0	0	0	0
PED CLR	0	5	0	5	0	5	0	5
PD CLR2	0	0	0	0	0	0	0	0
PC MAX	0	0	0	0	0	0	0	0
PED CO	0	0	0	0	0	0	0	0
VEH EXT	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
VH EXT2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAX1	0	35	12	20	0	35	0	20

NEXT DATA

NEXT SCREEN

NEXT PAGE

CLEAR

cobalt G-Series

D

Appendix D: Curriculum Vitae

CIMA+

Engineering
for **people**

Michael Jarrett

Technologist, Transportation

EDUCATION

Diploma, Transportation Engineering Technology, Mohawk College, 2020

CAREER

CIMA+ (since 2021)

City of Mississauga (2019)

Town of Halton Hills (2018)

City of Burlington (2018)

Profile

Michael is a Transportation Engineering Technologist specializing in traffic operations, transportation planning and transportation impact study peer reviews. At CIMA+, Michael is highly involved in a variety of projects related to transportation impact studies, in which he provides traffic operations analyses and assessments. He is proficient in software applications Synchro/SimTraffic, Vissim and T.E.S.

Relevant Experience

Traffic Impact Studies

Peer Review of Traffic Impact Studies; Halton Region

Ontario, 2021-2025

Conducted over one-hundred traffic impact study peer reviews as part of retainer with Halton Region. Assess trip generation, modal split, distribution, assignment, Synchro/Simtraffic analysis, parking assessments, safety reviews, access assessments, and ensure traffic impact study fully complies with guidelines required by respective road authority.

The reviews include Type 1 - Initial TIS review, Type 2 - Review of revised TIS, Type 3 - Comprehensive reassessment of TIS and Type 4 - Terms of reference review. Examples of recent project experience includes:

- Plains Road East, Halton – Type 1+3, 2025
- Bronte Creek, Halton – Type 1+3, 2025
- 777 Guelph Line – Type 1, 2025
- Vision Georgetown – Type 1+3, 2025
- 13584 Steeles Avenue – Type 1, 2025
- Toronto Premium Outlets – Type 1, 2025

Transportation Technologist

Traffic Operations

Traffic Impact Assessment; CBM Aggregates

Wellington, ON, 2025

Conducted and oversaw a comprehensive traffic impact assessment which analyses the impact of an open pit mine on various roadways within the network.

Transportation Technologist

Left-Turn Queue Study; City of Toronto

Toronto, ON, 2025

As part of a retainer with the City of Toronto – left-turn analyses are conducted at identified intersections to provide improved measures of effectiveness.

Transportation Technologist

Signal Coordination; Region of Halton

Burlington, ON, 2025

Conducted field reviews of existing traffic conditions and took field measurements. Reviewed and updated existing clearance timings, signal timing plans and programming sheets to coordinate the corridor. Performed in-field implementation and verification of coordination.

Transportation Technologist

Traffic Calming Treatments; Town of Whitchurch Stouffville

Stouffville, ON, 2023

Provided information of the various types of traffic calming available to the client, along with their feasibility, applications, expected outcomes, and intended usage.

Transportation Technologist

Traffic & Speed Management; City of Vaughan

Vaughan, ON, 2022

Conducted spot-speed studies at various roadways within the network. Reviewed on-street parking patterns at locations within proximity to certain schools.

Transportation Technologist

Traffic Safety

Roadway Safety Audit; City of Mississauga

Mississauga, ON, 2019

Conducted a safety audit of a major downtown corridor in the City of Mississauga. Assessed collision data to determine problematic areas and intersections. Reviewed active transportation and public transportation infrastructure across the network. Provided comments/suggestions based on findings.

Traffic Services Student

Corridor Operations Assessment; Town of Halton Hills

Georgetown, ON, 2018

Assisted in updating the traffic accident database, and collision analysis. Installed A.T.R counters, while also interpreting the data provided from these counts. Undertake traffic control signal and pavement markings inventory. Conduct parking studies to establish the parking demands of various networks. Investigate local roads for the feasibility of traffic calming devices.

Traffic Analyst Student

Roadway Safety Analysis; City of Burlington

Burlington, ON, 2018

Reviewed collision data to identify problematic intersections and corridors, in the City of Burlington's downtown core. Reviewed motor vehicle accident reports for validity, and inputted collisions in T.E.S to create a 2D Map. Conducted a road safety assessment based on any applicable data, such as; intersection/corridor geometry, collision location and collision frequency.

Traffic Services Student

Jaime Garcia

Ph.D., P.Eng.

Associate Partner

Senior Project Manager, Transportation

EDUCATION

Ph.D. Transportation Engineering, Carleton University, Ottawa, 2004

M.Sc. Environmental Engineering, Instituto Tecnologico y de Estudios Superiores de Monterrey, 1997

B.Sc. Civil Engineering, Universidad Autonoma de San Luis Potosi, 1987

ASSOCIATIONS

Association of Professional Engineers of Ontario (PEO), 2005 (#100087279)

CAREER

CIMA+ (2010 to Present)

The Corporation of the County of Essex (2006 to 2010)

Carleton University (2000 to 2005)

International Experience (prior to 1999)

Profile

Jaime Garcia is a Registered Professional Engineer in Ontario with 36 years of transportation planning, environmental engineering, and project management experience. He joined CIMA in 2010 as a Project Manager - Transportation Planning, with responsibilities in Transportation Studies and Environmental Assessments for transportation projects in Ontario. In this capacity, he has been managing several transportation studies, policy development, active transportation initiatives, traffic calming studies, cost-benefit analysis, parking studies, municipal environmental assessments, and public and agency consultation activities.

Jaime's previous experience as a Manager of Transportation Planning (2006-2010) at the Corporation of the County of Essex included provincial and municipal environmental assessments and multi-modal transportation planning projects and strategies. Jaime was also involved in the Environmental Assessment and Preliminary Design process for the Detroit River International Crossing and the related Let's Get Windsor Essex Moving Initiatives.

Jaime Garcia has an above par experience managing teams in charge of updating or developing Municipal, Provincial and National policies and guidelines including the Ontario Traffic Manual (OTM) Book 15 Pedestrian Crossing Facilities, Book 6 Warning Signs, the Ministry of Transportation Traffic Impact Study Guidelines and Highway Corridor Management Manual, as well as the Transportation Association of Canada's Canadian Guide to Traffic Calming.

Relevant Experience

Traffic Calming and Transportation Safety

Complete Streets Design and Construction Standards and Standard Drawings, City of Edmonton

Edmonton, AB (In Progress)

The City of Edmonton retained CIMA+ to provide expert advice on the existing design standards and guidelines to determine areas of overlap, inconsistency, and conflict as well as on proposed revisions to the documents. To this purpose, the scope of work considered a comprehensive review of the City's standards and design regulations to ensure that the mobility system enables the efficient movement of people and goods within Edmonton and the Metropolitan Region while support inviting and inclusive transportation options for Edmontonian of all ages, abilities, and incomes. Responsibilities under this assignment included the update of the Engineering Measures to Address Speeding Issues previously prepared for the City of Edmonton in 2016.

Senior Project Manager

Traffic Calming Consulting Services, City of Barrie

Barrie, ON. 2024

The City of Barrie retained CIMA+ to update its current Traffic Calming Policy to manage the increased needs for traffic calming as well as to secure the highest return on investment in terms of improving traffic safety. To this purpose, the scope of work not only included the preparation of a Traffic Calming Policy and Implementation Process but also the development of a Greenfield Traffic Calming Policy and Measures, a Speed Limit Reduction Assessment, as well as Recommendations for the Implementation of Vision Zero Policies as part of traffic calming. Responsibilities under this assignment included managing all phases of the assignment including meetings with General Public and Stakeholders following the accessibility requirements of the City of Barrie.

Senior Project Manager

Traffic Calming/Traffic Management Studies Policy Update, City of Sault Ste. Marie

Sault Ste. Marie, ON 2023

As part of our Traffic Advisory Services Retainer, the City requested CIMA+ a review and update of the current content of the Traffic Calming/Traffic Management Studies Policy into a Traffic Calming Guidelines that can be used for all types, classes, and cross-sections of roadways within the City. The main goal of these guidelines is to provide a toolkit for City Staff to respond consistently and objectively to speed complains, implement appropriate traffic calming measures where warranted, and proactively identify areas in the community that would benefit from traffic calming. Responsibilities under this assignment included managing all phases of the assignment including internal meetings with City Staff well as the development of a Traffic Calming Guideline tailored to satisfy the needs of the City of Sault Ste. Marie.

Senior Project Manager

Burkholder Street EA and Traffic Calming Detail Design; Town of Whitchurch-Stouffville

Whitchurch-Stouffville, ON, 2022 – 2023

Municipal Class Environmental Assessment (Class EA) study to explore how Burkholder Street and the Leisure Centre Driveway should function as access points to the Burkholder Neighbourhood. The traffic calming measures identified and designed included curb extensions, a PXO, upgrading sidewalk to multi-use path, a gateway feature, and speed cushions. CIMA+ was subsequently retained to complete the traffic calming review and selection of preferred countermeasures, and their detail design and preparation of tender packages.

Senior Project Manager

Traffic Calming Guidelines, Town of Orangeville

Orangeville, ON. 2022

CIMA was retained by the Town of Orangeville to determine a suitable set of traffic calming measures that can be implemented in the roadway network under the Town's jurisdiction in support of the recent introducing of a 40 kilometres per hour speed limit town wide. This assignment also included the development of a comprehensive implementation process and the evaluation of innovative traffic calming measures such as Traffic Dampening Signs. Responsibilities under this assignment included managing all phases of the assignment including Public Engagement and Consultation as well as the development of a Toolkit of Traffic Calming Measures tailored to satisfy the needs of the Town of Orangeville.

Senior Project Manager

Traffic and Speed Management Study, City of Vaughan

Vaughan, ON. 2022

CIMA was retained by the City of Vaughan, to support City Staff to provide an adequate response to the residents of the Athabasca Community that considers speeding traffic as a threat to the wellbeing of their community and – as such, they are reaching to the City for alternative solutions to this safety issue that goes beyond the standardized approach provided by the City's Neighbourhood Traffic Committee Policy and Procedure. Responsibilities under this assignment included managing all phases of the assignment including Public Engagement and Consultation as well as the development of a Toolkit of Traffic Calming Measures tailored to satisfy the needs of the Town of Orangeville.

Senior Project Manager

Traffic Calming Guidelines and Update of Pedestrian Crossings Guidelines, City of Kingston

Kingston, ON. 2021

CIMA was retained by the City of Kingston to determine a suitable set of traffic calming measures that can be implemented in phases and/or incrementally depending on the characteristics of the study area as well as to determine the necessary changes to the current Traffic Calming Policy. This assignment also included a full review of the current Pedestrian Crossing Guidelines to support an adequate implementation of pedestrian crossovers Type B and Type D city-wide. Responsibilities under this assignment included managing all phases of the assignment including Public Engagement and Consultation as well as the development of a Toolkit of Traffic Calming Measures tailored to satisfy the needs of the neighbourhoods composing the City of Kingston.

Senior Project Manager

Traffic Calming Strategy, Town of Caledon

Caledon, ON. 2020

CIMA was retained by the Town of Caledon to develop a Traffic Calming Strategy that incorporates best practices in traffic calming with local context to provide a more appropriate, efficient, flexible and systematic framework through which to address traffic safety issues relating to excessive speeding, traffic infiltration, and collision frequency. Responsibilities under this assignment included managing all phases of the assignment including Public Engagement and Consultation as well as the development of a Toolbox of Traffic Calming Measures tailored to satisfy the needs of the urban and rural communities composing the Town of Caledon.

Senior Project Manager

Traffic Management Process Update and Traffic Calming Design Guidelines, City of Ottawa

Ottawa, ON. 2018

CIMA was retained by the City of Ottawa to update their current ATM process and traffic calming design guidelines. The main objective of this assignment is to update and streamline their current process for reviewing concerns reported by the public and determining the most appropriate traffic calming solution. Responsibilities under this assignment included coordination and management of all technical aspects during the completion of the literature review and update of the Guidelines.

Project Manager

Canadian Guide to Neighbourhood Traffic Calming Update, TAC

Canada, 2018

CIMA was retained by the Transportation Association of Canada (TAC) to review and update the content and approach of the Guide with the latest "best practices" with a focus on a national and consistent application of traffic calming techniques/policies for all types of roadways in both rural and urban environments. Responsibilities under this assignment included coordination and management of all technical aspects during the completion of the literature review and update of the Guide.

Project Manager

Traffic Calming Warrant Update, Town of Ajax

Ajax, ON. 2015

CIMA was retained by the Town of Ajax to review the 2007 Traffic Calming Warrant and evaluate the existing warrant process, confirm if it was sufficiently responsive to local conditions and traffic calming priorities or, if changes were required, to provide a more appropriate, efficient and flexible framework to address the variety of traffic complaints relating to excessive speeding, traffic infiltration and collisions. Responsibilities under this assignment included coordination and management of all technical aspects that would be included as part of the review and evaluation process including project scope; data needs analysis; and recommendations in order to issue the revised version of the warrant.

Project Manager

Traffic Calming Design Services – Emperor Street and Seward Drive, Town of Ajax

Ajax, ON. 2015

CIMA was retained by the Town of Ajax to complete a detailed design, specifications, and drawings for traffic calming measures for Emperor Street between Harwood Avenue South and Pickering Beach Road, and for Seward Drive south of Williamson Drive, and the preparation of public notices and material for two Public Information Centre (PIC) meetings. Responsibilities under this assignment included coordination and management of all technical aspects including project management, data collection, identification of the most suitable set of traffic calming measures, detailed design and costing, and public consultation.

Project Manager

Road Safety Strategy Program, City of London

London, ON. 2014

The purpose of this assignment was to identify and target the most critical road safety issues in London with efforts and programs from a number of key stakeholders. To this purpose CIMA was required to set out the targets, policies and actions to guide the City of London and its partners to create safer roads and reduce the number of traffic collisions on the roads of London and the surrounding communities. Responsibilities included Project Team coordination, management and coordination with sub-consultants, budget, and quality control. Responsibilities under this assignment included Project Team coordination during the preparation of both reports, management and coordination of sub-consultants and budget control.

Project Manager

Traffic Calming Design Services – Clements Road West, Town of Ajax

Ajax, ON. 2014

CIMA was retained by the Town of Ajax to complete a detailed design, specifications, and drawings for traffic calming measures along a 520 m segment of Clements Road W. from Monarch Avenue to Harwood Avenue South in Ajax. Responsibilities under this assignment included coordination and management of all technical aspects including project management, data collection, identification of the most suitable set of traffic calming measures, detailed design and costing, and public consultation.

Project Manager

Active Transportation

Implementation of Complete Streets on 11 Neighbourhoods in Ward 14, City of Hamilton

Hamilton, ON. 2022

As part of a Retainer contract with the City of Hamilton, CIMA was requested to complete a study, focused on transportation safety, of 11 neighbourhoods in Ward 14, with a focus on identifying potential safety-related improvements based on best practices related to Vision Zero and Complete Streets principles. The study included public engagement and stakeholder consultation, including the City's various divisions, to ensure that all recommendations are in line with all stakeholders' needs and expectations. Responsibilities under this assignment included overseeing the review of existing pedestrian and cycling network, gap analysis and determination of potential network improvements.

Senior Project Manager

University Avenue & Victoria Avenue Environmental Assessment, The Corporation of the City of Windsor

Windsor, ON. 2022

CIMA was retained by the City of Windsor to complete a Municipal Class Environmental Assessment Study (Schedule C) for the University Avenue West/East corridor between Huron Church Road and McDougall Street and Victoria Avenue from Chatham Street West to Park Street West with the goal of optimizing the available right-of-way and to achieve a safe, efficient, comfortable, and convenient travel for roadway users of all ages, abilities and modes. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget, and quality control.

Senior Project Manager

Operational Review and Design of Pedestrian and Cycling Crossings, Niagara Parks

Niagara Region, ON. 2020

CIMA was selected by Niagara Parks to provide recommendations regarding the location, type, signing, marking and potential reconstruction of the existing roadway elements to support the design and future development of pedestrian and cycling crossings consistent with current provincial guidelines at two different locations along the Niagara Parkway. Responsibilities under this assignment included Project Team coordination and expert advise regarding appropriate consideration of Ontario Traffic Manuals and related standards.

Senior Project Manager

Pedestrian and Bicycle Master Plan Update, City of Vaughan

Vaughan, ON. 2020

CIMA was retained by the City of Vaughan to update the City's Pedestrian and Bicycle Master Plan and establish policies to create a two-pronged implementation framework for active transportation supporting infrastructure. As a result, the City's new plan mandates the accommodation of AT infrastructure as a routine part of any planning construction, operation and maintenance projects within the road allowance and open space system. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget, and quality control.

Senior Project Manager

Transportation and Pedestrian Safety Action Plan, Corporation of the Town of Whitby

Whitby, ON. 2020

CIMA was retained by the Town of Whitby to develop an Action Plan that considers all modes of transportation and all users groups with and emphasis on the creation of a walkable Downtown that supports the Town's Goal of building pedestrian-focused destinations. Responsibilities under this assignment included the development of an innovative approach in which urban characteristics, roadway element requirements and context zones suitable to Downtown Whitby commercial and residential environment provided the bases for the detailed evaluation and selection of strategic concepts.

Senior Project Manager

St. David's Road EA and Preliminary Design, Niagara Region

St. Catharines & Thorold, ON. 2018

CIMA was retained for the Region of Niagara to prepare a Municipal Class Schedule B Environmental Assessment Study Report with Preliminary Design for the reconstruction of Regional Road 71 between Highway 58 Ramp and Regional Road 56 using a Complete Streets approach and full consideration for active transportation facilities. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget and quality control.

Senior Project Manager

Cycling Master Plan Update, City of Burlington

Burlington, ON. 2018

Working in collaboration with Alta Planning + Design Canada Inc., CIMA is completing an update of the City of Burlington Cycling Master Plan. The purpose of the assignment is to identify the necessary modifications to the existing plan to respond to the new realities and projections identified by the City's Official Plan.

Senior Project Manager

Downtown Transportation Strategy, City of Windsor

Windsor, ON. 2016

CIMA was retained by the City of Windsor to develop a strategy for a transportation system that supports Council Strategic Vision for a vibrant and inviting Downtown Windsor focusing on place making and supporting active transportation choices. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget, and quality control.

Project Manager

OTM Book 15, Pedestrian Crossing Devices Update, Ministry of Transportation Ontario

Ontario, 2016

In a partnership with MORR Transportation Consulting (formerly Montufar Group) CIMA was retained by the Ministry of Transportation to create a revised version of OTM Book 15. Responsibilities under this assignment are to coordinate the activities of the Transportation Team to (1) identify and develop pedestrian crossing treatment systems suitable for use in Ontario; (2) identify and recommend changes to the Regulations in the Highway Traffic Act; and (3) production of a "publication ready" document.

Project Manager

Transportation Studies

Transportation Development Application Services, Region of Peel – Retainer contract

Peel Region, ON. 2024-2025

The Region receives TISs and site plans, on a regular basis, as part of the Region's (and/or as part of the local municipality's) site plan review and approval process. Essentially all developments and redevelopments that take place within the Region that have the potential to have an effect on the Regional road system must have supporting studies submitted by the proponent and reviewed by the Region. Since these development applications have multiple facets, and therefore multiple types of studies that need to be reviewed, CIMA developed a methodology to receive, review and respond to TISs and site plans on an as-needed basis on behalf of the Region's Transportation Development Section. Responsibilities included Project Team coordination during the completion of an independent evaluation of each TIS such that a consistent and supportable direction can be offered to the developer's consultant team.

Senior Project Manager

Traffic Impact Assessment – London Street, City of Sarnia

Sarnia, ON. (In Progress)

The City of Sarnia retained CIMA+ to complete a Traffic Impact Assessment that consider the opportunity for road diet or other platform changes on London Road between Front Street and Russell Street North to enhance pedestrian safety and promote safe travel for all modes. The final deliverable of this assignment included recommendations with respect to potential changes for each of the five segments on London Road as well as signal and lane configurations at the intersections of London Road with Front Street, Christina Street, Brock Street, Mitton Street and Russell Street. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget and quality control.

Senior Project Manager

Traffic Impact Study – Russell Street and Devine, City of Sarnia

Sarnia, ON. (In Progress)

The purpose of this assignment was the completion of an operational and safety review of the intersection of Russell Street and Devine, locate in the City of Sarnia. The intersection uses tight geometry and has a history of collisions and high levels of pedestrian activities. In March 2024, the Tecumseh Park Traffic Calming report prepared by the City's Engineering and Operations Division identified several pedestrian enhancements and traffic calming measures that the City could implement; however, while it is currently understood that the City are proceeding with these improvements, City Staff retainer CIMA+ to identify potential solutions given the current layout of the road system. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget and quality control.

Senior Project Manager

Traffic Study – ARC Fairgrounds, Town of Ajax

Ajax, ON. (In Progress)

CIMA+ was retained by the Town of Ajax to undertake a Traffic Study covering the area surrounding the proposed Ajax Fairgrounds at the Audley Recreation Centre (the ARC). The study considered a comprehensive evaluation of the parking supply and infrastructure servicing the area under study. Responsibilities under this assignment

included Project Team coordination, management and coordination with sub-consultants, budget and quality control.

Senior Project Manager

Peer Review of Traffic Impact Studies, Regional Municipality of Halton – Retainer contract

Halton Region, ON. 2015-2025

The Region receives TISs and site plans, on a regular basis, as part of the Region's (and/or as part of the local municipality's) site plan review and approval process. Essentially all developments and redevelopments that take place within the Region that have the potential to have an effect on the Regional road system must have supporting studies submitted by the proponent and reviewed by the Region. Since these development applications have multiple facets, and therefore multiple types of studies that need to be reviewed, CIMA developed a methodology to receive, review and respond to TISs and site plans on an as-needed basis on behalf of the Region's Infrastructure Planning and Policy Section. Responsibilities included Project Team coordination during the completion of an independent evaluation of each TIS such that a consistent and supportable direction can be offered to the developer's consultant team.

Senior Project Manager

Sherman Access and Sherman Cut Needs Assessment Study, City of Hamilton

Hamilton, ON. 2023

As part of our retainer contract with the City of Hamilton, CIMA+ was requested the completion of a needs assessments of the current operations along the Sherman Access and the Sherman Cut during 3 different operations periods. The purpose of this assessment was to provide an adequate respond to the following questions: If operations along Sherman Access/Sherman Cut changes - What are the effects on travel time? How delay, emissions and fuel consumption at a corridor-level may be affected? Do those changes have the potential to enhance or reduce safety conditions? What could be the effects on the communities surrounding those corridors? Responsibilities under this assignment included Project Team coordination, management and coordination or data collection and operational analysis including the completion of travel time and benefit-cost analysis.

Senior Project Manager

Peer Review of Traffic Impact Studies, Regional Municipality of Halton, Nelson Quarry

Burlington, ON. 2023

In addition to our role as Peer Reviewer for the Region of Halton as part of our Retainer contract, the Region requested CIMA to peer review the information provided by the proponent in support of the proposed expansion of the Nelson Quarry. Responsibilities included Project Team coordination during the completion of an independent evaluation of the transportation related information as well as the participation during the meetings with the proponent and other agencies.

Senior Project Manager

Peer Review of Traffic Impact Studies, Regional Municipality of Halton, Milton Quarry

Milton, ON. 2023

In addition to our role as Peer Reviewer for the Region of Halton as part of our Retainer contract, the Region requested CIMA to peer review the information provided by the proponent in support of the proposed expansion of the Milton Quarry. Responsibilities included Project Team coordination during the completion of an independent evaluation of the transportation related information as well as the participation during the meetings with the proponent and other agencies.

Senior Project Manager

Thessalon North Development - Highway 17, Tulloch Engineering

Thessalon, ON. 2022

The purpose of this TIS was to evaluate impacts of the proposed development on Highway 17, and to investigate mitigation measures to address the impacts (in particular, the operational efficiency of traffic and ensured safety and convenience for all users). The TIS was undertaken and analyzed in accordance with the Ministry of Transportation's TIS Guidelines. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget and quality control.

Senior Project Manager

Corridor Management Services Retainer, Ministry of Transportation, Central Region

Ontario (In Progress)

The main objective of this retainer is the development and/or updating of MTO's Corridor Management policies, practices and guidelines, and the investigation and development of innovative product applications. Under this retainer the following services are expected to be completed in a regular basis: Municipal Planning, Highway Access Management, Highway Corridor Management Permits, support in Development Application Reviews, support for the Highway Corridor Management System (HCMS) and any related technical training. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget and quality control for each of the Work Orders included as part of the 3-year retainer.

Senior Project Manager

Peer Review of Traffic Impact Studies, Regional Municipality of Halton

Georgetown, ON. 2024

In addition to our role as Peer Reviewer for the Region of Halton as part of our Retainer contract, the Region requested CIMA to peer review the information provided by the proponent in support of the proposed Southwest Georgetown development. Responsibilities included Project Team coordination during the completion of an independent evaluation of the transportation related information as well as the role as Expert Witness (Transportation Planning).

Senior Project Manager

One-Way Conversion Study, City of Oshawa

Oshawa, ON. 2022

With Oshawa's downtown population due to increase by 6,000 to 8,000 new residents over the next 10 to 15 years, the need to improve the walkability of the downtown area will be essential. While this planned residential development will increase travel demand in the area, the City considered that there is currently an excess of road capacity on a couplet of one-way streets in the Downtown area. To determine the availability of converting Celina Street, Albert Street, Brock Street East and Colborne Street to two-way operations, the City retained CIMA to complete a full operational analysis study encompassing existing and future scenarios. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget and quality control.

Senior Project Manager

Peer Review of Traffic Impact Studies, Town of Oakville, Retainer contract

Oakville ON. 2022

The Town of Oakville receives TISs and site plans, on a regular basis, as part of the Town's site plan review and approval process. Essentially all developments and redevelopments that take place within the Town that have the potential to have an effect on the Town's road system must have supporting studies submitted by the proponent and reviewed by the Town. Since these development applications have multiple facets, and therefore multiple types of studies that need to be reviewed, CIMA developed a methodology to receive, review and respond to TISs and site plans on an as-needed basis on behalf of the Town. Responsibilities included Project Team coordination during the completion of an independent evaluation of each TIS such that a consistent and supportable direction can be offered to the developer's consultant team.

Senior Project Manager

Peer Review of Traffic Impact Studies, Regional Municipality of Halton, Glen Abbey

Oakville, ON. 2021

In addition to our role as Peer Reviewer for the Region of Halton as part of our Retainer contract, the Region requested CIMA to peer review the information provided by the proponent in support of the proposed Glen Abbey development. Responsibilities included Project Team coordination during the completion of an independent evaluation of the transportation related information as well as the role as Expert Witness (Transportation Planning).

Senior Project Manager

Peer Review of Traffic Impact Studies, Regional Municipality of Halton, Brampton Brick Quarry

Brampton, ON. in progress

In addition to our role as Peer Reviewer for the Region of Halton as part of our Retainer contract, the Region requested CIMA to peer review the information provided by the proponent in support of the proposed excavation of the shale quarry in the City of Brampton. Responsibilities included Project Team coordination during the completion of an independent evaluation of the transportation related information as well as the participation during the meetings with the proponent and other agencies.

Senior Project Manager

Peer Review of Traffic Impact Studies, County of Wellington, Solmar Development

Erin, ON. 2021

The County of Wellington retained the services of CIMA to complete a peer review of the information provided by the proponent in support of the proposed Solmar development. Responsibilities included Project Team coordination during the completion of an independent evaluation of the transportation related information as well as the participation during the meetings with the proponent and other agencies.

Senior Project Manager

Ontario Power Generation Traffic Impact Study, OPG

Ontario. 2022

The purpose of this TIS was to evaluate impacts of the proposed development on the surrounding transportation network, and to investigate mitigation measures to address the impacts (in particular, the operational efficiency of traffic and ensured safety and convenience for all users). The TIS was undertaken and analyzed in accordance with the Municipality of Clarington, the Region of Durham and the Ministry of Transportation's TIS Guidelines. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget and quality control.

Senior Project Manager

Access Management, Traffic Impact Studies and Road Safety Audits Guidelines, County of Essex

Essex County, ON. 2024

As part of a Retainer for Consulting Services with the County of Essex, CIMA was requested to complete a full review, update, and development of a set of Guidelines relevant to the development approval process implemented by the County. Preparation of the new Guidelines considered among others, the difficulties regarding the identification of each type of studies as part of the preliminary phases of the development approval process, the time since implementation of the existing Guidelines, and the perceived need for a more streamlined process that facilitates its discussion and acceptance by developers and lower-tier municipalities. Responsibilities included Project Team management and direction during the identification of current practices in other jurisdictions, identification and selection of best practices and integration of the revised Guidelines as part of the development approval process.

Senior Project Manager

Access Management Policy and Guidelines, Region of Niagara

Niagara Region, ON. 2023

CIMA was retained by the Region of Niagara to develop an Access Management Policy and corresponding Guidelines – including the update of the Traffic Impact Study Guidelines, that optimize and standardize the access management process, facilitate the integration of traffic impact studies as part of the access management approval and to reduce any duplication that might be happening between the upper and lower tier municipalities composing the Region. Responsibilities included Project Team management and direction during the identification of current practices in other jurisdictions, identification and selection of best practices and integration of the revised Traffic Impact Studies Guidelines as part of the access management process.

Senior Project Manager

General Guidelines for the Preparation of Traffic Impact Studies, Ministry of Transportation

Ontario. 2020

The overall objective of this project was to review the Ministry's current Traffic Impact Study Guidelines (TIS) and to provide recommendations for updates, additions, and any other changes to the TIS Guidelines to assist developers in improving the quality of these studies and to meet the objectives of the Ministry. Responsibilities included Project Team management and direction during the identification of current practices in other jurisdictions, identification and selection of best practices and integration of the revised Corridor Management Manual as part of the Ministry's TIS Guidelines.

Senior Project Manager

Transportation Engineering Services, Niagara College

St. Catharines, ON. 2021

CIMA was retained by Niagara College to complete a traffic operations study to assess transportation implications of the Niagara College Master Plan (NCMP) Vision under existing and future conditions (5, 10 and ultimate horizon year). Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget and quality control.

Senior Project Manager

Caledonia Servicing Master Plan, Haldimand County

Caledonia ON. 2020

As part of a consulting team retained by Haldimand County for the preparation of the Caledonia Master Servicing Plan Update, the CIMA Team was assigned with the preparation of the Transportation section of the Master Servicing Plan. Responsibilities under this assignment included coordination and management of all technical aspects required for the completion of a Traffic Operation Analysis for existing conditions and future scenarios.

Senior Project Manager

Sherwood Community Centre and Library Traffic Impact Study, Town of Milton

Milton, ON. 2017

The purpose of this TIS was to evaluate impacts of the proposed development on the surrounding transportation network, and to investigate mitigation measures to address the impacts (in particular, the operational efficiency of traffic and ensured safety and convenience for all users). The TIS was undertaken and analyzed in accordance with the Region's TIS Guidelines as well as the Town of Milton's TIS Guidelines. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget and quality control.

Senior Project Manager

Review of West End Developments, Town of Grimsby

Grimsby, ON. 2015

As part of our retainer with the Town of Grimsby, CIMA was requested to conduct a review of traffic operational scenarios including the old Planet Night Club property and the Fifth Wheel property, a re-assessment of the intersection needs at Winston Road & North Service Road/Hunter Road and an examination/determination of the

cross-sectional needs along the section of North Service Road between Winston Road/Hunter Road and Casablanca Boulevard. Responsibilities under this assignment included coordination and management of all technical aspects including: project management, data collection, identification of the most suitable set of infrastructure improvements and functional design.

Senior Planner

Peer Review of Merton Technical and Tertiary Plans, Town of Oakville

Oakville, ON. 2015

CIMA was retained by AMEC Earth & Environmental to support the Peer Review of the Transportation Study provided by the Landowners and the Town of Oakville for the Merton Study Area. The purpose of this assignment was to review and assess the document in the context of current Municipal and Provincial policies, objectives, goals, criteria, as well as governing regulations and statutes. Activities conducted as part of the assignment included Project Team coordination during the completion of an independent evaluation of the Transportation Report such that a consistent and supportable direction can be offered to the Landowner's Consultant team.

Project Manager

Peer Review of Traffic Impact Studies, Town of Oakville

Oakville, ON. 2014

As part of a Retainer for Consulting Services with the Town of Oakville, CIMA was requested to conduct a Peer Review of the Traffic Impact Studies prepared for the Lazy Pat Farm Property and the Upper Glen Abbey. The purpose of this assignment was to review and assess the documents in the context of current Municipal and Provincial policies, objectives, goals, criteria, as well as governing regulations and statutes. Activities conducted as part of the assignment included Project Team coordination during the completion of an independent evaluation of the TIS such that a consistent and supportable direction can be offered to the developer's consultant team.

Project Manager

Environmental Assessments and Transportation Planning

Ridley Road Realignment and Road Improvements, City of St. Catharines

St. Catharines, ON. 2022

Ridley Road functions as a neighbourhood collector roadway serving a residential neighbourhood as well as Ridley College. However, With a new subdivision and GO Station access being developed at the west end of Ridley Road, the use of Ridley Road may change. As such, CIMA was retained by the City of St. Catharines to determine the preferred cross-section that will be used as the basis for the detailed design of the project. Responsibilities under this assignment included the development and evaluation of a diverse set of alternative cross-sections following the requirements of the City with respect of pedestrian and cycling activities as well as established guidelines such as OTM Book 18 and Book 15.

Senior Project Manager

Transportation Planning and Preliminary Engineering Study DCP, The Regional Municipality of York

YZork Region, ON. 2022

CIMA was retained for the Region of York to prepare a Transportation Planning and Preliminary Engineering Study to confirm the final alignment of the new north-south Donald Cousens Parkway and east-west roadway network proposed to serve the approved FUA. Responsibilities under this assignment included the determination of project employment and land use scenarios, estimation of the projected traffic volumes and evaluation of alternatives for the medium (10 year) and long term (20 year) scenarios.

Senior Project Manager

Moffatt Street Secondary Access EA; City of St. Catharines

St. Catharines, ON, 2020 – 2021

Schedule C Municipal Class EA to identify a new road corridor to serve an isolated neighbourhood with only one access into/out of the community. A series of public, Indigenous, and agency stakeholder consultation events were

undertaken which resulted in community consensus for the preferred option of a new road corridor crossing the Old Canal and providing a secondary access to the community.

Transportation Planning and Traffic Engineering Lead

Burnhamthorpe Road West Improvements EA, The Corporation of the City of Mississauga

Mississauga, ON. 2020

CIMA was retained for the Corporation of the City of Mississauga to prepare a Class Environmental Assessment Study (Schedule C) and Preliminary Design for the improvements of Burnhamthorpe Road West from Loyalist Drive to the West City Limit following a comprehensive and sound planning process that recognizes and accommodates the infrastructure and multimodal transportation needs along the corridor. Responsibilities under this assignment included the determination and analysis of existing conditions, traffic projections and evaluation of alternatives for the 2021, 2031 and 2041 horizon years.

Senior Project Manager

Albion Vaughan Road and King Street EA, Region of Pee

Bolton, ON. 2020

CIMA was retained for the Region of Peel to prepare a Municipal Class Schedule B Environmental Assessment Study Report taking a multimodal approach and following the visions outlined in both the Town of Caledon and the Region of Peel Official Plans. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget and quality control.

Senior Project Manager

Mohawk Road Class Environmental Assessment, City of Hamilton

Hamilton, ON. 2019

CIMA was retained by the City of Hamilton to complete Phases 3 and 4 of the Class Municipal EA Process for Mohawk Road between Lime Kiln Road/McNiven Road and Highway 403. Responsibilities under this assignment included a review of existing data including the Ancaster Transportation Master Plan and to update the data to existing conditions to ensure that the recommendations of the ATMP are still valid.

Senior Project Manager

Highway 404 North Collector Roads EA, Corporation of the City of Markham

Markham, ON. 2019

CIMA was retained for the Corporation of the City of Markham to prepare a Class Environmental Assessment Study (Schedule C) to confirm the final alignment of the new north-south road and east-west road proposed to serve the approved OPA 149 Secondary Plan. Responsibilities under this assignment included the determination of project employment and land use scenarios, estimation of the projected traffic volumes and evaluation of alternatives for the medium (10 year) and long term (20 year) scenarios.

Senior Project Manager

Portage Parkway Class EA, City of Vaughan,

Vaughan, ON. 2016

CIMA was retained by the City of Vaughan for the completion of a Class EA Study to establish the preferred alternative design for the widening, extension and improvements for Portage Parkway Widening from Applewood Crescent to Jane Street (Part A) and the Portage Parkway Extension from Jane Street crossing the Black Creek channel to Creditstone Road (Part B). Responsibilities under this assignment included coordination and management of all technical aspects required for the completion of a Traffic Operation Analysis and a Safety Performance Review.

Project Manager

Heritage Road Class EA, City of Brampton

Brampton, ON. 2017

CIMA Canada Inc. (CIMA) has been retained by the City of Brampton to undertake the Municipal Class Environmental Assessment (Class EA) study for improvements to Heritage Road from Steeles Avenue to the future Riverview Heights Road, approximately 460 m north of Embleton Road, south of the Credit River valley. Responsibilities included as part of this assignment are coordination of the Transportation Team during the review and assessment of a number of alternatives to address the potential operational deficiencies and need for additional capacity within the corridor, such as road widening and intersection improvements.

Project Manager

Erin Mills Parkway Schedule B, Class EA for Intersection Improvements, Region of Peel

Mississauga, ON. 2014

CIMA Canada Inc. (CIMA) has been retained by the Region of Peel to undertake the Municipal Class Environmental Assessment (Class EA) study for improvements at Erin Mills Parkway/Dundas Street and Erin Mills Parkway/Burnhamthorpe Road following a context sensitive approach and considering multi-modes of transportation including pedestrian, cycling and transit. Responsibilities under this assignment included identification and comprehensive evaluation of proposed alternatives including transportation demand management, active transportation, and traffic safety improvements.

Project Manager

On and Off-Street Parking

Review of Off-Street Parking Requirements and On-Street and Public Parking Lots in Downtown, City of Sault Ste. Marie,

Sault Ste. Marie, ON 2023

CIMA was retained by the City of Sault Ste. Marie to provide planning services in relation to a review of off-street parking requirements within the City of Sault Ste. Marie Comprehensive Zoning By-law 2005-150, with the overall intent of reducing minimums and establishing maximums, as well as a detailed review of on-street parking and public parking lots in the downtown area. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget, and quality control.

Senior Project Manager

Hespeler Core Parking Study, City of Cambridge

Cambridge, ON. 2022

CIMA was retained by the City of Cambridge to complete a comprehensive assessment of existing of-street parking offered in the Hespeler area as well as the expected demand generated by future residential and commercial development. The study also includes a jurisdictional scan and best practices review of parking management strategies conducted by other national and international communities. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget, and quality control.

Senior Project Manager

Parking Technology and Implementation Metrics Study, City of Guelph

Guelph, ON. 2018

CIMA was retained by the City of Guelph to complete a comprehensive assessment of parking technology than can be considered during the implementation of paid on-street parking in Downtown Guelph. The study also includes a jurisdictional scan and best practices review of parking management strategies conducted by other national and international communities. The result of the assignment suggested that a Performance-Based Parking Management supported by smart metres and/or pay-and-display stations will adequately respond to the requirements of the Guelph Vision for Downtown.

Senior Project Manager

Downtown Parking Study, Town of Milton

Milton, ON. 2018

CIMA was retained by the Town of Milton to undertake a Parking Study of the Downtown Core. This Study is part of a larger exercise that has the purpose of revitalizing the downtown area through potential land use policy changes and identification of redevelopment opportunities. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget, and quality control.

Senior Project Manager

On-Street Parking Policy Update, City of Guelph

Guelph, ON. 2017

CIMA was retained by the City of Guelph to provide recommendations to address a variety of concerns regarding the current on-street parking practices and provide an update to existing City of Guelph On-street Parking Policies and Procedures documents. The study evaluates existing municipal practices in assessing on-street parking changes that are requested from the public and other stakeholder's and included a best practice review comparing the existing City of Guelph policies and procedures, provided new criteria for reviewing and implementing on-street parking restrictions and consolidated existing on-street parking policies and procedures. Responsibilities under this assignment included Project Team coordination, management and coordination with sub-consultants, budget, and quality control.

Project Manager

Manager of Transportation Planning (County of Essex)

Regional Transit Study (Needs Assessment and Implementation), The Corporation of the County of Essex

Essex County, ON. 2009 -2010

Oversee the work of the Consultant Project Team regarding transit planning process and requirements. Responsible for lower tier municipalities' consultation and engagement, including liaison with the local planning authorities and presentations (both verbal and written) to the Steering Committee, Stakeholder Group and Public. Documented the planning and consultation process and formal presentation to County Council. Recommendations addressed the need of a regional transit service, the use of County Road 22, County Road 20 and Highway 3 as the preferred transit routes and the allocation of an annual expenditure level of 1.95 million CAD.

Project Manager

Region Wide Active Transportation Study, The Corporation of the County of Essex

Essex County, ON. 2010

Oversee the work of the Consultant Project Team regarding Active Transportation alternatives and funding requirements. Responsible for lower tier municipalities' consultation and engagement, including liaison with the local planning authorities and presentations (both verbal and written) to the Steering Committee, Stakeholder Group and Public. Documented the planning and consultation process and formal presentation to County Council.

Project Manager