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Date **May 25, 2023** **Report No. 2023-346**

To Chair and Members
Vision Zero Road Safety Committee

From Mark Jacklyn
Director of Operational Services, Public Works Commission

1.0 Type of Report

Consent Item	☐
Item For Consideration	☒

2.0 Topic Powerline Road – Traffic Safety Review [Financial Impact – None]

3.0 Recommendation

- A. THAT report no. 2023-346 regarding Powerline Road – Traffic Safety Review BE RECEIVED; and
- B. THAT a capital project to implement the Powerline Road recommendations BE CONSIDERED in the 2024 capital budget

4.0 Background

At its meeting held February 28, 2023, City Council approved the following resolution:

Powerline Road Speeding

WHEREAS residents of the Brantwood Park area are reporting on-going speeding concerns on Powerline Road; and

WHEREAS residents have raised concerns about the safety of pedestrians and the children in the area; and

WHEREAS the Pate family business is located on the north side of Powerline Road and holds several very well attended community activities through the seasons; and

WHEREAS numerous requests have been received by Ward Councillors to implement traffic calming measures on Powerline Road to improve the safety of Brantwood Park residents crossing the street to visit Brantwood farm activities and business; and

WHEREAS Ward Councillors have been very concerned with the speed of traffic that travels through this neighborhood on Powerline Road from Wayne Gretzky Parkway east to the city limits; and

WHEREAS several collisions have occurred at this location and most recently a young boy was struck and seriously injured by a vehicle while attempting to cross Powerline Road;

NOW THEREFORE BE IT RESOLVED:

- A. THAT staff BE DIRECTED to conduct various traffic studies with a focus on road user safety, speeding, street lighting, pedestrian facilities, traffic control and traffic calming on Powerline Road from Wayne Gretzky Parkway to the east city limits; and
- B. THAT funding BE PROVIDED from the Council Priorities Reserve (RF0558) fund to complete these studies and report back to the Vision Zero Road Safety Committee in Q2 2023.

Operational Services retained Aecom Canada Ltd. to conduct traffic studies, site assessment and traffic safety recommendations.

5.0 Analysis

A road safety review was conducted on Powerline Road east of Wayne Gretzky Parkway to the city limit to assess traffic conditions and identify opportunities for safety countermeasures. The consultant's road safety assessment is attached as Appendix "A" and "B" to this report.

5.1 Traffic Data

An evaluation of the collision history, between 2017 and 2022, identified twelve (12) reported collisions on this section of Powerline Road. Eight (8) occurred at, or are related to the intersection of Powerline Road and Brantwood Park Road. Three (3) collisions involved a vehicle entering or exiting the business on the

north leg of the intersection and one (1) collision involved a pedestrian crossing Powerline Road. One (1) of the collisions resulted in a pedestrian injury.

The posted speed limit on Powerline Road is 60 km/h. Speed studies conducted in the Spring 2023 revealed an 85th percentile speed of 79 km/h. The 85th percentile speed is the speed at which 85% of motorists are travelling at or below and is the industry standard for assessing vehicle speed operations. Staff conducted previous speed studies in the Fall 2022 and recorded an 85th percentile speed of 77 km/h, showing consistent high speeds.

The average daily vehicular traffic volumes on Powerline Road are estimated to be 4,300 vehicles per day between Wayne Gretzky Parkway and Brantwood Park Road and 1,800 vehicles per day east of Brantwood Park Road. The daily traffic volumes are almost equally distributed between the two directions of travel. Historical traffic counts conducted estimate almost 75% of vehicles travelling in the study area are “passenger vehicles”. 20% are classified as other 2-axle, 4-tire vehicles (e.g., minivans, pick-up trucks, etc.). 5% are other types of vehicles. Traffic volumes have stayed consistent on a year to year basis.

5.2 Study Findings and Recommendations

5.2.1 Traffic Control

Following guidelines outlined in Public Works-009 All-way stop controls policy, warrant studies were conducted at the intersections of Powerline Road at Brantwood Park Road and Powerline Road at Coulbeck Road. In order for all-way stop control to be warranted, the following conditions must be met:

- The total vehicular volume on all intersection approaches exceeds 500 vehicles per hour for each and any eight hours of the day;
- The combined vehicular and pedestrian volumes on the minor street (Brantwood Park Rd. and Coulbeck Rd.) exceeds 200 units per hour;
- The volume split does not exceed 70/30.

The highest vehicular volume recorded entering the Brantwood Park Road intersection was 429 vehicles, and 158 vehicles at Coulbeck Road. The highest volume recorded on the minor street was 146 at Brantwood Park Road, and 43 at Coulbeck Road. Based on the traffic volumes, all-way stop control is not warranted.

Following the guidelines provided in Public Works-011 Traffic Signals policies, warrant studies were conducted at the intersection of Powerline Road at Brantwood Park Road and Powerline Road at Coulbeck Road. In order for a traffic signal to be warranted, the warrant must be a minimum of 80% satisfied. A traffic control signal is 51% warranted at the

Brantwood Park Road intersection and 21% warranted at the Coulbeck Road intersection. Based on the warrant studies, a traffic signal is not warranted.

Staff are currently working on the Powerline Road Widening Environmental Assessment that is expected to be issued Q3 2023. As per the City Policy and part of the scope of the project, all intersections will be reviewed for operational improvements and/or suitability for roundabouts. These enhancements will assist in addressing the speed concerns and could allow for the installation of pedestrian crossovers.

5.2.2 Left Turn Lane

The intersection of Brantwood Park Road and Coulbeck Road was reviewed for the installation of dedicated left turn lanes utilizing the MTO's Geometric Design Standards for Ontario Highways guidelines. The posted speed on Powerline Road is 60 km/hr., therefore a design speed of 80 km/hr. was used for the analysis. Tables 1-3 detail the left turn warrant analysis.

Table 1 - Powerline Rd. at Brantwood Park Rd. Left Turn Warrant - Eastbound

Intersection		AM Peak Hour	PM Peak Hour	Off-Peak Hour
Powerline Road and Brantwood Park Road	Advancing Eastbound Traffic Volume (in pcu*)	115	272	143
	Eastbound Left Turn Traffic Volume (in pcu*)	2	3	4
	% Left Turns in Advancing Vehicles	2%	1%	3%
	Opposing Westbound Traffic Volume	64	52	52
	Left Turn Lane Warranted?	No	No	No
Note: * A heavy vehicle adjustment factor of 2.5 passenger car unit equivalents (pcu) was used.				

Table 2 - Powerline Rd. at Brantwood Park Rd. Left Turn Warrant - Westbound

Intersection		AM Peak Hour	PM Peak Hour	Off-Peak Hour
Powerline Road and Brantwood Park Road	Advancing Westbound Traffic Volume (in pcu*)	86	76	69
	Westbound Left Turn Traffic Volume (in pcu*)	22	24	17
	% Left Turns in	26%	32%	25%

	Advancing Vehicles			
	Opposing Eastbound Traffic Volume	27	79	41
	Left Turn Lane Warranted?	No	No	No
Note: * A heavy vehicle adjustment factor of 2.5 passenger car unit equivalents (pcu) was used.				

Table 3 - Powerline Rd. at Coulbeck Rd. Left Turn Warrant - Westbound

Intersection		AM Peak Hour	PM Peak Hour	Off-Peak Hour
Powerline Road and Brantwood Park Road	Advancing Westbound Traffic Volume (in pcu*)	36	63	47
	Westbound Left Turn Traffic Volume (in pcu*)	0	11	5
	% Left Turns in Advancing Vehicles	0%	17%	11%
	Opposing Eastbound Traffic Volume	35	44	41
	Left Turn Lane Warranted?	No	No	No
Note: * A heavy vehicle adjustment factor of 2.5 passenger car unit equivalents (pcu) was used.				

The warrant studies and analysis of the collision data determined left turn lanes are not warranted at the Brantwood Park Road or Coulbeck Road intersections.

5.2.3 Streetlighting

A streetlight assessment was conducted along Powerline Road utilizing the Transportation Association of Canada (TAC) Guide for Design of Roadway Lighting. It was determined that the road segment of Powerline Road east of Wayne Gretzky Parkway to the east city limit does not require streetlighting. However, it is recommended that streetlighting be installed at the Brantwood Park Road and Coulbeck Road intersections, which is a requirement for intersections with a rural cross section.

5.2.4 Pedestrian Facilities

There is presently no “controlled” pedestrian crossing facility at the “desire line” for pedestrians to cross Powerline Road at the Brantwood Park Road intersection.

A review of the location determined a pedestrian crossover (PXO) type “C” is warranted based on vehicle volume however, the roadway exceeded the operating speed threshold (maximum 60km/h) and therefore is not recommended for installation at this time. If the installation of traffic calming measures as outlined in sub-section 5.2.7 occur, staff will reassess to determine if operational speeds have improved to permit the installation of a PXO.

5.2.5 Vehicle Speeds

White edge line markings are absent on both sides of Powerline Road. The lack of edge lines combined with the presence of 4 metre wide travel lanes, encourages speeding as it provides a higher level of comfort for the motorist. To address this issue, it is recommended that edge line markings and a second yellow centerline be painted east of Wayne Gretzky Parkway to the east city limit, to reduce the travel lane width and reduce the comfort level of the motorists.

In the absence of any posted speed limit signs on the westbound approach to the Coulbeck Road intersection, motorists could assume that the speed limit is still 80 km/h. The installation of a posted speed sign of 60 km/h and its respective “Maximum Speed Ahead” sign is recommended on the westbound approach.

5.2.6 Warning Signs

The existing “Pedestrians Ahead” signs facing both directions are located too close to the intersection at Brantwood Park Road. The signs should be relocated to more than 225 metres from the intersection.

The existing “T Intersection” sign facing eastbound motorists does not inform / warn motorists about the driveway to the business north of the intersection. Installation of “Hidden Entrance” signs on both Powerline Road approaches to the intersection is recommended.

There are no “Intersection” warning signs to inform eastbound and westbound motorists about the presence of the Coulbeck Road intersection. The warning signs are recommended on both Powerline Road approaches to the intersection.

5.2.7 Traffic Calming Measures

Vehicle speed studies conducted on Powerline Road over multiple years has determined the 85th percentile speed exceeds the posted speed of 60 km/h in both directions, raising a level of concern with the operational characteristics of the roadway.

In order to address these concerns, the following traffic calming measures, suitable for the roadway classification, are recommended:

- Converging chevrons
- Full-lane transverse bars
- On-road “sign” pavement markings
- Peripheral transverse bars
- Speed display devices
- Vehicle activated signs

The additions, along with the implementation of pavement marking amendments to narrow the travel lane widths, will assist in raising awareness to motorists of vehicle speed concerns and reduce motorist comfort levels.

5.2.8 Roadside Improvements

There are several minor edge drops or side slopes along the gravel shoulder that are in need of repair. These can be addressed through additional maintenance or the installation of guiderail.

It is recommended that these measured be completed as part of the yearly Road Maintenance program.

5.2.9 Intersection Improvements

The wide curbs set back at both intersections allows motorists to make turns at higher speeds than desired. A tighter curb is recommended at the south west corner of the Brantwood Park Road intersection and the south west corner of the Coulbeck road intersection to encourage slower speeds when turning on to these roads.

The long setback of the painted stop line on Brantwood Park Road to the nearest edge of Powerline Road pavement is 14 metres. This requires motorists to make two stops before turning onto Powerline Road. It is recommended that the realignment of the multi-use trail at the intersection be completed and to relocate the stop line and crosswalk across the south leg closer to the intersection.

The northbound travel lane on Brantwood Park Road is 5.5 metres wide, which encourages motorists to use it as two lanes. A painted / hatched “buffer” area is recommended between the northbound bike lane and the adjacent northbound travel lane.

There is presently no yellow centerline marking on Coulbeck Road, south of Powerline Road. A yellow centreline marking on Coulbeck Road to define the boundary of the northbound and southbound travel lanes is recommended.

6.0 Financial Implications

The work to be completed in 2023 will be funded from the Operational Services operating budget, at an estimated cost of \$13,000. A summary of the costs are outlined below:

- \$1,000 – Maximum Speed and Intersection warning signs

- \$10,000 – Pavement markings
- \$2,000 - Bollards

Staff will submit a capital project for consideration as part of the 2024 capital budget deliberations, at an estimated cost of \$70,000. A summary of the costs are outlined below:

- \$40,000 – Intersection streetlighting
- \$10,000 – Speed Display Devices and poles
- \$20,000 - Wood and cable guiderail

It is important to note that enhancements, such as those noted in this report, will have a future impact on maintenance costs associated with asphalt repair, signs and pavement markings.

7.0 Climate and Environmental Implications

The construction activities of traffic control and calming measures will temporarily increase greenhouse gas (GHG) emissions but since the construction variables are unknown at this time, GHG emissions cannot be quantified. However, traffic calming measures will overall reduce vehicle emissions since decreased speed leads to fewer GHG emissions. Additionally, traffic control and calming measures creates a safer environment for walking and cycling which encourages active transportation as well as improves the local air quality.

The addition of streetlighting will increase GHG emissions from electricity consumption. However, LED lighting will be installed to reduce energy consumption.

8.0 Conclusion

The recommended traffic safety measures address many of the concerns identified in the Road Safety Assessment, and create a safer neighbourhood environment that promotes active and healthy living for all road users.



Mark Jacklyn

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Attachments

Appendix "A" – Road Safety Assessment of Powerline Road between Wayne Gretzky Parkway and East City Limits

Appendix "B" – Road Safety Assessment appendices

In adopting this report, is a by-law or agreement required? If so, it should be referenced in the recommendation section.

By-law required ☐ yes ☒ no

Agreement(s) or other documents to be signed by Mayor and/or City Clerk ☐ yes ☒ no

Is the necessary by-law or agreement being sent concurrently to Council? ☐ yes ☒ no