

Transportation Impact Study Addendum

PROPOSED RESIDENTIAL DEVELOPMENT

Harvest Moon Drive and Emil Kolb Parkway
Town of Caledon

December 8, 2025
Project No: NT-20-113

December 8, 2025

Camcos (Bolton Village) Inc.
238 Wellington Street East, Suite 100
Aurora, ON L4G 1J5

Attention: James Circosta

**Re: Engineering Service – Transportation Impact Study Addendum
Proposed Residential Development
Harvest Moon Drive and Emil Kolb Parkway, Town of Caledon
Our Project No. NT-20-113**

On behalf of our Client, Camcos (Bolton Village) Inc., we acknowledge the transportation related comments issued by reviewing agencies regarding our Transportation Impact Study (TIS) Update dated February 28, 2025.

The subject property is currently vacant and has a total site area of 8,363.7 m² (90,026.1 ft²). Our previously submitted TIS Update was prepared in accordance with a site plan that illustrated two (2) townhouse buildings with a total of 22 dwelling units and an eight (8)-storey mid-rise residential building with 102 dwelling unit. The site plan also illustrated a vehicle parking supply of 172 parking spaces and vehicular access was envisioned via a full movement driveway onto Harvest Moon Drive.

Subsequent to the previous development application submission, comments were received from reviewing agencies and updates to the site plan have been made. The overall unit count has remained the same; however, the vehicle parking supply has been reduced from 172 spaces to 168 spaces for the entire site. The site plan used to prepare this TIS Addendum is enclosed in **Appendix A**.

Transportation Comments

1. *Please include the Town's responses to the Terms of Reference (ToR) in the appendix of the report for transparency and future reference.*

NEXTRANS RESPONSE: Acknowledged. The Town's responses are enclosed in **Appendix B**.

2. *It is noted that a 2% growth rate is being used in the analysis. Please confirm how this rate compares to the growth projections presented in the Environmental Assessment (EA) for the area.*

NEXTRANS RESPONSE: An assessment of the growth rates used in the EA report prepared by CIMA+ was conducted to confirm how these rates compare to the 2% growth rate used in the previously submitted TIS. It is to be noted that the EA report states that future traffic volumes were estimated using EMME model outputs provided by the Region but does not explicitly state what growth rates were used to forecast the future traffic volumes. In comparing the 2041 projected link volumes with the baseline traffic volumes used in the EA report, the annual growth rate for each link volumes vary; however, higher growth for the southbound and westbound links are projected and as such, the future background traffic volumes were updated accordingly as a conservative approach.

3. Typically, the use of Synchro for roundabout analysis is not acceptable. Please consult with Regional staff (as the study intersection is under the Region's jurisdiction) to confirm and utilize appropriate software such as ARCADY or RODEL for the roundabout operational analysis.

NEXTRANS RESPONSE: Acknowledged. It is to be noted that Peel Region's TIS Guidelines do not explicitly require the use of ARCADY or RODEL software for roundabout operational analysis. While it is noted that both ARCADY and RODEL provide a more conservative analysis of the traffic operations of a roundabout, the Region has not issued any comments regarding our methodology.

4. Traffic Zone 3153 has been used to determine the traffic distribution. Please include a figure showing the location of this zone relative to the proposed site. Further explanation is required to justify why the traffic distribution from this zone is applicable to the site.

NEXTRANS RESPONSE: In accordance with TTS 2006 TAZ, zone 3153 corresponds with the area that the subject site is located and as such, is the most applicable for the assessment of existing traffic distributional patterns.

5. Please provide a traffic distribution figure indicating the percentage of site-generated traffic assigned to each roadway segment in the study area.

NEXTRANS RESPONSE: A traffic distribution figure with percentages is provided in this Addendum.

6. The current TDM section outlines general measures rather than specific strategies proposed for the subject site. Please revise this section to detail the precise TDM measures being implemented on-site.

NEXTRANS RESPONSE: Given the conceptual nature of the development plan, TDM measures will be finalized in subsequent detailed submissions in partnership with the Town to determine what TDM measures will be effective and appropriate for the site.

7. For all Level of Service (LoS) tables, please include:

- Available storage lengths for all turning lanes.
- Link distances (distance from the intersection to the nearest access/roadway) for through lanes.
- If the Synchro analysis indicates that 95th percentile queues under existing or future background conditions extend beyond the site limits, please conduct a SimTraffic assessment to verify queuing impacts. If queuing issues persist, appropriate mitigation measures must be proposed for the Town's review.

NEXTRANS RESPONSE: Acknowledged.

8. All site accesses must be designed in accordance with OPSD 350.010. For apartment uses, the curb return radii should range between 4.5 and 12.0 metres.

NEXTRANS RESPONSE: Acknowledged. It is to be noted that a 9.0m curb return radius has been selected and the AutoTURN analysis demonstrates that this radius will function without conflict.

9. A detailed Pavement Markings and Signage Plan is required and must include the following:

- All traffic signage to comply with the Ontario Traffic Manual and be installed on streetlight poles where possible.
- The plan must clearly show:
 - Roadways
 - Property lines
 - Driveways
 - Fire hydrants
 - Sidewalks
 - Street lighting
 - Traffic signage (regulatory, warning, information)
 - Street trees
 - Tactile surfaces
 - Pavement markings
- All signage must align with:
 - The Town's Traffic By-Law
 - Accessibility for Ontarians with Disabilities Act (AODA)
 - Highway Traffic Act (HTA)
- Refer to the Town's Traffic By-law Schedule P for fire route signage and HTA for accessible parking signage requirements.
- Please include a note on the Site Plan stating that all pavement markings and signage must be installed in accordance with the approved Pavement Markings and Signage Plan to assist Town staff during site inspections.

NEXTRANS RESPONSE: Acknowledged. The Pavement Marking and Signage Plan is enclosed in **Appendix E**.

10. Please revise the parking requirements to reflect the correct rates as provided by the Zoning Department.

- The only identified deficiency is in Barrier-Free Parking, where 7 spaces are required and only 2 are proposed.
- The Town's preference is that this deficiency be addressed so that the minimum requirement is met. Barrier-free accessible spaces should be designed according to the requirements contained within Schedule O of the Town's Traffic By-Law 2024-048

NEXTRANS RESPONSE: Acknowledged.

11. A detailed review of the access geometry related to OTM/TAC guidelines should be included. The review should include but not be limited to: sight distances; roadway curves (vertical and horizontal) standards; clear zones; conflicting vehicle movements within and adjacent to the development; and on-site vehicle swept path analysis (AutoTurn) utilizing the proper design vehicles (buses, fire trucks, garbage trucks, snowplows, etc., as v Plan review is provided in this Addendum.

NEXTRANS RESPONSE: Acknowledged.

12. Town requires that the study be stamped, signed, and dated by a licensed Professional Transportation Engineer in Ontario (P.Eng).

NEXTRANS RESPONSE: Acknowledged.

13. The Traffic Consultant is requested to submit an updated Transportation Study and a detailed response letter as part of the re-submission package. This letter must clearly reiterate the Town's comments in order, outlining how each comment has been addressed.

NEXTRANS RESPONSE: Acknowledged.

We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

NEXTRANS CONSULTING ENGINEERS

Prepared by:



Kristian Aviles, B. Eng
Transportation Analyst

Reviewed by:



John Nhan, P. Eng
Project Engineer



Reviewed and Approved by:



Richard Pernicky, MITE
Principal

Issues and Revisions Registry

Identification	Date	Description of issued and/or revision
Transportation Impact Study	August 21, 2021	1 st Submission
Transportation Impact Study Update	February 10, 2024	2 nd Submission
Transportation Impact Study Addendum	December 8, 2025	3 rd Submission

1.0 FUTURE BACKGROUND CONDITIONS

The assumed build-out year for the proposed development is 2027. A five (5)-year horizon from the assumed build-out year was analyzed for future background traffic volumes (2032).

1.1. Future Corridor Growth

ADT data was provided by Town staff for Harvest Moon Drive to determine an appropriate growth rate. Data was available for the years 2015, 2016, 2017, 2019 and 2022. Given the gaps in the ADT data, it was determined that this was insufficient to determine an appropriate growth rate to project future traffic volumes. Peel Region AADT data was also reviewed to determine an appropriate growth rate to project future traffic volumes; however, the available data was also insufficient to determine an appropriate growth rate.

Previously, a 2% growth rate was used to project future traffic growth within the area; however, to be consistent with future growth projected in the EA Report prepared by CIMA+, the growth rates were updated in accordance with the link volumes noted in **Table 1.1**.

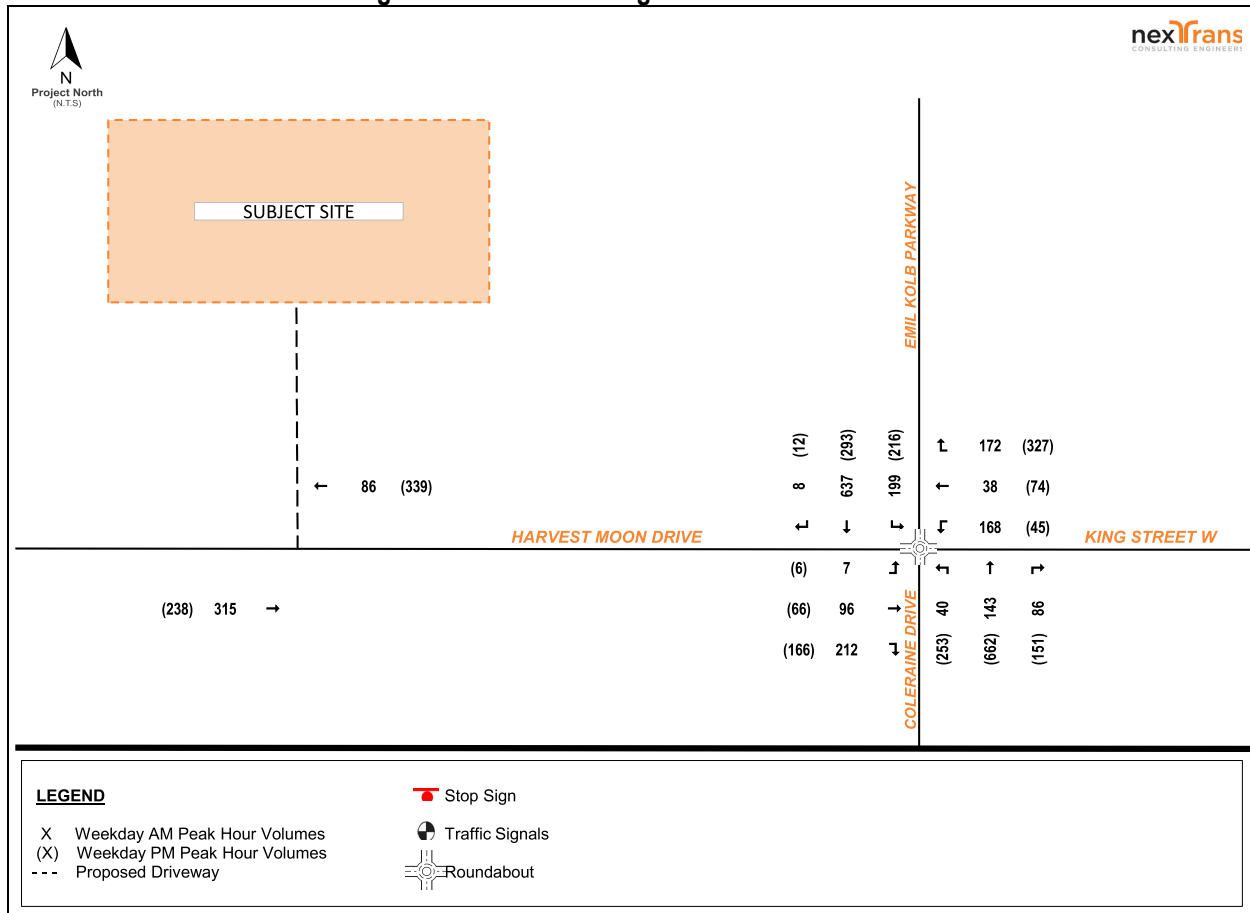
Table 1.1: 2017 Baseline and 2041 Projected Link Volumes

Road Section	Direction	2017		2041		Annual Growth Rate	
		AM	PM	AM	PM	AM	PM
Coleraine S of King St W	NB	249	1070	349	1500	1.4%	1.4%
	SB	933	336	1824	657	2.8%	2.8%
King St W between Coleraine and Station	EB	294	433	486	716	2.1%	2.1%
	WB	422	338	982	787	3.6%	3.6%

1.2. Future Background Traffic Assessment

The estimated future background traffic volumes (i.e., future background growth volumes + background development site traffic volumes) are illustrated in **Figure 1-1**.

Figure 1-1 – Future Background Traffic Volumes



As previously noted in this Study, a roundabout is envisioned at the intersection of Emil Kolb Parkway/Coleraine Drive and Harvest Moon Drive/King Street West. As such, this condition was modelled in Synchro and the future background traffic volumes were analyzed accordingly.

The methodology used for the future background traffic analysis follows the procedures described and outlined in HCM 2010 Roundabout, published by the Transportation Research Board. The detailed calculations are enclosed in **Appendix C** and **Table 1.2** summarizes the level of service at the study area intersections under future background traffic conditions. In accordance with the comments issued by Town staff, the storage length of turning lanes and link distances for through lanes are noted in the capacity analysis results table; however, given that the detailed design of the proposed roundabout is not yet available, link distances/storage volumes were assumed based on the existing lane configurations. Furthermore, it is to be noted that link distances/storage lengths were measured back from the stop bars of the intersection.

Table 1.2: Level of Service – Future Background Traffic Assessments

Intersection	Movement	Storage (m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
			v/c	Delay (s)	LOS	95 th Queue (veh)	v/c	Delay (s)	LOS	95 th Queue (veh)
	Overall	-	-	12.2	B	-	-	20.1	C	-
Coleraine Drive/Emil Kolb Parkway & Harvest Moon Drive/King Street West	EBLT	125	0.25	12.0	B	1	0.13	6.8	A	0
	EBR	60	0.43	13.9	B	2	0.25	7.1	A	1
	WBLT	130	0.25	6.6	A	1	0.28	11.4	B	1
	WBR	130	0.21	6.2	A	1	0.63	18.2	C	4
	NBLT	275	0.21	7.8	A	1	0.78	23.0	C	8
	NBTR	275	0.24	8.3	A	1	0.87	32.4	D	11
	SBLT	500+	0.59	14.4	B	4	0.45	12.2	B	2
	SBTR	500+	0.66	17.1	C	5	0.51	13.6	B	3

Based on the results of the capacity analysis under future background traffic conditions, the study area intersection is projected to operate with residual capacity, with acceptable levels of service, with manageable delays and queue lengths during weekday AM and PM peak hours.

2.0 SITE TRAFFIC

2.1. Trip Generation

As previously identified, the development proposal is to construct two (2) townhouse buildings with a total of 22 dwelling units and an eight (8)-storey mid-rise residential building with 102 dwelling units. Trip rates and site generated trips were derived from the information contained in the *Trip Generation Manual, 11th Edition* published by the Institute of Transportation Engineers (ITE) for “Multifamily Housing (Mid-Rise) Not Close to Rail Transit” (LUC 221) and “Multifamily Housing (Low-Rise) Not Close to Rail Transit” (LUC 820).

The trip generation summary is detailed in **Table 4.1**.

Table 2.1 – Site Traffic Trip Generation

ITE Land Use	Morning Peak Hour			Afternoon Peak Hour		
	In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise) Not Close to Rail Transit	14	27	41	28	22	50
Multifamily Housing (Low-Rise) Not Close to Rail Transit	7	23	30	19	11	30
Total	21	50	71	47	33	80

Based on the trip generation calculations, the proposed development is projected to generate a total of 71 new two-way trips (21 inbound and 50 outbound) and 80 new two-way trips (47 inbound and 33 outbound) during the weekday AM peak hour and PM peak hour, respectively.

2.2. Trip Distribution

The distribution of residential site-generated traffic was estimated using data extracted from the 2016 Transportation Tomorrow Survey (TTS) for traffic zone 3153, as well as assumptions based on existing road configuration and

routes that travellers would be likely to take when accessing the subject site. Trip distribution is summarized in **Table 2.2**.

Table 2.2 – Site Traffic Trip Distribution

Corridor	Direction	AM		PM	
		Inbound	Outbound	Inbound	Outbound
Emil Kolb Parkway	North	16%	23%	30%	44%
Coleraine Drive	South	66%	55%	57%	48%
King Street W	East	18%	22%	13%	8%
Total		100%	100%	100%	100%

Figure 2-1 illustrates the inbound site traffic distribution whereas **Figure 2-2** illustrates the outbound site traffic distribution.

Figure 2-1 – Inbound Trip Distribution

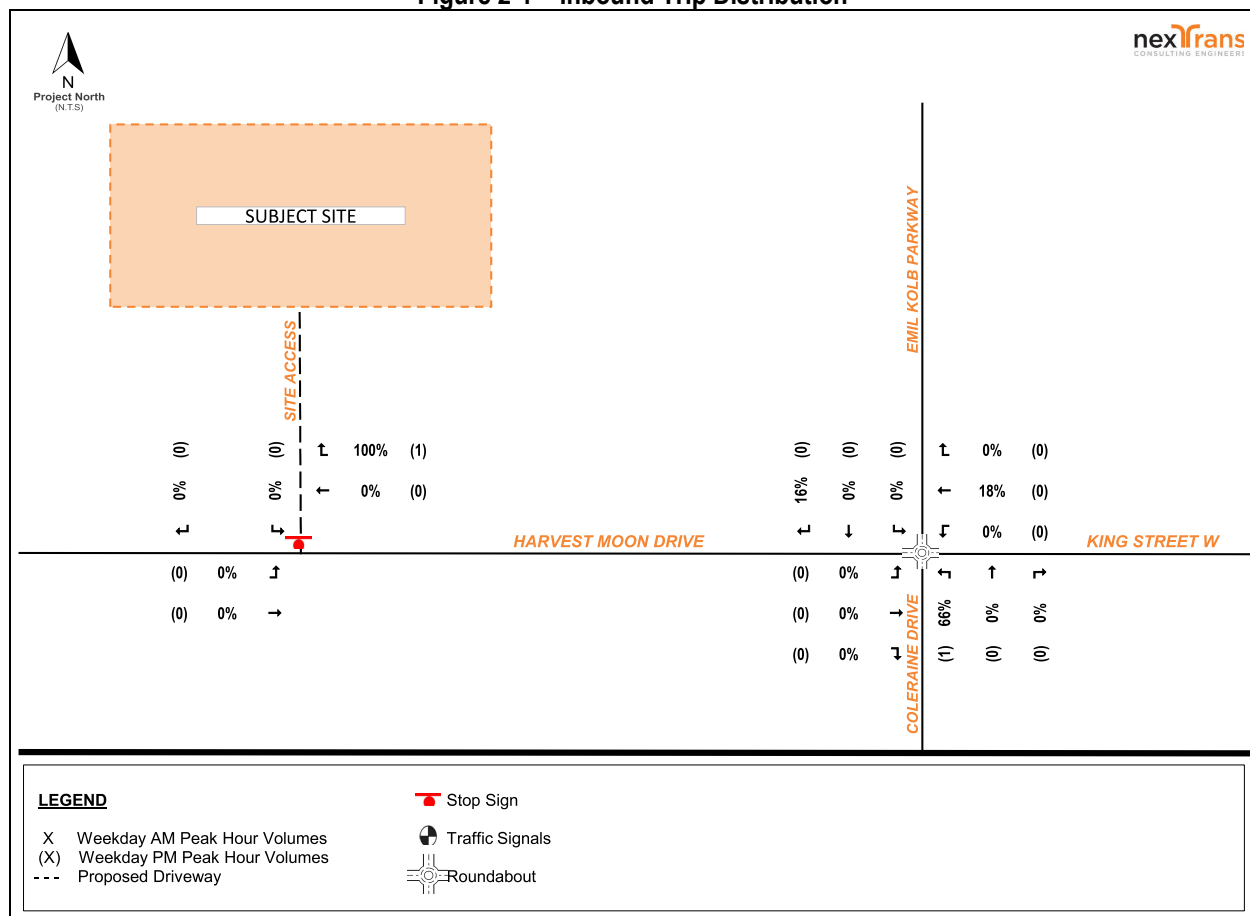
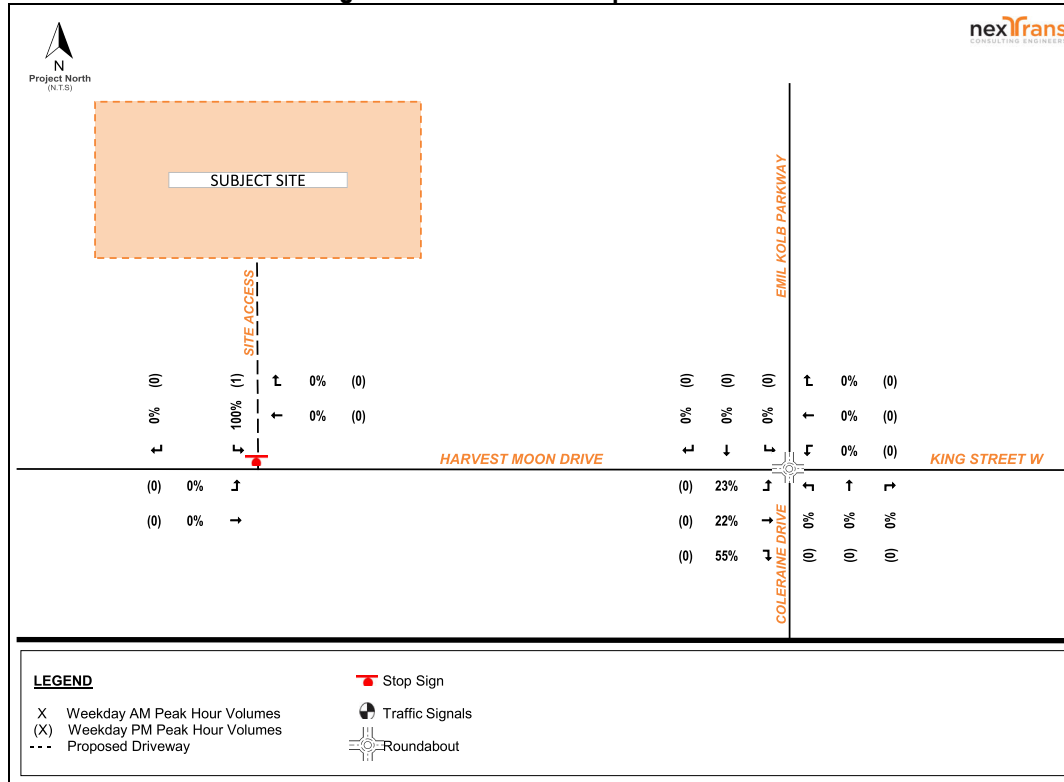
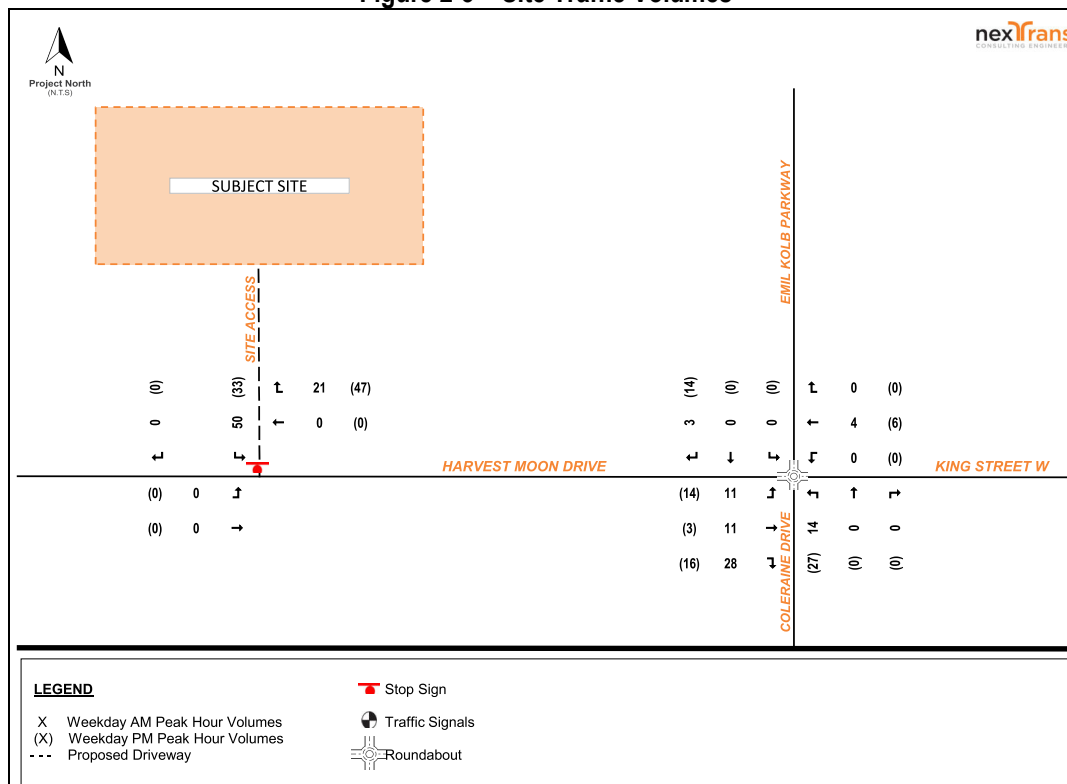


Figure 2-2 – Outbound Trip Distribution



Trip assignments for all site generated traffic volumes are illustrated in Figure 2-3.

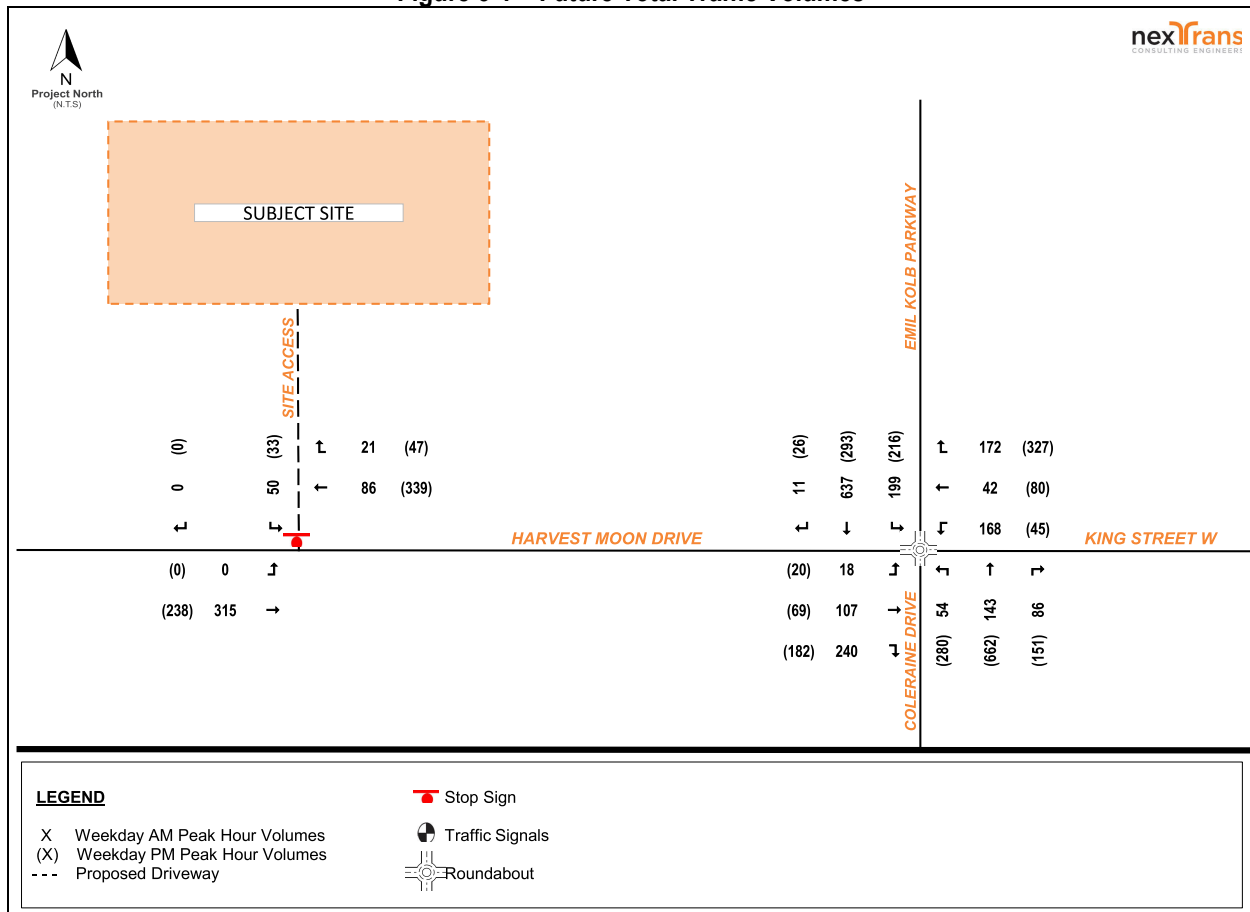
Figure 2-3 – Site Traffic Volumes



3.0 FUTURE TOTAL ANALYSIS

The forecasted future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figure 3-1** and were analyzed using Synchro 10 software. Procedures outlined in HCM 2010 Roundabout were used for the operational assessment of the proposed roundabout at the intersection of Emil Kolb Parkway/ Coleraine Drive and Harvest Moon Drive/King Street W, whereas procedures outlined in HCM 2000 were used at the unsignalized site access.

Figure 3-1 – Future Total Traffic Volumes



The detailed calculations are enclosed in **Appendix D** and are summarized in **Table 3.1**.

Table 3.1 – Level of Service – Future Total Traffic Assessment

Intersection	Movement	Storage (m)	Weekday AM Peak Hour				Weekday PM Peak Hour			
			v/c	Delay (s)	LOS	95 th Queue (veh)	v/c	Delay (s)	LOS	95 th Queue (veh)
Roundabout										
	Overall	-	-	9.9	A	-	-	22.8	C	-
Coleraine Drive/Emil Kolb Parkway & Harvest Moon Drive/King Street West	EBLT	125	0.26	13.4	B	1	0.16	7.4	A	1
	EBR	60	0.49	15.5	C	3	0.27	7.4	A	1
	WBLT	130	0.25	6.8	A	1	0.31	12.3	B	1
	WBR	130	0.21	6.3	A	1	0.64	18.8	C	5
	NBLT	275	0.15	8.3	A	1	0.82	26.4	D	9
	NBTR	275	0.17	8.7	A	1	0.92	39.1	E	13
	SBLT	500+	0.44	15.2	B	2	0.48	13.3	B	3
	SBTR	500+	0.49	18.2	B	3	0.54	15.0	C	3
Unsignalized										
Harvest Moon Drive & Site Access	WBR	-	0.07	0	A	0	0.25	0	A	0
	SBL	40	0.10	1212	B	2.5m	0.09	14.6	B	2.3m

Based on the results of the capacity analysis of future total traffic volumes, the study area intersection and proposed site access are projected to operate with residual capacity, with excellent levels of service and with acceptable delay and queue lengths. **On this basis, the site traffic generated by the proposed development is projected to have a negligible impact on the future traffic operations of the surrounding road network.**

4.0 PARKING ASSESSMENT

4.1. Parking Requirements

4.1.1. Vehicle Parking Requirements

The proposed development is zoned A1 and is subject to the Town of Caledon's Zoning By-law 2006-50. The parking requirements for each of the proposed land uses are detailed in **Table 4.1**.

Table 4.1: Vehicle Parking Requirements

Land Use	No. of Units / GFA (m ²)	Minimum Rate	Minimum Requirement	Parking Supply	Difference
Building, Apartment (Resident)	102 units	1.5 spaces/unit	153	102	-51
Dwelling, Townhouse (Resident)	22	2 spaces/unit	44	44	-
Visitor	124 units	0.25 spaces/unit	31	22	-9
Total			229 spaces	168 spaces	-60 spaces

Based on the rates prescribed in the Town's Zoning By-law, a total of 229 vehicle parking spaces are required (197 resident spaces and 32 visitor spaces). In comparing the technical parking requirement with the proposed parking supply of 168 spaces, there is an overall shortfall of 60 spaces (26% reduction), composed of a shortfall of 51 resident spaces and a shortfall of nine (9) visitor spaces.

It is to be noted that the shortfall in resident parking supply is from the requirement for the apartment building, whereas the proposed parking supply for the townhouse dwelling units is compliant with the Zoning By-law requirements.

4.1.2. Barrier Free Parking Requirements

According to the accessible parking requirements outlined in Zoning By-law 2015-058, the total number of accessible spaces required for an overall parking requirement of 229 standard vehicle parking spaces, is 2 accessible spaces + 2% of the overall parking supply. On this basis, the minimum requirement for the proposed development is seven (7) accessible parking spaces, composed of three (3) Type A spaces and four (4) Type B spaces. The site plan used to prepare this report provides a supply of seven (7) accessible parking spaces. On this basis, the proposed accessible parking supply is compliant with the minimum requirements of the Zoning By-law.

4.2. Parking Justification

The following justifications are provided to support the proposed parking reduction in comparison to the Zoning By-law requirements:

1. Proxy Site Parking Utilization Survey Rates
2. Provincial Policies
3. Town of Caledon Official Plan
4. Transportation Demand Management

4.2.1. Proxy Site Parking Utilization Surveys

A review of parking survey data from previous parking utilization surveys completed by Nextrans was undertaken to determine the appropriateness of the proposed parking reduction of the proposed development.

The proxy sites considered were comparable in built form to the proposed development (i.e., mid-rise apartment building) and similar in density. Parking utilization surveys were conducted on typical (i.e., non-holiday) Fridays and Saturdays, with survey times varying per site but typically conducted in the evening when residents would be home, and their vehicles would be able to be accounted for. A summary of peak utilization rates at each of the selected proxy sites are detailed in **Table 4.2**, as well as general information of each site.

Table 4.2: Peak Proxy Site Parking Utilization Rates

Municipal Address	Description	Peak Resident Rate (spaces/unit)	Peak Visitor Rate (spaces/unit)
1315 Silver Spear Road, Mississauga	<ul style="list-style-type: none"> 8-storey apartment building 93 dwelling units 98 resident spaces 10 visitor spaces 	0.81	0.10
1015 Roosevelt & 1020 Shaw, Mississauga	<ul style="list-style-type: none"> 2 8-storey apartment buildings 152 units (each building has 76 units) 86 tenant spaces 14 visitor spaces 	0.36	0.04
480 Lakeshore Road East, Mississauga	<ul style="list-style-type: none"> 7-storey apartment building 82 dwelling units 80 resident spaces 7 visitor spaces 	0.85	0.06

Table 4.2: Peak Proxy Site Parking Utilization Rates (Continued)

Municipal Address	Description	Peak Resident Rate (spaces/unit)	Peak Visitor Rate (spaces/unit)
3122 Hurontario Street, Mississauga	<ul style="list-style-type: none"> 12-storey apartment building 89 dwelling units 92 tenant spaces 10 visitor spaces 	0.64	0.05
111 Civic Square Gate, Aurora	<ul style="list-style-type: none"> 7-storey apartment building 157 dwelling units 	0.60	0.05
7 Albert Street, Whitchurch-Stouffville	<ul style="list-style-type: none"> 4-storey apartment building 63 dwelling units 77 resident spaces 4 visitor spaces 	0.90	0.03

Based on our review of previously collected parking survey data at the noted proxy sites, the peak observed resident rate was 0.90 spaces/unit whereas the peak observed visitor rate was 0.10 spaces/unit. It is critical to note that the proxy sites selected are located nearby existing transit facilities; however, as noted in Section 3.2.2 of this Study, there are significant transit improvements planned within the vicinity of the subject site. With access to the future Caledon GO station and with access to the future transit lines that will be available along the King Street W and Emil Kolb Parkway corridors, the proposed development will have ample transit connections. As such, it is our opinion that the rates noted in the table above are appropriate for a development of this nature.

On this basis, it is our opinion that the proposed resident parking rate of 1.0 spaces/unit and proposed visitor rate of 0.18 spaces/unit is appropriate for the proposed development and is adequate to accommodate the future demands of the proposed development.

4.2.2. Provincial Policies

At the time that this report was prepared, it is to be noted that the Province of Ontario introduced a new legislative proposal named Bill 185, Cutting Red Tape to Build More Homes Act, 2024. Bill 195 would prohibit minimum parking standards around MTSA's and an excerpt from the bill proposes the following:

"No official plan may contain any policy that has the effect of requiring an owner or occupant of a building or structure to provide and maintain parking facilities, other than parking facilities for bicycles, on land that is not part of a highway and this is located within,"

As of June 6th, 2024, Bill 185 received Royal Assent and includes amendments to s.34 of the Planning Act to add a new subsection (1.1) as follows:

- (1.1) *Despite paragraph 6 of subsection (1), a zoning by-law may not require an owner or occupant of a building or structure to provide and maintain parking facilities, other than parking facilities for bicycles, on land that is not part of a highway and that is located within,*
- (a) *A protected major transit station identified in accordance with subsection 16(15) or (16)*
 - (b) *An area delineated in the official plan of the municipality surrounding and including an existing or planned higher order transit station or stop, within which area the official plan policies identify the minimum number of residents and jobs, collectively, per hectare that are planned to be accommodated, but only if those policies are required to be included in the official plan to conform with a provincial plan or be consistent with a policy statement under subsection 3(1); or*

(c) Any other area prescribed for the purposes of clause 16(22)(c)

While the subject site falls just outside of MTSA designated lands according to the Bolton GO Station Study Area, the linear distance between the subject lands and the MTSA lands is just over 1km. As such, the reduced parking standards proposed on-site are compliant with the goals of Bill 185 and will assist in encouraging future residents to consider alternative modes of transportation. T

4.3. Town of Caledon Official Plan (2018)

The Town of Caledon's Official Plan states that one of the Town's main objectives is to promote an integrated transportation system which supports the provision of improved transportation options to residents. In Section 5.9.3.4 and Section 5.9.3.5 of the Town of Caledon's Official Plan, one of the Town's goals in regards to transportation is "To support the planning and development of pedestrian and bicycle facilities and their linkages with open space areas. To support energy conservation and reduced transportation costs by advocating an expanded role of a public transit system and other sustainable modes of transportation."

Our review of the Town of Caledon's Official Plan Transportation Objectives indicates that there is a need to reduce single-occupant-vehicle trips and to support other modes of transportation such as public transit and active transportation.

4.4. Transportation Demand Management

The main objective of the Transportation Demand Management (TDM) is to encourage residents to take alternative modes of transportation such as public transit, walking, cycling and carpooling. Based on NexTrans' experience in conducting parking justification studies in various jurisdictions in the Greater Toronto and Hamilton Area (GTHA), parking management is the best Transportation Demand Management measure that helps reducing the number single-occupant vehicle trips to and from the proposed development, which is consistent with the Town of Caledon's Official Plan policies and sustainability objectives. Specific TDM measures will be identified in collaboration with the Town during the detailed design stage in based on appropriateness for the site.

5.0 SITE PLAN REVIEW

5.1. Vehicle Maneuverability Assessment

AutoTURN software was used to generate a vehicular turning template to confirm and demonstrate the accessibility of the proposed study area. The AutoTURN analysis demonstrates that a Peel Region front-loading waste collection vehicle can access the loading space without conflict. Additionally, AutoTURN analysis demonstrates that an Aerial Fire Truck (NCHRP Report 659) can access the fire route. The AutoTURN analysis is provided in **Figure 5-1** and **Figure 5-2**.

5.2. Access Review

It is to be noted that the initial submission of our Transportation Impact Study provided a review of the proposed site access in accordance with Peel Region's Road Characterization Study. In response to the Region's comments regarding the proposed site access, the site access design elements were explored further in the following subsections.

5.2.1. Access Width

Based on the Town of Caledon's Development Standards Manual, 2019, street access and major internal aisles shall have a minimum width of 6.0m for two-way traffic. Based on the site plan used to prepare this TIS Addendum, the width of the site access at the property line is 8.68m and tapers down to 6.5m. Additionally, the internal drive aisles have a minimum width of 6.5m throughout the site. On this basis, the proposed widths of the site access and internal drive aisles are compliant with the minimum requirements noted in the Town's standards.

5.2.2. Auxiliary Lanes

Given that no site traffic volumes were assumed to turn left into the site, no inbound left turn lane is required.

Based on the future total traffic assessment, no queues are expected for inbound right turn movements at the site access and as such, no right-turn lane is required.

5.2.3. Sightline Analysis

5.2.4. Stopping Sight Distance

For the purpose of sight distance assessment, a design speed of 50 km/hr (posted speed limit plus 10 km/hr) was considered. Sight distance requirements were considered for passenger vehicles approaching the proposed site access onto Harvest Moon Drive. Under the stopping sight distance assessment, the target height applied is 0.38 m for vehicle taillights, and for intersection movements a top of car height of 1.3 m is applied. A driver eye height of 1.05 m is applied for all scenarios.

The effect of the road grade on Harvest Moon Drive was considered in calculating the stopping sight distance requirement. For the west approach, no road grade was applied as the approaching roadway has no change in grade and for the east approach, a road grade of 0.016 was considered approaching the site access.

In accordance with the Geometric Design Guide for Canadian Roads by the Transportation Association of Canada (TAC 2017) section 2.5.3, the required stopping distance is determined using the following equation:

$$d_b = V^2 / 254[(a/9.81) +/- G]$$

Where:

d_b = Braking distance (m);

V = design speed (km/h);

a = Deceleration rate (m/s^2), 3.4 m/s^2

G = the percent grade divided by 100

Then:

$$\text{Stopping Sight Distance} = 0.278tV + d_b$$

$$\begin{aligned} \text{Minimum stopping sight distance for east approach} &= [0.278 \times 2.5 \times 50] + [50^2 / 254 ((3.4/9.81) + 0.0125)] \\ &= 41.31m \sim 42m \end{aligned}$$

Existing sight distances approaching the proposed site access have been determined through a site visit. Stopping sight distance at the proposed site access is detailed in **Table 5.1**.

Table 5.1 – Stopping Sight Distance Assessment at Site Access

Approach	Required	Achieved	Difference
Eastbound	64m	+150m	+86m
Westbound	42m	+150m	+108m

In comparing the achieved stopping sight distance of a minimum of 150m with the required stopping sight distance of 64m for the westbound approach, there is a minimum surplus of 86m available for approaching vehicles. In comparing the achieved stopping sight distance of a minimum of 150m with the required stopping sight distance of 42m for the eastbound approach, there is a minimum surplus of 108m available for approaching vehicles.

On this basis, the achieved stopping sight distances are compliant with the minimum requirement.

5.2.5. Departure Sight Distance

To assess scenarios where vehicles are departing from the location of the proposed driveway, the departure sight distance was assessed under Case B1 – Left Turn from the Minor Road, in accordance with Section 9.9.2.3 of the *Geometric Design Guide for Canadian Roads (TAC 2017)*. The departure sight distance was assumed to be under stop-controlled conditions.

As stipulated in the *Geometric Design Guide for Canadian Roads*, the intersection sight distance along the major road is determined using the following equation:

$$ISD = 0.278 V_{\text{major}} t_g$$

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); and,

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

Case B1 – Minimum intersection sight distance for vehicles turning left from the proposed site access onto Harvest Moon Drive:

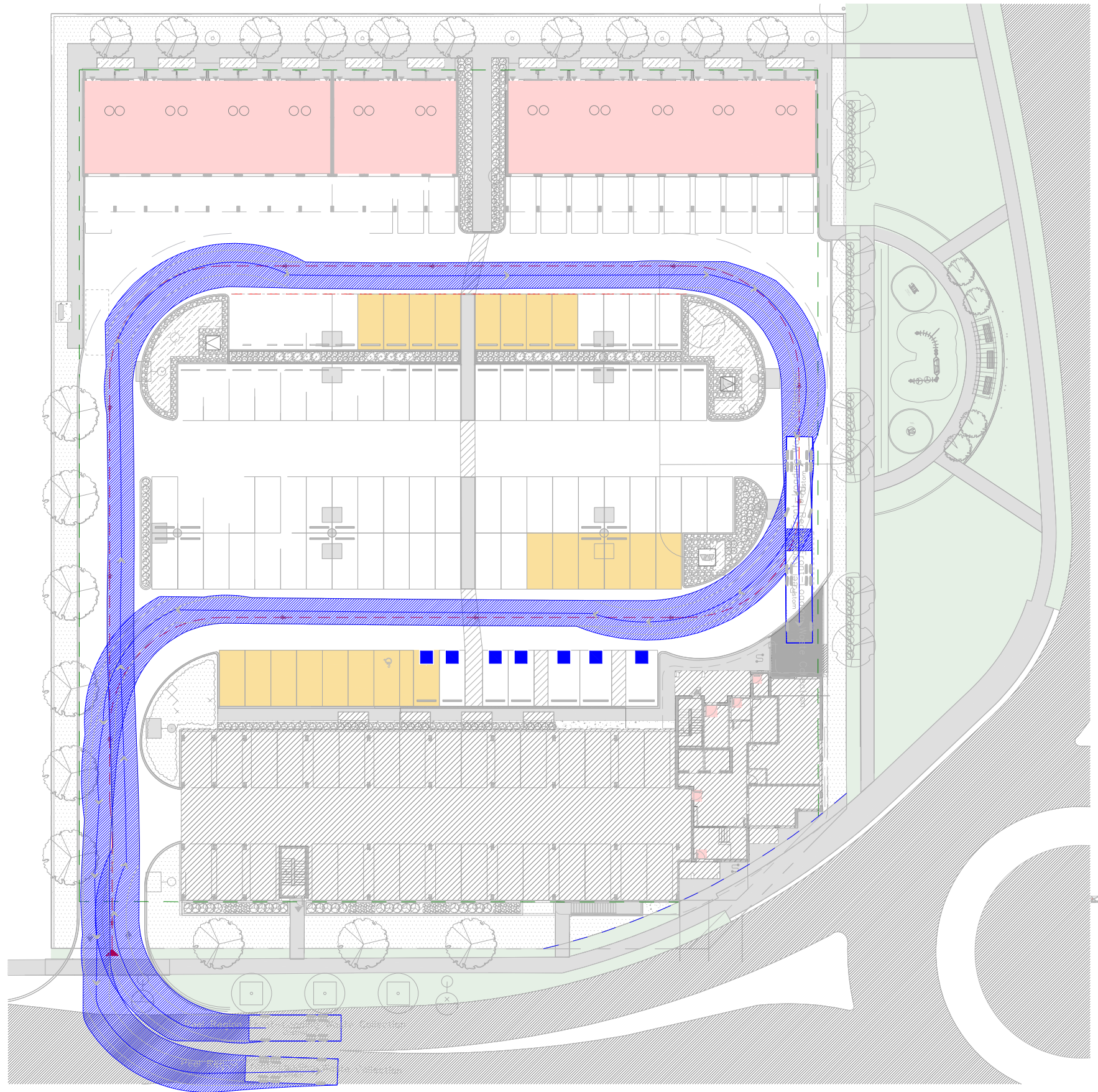
$$\begin{aligned} ISD &= 0.278 \times 90 \times 7.5 \\ &= 104.25\text{m} \sim \mathbf{105\text{m}} \end{aligned}$$

As previously mentioned, actual departure sight distances at the proposed site access have been determined through an on-site visit. The departure sight distances at the proposed site access are summarized in **Table 5.2**.

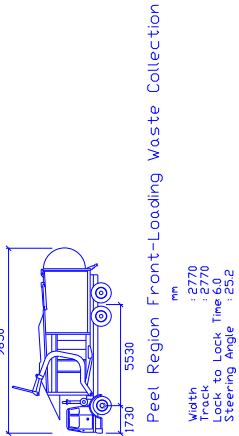
Table 5.2 – Departure Sight Distance Assessment at Site Access

Approach	Required	Achieved	Difference
Eastbound	105m	+150m	+45m
Westbound	105m	+150m	+45m

In comparing the achieved departure sight distance of a minimum of 150m in each direction with the required departure sight distance of 105m in each direction, there is a minimum surplus of 45m in departure sight distance for vehicles turning left out of the driveway. **On this basis, the achieved departure sight distance is adequate.**



DESIGN VEHICLE



SCALE: 1:400

REVISIONS

NO.	REVISION	DATE	BY

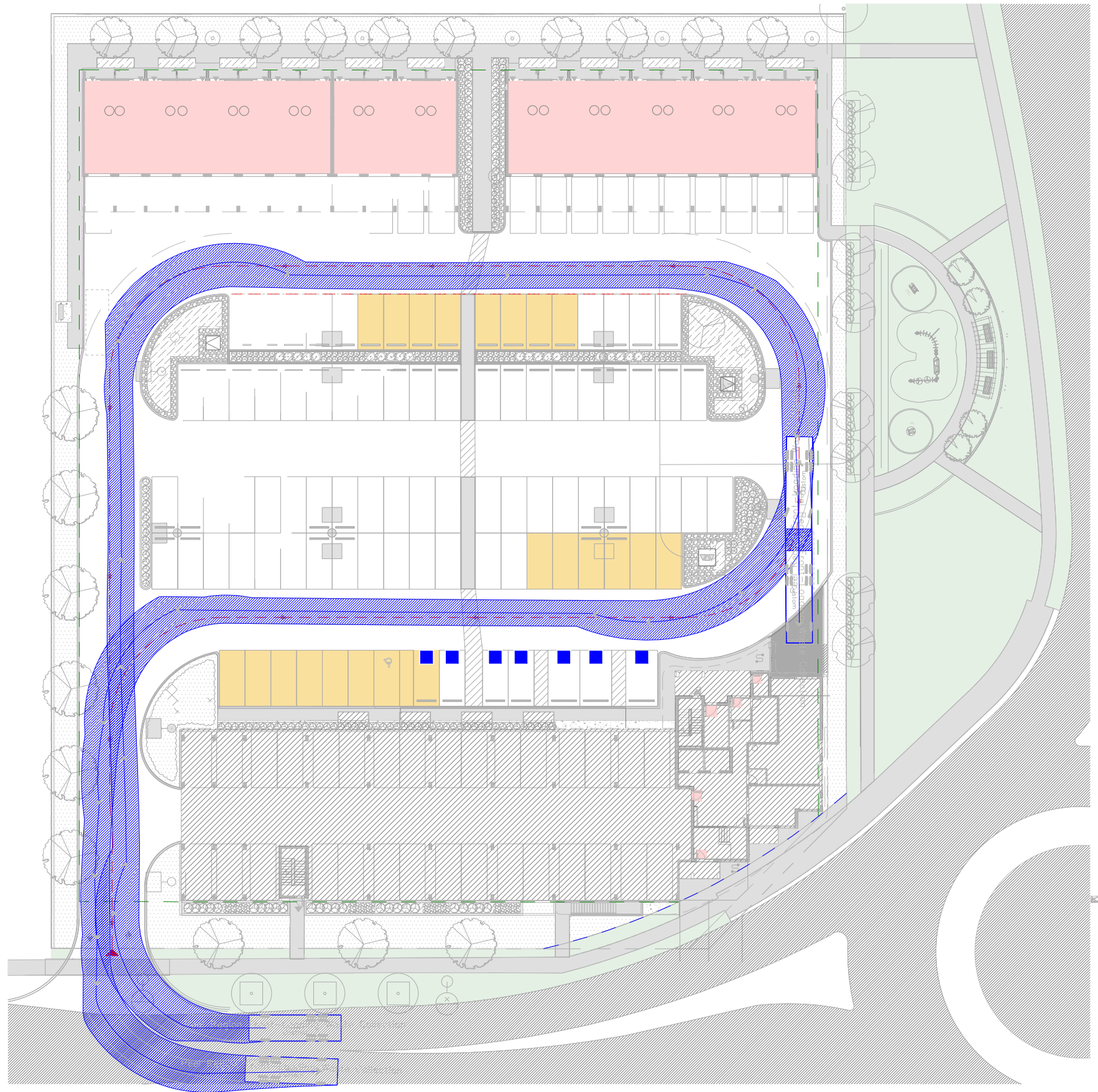
STAMP

nextrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6V9
Tel: 905-503-2563
Web: www.nextrans.ca

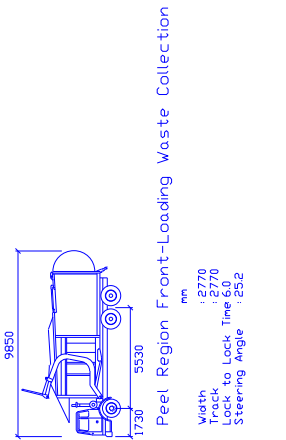
PROJECT NAME:
MIXED-USE RESIDENTIAL DEVELOPMENT
HARVEST MOON & EMIL KOLB PARKWAY
TOWN OF CALEDON

DRAWING TITLE:
AutoTURN Analysis
PEEL REGION FRONT
LOAD WASTE COLLECTION

DESIGN BY: K.A.	DATE: November 20, 2025
CHECKED BY: R.P.	PROJECT NO. NT-20-113
DRAWN BY: K.A.	DRAWING NO. Figure 5-1
SCALE: 1:500	



DESIGN VEHICLE



SCALE: 1:400

REVISIONS

NO.	REVISION	DATE	BY

STAMP



PROJECT NAME:
MIXED-USE RESIDENTIAL DEVELOPMENT
HARVEST MOON & EMIL KOLB PARKWAY
TOWN OF CALEDON

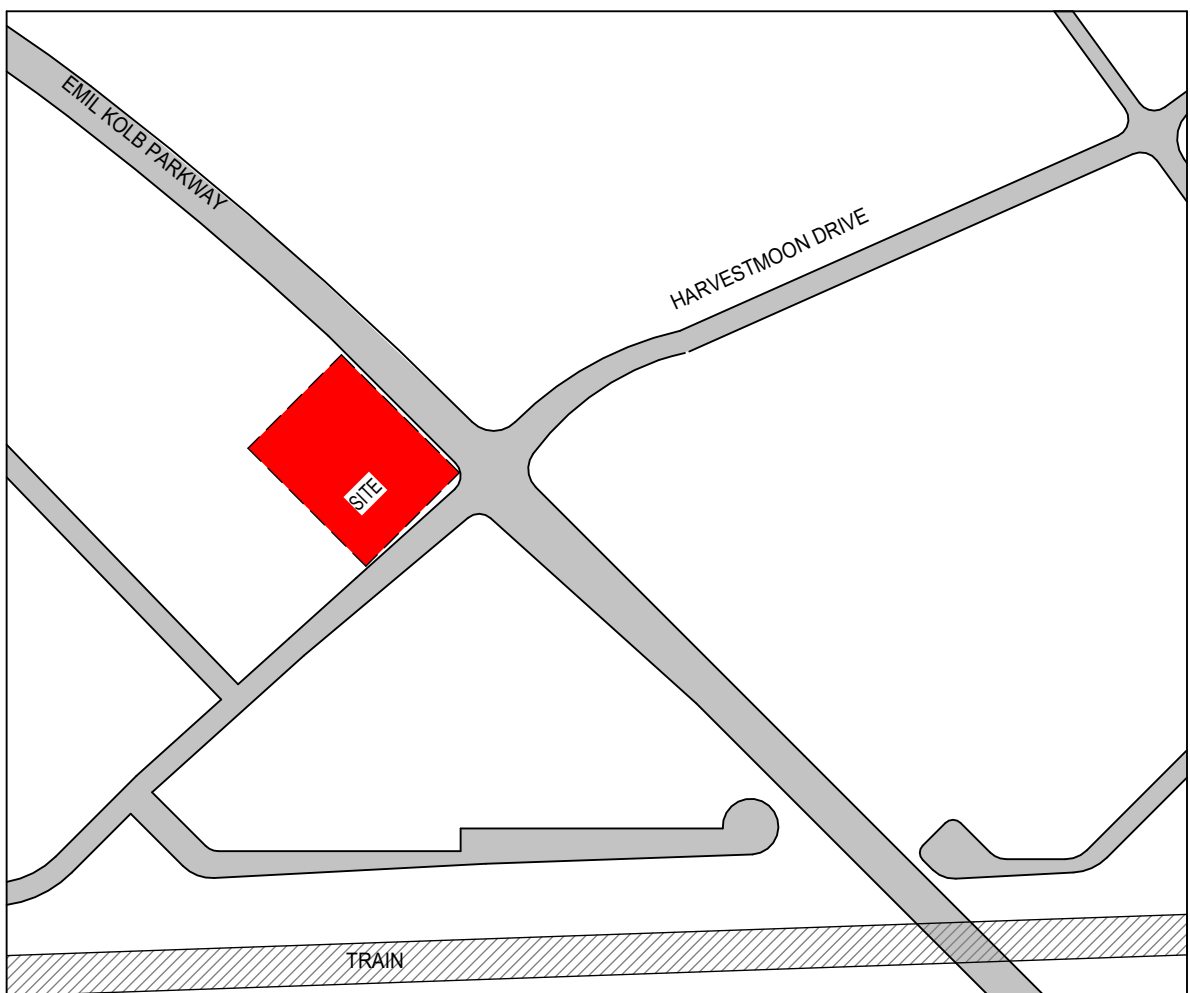
DRAWING TITLE:
AutoTURN Analysis
AERIAL FIRE TRUCK
NCHREP REPORT 659

DESIGN BY: K.A.	DATE: November 20, 2025
CHECKED BY: R.P.	PROJECT NO. NT-20-113
DRAWN BY: K.A.	DRAWING NO. Figure 5-2
SCALE: 1:500	

APPENDIX A:

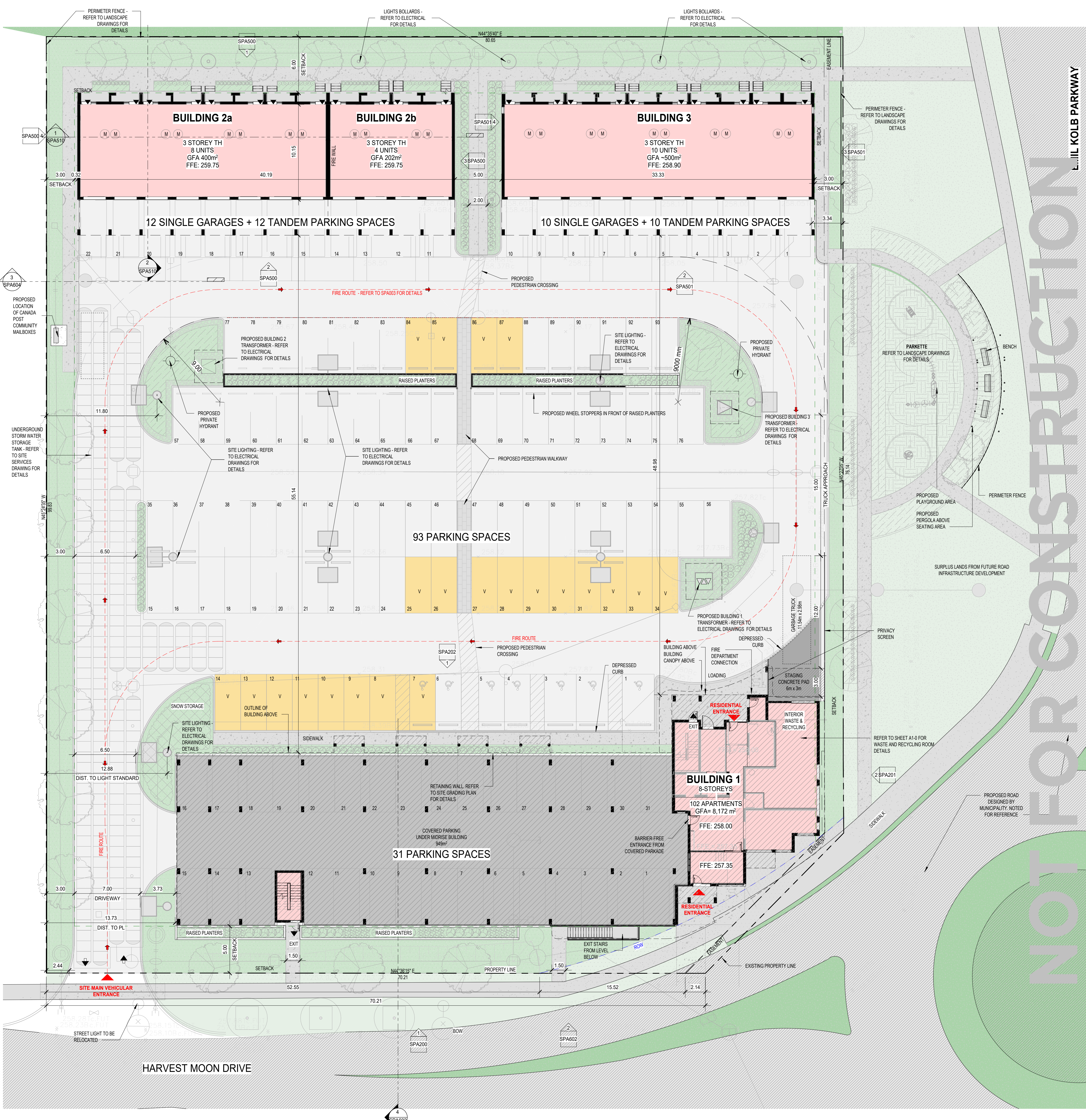
Site Plan

C:\Users\lgortalez\Documents\Bolton_Site_cop\bolton\ASTVL\nt 2025-12-03 12:45:58 PM



KEY PLAN N.T.S.

PROJECT INFORMATION			
PROJECT NAME		BOLTON VILLAGE - ARPEGGIO	
LEGAL DESCRIPTION		PART OF LOT 9, CONCESSION 5 TOWN OF CALEDON REGIONAL MUNICIPALITY OF PEEL PIN# 14326-1856 (LT)	
MUNICIPAL ADDRESS		13656 and 13668 EMIL KOLB PARKWAY, BOLTON, ON	
SITE			
SITE AREA		8,363.7 m ² / 0.83 ha / 90,026.1 SqFt	
TOTAL LANDSCAPE AREA		2,033.3 m ² 24 %	
SOFT LANDSCAPE AREA		1,378.9 m ²	
HARD LANDSCAPE AREA		602.0 m ²	
OUTDOOR PARKING AREA		4,245.7 m ²	
SITE COVERAGE		28%	
BUILDING AREAS			
TOTAL BUILDING AREA		2,303 m ²	
BLDG 1 AREA - HIGH BLDG		1,201 m ² (INCLD. OPEN PARKING AREA)	
BLDG 2 AREA - 12 UNITS		602 m ² (BLDG 2a: 400 m ² BLDG 2b: 202 m ²)	
BLDG 3 AREA - 10 UNITS		500 m ²	
UNIT BREAKDOWN		GFA	
BLDG 1 - HIGH BLDG		BLDG 1 - HIGH BLDG RESIDENTIAL	
No OF STOREYS		8	
No OF UNITS		102	
ACCESSIBLE UNITS		15	
BLDG 2a - TOWNHOUSES		BLDG 2A - TOWNHOUSES	
No OF STOREYS		3	
No OF UNITS		8	
BLDG 2b - TOWNHOUSES		BLDG 2B - TOWNHOUSES	
No OF STOREYS		3	
No OF UNITS		4	
BLDG 3 - TOWNHOUSES		BLDG 3 - TOWNHOUSES	
No OF STOREYS		3	
No OF UNITS		10	
TOTAL # OF RESIDENTIAL UNITS		124	
FSI = 1.36			
PARKING			
TOTAL # OF PARKING SPACES		REQUIRED (RM)	PROPOSED (PROVIDED)
		228	168
AT GRADE PARKING			
HIGH-RISE (RESIDENTS)		(Ratio 1:5)	153
STACKS (RESIDENTS)		(Ratio 1:2)	44
VISITOR PARKING		(Ratio 1:0.25)	31
BARRIER-FREE PARKING (Incl.)		(3% of total parking)	6
		(Ratio 1:0.17)	22
		(4% of total parking)	7 (incl.)
INFORMATION TAKEN FROM		LEGEND	
PLAN OF SURVEY AND TOPOGRAPHY PART OF LOT 9, CONCESSION 5 (GEOGRAPHIC TOWNSHIP OF ALBION) TOWN OF CALEDON REGIONAL MUNICIPALITY OF PEEL SCALE 1:1500 R-PEE SURVEYING LTD., O.L.S. METRIC DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 3.2808		TRAVEL DISTANCE	
		RESIDENTS PARKING	
		ACCESSIBLE PARKING TYPE A	
		ACCESSIBLE PARKING TYPE B	
NO PARKING AREA			
VISITOR PARKING			



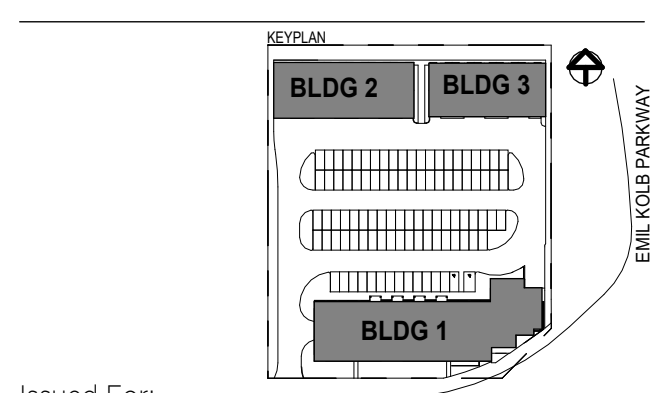
Q4A

ARCHITECTS

Q4 ARCHITECTS INC.
4110 Yonge Street
Suite 602, Toronto, ON
M2P 2B7
T: 416.322.6334
F: 416.322.7294
E: info@q4architects.com

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PN = PROJECT NORTH
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No	Description	Date
01	Issue for SPA Coordination	2024-11-21
02	Issue for SPA Coordination #2	2025-01-07
03	Issued for Review - Stubbs	2025-01-22
04	Issued for Client Review	2025-01-23
06	Issued for SPA Coordination #3	2025-01-29
07	Issued for Client Review	2025-01-31
08	Issued for SPA Coordination #4	2025-02-20
09	Issued for Site Plan Application	2025-02-28
10	Issued for Rezoning Application	2025-02-28
11	Issued for SPA #2 Coord. #2	2025-09-24
12	Issued for SPA #2 Coord. #2	2025-10-21
13	Issued for SPA #2 Coord. #3	2025-10-23
14	Issued for SPA #2 Coord. #4	2025-11-13
15	Issued for SPA #2-CLIENT REVIEW	2025-11-18
16	Issued for SPA #2 Coord. #5	2025-11-26
17	Issued for Site Plan App. #2	2025-12-03
18	Issued for Rezoning App #2	2025-12-03

No	Description	Date
1	Revision Schedule	

Project Title

Project Description

BOLTON VILLAGE (ARPEGGIO)

13656, 13668 EMIL KOLB PARKWAY
BOLTON, ON

CAMCOS LIVING

Project No. 23005

Scale As indicated

Drawn By Author

Checked By Checker

MASTER SITE PLAN

BUILDING 1-2-3

SPA001

APPENDIX B:

Terms of Reference Correspondence

Kristian Aviles

From: Kavleen Younan <Kavleen.Younan@caledon.ca>
Sent: June 28, 2024 9:05 AM
To: Kristian Aviles
Cc: Emma Howlett
Subject: RE: Terms of Reference for a Transportation Impact Study for 13656 Harvest Moon Drive in the Town of Caledon

Follow Up Flag: Follow up
Flag Status: Flagged

Good Morning Kristian,

Thank you for circulating your email. Please see the Town's responses below.

Kavleen S. Younan, P.Eng.
Transportation Engineer
Engineering, Public Works & Transportation Department

Email: kavleen.younan@caledon.ca
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STRATEGIC PLAN 2023-2035



The best of rural and urban life for everyone

From: Kristian Aviles <kristian@nextrans.ca>
Sent: June 26, 2024 4:52 PM
To: Kavleen Younan <Kavleen.Younan@caledon.ca>
Cc: Emma Howlett <Emma.Howlett@caledon.ca>
Subject: RE: Terms of Reference for a Transportation Impact Study for 13656 Harvest Moon Drive in the Town of Caledon
Importance: High

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the contents to be safe.

Hi Kavleen,

Thanks for your response. Based on my review of the zoning by-law definitions and residential parking requirements, it doesn't seem that any of the townhouse definitions are an accurate description for the stacked towns proposed by this development. Furthermore, based on my review of residential areas within Caledon, it seems that this is a unique land use in comparison to the existing back-to-back, comment element and freehold townhouses throughout the Town.

- Please note that the Town's Zoning Department leads decisions with regard to parking rates in the Town's Zoning By-Law.

- Transportation Staff will review the proposed parking justification from a Transportation Engineering perspective to offer expertise in the form of comments for both internal staff consideration and the consultant/applicant.

As such, we propose to conduct proxy site parking utilization surveys at an existing stacked townhouse site in north Brampton located at 60 Fairwood Circle. The proxy site has 150 dwelling units and a mix of garage and surface parking for residents, as well as surface parking for visitors (i.e., similar to the proposed development). The parking supply will be confirmed via site visit as this information is not available online. While we acknowledge that the site is not within the Town of Caledon and is also located within an area that is serviced by 1 transit route, it is to be noted that our review of sites with similar built form concluded that no stacked townhouse sites are located in areas with no transit availability.

- Justification should be provided that Proxy sites are comparable to the proposed context within Caledon. We note that in general Brampton has more multi-modal transportation options when compared to the proposed context in Caledon. Please justify by comparing vehicle ownership, modal splits, or other characteristics between the proposed proxy site location & the proposed development context within Caledon.
- Note that 0 Kennedy Road - Town of Caledon proposes stacked condo townhouse units.

We propose to conduct surveys at the proxy site from July 4 – 6, in accordance with the comments previously provided by staff (i.e., 1 site over 3 days) and we propose to conduct surveys between 4PM – 12AM to capture both peak visitor and resident demands.

- The proposed data collection period is during summer break, just after the long weekend when many families are on vacation. Transportation Staff recommend waiting for a period that is reflective of typical conditions. If required, it must be justified to the satisfaction of Transportation Staff that the proxy site data collected is reflective of typical conditions.
- Impacts of prohibited and on-street parking should be recorded then quantified.
- Provide clarification on how garage parking space occupancy will be considered in the survey.
- For clarification 12am is midnight (i.e., one minute after 11:59pm)? If the answer is yes, the proposed survey periods are insufficient when compared to industry standards and best practices, revise proposal to extend survey periods.
- Please note ideally parking would be surveyed:
 - on a weekday, Friday, Saturday, and Sunday.
 - Between 3pm to 10am with adjustments based on the anticipated time of peak demand for that particular day of the week.

Please advise if the proposed parameters for parking utilizations surveys at the proxy site are acceptable as soon as possible.

Further to the background developments provided below, can you please provide more information for the second site (i.e., location, access configuration)? Otherwise, would it be acceptable to exclude this from our analysis given the low number of trips its expected to generate?

- Justification is acceptable to exclude, document this justification in the proposed study.

Looking forward to your response.

Thank you,

Kristian Aviles, B.Eng.
Transportation Analyst

o: 905-503-2563 ext. 206

e: kristian@nextrans.ca

w: www.nextrans.ca

NexTrans Consulting Engineers

A Division of NextEng Consulting Group Inc.

520 Industrial Parkway South, Suite 201

Aurora ON L4G 6W8

From: Kavleen Younan <Kavleen.Younan@caledon.ca>

Sent: Friday, June 21, 2024 3:38 PM

To: Kristian Aviles <kristian@nextrans.ca>

Cc: Emma Howlett <Emma.Howlett@caledon.ca>

Subject: RE: Terms of Reference for a Transportation Impact Study for 13656 Harvest Moon Drive in the Town of Caledon

Hello Kristian,

Thank you for circulating the TOR. Town Transportation Engineering staff reviewed the submitted terms of reference and offer the following comments.

- 1) Parking spaces should be provided according to the rates in the Zoning By-Law. If fewer than the required parking spaces are proposed, a parking justification will be required. A work plan (Terms of Reference) for the parking justification study should be circulated with Town Transportation Staff before starting the parking portion of the investigations.
- 2) Review the Town's visitor parking space and Barrier Free Accessible Parking Space requirements.
- 3) Capacity review and access management of intersections under regional jurisdiction is currently deferred to the Region of Peel. Accordingly, the TOR should be reviewed by the Regional Staff.
- 4) Nextrans provided a Transportation Study for a different proposal at this location. Comments provided for the previously submitted study should be applied as applicable to the new proposal and updated study.
- 5) Please see the attached for ADT data on Town Roads. Please contact the Region of Peel with regard to Traffic Data and growth rates on regional roadways and intersections under their jurisdiction.
- 6) The following background developments have been identified within the proposed study network:
 - a. [Zancor Homes](#) (TIS linked)
 - b. SB 21T-13002C (no TIS available; this development proposes the construction of 7 single detached dwelling units)

Kavleen S. Younan, P.Eng.

Transportation Engineer

Engineering, Public Works & Transportation Department

Email: kavleen.younan@caledon.ca

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**STRATEGIC PLAN
2023-2035**



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From: Kristian Aviles <kristian@nextrans.ca>
Sent: Friday, June 14, 2024 8:00 AM
To: Arash Olia <Arash.Olia@caledon.ca>
Cc: Kavleen Younan <Kavleen.Younan@caledon.ca>
Subject: RE: Terms of Reference for a Transportation Impact Study for 13656 Harvest Moon Drive in the Town of Caledon

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the contents to be safe.

Noted. Thanks for forwarding to the appropriate party. Hoping to get your review ASAP Kavleen.

Kristian Aviles, B.Eng.
Transportation Analyst

o: 905-503-2563 ext. 206
e: kristian@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

From: Arash Olia <Arash.Olia@caledon.ca>
Sent: Thursday, June 13, 2024 5:12 PM
To: Kristian Aviles <kristian@nextrans.ca>
Cc: Kavleen Younan <Kavleen.Younan@caledon.ca>
Subject: Fwd: Terms of Reference for a Transportation Impact Study for 13656 Harvest Moon Drive in the Town of Caledon

Hi Kristian,

Please for any future correspondence follow up directly with Kavleen from my team.

Thanks,

Arash Olia, Ph.D., P.Eng.
Manager, Transportation Engineering
Engineering, Public Works & Transportation

Office: 905.584.2272 x.4073
Email: arash.olia@caledon.ca

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From: Kristian Aviles <kristian@nextrans.ca>

Sent: Thursday, June 13, 2024 5:09:38 p.m.

To: Arash Olia <Arash.Olia@caledon.ca>; Barnes, Catherine <catherine.barnes@peelregion.ca>

Subject: Terms of Reference for a Transportation Impact Study for 13656 Harvest Moon Drive in the Town of Caledon

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the contents to be safe.

Good afternoon,

Please see the attached terms of reference for a Transportation Impact Study for a development located at 13656 Harvest Moon Drive, within the Town of Caledon.

For convenience, I've also attached the latest iteration of the site plan for the proposed development for your review.

Please advise if the proposed scope of work is acceptable at your earliest convenience.

Thank you,

Kristian Aviles, B.Eng.
Transportation Analyst

o: 905-503-2563 ext. 206

e: kristian@nextrans.ca

w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

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APPENDIX C:

Future Background Traffic Analysis Results

Intersection								
Intersection Delay, s/veh	12.2							
Intersection LOS	B							
Approach	EB		WB		NB		SB	
Entry Lanes	1		1		2		2	
Conflicting Circle Lanes	2		2		1		1	
Adj Approach Flow, veh/h	346		416		296		928	
Demand Flow Rate, veh/h	361		442		350		1062	
Vehicles Circulating, veh/h	1245		260		360		280	
Vehicles Exiting, veh/h	97		450		1004		216	
Follow-Up Headway, s	3.186		3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	0		3		0		3	
Ped Cap Adj	1.000		1.000		1.000		0.997	
Approach Delay, s/veh	13.3		6.4		8.1		15.8	
Approach LOS	B		A		A		C	
Lane	Left	Bypass	Left	Bypass	Left	Right	Left	Right
Designated Moves	LT	R	LT	R	LT	TR	LT	TR
Assumed Moves	LT	R	LT	R	LT	TR	LT	TR
RT Channelized	Yield		Yield					
Lane Util	1.000		1.000		0.469	0.531	0.470	0.530
Critical Headway, s	4.113		4.113		5.193	5.193	5.193	5.193
Entry Flow, veh/h	119	242	236	206	164	186	499	563
Cap Entry Lane, veh/h	473	560	942	971	788	788	854	854
Entry HV Adj Factor	0.948	0.962	0.961	0.917	0.848	0.843	0.874	0.874
Flow Entry, veh/h	113	233	227	189	139	157	436	492
Cap Entry, veh/h	448	538	905	891	668	665	744	744
V/C Ratio	0.252	0.433	0.251	0.212	0.208	0.236	0.586	0.661
Control Delay, s/veh	12.0	13.9	6.6	6.2	7.8	8.3	14.4	17.1
LOS	B	B	A	A	A	A	B	C
95th %tile Queue, veh	1	2	1	1	1	1	4	5

HCM 2010 Roundabout
1: Coleraine Drive/Emil Kolb Parkway & Harvest Moon Drive/King Street West

Future Background PM Traffic Conditions

10/17/2025

Intersection								
Intersection Delay, s/veh	20.1							
Intersection LOS	C							
Approach	EB		WB		NB		SB	
Entry Lanes	1		1		2		2	
Conflicting Circle Lanes	2		2		1		1	
Adj Approach Flow, veh/h	284		531		1269		620	
Demand Flow Rate, veh/h	287		537		1316		689	
Vehicles Circulating, veh/h	730		1144		349		445	
Vehicles Exiting, veh/h	404		521		468		843	
Follow-Up Headway, s	3.186		3.186		3.186		3.186	
Ped Vol Crossing Leg, #/h	2		3		2		5	
Ped Cap Adj	1.000		1.000		0.998		0.996	
Approach Delay, s/veh	7.0		16.4		28.0		13.0	
Approach LOS	A		C		D		B	
Lane	Left	Bypass	Left	Bypass	Left	Right	Left	Right
Designated Moves	LT	R	LT	R	LT	TR	LT	TR
Assumed Moves	LT	R	LT	R	LT	TR	LT	TR
RT Channelized	Yield		Yield					
Lane Util	1.000		1.000		0.470	0.530	0.470	0.530
Critical Headway, s	4.113		4.113		5.193	5.193	5.193	5.193
Entry Flow, veh/h	87	200	144	393	619	697	324	365
Cap Entry Lane, veh/h	678	814	507	626	797	797	724	724
Entry HV Adj Factor	0.989	0.990	0.986	0.990	0.963	0.965	0.900	0.900
Flow Entry, veh/h	86	198	142	389	596	672	291	329
Cap Entry, veh/h	670	806	500	620	767	768	649	650
V/C Ratio	0.128	0.246	0.284	0.627	0.778	0.876	0.449	0.506
Control Delay, s/veh	6.8	7.1	11.4	18.2	23.0	32.4	12.2	13.6
LOS	A	A	B	C	C	D	B	B
95th %tile Queue, veh	0	1	1	4	8	11	2	3

APPENDIX D:













Future Total Traffic Analysis Results

HCM Unsignalized Intersection Capacity Analysis

Future Total AM Traffic Conditions

1: Coleraine Drive/Emil Kolb Parkway & Harvest Moon Drive/King Street West

11/28/2025

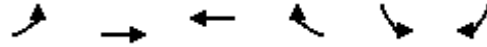
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			MOYes			MOYes						
Traffic Volume (veh/h)	18	107	240	168	42	172	0	143	86	0	637	11
Future Volume (veh/h)	18	107	240	168	42	172	0	143	86	0	637	11
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	20	118	264	185	46	189	0	157	95	0	700	12
Approach Volume (veh/h)		138			231			252			712	
Crossing Volume (veh/h)		885			177			138			231	
High Capacity (veh/h)		684			1206			1243			1156	
High v/c (veh/h)		0.20			0.19			0.20			0.62	
Low Capacity (veh/h)		536			999			1033			953	
Low v/c (veh/h)		0.26			0.23			0.24			0.75	
Intersection Summary												
Maximum v/c High			0.62									
Maximum v/c Low			0.75									
Intersection Capacity Utilization		54.5%		ICU Level of Service					A			




Intersection									
Intersection Delay, s/veh	9.9								
Intersection LOS	A								
Approach	EB		WB		NB		SB		
Entry Lanes	1		1		2		2		
Conflicting Circle Lanes	2		2		1		1		
Adj Approach Flow, veh/h	402		420		252		712		
Demand Flow Rate, veh/h	422		446		306		824		
Vehicles Circulating, veh/h	1004		230		147		240		
Vehicles Exiting, veh/h	60		223		1004		230		
Follow-Up Headway, s	3.186		3.186		3.186		3.186		
Ped Vol Crossing Leg, #/h	0		3		0		3		
Ped Cap Adj	1.000		1.000		1.000		0.997		
Approach Delay, s/veh	13.8		6.4		6.1		11.1		
Approach LOS	B		A		A		B		
Lane	Left	Bypass	Left	Bypass	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	TR	LT	TR	
Assumed Moves	LT	R	LT	R	LT	TR	LT	TR	
RT Channelized	Yield		Yield						
Lane Util	1.000		1.000		0.471	0.529	0.470	0.530	
Critical Headway, s	4.113		4.113		5.193	5.193	5.193	5.193	
Entry Flow, veh/h	147	275	240	206	144	162	387	437	
Cap Entry Lane, veh/h	560	560	962	962	975	975	889	889	
Entry HV Adj Factor	0.939	0.962	0.961	0.917	0.822	0.824	0.865	0.864	
Flow Entry, veh/h	138	264	231	189	118	133	335	377	
Cap Entry, veh/h	526	538	924	882	802	804	766	765	
V/C Ratio	0.263	0.491	0.250	0.214	0.148	0.166	0.437	0.493	
Control Delay, s/veh	10.6	15.4	6.4	6.3	6.0	6.2	10.5	11.7	
LOS	B	C	A	A	A	A	B	B	
95th %tile Queue, veh	1	3	1	1	1	1	2	3	

HCM Unsignalized Intersection Capacity Analysis 2: Harvest Moon Drive

Future Total AM Traffic Conditions

11/28/2025















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	315	86	21	50	0
Future Volume (Veh/h)	0	315	86	21	50	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	342	93	23	54	0
Pedestrians		2	5		4	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	120				456	110
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	120				456	110
tC, single (s)	4.2				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	100				90	100
cM capacity (veh/h)	1438				562	917
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	342	116	54			
Volume Left	0	0	54			
Volume Right	0	23	0			
cSH	1438	1700	562			
Volume to Capacity	0.00	0.07	0.10			
Queue Length 95th (m)	0.0	0.0	2.5			
Control Delay (s)	0.0	0.0	12.1			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	12.1			
Approach LOS			B			
Intersection Summary						
Average Delay		1.3				
Intersection Capacity Utilization		27.2%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

Future Total PM Traffic Conditions

1: Coleraine Drive/Emil Kolb Parkway & Harvest Moon Drive/King Street West

11/28/2025

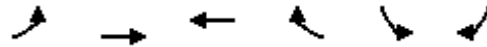
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			MOYes			MOYes						
Traffic Volume (veh/h)	20	69	182	45	80	327	280	662	151	216	293	26
Future Volume (veh/h)	20	69	182	45	80	327	280	662	151	216	293	26
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	24	82	217	54	95	389	333	788	180	257	349	31
Approach Volume (veh/h)		106			149			1301			637	
Crossing Volume (veh/h)		660			1145			363			482	
High Capacity (veh/h)		821			552			1041			947	
High v/c (veh/h)		0.13			0.27			1.25			0.67	
Low Capacity (veh/h)		655			423			850			766	
Low v/c (veh/h)		0.16			0.35			1.53			0.83	
Intersection Summary												
Maximum v/c High			1.25									
Maximum v/c Low			1.53									
Intersection Capacity Utilization			69.9%			ICU Level of Service				C		




Intersection									
Intersection Delay, s/veh	22.8								
Intersection LOS	C								
Approach	EB		WB		NB		SB		
Entry Lanes	1		1		2		2		
Conflicting Circle Lanes	2		2		1		1		
Adj Approach Flow, veh/h	323		538		1301		637		
Demand Flow Rate, veh/h	329		544		1348		707		
Vehicles Circulating, veh/h	730		1196		372		484		
Vehicles Exiting, veh/h	461		524		468		863		
Follow-Up Headway, s	3.186		3.186		3.186		3.186		
Ped Vol Crossing Leg, #/h	2		3		2		5		
Ped Cap Adj	1.000		1.000		0.998		0.997		
Approach Delay, s/veh	7.4		17.0		33.1		14.2		
Approach LOS	A		C		D		B		
Lane	Left	Bypass	Left	Bypass	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	TR	LT	TR	
Assumed Moves	LT	R	LT	R	LT	TR	LT	TR	
RT Channelized	Yield		Yield						
Lane Util	1.000		1.000		0.470	0.530	0.470	0.530	
Critical Headway, s	4.113		4.113		5.193	5.193	5.193	5.193	
Entry Flow, veh/h	110	219	151	393	634	714	332	375	
Cap Entry Lane, veh/h	678	814	489	618	779	779	696	696	
Entry HV Adj Factor	0.964	0.990	0.987	0.990	0.964	0.966	0.902	0.901	
Flow Entry, veh/h	106	217	149	389	611	689	299	338	
Cap Entry, veh/h	653	806	483	611	750	751	626	625	
V/C Ratio	0.162	0.269	0.309	0.636	0.815	0.918	0.478	0.540	
Control Delay, s/veh	7.4	7.4	12.3	18.8	26.4	39.1	13.3	15.0	
LOS	A	A	B	C	D	E	B	C	
95th %tile Queue, veh	1	1	1	5	9	13	3	3	

HCM Unsignalized Intersection Capacity Analysis2: Harvest Moon Drive

Future Total PM Traffic Conditions

11/28/2025



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	238	339	47	33	0
Future Volume (Veh/h)	0	238	339	47	33	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	259	368	51	36	0
Pedestrians			19		7	
Lane Width (m)			3.6		3.6	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			2		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	426				678	400
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	426				678	400
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	100
cM capacity (veh/h)	1137				411	650
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	259	419	36			
Volume Left	0	0	36			
Volume Right	0	51	0			
cSH	1137	1700	411			
Volume to Capacity	0.00	0.25	0.09			
Queue Length 95th (m)	0.0	0.0	2.3			
Control Delay (s)	0.0	0.0	14.6			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	14.6			
Approach LOS			B			
Intersection Summary						
Average Delay		0.7				
Intersection Capacity Utilization		30.8%		ICU Level of Service		A
Analysis Period (min)		15				

APPENDIX E:

Pavement Marking & Signage Plan

