March 11, 2021

Mr. Mario Polla
904 Mississauga Heights Drive
c/o Ms. Elyse Comeau
Sajecki Planning
777 Richmond Street West
Toronto, ON M6J 3N5

Subject : **904 Mississauga Heights Drive**
Transportation Assessment

Dear Mr. Polla :

I am pleased to submit this transportation assessment of the proposed residential development, totalling five single-family dwelling units, located at 904 Mississauga Heights Drive in the City of Mississauga. This report presents the findings of our assessment of the traffic generated by the proposed development and the results of our sightline analysis at the proposed driveway location. The assessment also addresses issues raised by City of Mississauga Transportation staff in their review of our proposed scope of work.

We have concluded that the traffic generated by the proposed development can be adequately accommodated by the area road network. There are no traffic or safety concerns associated with the location or configuration of the proposed driveway and the related operations.

Please feel free to contact me if you have any questions or require any clarification or additional information.

Sincerely,

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1. INTRODUCTION

A Zoning Bylaw Amendment application will be submitted to subdivide the property located at 904 Mississauga Heights Drive in the City of Mississauga into five lots each containing a single-family detached dwelling served by a private 7.5-metre wide (curb-to-curb) Common Element Condominium (CEC) driveway. A single-family dwelling is currently located on the property. The site is located south of Queensway West, west of Mavis Road, with a site area of approximately 1.28 ha.

2. DEVELOPMENT SITE

The site is located on the south side of Mississauga Heights Drive, which is a local residential road with a rural cross-section (no curbs/sidewalks and instead ditches/swales). It is crescent-shaped with two intersections to Queensway West. The site is located just to the south of the easterly intersection with Queensway West, as shown in Figure 1.

There are no speed limit signs posted on Mississauga Heights Drive and therefore, under the provisions of the Highway Traffic Act, Ontario, the speed limit is by default 50 km/h. However, by comparison, the speed limit for Queensway West, which is designated as a minor collector road, is 40 km/h. Also, due to the cross-section, horizontal alignment, function and character of Mississauga Heights Drive, the practical and safe operating speed of vehicles on this street is 40 km/h or less.

A multi-use trail is located within the Queensway West south boulevard which is designated as a "Primary Off-Road Route" in the City's Official Plan and Cycling Master Plan.

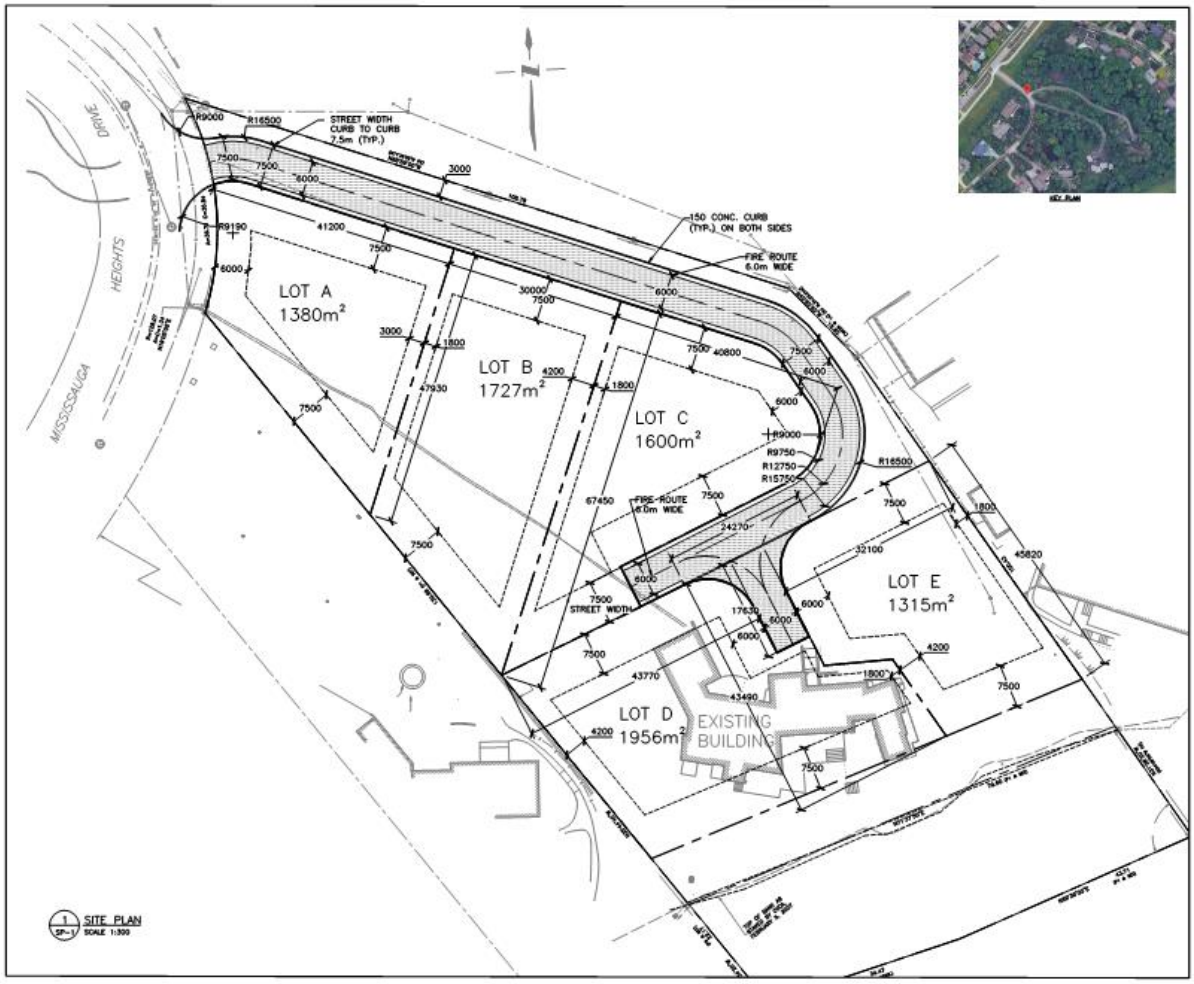
Figure 1: Site Location

Source: Google Maps

Note: Site boundaries are approximate

As noted above, the proposal is for the subdivision of the property into five separate lots for single-family detached dwellings, as shown in the preliminary site plan in Figure 2.

Figure 2: Preliminary Site Plan



Source: Sajecki Planning

3. SCOPE OF WORK

In support of this development application, we proposed the following scope of work:

- Review the site plans and provide traffic advice and input on the proposed access configuration to ensure safe and efficient operations (and to ensure that no drivers would be required to back out to Mississauga Heights Drive);
- Assess existing traffic conditions on the abutting roads;
- Estimate the amount of traffic generated by the proposed development;
- Undertake an analysis of the impacts of this site-generated traffic on the operations at the intersection of Mississauga Heights Drive and Queensway West;
- Undertake a sightline analysis at the site driveway on Mississauga Heights Drive;
- Prepare a traffic opinion letter on the results of these analyses for review.

In submitting this scope of work to City of Mississauga transportation staff for their review, they requested the following additional analyses:

- A review of any additional development on lands in the area and the traffic implications of these developments;
- A review of any road construction or improvement projects in the area; and
- The preparation of a Transportation Demand Management Plan for this development project.

The results of our analysis and conclusions are presented in the following sections.

4. SITE VISIT AND EXISTING CONDITIONS

A site visit was conducted on Friday, November 27, 2020 between 8 a.m. and 10 p.m. to observe peak morning traffic conditions, road geometry, traffic regulations and controls.

Mississauga Heights Drive is a two-lane road without any pavement markings or traffic/parking signs, with the exception of the stop signs at the two approaches to Queensway West and signs warning motorists of crossing pedestrians and cyclists using the multi-use trail south of these two intersections as shown in Figure 3.

Figure 3: Approach to Queensway West (east intersection)

Source: Google Streetview

Figure 4 shows the cross-section of Mississauga Heights Drive and the character of the neighbourhood.

Figure 4: Looking west on Mississauga Heights Drive west of the site

Source: Google Streetview

5. TRAFFIC FORECAST

EXISTING TRAFFIC VOLUMES

We contacted City of Mississauga to inquire about available traffic counts at either of the two Mississauga Heights Drive/Queensway West intersections or along Mississauga Heights Drive. We were advised that there were no traffic counts available at these locations. The closest available traffic count on Queensway West is at the signalized intersection with Mavis Road/Stavebank Road which is located approximately 900 metres to the east of the easterly Mississauga Heights/Queensway West intersection.

Typically, we would have undertaken traffic surveys to determine the current peak volumes along Mississauga Heights Drive and at its intersection with Queensway West. However, given the time of year and, more significantly, the Covid-19 pandemic which has affected traffic volumes and travel characteristics, traffic counts undertaken at this time would not represent typical average conditions. Furthermore, City of Mississauga traffic staff indicated that any traffic counts undertaken during the pandemic would not be accepted as representative of typical conditions.

For this reason, the most recent traffic count at the Queensway West/Mavis Road/Stavebank Road intersection, which was undertaken in 2010, was used to estimate 2021 traffic volumes on Queensway West. The eastbound and westbound through volumes on Queensway West at Mavis Road were assumed to carry through to the eastbound and westbound through volumes on Queensway West at Mississauga Heights Drive. A 1% per year annual growth rate was applied to these eastbound and westbound through traffic volumes on Queensway West over the 11-year period in order estimate the increase in traffic to 2021. A 1% growth rate was applied based on discussions with City staff who indicated that this rate was appropriate because Queensway West is designated as a minor collector roadway and annual growth is expected to be minimal.

The amount of traffic currently using Mississauga Heights Drive was estimated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual* 10th Edition. The equation associated with Residential Land Use Code 210 (Single-family Detached Housing) was applied to the existing number of houses (22) to calculate the number of vehicles entering / exiting Mississauga Heights Drive during the a.m. and p.m. peak hours. To be conservative, all trips were assigned to the easterly Queensway West and Mississauga Heights Drive intersection, which is the intersection that would be affected most by the traffic generated by this development, although a portion of the trips calculated would likely use the west intersection. The estimated number of trips on Mississauga Heights Drive during the existing a.m. and p.m. peak hours are shown in **Table 1**.

Table 1 – Estimates of Existing Traffic on Mississauga Heights Drive

PEAK HOUR	INBOUND	OUTBOUND	TOTAL
A.M.	5	15	20
P.M.	15	9	24

It should be noted that many of the existing houses on Mississauga Heights Drive have 3-car or 4-car garages. Therefore, the peak traffic volumes could be somewhat greater than what is presented in Table 1 that were calculated using typical trip generation rates because of the high vehicle ownership of these existing residents.

The distribution of the existing Mississauga Heights Drive traffic was based on information obtained from the 2016 Transportation Tomorrow Survey (TTS). The distribution is summarized in **Table 2**.

Table 2 - Trip Distribution of Trips to/from Mississauga Heights Drive

DIRECTION	A.M. INBOUND	A.M. OUTBOUND	P.M. INBOUND	P.M. OUTBOUND
Northwest	0%	8%	4%	3%
North	0%	16%	23%	36%
Northeast	0%	14%	12%	11%
East	33%	33%	30%	17%
Southeast	23%	3%	1%	0%
South	0%	4%	1%	0%
Southwest	18%	4%	0%	2%
West	28%	18%	28%	31%
Total	100%	100%	100%	100%

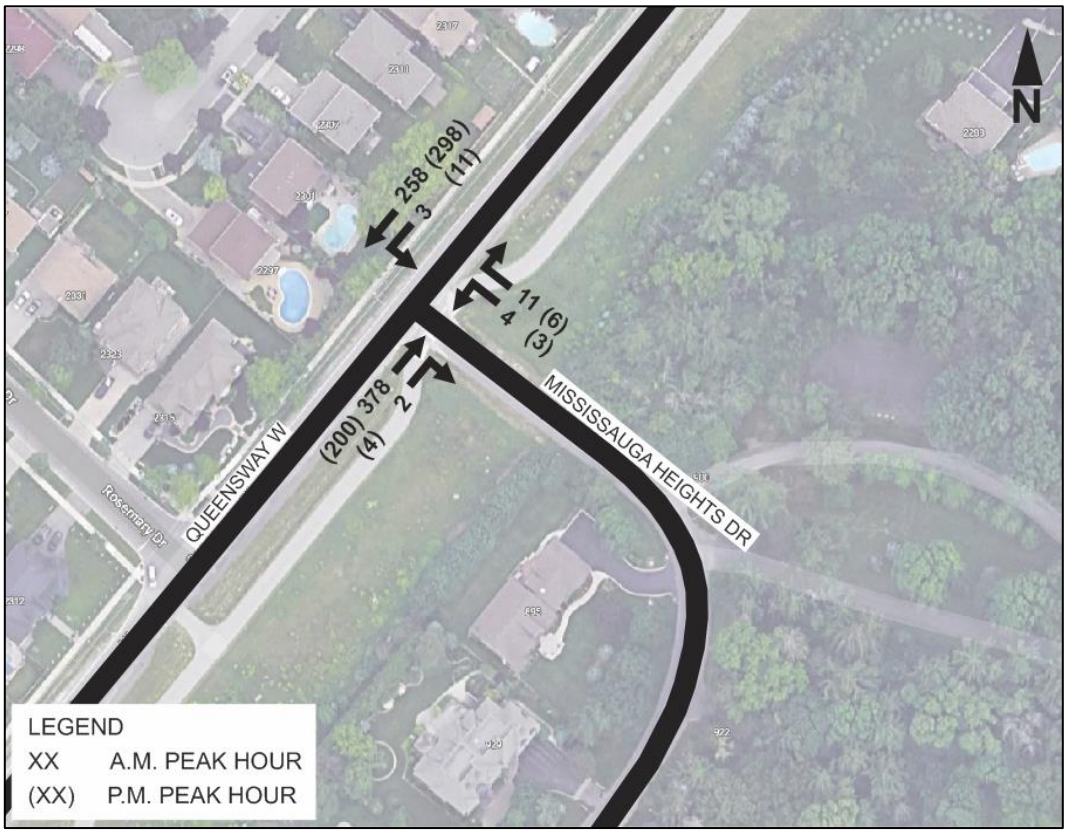
The estimated existing a.m. and p.m. peak hour turning movements at the easterly Queensway West and Mississauga Heights Drive intersection are illustrated in **Figure 5**.

Figure 5 – Estimated Existing (2021) Peak Hour Traffic Volumes

BACKGROUND TRAFFIC ON QUEENSWAY WEST

To develop the background traffic forecast on Queensway West, the existing eastbound and westbound through volumes recorded at the intersection with Mavis Road/Stavebank Road were increased, as noted previously, at a rate of 1% per year from 2021 to 2026. The traffic volumes on Mississauga Heights Drive are generated solely by the 22 existing properties and, therefore, are not anticipated to experience growth. On this basis, **Figure 6** illustrates the 2026 background traffic forecast for the easterly Queensway West and Mississauga Heights Drive intersection.

Figure 6 - Background (2026) Peak Hour Traffic Volumes



SITE TRIP GENERATION

Similar to the estimation of existing traffic on Mississauga Heights Drive, the amount of traffic associated with the proposed development was also estimated using the ITE *Trip Generation Manual* 10th Edition. The number of dwelling units on Mississauga Heights Drive was adjusted to account for the removal of the existing house on the subject site and the subdivision of the site into five lots, each containing one single-family residence, for a net increase of four dwelling units. The estimated number of trips on Mississauga Heights Drive at the completion of the proposed development during the a.m. and p.m. peak hours are shown in **Table 3**.

Table 3 - Mississauga Heights Drive Traffic Estimate with Development

PEAK HOUR	INBOUND			OUTBOUND			TOTAL		
	Existing Traffic	Site-Traffic	Total Traffic	Existing Traffic	Site-Traffic	Total Traffic	Existing Traffic	Site-Traffic	Total Traffic
A.M.	5	1	6	15	2	17	20	3	23
P.M.	15	3	18	9	1	10	24	4	28

As summarized in Table 3, the proposed development results in an additional three trips during the a.m. peak hour and four trips during the p.m. peak hour.

The traffic was distributed using the 2016 TTS distribution outlined above in Table 2.

FUTURE TOTAL TRAFFIC

As instructed by City staff, the City's website of active development applications was checked to determine whether there are any current applications that would affect the traffic volumes in this area. The active developments in Ward 7 were reviewed and it was determined that none would generate site traffic that would affect the volumes on this section of Queensway West.

Therefore, the full build-out traffic forecast was determined by combining the Mississauga Heights Drive traffic estimate (Table 3) with the background traffic estimate included in Figure 6. Figure 7 illustrates the total future traffic volumes (2026) at the Queensway West and Mississauga Heights Drive intersection.

Figure 7 - Full Build-out (2026) Peak Hour Traffic Volumes

6. TRAFFIC OPERATIONS ANALYSIS

The City's website was reviewed to determine whether there are any current or upcoming construction projects that would affect the operations or capacity of the area road network. None are ongoing or planned. The traffic operations analysis was conducted, therefore, based on the existing road network and lane configuration, using Synchro Studio 10 in order to determine the impact of the proposed development on the Queensway West and Mississauga Heights Drive intersection. The results of the analysis are summarized in **Table 4**.

Table 4 - Queensway West and Mississauga Heights Drive Intersection Operations

SCENARIO	OVERALL LOS[1] (DELAY IN SEC)	CRITICAL MOVEMENT[2] (V/C)
Existing (2021) A.M.	B (11)	--
Existing (2021) P.M.	B (10)	--
Background (2026) A.M.	B (12)	--
Background (2026) P.M.	B (10)	--
Full Build-out (2026) A.M.	B (12)	--
Full Build-out (2026) P.M.	B (10)	--

1. For minor leg stop-controlled intersections, the overall LOS is based on the delay associated with the stop-controlled movement.
2. Critical movements are only listed for movements operating at a v/c greater than 0.85. A table cell containing "--" means no critical movements were identified.

Based on the results of the analysis, the proposed development will not have any impact on traffic operations at the Queensway West and Mississauga Heights Drive intersection. The intersection operates at an overall LOS B, indicating minimal delay, during both the background and full build-out scenarios, and there are no critical movements which indicate low and acceptable v/c ratios for all movements.

Although the traffic forecast may contain some degree of uncertainty due to the lack of data at the study intersection, the traffic operations analysis results show that the intersection can handle a significant increase in traffic before experiencing adverse impacts. Sensitivity analysis at the intersection revealed that the intersection can handle over 2.5 times the forecasted amount of through traffic on Queensway West before the operation of the intersection declines below LOS D.

7. TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN

In reviewing our proposed scope of work for this transportation assessment, City of Mississauga staff requested the preparation of a Transportation Demand Management (TDM) Plan to encourage transit and active transportation use and discourage single-occupant vehicle travel.

The area is not well-served by public transit. The closest MiWay bus route is the Sherway Route 4 which provides service eastbound to Sherway Gardens and westbound to the Glengarry Road/Dundas Street area in the west. Service is approximately every 20 minutes during the weekday peak periods. The closest stop is located at the Mavis Road/Paisley Boulevard West intersection approximately 1.5 km away (approximately a 20-minute walk).

Route 4 also provides service via Paisley Boulevard to Huron Park with a bus turnaround area just north of Queensway West. This turnaround area is approximately 300m from the subject site (approximately a 4-minute walk) but only available on a limited basis. Future residents should be advised of the transit services available in this area to encourage the use of transit to the greatest extent possible.

As noted in Section 2, an east-west multi-use trail is located within the Queensway West boulevard, as shown in **Figure 8** below, which is designated as a "Primary Off-Road Route" in the City's Official Plan and Cycling Master Plan. In addition, on-street bike lanes exist on the Huron Park access road to access the facilities within the park and beyond to Mavis Road. Therefore, future residents can

conveniently bike to the Huron Park Recreation Centre, Credit Valley Lawn Tennis Club, soccer pitches and other recreational facilities located in the park.

The City's Cycling Master Plan includes the future westerly extension of the Queensway West off-road facility across the Credit River to eventually connect with the on-street bike lanes on Mississauga Road. The plan also includes future bike lanes on Glengarry Road north to Dundas Street West and then further north on Erindale Station Road to Burnhamthorpe Road West.

In order to encourage access to these facilities and other services and destinations in the area by bicycle, rather than driving, ample storage space will be provided in the garages and houses for the storage of bicycles. Information should be provided to prospective purchasers of the facilities, services and attractions within walking and cycling distance from this site.

Figure 8 – Multi-Use Trail on Queensway West at Mississauga Heights Drive

8. SITE PLAN REVIEW

The proposed site plan shows a driveway with a 7.5-metre pavement width (curb-to-curb dimension) serving the five dwelling units, intersecting with Mississauga Heights Drive at the existing driveway location. The driveway intersection, located on the outside of a curved section of Mississauga Heights Drive, is approximately 75 metres south of the multi-use path crossing at Queensway West.

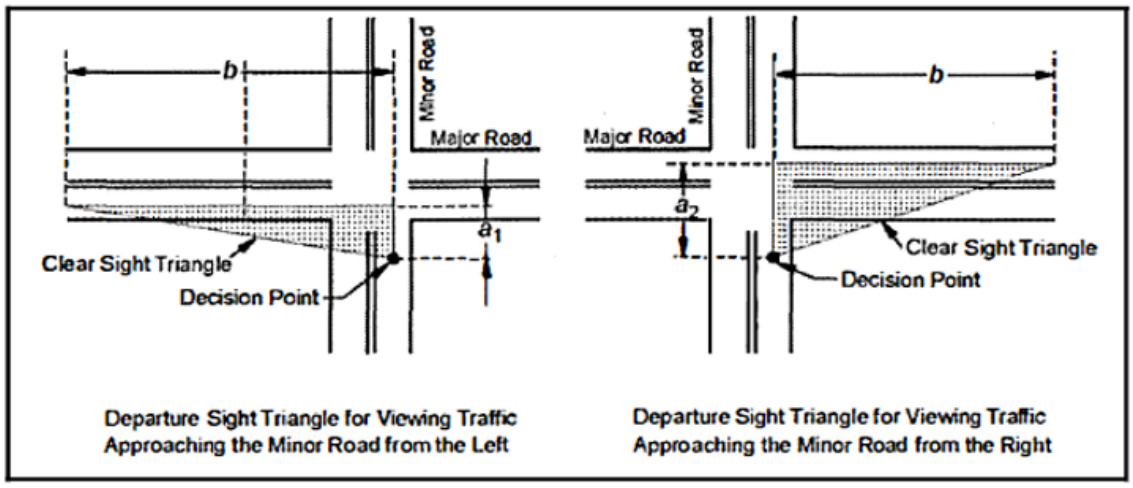
Input was provided to the project architect in the development of the site plan, to ensure that appropriate geometric design standards are satisfied. This includes the provision of a minimum 6.0-metre width, a minimum centreline horizontal radius of 12 metres, and appropriate turnaround facilities to accommodate firetrucks, as well as service and delivery vehicles at the terminus of the driveway. The proposed site plan incorporates these geometric design elements and will result in safe and efficient vehicle operations.

9. SIGHTLINE ANALYSIS

The sightline analysis was conducted to confirm if vehicles exiting from the proposed driveway can complete their movement safely. To determine the sightline compliance, the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Road (GDGCR), which is the industry standard, was used.

As noted in Section 2, there are no speed limit signs posted on Mississauga Heights Drive and therefore, by default, the speed limit is 50 km/h. However, due to the cross-section, horizontal alignment, function and character of Mississauga Heights Boulevard, the practical and safe operating speed of vehicles on this street is 40 km/h or less. During the site visit, vehicles on Mississauga Heights Road were generally observed to travel less than 40 km/h. An illustration depicting the departure sight distances, denoted as "b", is provided in Figure 9 and the corresponding stopping and departure sight distances at 40 km/h are summarized in Table 5.

Figure 9: Departure Sight Triangles (stop-controlled)



Source: TAC Geometric Design Guide for Canadian Roads

Table 5: Sight Distance based on the TAC Geometric Design Guide

	Required distance (m)	Available distance (m)
Stopping Sight Distance (SSD)	50	75
Left Turn Departure Sight Distance (DSD)	85	75
Right Turn Departure Sight Distance (DSD)	75	75

The stopping sight distance (SSD) is the minimum distance required for motorists to perceive objects/vehicles in their path with sufficient time to stop before reaching the object/vehicle. The left turn departure sight distance (DSD) is the distance from the proposed driveway to traffic approaching from the right. The right turn departure sight distance (DSD) is the distance from the proposed driveway to traffic approaching from the left.

As shown above in Table 5, the Stopping Sight Distance and Right Turn Departure Sight Distance requirements are satisfied. However, the required Left Turn Departure Sight Distance of 85 metres is not satisfied because Queensway West is located only 75 to the north of the proposed driveway

intersection. As noted, this required Departure Sight Distance is based on a travelling speed of 40 km/h. But vehicles turning right or left onto Mississauga Heights Drive from Queensway West will be initially travelling less than 40 km/h as they make the turn, providing drivers with more opportunity and a clear, unobstructed view of a vehicle turning left out of the driveway from the subject site, as shown in Figure 10. Similarly, a driver turning left from the driveway will have more time to complete the turn before a vehicle approaching from Queensway West reaches the driveway. As a result, it is our opinion that sufficient left turn departure sight distance is provided. In any event, it is likely that any vehicles destined to the west from this site would turn right from the driveway and up Mississauga Heights Drive to turn left on Queensway West. This is a more direct and slightly quicker route than turning left and travelling the length of Mississauga Heights Drive to the westerly intersection with Queensway West.

Figure 10 – View from Queensway West to vehicle turning left from site driveway

Photos from the existing site driveway looking left and right are provided in Figures 11 and 12.

Figure 11: Looking west on Mississauga Heights Drive from existing site driveway

Figure 12: Looking north on Mississauga Heights Drive from existing site driveway

All sight distances to and from the proposed driveway are shown in Figure 14. In order to enhance safety and improve operations on Mississauga Heights Drive at the curve in the roadway in the vicinity of the proposed site driveway, the City might want to consider the installation of a "sharp curve" sign on both approaches (Wa-2L/Wa-2R) with a 30 km/h "advisory speed" tab sign (Wa-7t) as shown in Figure 13. However, we feel this is not a requirement with this development proposal and the City might consider this installation regardless.

Figure 13 – Possible "Sharp Curve" and "Advisory Speed" sign installation

10. CONCLUSIONS

We have reviewed the transportation impacts and operations of the proposed development, comprising five single-family dwelling units, on the property located at 904 Mississauga Heights Drive. Based on the ITE *Trip Generation Manual*, the development is forecast to generate only three additional vehicle trips in the a.m. peak hour and four additional vehicle trips in the p.m. peak hour. This will have negligible impact on the operations of Mississauga Heights Drive and its intersection with Queensway West. The intersection will continue to operate at acceptable levels of service.

Based on our sightline analysis of the proposed driveway, we have concluded that there are no traffic or safety concerns associated with its location or configuration. However, in order to enhance safety on this curved section of Mississauga Heights Drive, the City might want to consider the implementation of advisory 30 km/h speed limit signs on both approaches to this curved section of roadway. This should be considered independent of this proposed development.

John Mende, P.Eng.
Senior Consultant

Source: 2104-SP-1-BIND.dwg, from Sajecki Planning, received on February 17, 2021 and Google Earth Base

Scale: 1: 500

wsp

Figure 14
Intersection Sightline Analysis
904 Mississauga Heights Drive

Sightline Analysis.dwg, Fig 1

Modified: [illegible] By: [illegible] Plot Date: [illegible]