



City of
Peterborough

To: **Members of the General Committee**

From: **Cynthia Fletcher**
Commissioner of Infrastructure and Planning Services

Meeting Date: **September 3, 2019**

Subject: **Report IPSTR19-016**
Chandler Crescent / Loudon Terrace Traffic Operational Review

Purpose

A report to present the findings of the traffic operational review and to recommend the implementation of All-Way Stop Control at the intersection of Chandler Crescent and Loudon Terrace.

Recommendations

That Council approves the recommendations outlined in Report IPSTR19-016 dated September 3, 2019, of the Commissioner of Infrastructure and Planning Services, as follows:

- a) That All-way Stop Control be implemented at the intersection of Chandler Crescent and Loudon Terrace.
- b) That a By-law be approved to amend the appropriate Schedules and Articles of the Through Highways By-law 91-56 to authorize implementation of Recommendation a).

Budget and Financial Implications

The implementation of the signage and pavement markings will cost approximately \$3,000, funds for which are available in the uncommitted balance in the 2019 Capital Budget for Traffic Improvements (Project Reference 5-13.05).

Background

In response to resident concerns, City staff conducted a traffic operational review of the intersection of Chandler Crescent and Louden Terrace with respect to the need for all-way stop control.

Site Details

Chandler Crescent is a two-lane low capacity collector road running north-south from Parkhill Road, in the south, to the northeast limits of the Jackson Creek Meadows subdivision. Chandler Crescent is currently the only entrance to the subdivision. Louden Terrace is a two-lane local road within the Jackson Creek Meadows subdivision running east-west from Florence Drive to the west limits of the subdivision.

At the intersection of Chandler Crescent and Louden Terrace, Chandler Crescent is the through street and there are stop signs on Louden Terrace. Both roads have sidewalks on both sides of the street and on-street parking is permitted (maximum 3 hours). The speed limit is 50 km/h on both streets. A community park is also located on the east side of Chandler Crescent just north of the intersection and includes a children's play structure.

The Jackson Creek Meadows subdivision, once completed, will contain 138 single and townhouse units as well as commercial development at Parkhill Road West and Chandler Crescent. A Tim Horton's, including a drive through, has been proposed for the corner of Parkhill Road and Chandler Crescent, but the development has been postponed until the Parkhill Road construction is completed, including traffic signals at the intersection of Chandler Crescent and Parkhill Road.

A sketch of the subject area is shown on Appendix A.

Traffic Operational Review

The traffic operational review which was conducted at the Chandler Crescent and Louden Terrace intersection consisted of the following data collection and analyses:

- Vehicle Volume;
- Collision History;
- Spot Speed Study;
- Sight Line Measurements; and
- Site Observations.

Vehicle Volume

A 12-hour traffic movement count (TMC) was conducted at the intersection of Chandler Crescent and Louden Terrace from 7 A.M. to 7 P.M. A total of 1,723 vehicles were recorded entering the intersection during the 12-hour period, with 348 (~20%) originating on Louden Terrace.

Collision History

Since 2014 there has been one recorded collision at the intersection of Chandler Crescent and Louden Terrace. This collision resulted when the eastbound driver on Louden Terrace failed to yield the right-of-way to the northbound driver on Chandler Crescent.

Spot Speed Study

A vehicle speed study was conducted for vehicles on Chandler Crescent travelling northbound and southbound at Louden Terrace. It was found that 85% of drivers on Chandler Crescent were travelling at or below 49 km/h, while the average speed was 43 km/h. This is typical for a low capacity collector roadway within the City of Peterborough.

Sight Line Review

Stopping sight distances were measured for vehicles travelling northbound and southbound on Chandler Crescent approaching the intersection with Louden Terrace. Sightline distances were also measured for vehicles stopped on Louden Terrace waiting to turn or cross Chandler Crescent.

The stopping sight distance is the minimum distance required for a driver to perceive the need to stop plus the reaction and deceleration time to bring the vehicle to a complete stop for the prevailing operating speed. The measured stopping sight distance for vehicles' travelling northbound on Chandler Crescent was found to be 78 m. The Transportation Association of Canada (TAC) design guidelines recommend a minimum stopping sight distance of 85 m for a speed limit of 50 km/h. The stopping sight distances for southbound vehicles met TAC design guidelines.

The sight line distance is the minimum distance required for a driver stopped on the side road to perceive a gap in traffic plus the reaction and acceleration time necessary to cross the intersection or turn onto the intersecting roadway and then accelerate to the normal operating speed without interfering with through traffic. The sight line distance for vehicles on Louden Terrace exiting the east leg of the intersection met the minimum requirements as set out by the TAC design guidelines.

The sight line distance for vehicles on Louden Terrace exiting the west leg of the intersection is 110 m. TAC guidelines recommend a minimum of 125 m of clear sight distance. The sight line to the south is restricted by vehicles parked on the asphalt driveways between the sidewalk and the curb, and the curve on Chandler Crescent. To

achieve an adequate sight distance, drivers need to pull forward through the crosswalk into the southbound lane on Chandler Crescent.

All-Way Stop Analysis

The key factors used to assess the need for the implementation of all-way stop control include: collision history, minimum vehicle volume, and traffic flow. The technical justification for the installation of an all-way stop is broken down into two warrants,

- Minimum Vehicle Volume Warrant and the Collision Warrant.
- The Minimum Vehicle Volume Warrant requires a minimum of 350 vehicles entering the intersection for the peak hour of the day and the vehicle volume on the major road must not be more than 75% of the total traffic volume entering the intersection. This intersection does not meet the Minimum Vehicle Volume Warrant as there were only 205 vehicles recorded during the peak hour of the day.
- The Collision Warrant requires an average of four or more collisions per year over a three year period that potentially could be mitigated by an all-way stop. This intersection does not meet the Collision Warrant as there was only one (1) recorded collision from 2014-2019.

Site Observations

Staff visited the area on several occasions to better assess the existing driving and environmental conditions. Chandler Crescent has a curve south of Louden Terrace, towards Parkhill Road, resulting in reduced sightlines for eastbound drivers on the west leg of Louden Terrace. This issue is compounded by vehicles parked in driveways and on the west side of Chandler Crescent south of the intersection.

Restricting on-street parking might provide minimal improvement to vehicle sightlines; however, vehicles parked in the driveways on the west side of Chandler Crescent would still block sightlines below the recommended TAC design guidelines.

Discussion

The traffic operational review revealed the geometric design of Chandler Crescent at Louden Terrace in combination with vehicles parked in driveways south of the intersection block sight lines for eastbound drivers exiting the west leg of the intersection.

The sight line distance cannot be improved by restricting on-street parking due to vehicles also parking in the boulevard portion of driveways, and the stopping sight distance is limited by the geometric design of the road. In addition to this, there is a need for families living on the west side of Chandler Crescent to cross Chandler crescent to access the park/playground on the east side of the road. The restricted sight

distance makes it harder for side road traffic and pedestrians to determine safe gaps in traffic to make their turn or to cross the main road. Based on the existing operating conditions at the intersection and pedestrian demand to access the park/playground, staff recommend that an all-way stop control be implemented at this intersection to improve traffic operations and provide a safe crossing opportunity for pedestrians.

Timelines

If the recommendations are approved, implementation would commence immediately, and it is anticipated that it would be complete in the late fall of 2019.

Summary

The Chandler Crescent / Louden Terrace traffic operational review has shown that the vehicle volumes and vehicle speed is typical for a collector designated road within the City of Peterborough. Despite this, a review of sight lines revealed intermittent sight line restrictions attributed to the geometric design of the road and the presence of parked vehicles within driveway boulevards. The review also identified the need for a controlled crossing opportunity for pedestrians to access the park/playground.

Based upon analysis, the minimum technical criteria for the installation of an all-way stop was not met however, considering the additional factors identified through this review, the implementation of all-way stop control at the intersection Chandler Crescent and Louden Terrace is recommended to improve driver and pedestrian safety.

Submitted by,

Cynthia Fletcher
Commissioner of Infrastructure and Planning Services

Contact Name:

Kevin Jones
Manager, Transportation
Phone: 705-742-7777 Ext. 1895
Toll Free: 1-855-738-3755
E-Mail: kjones@peterborough.ca

Peter Malin
Transportation Services Coordinator
Phone: 705-742-7777 Ext. 1846
Fax: 705-876-4621
E-Mail: pmalin@peterborough.ca

Graeme Pickett
Traffic Engineering Technologist
Phone: 705-742-7777 Ext. 1752
Toll Free: 1-855-738-3755
Fax: 705-876-4621
E-Mail: gpickett@peterborough.ca

Attachments:

Appendix A: Chandler Crescent and Louden Terrace

Appendix A - Chandler Crescent and Louden Terrace Diagram

