City of Peterborough

To:	**Members of the General Committee**
From:	**W.H. Jackson, Director of Utility Services**
Meeting Date:	**April 16, 2018**
Subject:	**Report USTR18-007** **Whitefield Drive / Golfview Road / Silverdale Road** **Neighbourhood Traffic Calming Study**

Purpose

A report to present the findings and recommendations from the Whitefield Drive / Golfview Road / Silverdale Road Neighbourhood Traffic Calming Study.

Recommendation

That Council approve the recommendation outlined in Report USTR18-007 dated April 16, 2018, of the Director of Utility Services, as follows:

That traffic calming measures not be implemented on Whitefield Drive.

Budget and Financial Implications

There are no budget or financial implications to receiving this report. If Council wishes to pursue any of the other options listed in this report then the various financial implications as identified for each option will be applicable; funds for which are available in the uncommitted balance in the 2018 Capital Budget for Traffic Improvements (Project Reference 5-13.05).

Background

At the Council meeting on February 13, 2017, a petition signed by ninety-five Whitefield Drive, Golfview Road and Silverdale Road residents was submitted requesting all-way stop control at the intersection of Whitefield Drive and Golfview Road. The petition expressed concern with the safety of children on Whitefield Drive who board the school bus; attend two local daycares; and walk to and from the neighbourhood park.

In response to this resident petition, City Council approved the following resolution:

a. That the petition from the Golfview Road – Whitefield Drive-area residents be received and forwarded to staff;

b. That Staff examine the intersection as a traffic calming case study; and

c. That the study be designed to accomplish two goals:

    i. Address the issue of speeding at and around the intersection; and

    ii. Develop traffic calming tools that can be used elsewhere in the community.

This report summarizes the Traffic Calming Study findings and recommendations. A sketch of the study area is presented in Attachment 1.

The Objective of Traffic Calming

Traffic calming is a series of measures deployed within the road right-of-way to slow down or reduce the volume of traffic using a local or a collector street in a residential neighbourhood. This can be done by altering the road layout through physical changes, the application of signing or other warning devices to impact driver behaviour, or through the implementation of traffic regulations to encourage lower speeds or prohibit certain vehicle movements. Such measures may slow traffic down, deter non local drivers from using the traffic calmed street, and encourage drivers to use alternate routes to get to their destination. In some cases, the implementation of traffic calming measures on local streets is intended to encourage drivers to use the arterial road network instead of cutting through neighbourhoods.

The subject area, with only one access point to the Whitefield Drive, Golfview Road and Silverdale Road neighbourhood, there is no cut-through traffic. All traffic entering the neighbourhood has a destination within the neighbourhood, and therefore any traffic calming solutions for this area should be designed to address speed and driver behaviour concerns, as opposed to cut through traffic.

The Study Process

Based on traffic calming policies in other municipalities and the experience in undertaking traffic calming reviews in various areas of the City, staff have developed a technical assessment process which is used as a screening process to determine if traffic calming measures are appropriate for a given street.

The technical assessment for this study focused on evaluating the need and justification for the implementation of traffic calming measures on Whitefield Drive in the vicinity of the Whitefield Drive / Golfview Road intersection and Golfview Park.

The detailed review and analysis of existing operational conditions was completed in June 2017 and included:

- 24 hour – 7 day vehicle volume counts,
- Vehicle speed study,
- 3 year collision history,
- Site observations

Whitefield Drive between Clonsilla Avenue and Silverdale Road is an urban local road with sidewalks on both sides of the street and is comprised of 18 single family homes. Golfview Heights Park is located on the north side of Whitefield Drive between Golfview Road and Silverdale Road and is supported with “Playground” warning signs on both east and westbound approaches.

Golfview Road and Silverdale Road are urban local roads serving approximately 109 single family homes with a sidewalk on the east side of the road only. These sidewalks extend from Whitefield Drive north for approximately 235 metres on Golfview Road and 155 metres on Silverdale Road, and there are no sidewalks beyond this point. At the north limit of the development both roads connect to create a crescent type of road pattern.

Travelling northbound on Whitefield Drive, approaching Golfview Road, the road bends to the right at an 80 degree angle and at this point, Golfview Road intersects with Whitefield Drive on the left to create a ‘T” intersection. Golfview Road is controlled by a stop sign which was installed in 2006 following approval of Council Report USTR06-003 to address resident concerns that vehicles entering the intersection from Golfview Road were failing to yield to vehicles on Whitefield Drive.

A detailed description of the study area and site specific data for the Whitefield Drive / Golfview Road / Silverdale Road neighbourhood is presented in Appendix A – Traffic Calming Study Details and Analysis.

Traffic Calming Technical Assessment

The traffic study results show that Whitefield Drive vehicle volume is typical of an urban local road and vehicle speed and collision rates are at comparable levels to other similar streets in the City. The data collected on Whitefield Drive was compared to the thresholds in the Traffic Calming Screening process and the results are summarized in Table 1.

Table 1 – Traffic Calming Screening Results for Whitefield Drive

Traffic Calming Screening Process			
Factor	**Criteria**	**Whitefield Drive**	**Criteria Satisfied**
Road Type	Local or Collector	Local	Yes
Road Length	Block Length greater than 300 m	450m	Yes
Operating Speed or Cut-through Traffic	85%ile speed greater than 55km/h or Infiltration (non local Traffic) exceeds	46-50 km/h 0%	No No
Transit Route	Not a transit route	No transit	Yes
Vehicle Volume	Greater than 1,000 vehicles/day, less than 5,000 vehicles/day	1,163 vehicles /day	Yes
Sidewalks	Minimum – sidewalk on one side of street	Two sides	Yes
Results	**All Criteria Satisfied**		**No**

In summary, the Traffic Calming Screening Process concluded that Whitefield Drive would not typically meet the criteria to be considered for traffic calming measures.

Intersection Operational Review

Staff visited the area on several occasions to better assess the existing driving behaviour and environmental conditions. It was observed that vehicles entering the neighbourhood travelling northbound on Whitefield Drive usually slow as they approach the Golfview Road intersection and, if there is no conflicting traffic approaching, drivers cut the corner onto Golfview Road and accelerate up the hill. It was also observed that the majority of the southbound vehicles on Golfview Road fail to stop at the stop sign before proceeding onto Whitefield Drive. This was confirmed by a stop sign compliance study that revealed that 93% of drivers traveling south on Golfview Road during the A.M. peak period failed to come to a complete stop at the existing stop sign.

In addition to site observations, staff reviewed the need for all-way stop control. The all-way Stop Warrant for both Minimum Vehicle Volume and Collision Experience

concluded that the Whitefield Drive and Golfview Road intersection does not meet the criteria to be considered for the implementation of all-way stop control; with zero reported collision in the past 3 years and less than 350 vehicles entering the intersection in the peak hour.

To address poor driver behaviour at the intersection, in recognition of the number of residents who signed a petition and Council's desire to develop traffic calming tools that can be used elsewhere in the community, a number of traffic calming options were developed to address the behaviours noted during the field observations and these options were presented to the neighbourhood in the form of a traffic calming survey.

Traffic Calming Neighbourhood Survey

The Whitefield Drive / Golfview Road / Silverdale Road neighbourhood study area is comprised of 127 households. On January 15, 2018, City staff hand delivered surveys (Attachment 2 – Whitefield Drive / Golfview Road and Silverdale Road Traffic Calming Neighbourhood Survey) to study area residents asking them to indicate their preference of traffic calming measures, with the objective of identifying a preferred neighbourhood option. The options included:

1. Leave As Is (Do Nothing).
2. Additional Pavement Markings with Park Zone Delineation.
3. Temporary Removable Traffic Circle with Pavement Markings and Park Zone Delineation.

Surveys responses were received and the results are summarized in Table 2, below.

Table 2 – Neighbourhood Survey Results

Option	**Number of Surveys**	**Percentage of Total**
1. Leave As Is (Do Nothing)	27	21 %
2. Added Pavement Markings with Park Zone Delineation	23	18 %
3. Traffic Circle with Pavement Markings and Park Zone Delineation	9	7 %
Other Suggestions	2	2 %
Did Not Respond	66	52 %
Total	**127**	**100%**

The results indicate that 52% of the households in the study area chose not to engage in the survey and 21% of households chose Leave As Is (Do Nothing). Only 34 or 27 % of households indicated a desire to implement traffic calming on Whitefield Drive although there was no clear consensus of a preferred option amongst these residents.

A review of the comment section from the neighbourhood survey reaffirmed that many residents are concerned that drivers do not comply with the existing stop sign on Golfview Road and suggested that enhanced enforcement of this existing traffic control measure was all that was needed.

Prior to 1992, this intersection operated in an uncontrolled fashion with no traffic controls on any approach. In response to concerns raised by residents, a yield sign was installed for traffic on Golfview Road at Whitefield Drive. In 2005 a neighbourhood resident requested that the yield sign be replaced with a stop sign as it was observed that drivers failed to slow down at the yield sign. At the Council meeting on February 6, 2006, Council approved Report USTR06-003 to replace the existing yield sign with a stop sign on Golfview Road at Whitefield Drive. Despite the additional traffic control, the site review and stop sign observance study confirmed that drivers continue to roll through the existing stop sign and treat it like the yield condition that existed previously. Driver's failure to comply with the existing stop sign may be attributed to clear unobstructed sightlines, low vehicle volume on Whitefield Drive, and few conflicting movements at the intersection. Staff are of the opinion that only additional enforcement will improve compliance.

Many residents in responding to the survey also expressed a desire to consider the installation of traffic signals at the intersection of Whitefield Drive and Clonsilla Avenue. In response to these comments, staff undertook an operational review of the intersection. The traffic signal installation warrant considers major street volume, minor street volume, total intersection volume, collision history, as well as traffic and pedestrian volumes crossing the major street to determine if a traffic signal is required.

The warrant evaluates the existing delay to side road traffic and difficultly motorists and pedestrians have in crossing or turning left onto a major roadway versus the likely increase in overall delay to through traffic and potential increase in rear end collisions that would likely occur with a traffic signal. Based on the results of the intersection review, the vehicle and pedestrian crossing volume on Whitefield Drive was only 14% of the required volume needed to warrant traffic signal control. There have been no reportable collisions at this location over the past 3 years that would be corrected or avoided by the installation of traffic signals. Staff anticipate that even future development of the remaining lands within the neighbourhood will not generate sufficient vehicle volume to warrant traffic signals at this location.

Discussion

The Whitefield Drive / Golfview Road / Silverdale Road technical traffic assessment revealed vehicle volume, vehicle speed and collision history that are typical of an urban local road. About 85% of drivers on these streets are travelling at or below the posted speed limit and the average speeds are around 40 km/h. In this regard, the streets in the study area are performing better than many other local streets in other

neighborhoods. The traffic speeds on Whitefield Drive, in front of the neighbourhood park, are lower than those recorded on the other streets in the study area, suggesting that the existing park area signage is already having some influence on driver behavior.

The implementation of all-way stop control at the intersection of Whitefield Drive and Golfview Road is not technically warranted, and given the lower volumes on both Golfview Road and Whitefield Drive, is not expected to have any better compliance than the existing stop sign in place. Contrary to public belief all-way stops at intersections do not reduce speed. There have been many studies conducted that prove implementing an all-way stop at intersections creates delay to drivers which, in-turn, causes drivers to accelerate to higher speeds between intersections to make up the lost time. This pattern has also been observed at some all-way-stop intersections in Peterborough. Installing an unwarranted all-way-stop at this location may in fact increase vehicle speeds in front of Golfview Heights Park.

The intersection operational review did identify two areas of concern, and staff developed two traffic calming options that were presented to neighbourhood residents as part of the traffic calming neighbourhood survey. The results of the neighbourhood traffic calming survey revealed only 34 or 27% of households surveyed indicated a desire to implement traffic calming on Whitefield Drive, which is significantly less than the 77 households who signed the original petition. It would also appear that the majority of households 52% did not see enough of a problem to engage in the survey process and 21% of the households that responded chose the option to “Leave As is” once they were presented with the findings of the traffic studies. Many residents who suggested that things be left “as is” felt that the costs of the options, $3,000 to $15,000 were too high and that this money would be wasted at this location.

The Traffic Calming Screening Process showed that Whitefield Drive would not typically be an appropriate candidate for the implementation of traffic calming measures. The neighbourhood traffic calming survey showed there is no clear consensus of a preferred option amongst area residents. The traffic calming study clearly shows there is neither technical justification nor neighborhood support to implement traffic calming in the Whitefield Drive / Golfview Road / Silverdale Road neighbourhood.

Options

If Council wishes to implement one of the options presented in this report Council may direct staff through a motion to Council as presented below.

a) If Council wishes to implement Option 2 (Added Pavement Marking with Park Zone Delineation) as described in this report, the following recommendation should be passed:

That staff be requested to implement Option 2 as described in Report USTR18-007 funds for which to come from the 2018 Capital Budget Reference 5-13-05.

b) If Council wishes to implement Option 3 (Traffic Circle with Pavement Markings and Park zone Delineation) as described in this report, the following recommendation should be passed:

That staff be requested to implement Option 3 as described in Report USTR18-007, funds for which to come from the 2018 Capital Budget Reference 5-13-05.

c) If Council does not wish to pursue this matter further, then acceptance of the recommendation of this report is appropriate.

Summary

The Whitefield Drive / Golfview Road / Silverdale Road neighbourhood traffic calming study has shown that vehicle volume, vehicle speed and collision history are typical of an urban local road. The Traffic Calming Screening Process, indicated that the neighbourhood is not a candidate for traffic calming measures and there is no technical justification for the installation of all-way stop control at the intersection of Whitefield Drive and Golfview Road.

As directed by Council, staff developed traffic calming measures to address concerns at the Whitefield Drive / Golfview Road intersection and vehicle speed in the vicinity of Golfview Park. The implementation of these traffic calming measures were not supported by the neighbourhood residents, however; these traffic calming tools may be considered at other locations in the community, where warranted.

Submitted by,

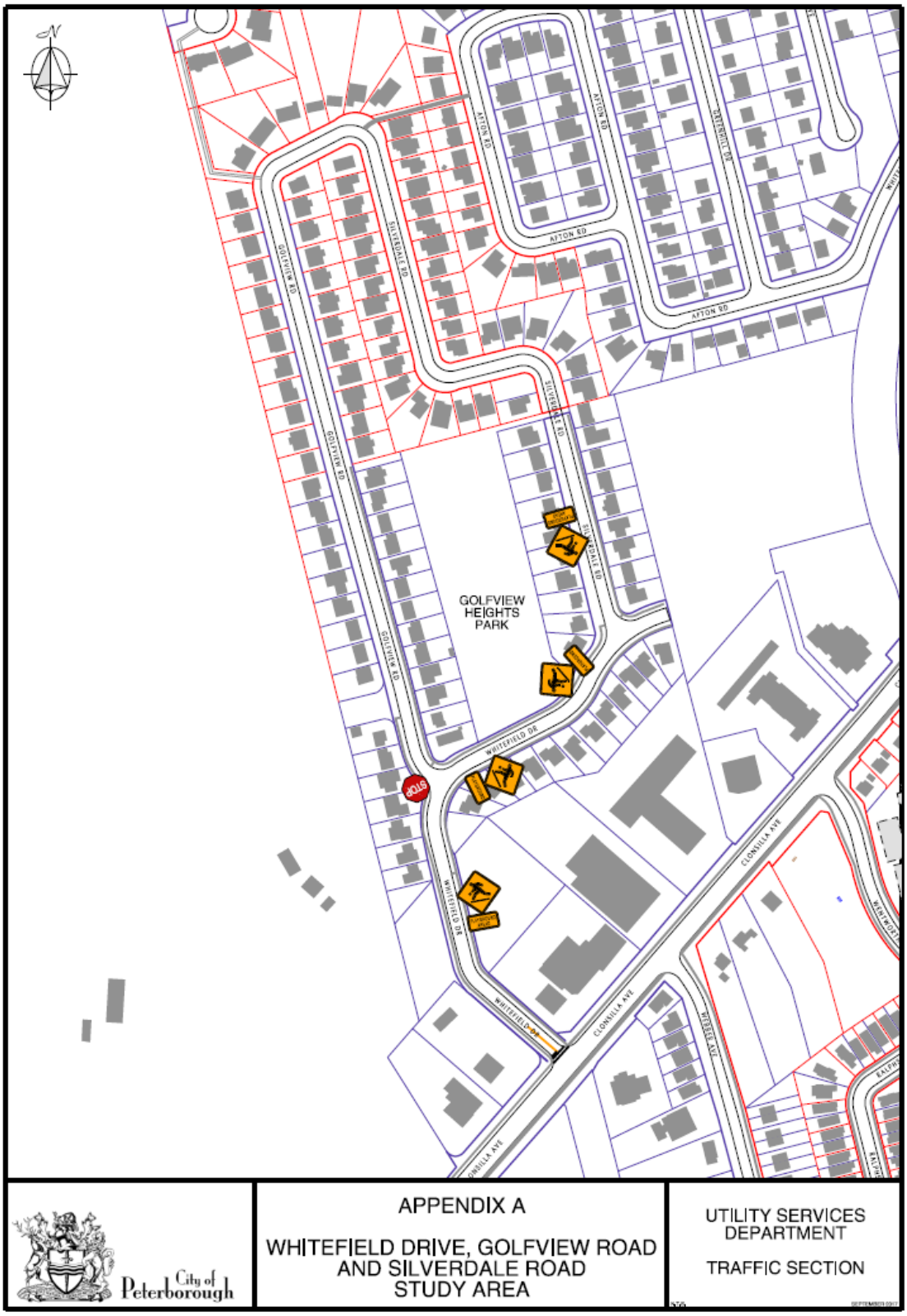
W.H. Jackson
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Attachments:
Attachment 1 – Whitefield Drive / Golfview Road / Silverdale Road Study Area

Attachment 2 – Whitefield Drive / Golfview Road / Silverdale Road Traffic Calming Neighbourhood Survey
Appendix A – Traffic Calming Study Details and Analysis

Attachment 1 – Existing Whitefield Drive / Golfview Road / Silverdale Road Study Area



Attachment 2 - Whitefield Drive / Golfview Road / Silverdale Road Traffic Calming Neighbourhood Survey

City of Peterborough

500 George Street North, Peterborough, ON K9H 3R9
Utility Services Department, Transportation Division
Tel: 705 742 7777, Extension 1846 Fax: 705 742 6273

January 15, 2018

Whitefield Drive / Golfview Road and Silverdale Road Traffic Calming Study - Neighbourhood Survey

At the City Council meeting on February 13, 2017, Council received a petition signed by ninety-five Whitefield Drive, Golfview Road and Silverdale Road residents and directed staff to conduct a traffic calming study with respect to speeding in the vicinity of the Whitefield Drive / Golfview Road intersection.

The purpose of this survey is to gather input from neighbourhood residents on traffic calming options to determine if there is a desire to implement traffic calming measures on Whitefield Drive. The responses of this survey will be tabulated and analyzed by Transportation Division staff to determine if changes are warranted and supported. Recommendations resulting from this survey will be forwarded in a report to Council for approval.

Please complete the survey, indicate your choice of options and return your survey in the attached envelope on or before February 9, 2018. We welcome any comments you may have and encourage you to complete the comments section provided. If you have any questions with respect to this survey, please feel free to contact the undersigned at your earliest convenience.

Yours sincerely,

Peter Malin, Transportation Services Coordinator
Transportation Division

Whitefield Drive / Golfview Road and Silverdale Road Traffic Calming Study

The City's Transportation Division has recently conducted a traffic operational review of Whitefield Drive, Golfview Road and Silverdale Road. The review concluded vehicle volume, vehicle speed and collision history are typical of a local urban road in the City of Peterborough. To address neighbourhood concerns relating to the intersection of Whitefield Drive and Golfview Road and safety of children in the vicinity of Golfview Park, staff developed three traffic calming measures and is looking for neighbourhood input with respect to the implementation of one these measures.

Recent traffic studies conducted on Whitefield Drive, Golfview Road and Silverdale Road indicate:

- The average vehicle speed on Whitefield Drive, Golfview Road and Silverdale Road vary between 38 - 42 km/h.
- The average vehicle speed on Whitefield Drive fronting Golfview Heights Park is 38 km/h.
- The average daily vehicle volume entering and exiting the sub-division on Whitefield Drive is approximately 1,160 vehicles per day.
- There is no cut-through traffic on Whitefield Drive, Golfview Road and Silverdale Road.
- There have been zero reported collisions within the intersection of Whitefield Drive and Golfview Road.
- An all-way stop is not justified at the intersection of Whitefield Drive and Golfview Road. Vehicle volume and collision history does not meet the criteria required for the implementation of an all-way stop. Studies of all-way stops in other parts of the City have shown they do not reduce vehicle speed downstream of the stop sign.
- Observations revealed that vehicles entering the neighbourhood travelling northbound on Whitefield Drive tend to slow and cut the corner onto Golfview Road.
- Observations revealed vehicles failing to stop at the existing stop sign on Golfview Road at Whitefield Drive.

The purpose of this survey is to present traffic calming options and determine if there is neighbourhood support for any of these options.

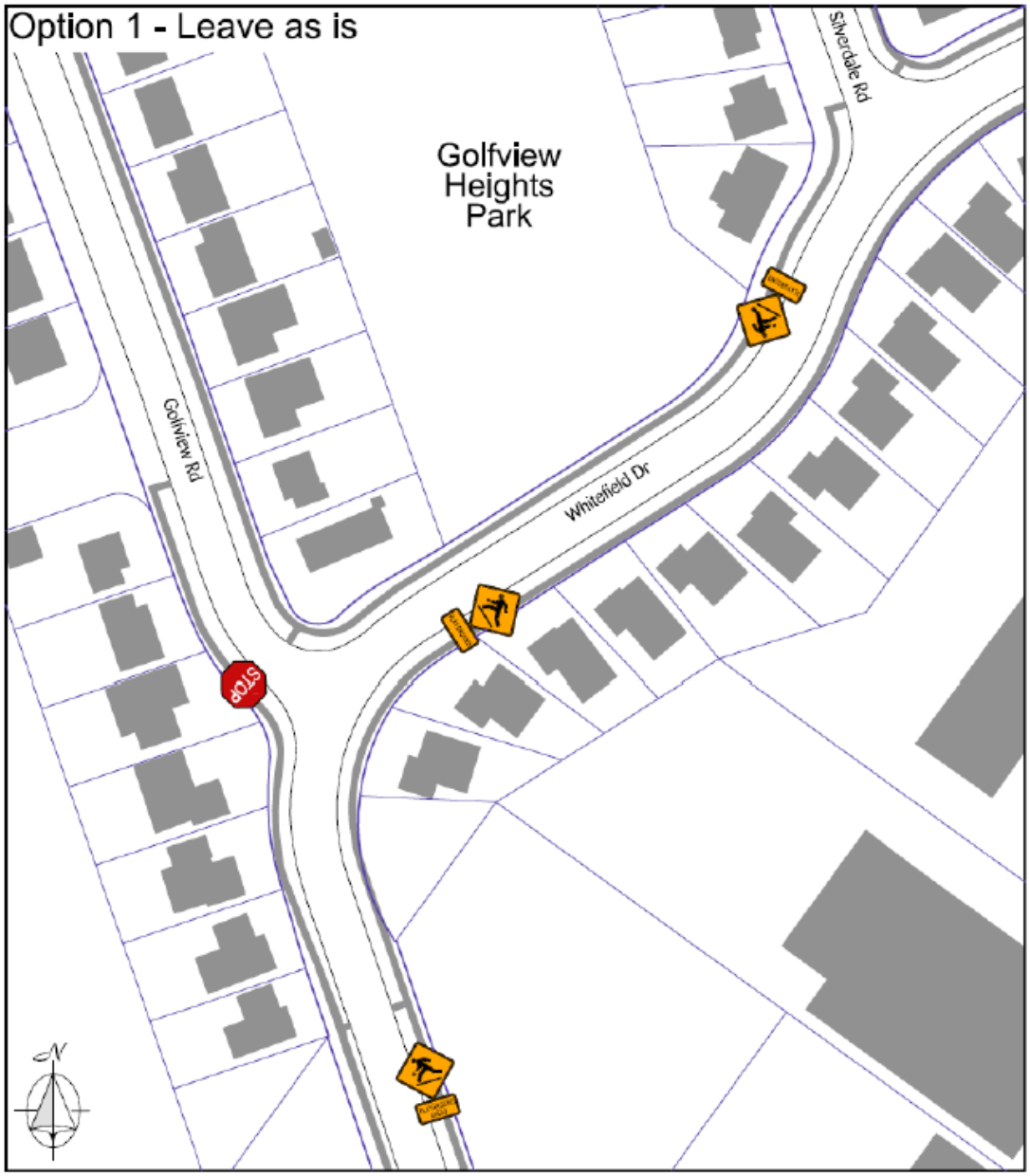
The proposed traffic calming measures (Options 1 through 3) are depicted on pages 3 to 5 and include a brief description and factors to consider when comparing the options. The options include:

1. Leave as is.
2. Added pavement markings with park zone delineation.
3. Traffic circle (mini roundabout) with park zone delineation.

Please review the following options and indicate your preferred choice on the Preferred Traffic Calming Options and Comment Sheet (page 6). Once you have made your selection, return the Preferred Traffic Calming Options and Comment Sheet in the attached envelope on or before February 9, 2018.

Option 1 – Leave as is

Description: No change to existing conditions.

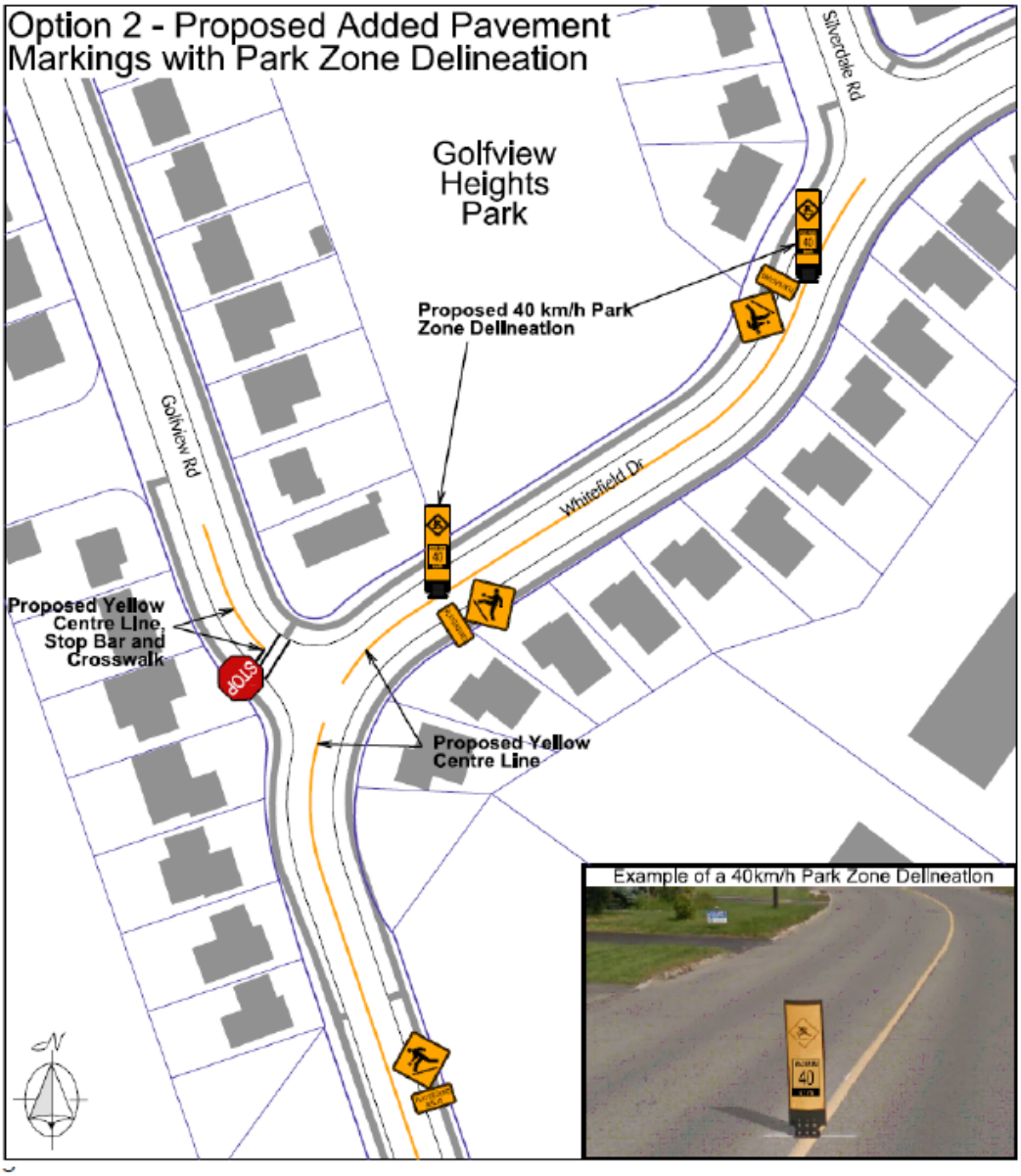


Option 2 – Proposed Added Pavement Markings with Park Zone Delineation

Description: Added yellow centre line along Whitefield Drive with temporary (seasonal) yellow 40 km/h advisory playground park zone signage installed along the centre line.

Factors to consider:

- Vehicle speed may not be reduced.
- Increase pedestrian awareness surrounding Golfview Heights Park.
- Centre line provides motorists guidance as they travel around the corner.
- Least expensive option to construct. Estimated cost $3,000
- Added maintenance costs as advisory signage will be removed during the fall and reinstalled in the spring.
- Constructed as a two year pilot project to allow staff to evaluate the effectiveness of this traffic calming device

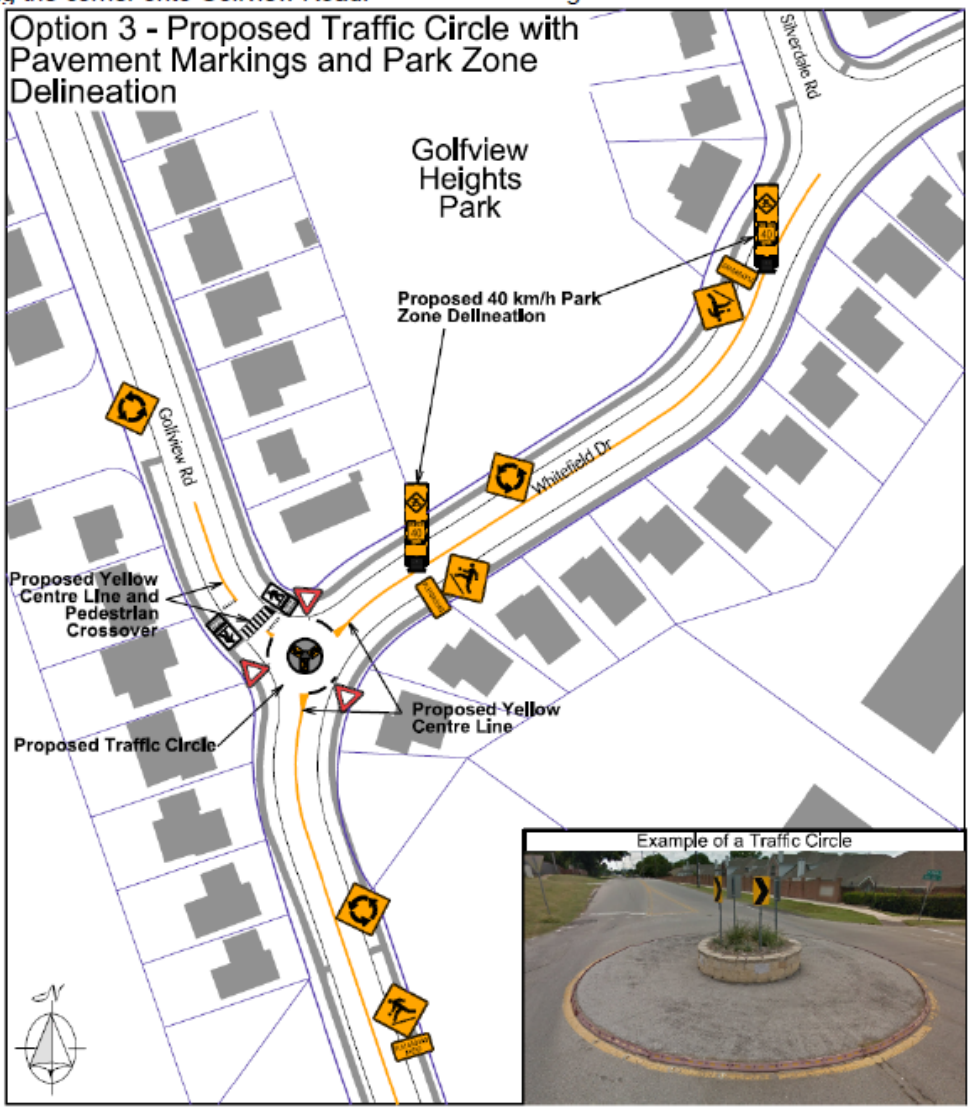


Option 3 – Proposed Traffic Circle with Pavement Markings and Park Zone Delineation

Description: Installation of a temporary (seasonal) raised circular median constructed in the centre of the intersection to direct both turning and through traffic into a roundabout. A pedestrian crossover is also proposed on the north side of the intersection to provide pedestrians a safe crossing opportunity, and yellow centre line pavement markings along Whitefield Drive with temporary (seasonal) yellow 40 km/h advisory playground park zone signage installed along the centre line.

Factors to consider:

- Vehicle speed will be reduced within the intersection.
- May not reduce mid-block vehicle speeds.
- Provides pedestrians a safe crossing opportunity on Golfview Road for school bus stop.
- Eliminates northbound vehicles on Whitefield Drive cutting the corner onto Golfview Road.
- Added maintenance costs as traffic circle will be removed during the fall and reinstalled in the spring.
- Most expensive option to construct. Estimated cost $15,000
- Constructed as a two year pilot project to allow staff to evaluate the effectiveness of this traffic calming device.



Preferred Traffic Calming Options and Comment Sheet

Please indicate your preferred choice...

Option 1 - Leave as is Existing Conditions	☐
Option 2 - Proposed Added Pavement Markings with Park Zone Delineation Installation of a yellow centre line and 40 km/h park zone signage.	☐
Option 3 - Proposed Traffic Circle with Pavement Markings and Park Zone Delineation Implementation of a raised circular median constructed in the centre of the intersection, a pedestrian crossover, yellow centre line pavement markings and 40 km/h advisory playground park zone signage.	☐

My address is: _____

Comments:

The City of Peterborough appreciates your co-operation in completing this survey and returning your comments in the attached envelope on or before February 9, 2018.

Appendix A – Traffic Calming Study Details and Analysis

Background

At the City Council meeting on February 13, 2017, Council received a petition signed by ninety-five Whitefield Drive, Golfview Road and Silverdale Road residents requesting all-way stop control at the intersection of Whitefield Drive and Golfview Road. Residents are concerned with the safety of children on Whitefield Drive who board the school bus; attend two local daycares and; walk to and from the neighbourhood park. In response to this resident petition, City Council directed staff to conduct a traffic calming study with respect to speeding in the vicinity of the Whitefield Drive / Golfview Road intersection and through this process develop traffic calming tools that can be used elsewhere in the community. A sketch of the study area is presented in Attachment 1.

Traffic Calming

Traffic calming is a series of measures deployed within the road right of way to slow down or reduce the volume of traffic using a local or a collector street in a residential neighbourhood. This can be done by altering the road layout through physical changes, the application of signing or other warning devices to impact driver behaviour, or through the implementation of traffic regulations to encourage lower speeds or prohibit certain vehicle movements. Such measures may slow traffic down, deter non local drivers from using the traffic calmed street, and encourage drivers to use alternate routes to get to their destination.

Typically, the implementation of traffic calming measures on local streets is intended to encourage drivers to use the arterial road network instead of cutting through neighbourhoods. In this case, with only one access point to the Whitefield Drive, Golfview Road and Silverdale Road neighbourhood there is no cut-through traffic. All traffic entering the neighbourhood has a destination within the neighbourhood.

The Study Area

Based on traffic calming policies in other municipalities and the experience in undertaking traffic calming reviews in various areas of the City, staff have developed a technical assessment process which is used as a screening process to determine if traffic calming measures are appropriate for a given street.

The Whitefield Drive study area includes the neighbourhood bounded by Whitefield Drive to the south, Golfview Road to the west and Silverdale Road to the east as shown on ‘Attachment 1 – Existing Whitefield Drive / Golfview Road / Silverdale Road Study Area’.

Whitefield Drive between Clonsilla Avenue and Silverdale Road is an urban local road with sidewalks on both sides of the street, and is comprised of 18 single family homes. Golfview Heights Park is located on the north side of Whitefield Drive between Golfview Road and Silverdale Road and “Playground” warning signs are installed on both east and westbound approaches to the park area to warn drivers.

Golfview Road and Silverdale Road are urban local roads serving approximately 109 single family homes, with a sidewalk on the east side of the road only. These sidewalks extend from Whitefield Drive north for approximately 235 metres on Golfview Road and 155 metres on Silverdale, and there are no sidewalks beyond this point. At the north limit of the development both roads connect to create a crescent type of road pattern.

Travelling northbound on Whitefield Drive, approaching Golfview Road, the road bends to the right at an 80 degree angle and at this point, Golfview Road intersects with Whitefield Drive on the left to create a ‘T” intersection. Golfview Road is controlled by a stop sign which was installed in 2006 as part of Council Report USTR06-003, to address resident concerns that vehicles entering the intersection from Golfview Road were failing to yield to vehicles on Whitefield Drive. The drop curb serving the sidewalks on Golfview Road at Whitefield Drive are setback approximately 15 metres from the curb line to avoid conflict with multiple driveways within the intersection.

The Study Process

The technical assessment was undertaken to evaluate the need and justification for the implementation of traffic calming measures on the Whitefield Drive in the vicinity of the Whitefield Drive / Golfview Road intersection.

The detailed review and analysis of existing operational conditions was completed in June 2017 and included:

- 24 hour – 7 day vehicle volume counts,
- Vehicle speed study,
- 5 year collision history,
- Site observations.

Vehicle Volumes

The average two-way vehicle volume on Whitefield Drive is approximately 1,163 vehicles per day consisting of 541 northbound vehicles and 533 southbound vehicles on a typical week day. The average number of vehicles recorded during the peak P.M. peak hour was 87 vehicles per hour which is equivalent to 1 vehicle every 40 seconds.

The Transportation Association of Canada (TAC) guidelines suggest that 1,000 – 3,000 vehicles per day is typical for the average daily volume on an urban local road. While the City does not undertake annual traffic counts on every local road, there have been a number of counts done as part of other studies that suggest many other local roads in

Peterborough have traffic volumes within this range. A few examples include Bellevue Street (2,800 / day), Mark Street (2,300 /day), McKellar Street (1,500 / day), Neptune Street (3,400 / day), Dalhousie Street (2,600 / day), Donegal Street (3,300 / day) and Prince Street (900 / day).

Based on trip generation guidelines published by the Institute of Transportation Engineers (ITE) a typical neighbourhood with 130 residential homes would typically generate approximately 1,240 local vehicle trips.

The average daily volume on Whitefield Drive is within the TAC and ITE guidelines for an urban local road and is lower than many other local roads in the City.

Vehicle Speed Study

The speed limit on Whitefield Drive, Golfview Road and Silverdale Road is 50 km/h. A neighbourhood vehicle speed study was conducted over a 7 day period in the fall of 2017 and the following speeds were recorded:

Street	85th Percentile Speed	Median Speed
Whitefield Drive between Clonsilla Avenue and Golfview Road	50 km/h	42 km/h
Whitefield Drive fronting Golfview Heights Park	46 km/h	38 km/h
Golfview Road	52 km/h	41 km/h
Silverdale Road	48 km/h	41 km/h

The results of the Vehicle Speed Study are lower than expected speeds for an urban local road within the City of Peterborough.

About 85% of drivers on these streets are travelling at or below the posted speed limit and the average speeds are around 40 km/h. In this regard, the streets in the study area are performing better than many other local streets in other neighbourhoods. The traffic speeds on Whitefield Drive, in front of the neighbourhood park, are lower than those recorded on the other streets in the study area, suggesting that the existing park area signage is already having some influence on driver behavior.

Collision History

There have been zero reported collisions within the intersection of Whitefield Drive and Golfview Road during the past three years.

Technical Assessment

The traffic study shows that Whitefield Drive vehicle volume is typical of an urban local road and vehicle speed and collision rates are at acceptable levels. The data collected on Whitefield Drive was compared to the thresholds in the Traffic Calming Screening process and the results are summarized in Table 1.

Table 1 – Traffic Calming Screening Results for Whitefield Drive

Traffic Calming Screening Process			
Factor	**Criteria**	**Whitefield Drive**	**Criteria Satisfied**
Road Type	Local or Collector	Local	Yes
Road Length	Block Length greater than 300 m	450m	Yes
Operating Speed or Cut-through traffic	85%ile speed greater than 55km/h or Infiltration (non local Traffic) exceeds	50-46 km/h 0%	No No
Transit Route	Not a transit route	No transit	Yes
Vehicle Volume	Greater than 1,000 vehicles/day, less than 5,000 vehicles/day	1,163 vehicles /day	Yes
Sidewalks	Minimum – sidewalk on one side of street	Two sides	Yes
Results	**All Criteria Satisfied**		**No**

In summary, the Traffic Calming Screening Process concluded that Whitefield Drive does not meet the criteria to be considered for traffic calming measures.

All-way Stop Analysis

The purpose of all-way stop control is to disrupt the flow of traffic to allow equal right-of -way for two intersecting streets with relatively equal vehicle volume and operating characteristics. All-way stop control may be considered at locations having high collision frequency and/or those that meet the provincial warrant criteria for minimum vehicle volume. The Ontario Traffic Manual does not recommend the use of all-way stop control at skewed intersections, as a means of deterring cut-through traffic or for the control of vehicle speed.

Frequently, residents request all-way stop signs hoping that it will reduce the speed of vehicles on their street. There have been many studies conducted that prove otherwise. Implementing any all-way stop control at intersections creates delay to drivers which in-

turn causes drivers to accelerate to higher speeds between intersections to make up the lost time. To confirm the findings of these studies, staff collected vehicle speed data at two existing intersections with all-way stop control. The data collected showed the 85th percentile speed of vehicles accelerating away from the intersection to be 51 km/h at a point 100 metres from the stop sign and 56 km/h at a point 136 metres beyond the stop sign. While traffic does have to stop at the sign itself, the local data supports the studies that all-way stop control at intersection does not reduce mid-block vehicle speeds and may, in fact, increase mid-block speeds under some circumstances.

The key factors used to assess the need for the implementation of all-way stop control includes: collision experience, 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 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 be less than 75% of the total traffic volume entering the intersection.

The Collision Warrant requires an average of four or more collisions per year over a three year period that involve side street traffic failing to yield to through street traffic.

The data collected on Whitefield Drive and Golfview Road was compared to the thresholds in the criteria outlined in the all-way stop warrant and the results are summarized in Table 3 and Table 4.

Table 3 – Minimum Vehicle Volume Warrant for Whitefield Drive and Golfview Road

Minimum Vehicle Volume Warrant			
Factor	**Criteria**	**Recorded Results**	**Criteria Satisfied**
Minimum Vehicle Volume	350 vehicles entering the intersection for the peak hour	108	No
Traffic Flow	Vehicle volume on major road must be less than 75%	76%	No
Results	**All Criteria Satisfied**		**No**

Table 4 – Collision Warrant for Whitefield Drive and Golfview Road

Collision Warrant			
Factor	**Criteria**	**Recorded Results**	**Criteria Satisfied**
Collision Experience	An average of four or more collisions per year over a three year period that involve side street traffic failing to yield to through street traffic	0	No
Results	**Criteria Satisfied**		**No**

Analysis has shown that the implementation of all-way stop control at the intersection of Whitefield Drive and Golfview Road is not technically warranted. As a result, driver compliance would be unlikely and if implemented the all-way-stop may increase vehicle speeds in front of Golfview Park compared to the low speeds that have already been recorded at this location.

Site Observations

Staff visited the area on several occasions to better assess the existing driving and environmental conditions. It was observed that vehicles entering the neighbourhood travelling northbound on Whitefield Drive usually slow as they approach the Golfview Road intersection and, if there is no conflicting traffic, approaching drivers cut the corner onto Golfview Road and accelerate up the hill. It was also observed that the majority of the southbound vehicles on Golfview Road failed to stop at the stop sign before proceeding onto Whitefield Drive. This was confirmed by stop sign compliance study that revealed that 93% of southbound drivers recorded during the A.M. peak hour failed to come to a complete stop at the existing stop sign.

Discussion

The Whitefield Drive, Golfview Road and Silverdale Road neighbourhood technical traffic assessment revealed that vehicle volume, vehicle speed and collision history is typical of an urban local road. The Traffic Calming Screening Process showed that Whitefield Drive is not a candidate for the implementation of traffic calming measures and the warrant for all-way stop control at the intersection of Whitefield Drive and Golfview Road was not met.

To address poor driver behaviour at the intersection, in recognition of the number of residents who signed a petition and Council’s desire to develop traffic calming tools that

can be used elsewhere in the community, a number of traffic calming options were developed and presented to the neighbourhood in the form of a traffic calming survey.

Option 1: Leave As Is

Option 2: Added Pavement Markings with Park Zone Delineation

The implementation of yellow centreline pavement markings, white stop bar and crosswalk markings would provide guidance to drivers negotiating the intersection and increase driver awareness of the existing stop sign and crosswalk on Golfview Road at Whitefield Drive.

The Installation of yellow 40 Km/h advisory playground park zone signs placed along the centreline of the road has the affect of narrowing the traffic lane to reduce driver comfort and may reduce vehicle speeds in front of Golfview Heights Park. These types of signs have not been used in Peterborough before, but have been applied in other municipalities, such as Ottawa, to calm traffic in pedestrian activity areas.

If approved, the implementation of added pavement markings with park zone delineation will be a first for the City of Peterborough and should be evaluated for effectiveness, maintenance and installation/removal costs. The on-street park zone delineators will be installed in the spring and removed in the fall to allow for winter maintenance. In order to adequately evaluate these traffic calming devices, staff would recommend that these traffic calming devices be implemented as a two-year pilot project subject to further evaluation.

Option 3: Traffic Circle (mini roundabout) with Park Zone Delineation

Traffic Circles (mini roundabout) are raised circular medians constructed in the centre of residential intersections to direct both turning and through traffic onto a one-way circular roadway, constructed for the purpose of traffic calming. Vehicles entering the intersection must slow and yield to vehicles in the intersection. The City has one permanent roundabout installed in the on Broadway Boulevard in the new “Mason Homes” subdivision, and additional roundabouts on local roads are planned in the Lily Lake subdivision. What is different about this application is the use of a temporary “mini roundabout” that can fit within an existing roadway and can be removed during the winter to allow for snow removal. Mountable rubber curbs would allow for emergency vehicles, delivery trucks, and other larger vehicles to mount the roundabout if required without causing significant damage to the roundabout or the vehicle.

Option 3 also includes the installation of a Pedestrian Crossover at the crosswalk on Golfview Road to provide a protected crossing for pedestrians, and in particular students crossing to access the school bus stop, just east of the intersection. The amendments recently approved to the Highway Traffic Act through Bill 31 provide the legal authority for three new variations of the Pedestrian Crossovers (PXOs) that were implemented in the 2015 update to the Ontario Traffic Manual (OTM) Book 15. This type

of crossing treatment will provide the right-of-way to pedestrians to cross the road and the legislation requires drivers to stop until all pedestrians have cleared the crosswalk. Fines for violating the new rules are $150 - $500, plus 3 demerit points. The City has installed two of these PXO's, on Douro Street and on Mark Street. A third will be installed on Water Street at Sherbrooke Street as part of the George Street reconstruction this summer.

The new PXOs are limited to roads with a posted speed limit of 60 km/h or less and must be implemented in conjunction with a defined set of roadside signs and road pavement markings which form a new passive treatment to provide pedestrians the right-of-way when crossing the roadway. OTM book 15 recommends the installation of a Level 2 Type D Pedestrian crossover at roundabouts.

The construction of a traffic circle and a pedestrian crossover level 2 type D at the intersection of Whitefield Drive and Golfview Road would address northbound vehicles cutting the corner through the intersection, provide pedestrians with a safe crossing opportunity and slow vehicles through the intersection. Like most right-of-way controls at intersections, a traffic circle may not necessarily reduce mid-block speeds; therefore, this treatment has been combined with Option 2, which includes yellow centre line pavement marking plus advisory 40km/h park zone signing using flexible sign delineators installed in the centre of the road.

If approved, the implementation of these traffic calming devices will also be a first for the City of Peterborough and should be evaluated for effectiveness, maintenance and installation/removal costs. The traffic circle and on-street park zone delineators would be installed in the spring and removed in the fall to allow for winter maintenance. In order to adequately evaluate these traffic calming devices, staff would recommend that these traffic calming devices be implemented as a two-year pilot project subject to further evaluation.

Traffic Calming Neighbourhood Survey

The Whitefield Drive / Golfview Road / Silverdale Road neighbourhood study area is comprised of 127 households. On January 15, 2018, City staff hand delivered surveys (Attachment 2 – Whitefield Drive / Golfview Road and Silverdale Road Traffic Calming Neighbourhood Survey) to study area residents asking them to indicate their preference of traffic calming measures, with the objective of identifying a preferred neighbourhood option. The options included:

1. Leave As Is (Do Nothing).
2. Added Pavement Markings with Park Zone Delineation
3. Traffic Circle with Pavement Markings and Park Zone Delineation

Surveys responses were received and the results are summarized in Table 2, below.

Table 2 – Neighbourhood Survey Results

Option	Number of Surveys	Percentage of Total
1. Leave As Is (Do Nothing)	27	21 %
2. Added Pavement Markings with Park Zone Delineation	23	18 %
3. Traffic Circle with Pavement Markings and Park Zone Delineation	9	7 %
Other Suggestions	2	2 %
Did Not Respond	66	52 %
Total	**127**	**100%**

The results indicate that 52% of the households in the study area chose not to engage in the survey and 21% of households chose to Leave As Is (Do Nothing). Only 34 or 27% of households indicated a desire to implement traffic calming on Whitefield Drive although there was no clear consensus of a preferred option amongst these residents.

A review of the comments from the neighbourhood survey reaffirmed that residents are concerned that drivers do not comply with the existing stop sign on Golfview Road and many expressed a desire for traffic signals at the intersection of Whitefield Drive and Clonsilla Avenue.

Traffic Signal Control

The traffic signal installation warrant considers major street volume, minor street volume, total intersection volume, collision history, as well as traffic and pedestrian volumes crossing the major street to determine if a traffic signal is required.

The warrant evaluates the existing delay to side road traffic and difficultly motorists and pedestrians have in crossing or turning left onto a major roadway versus the likely increase in overall delay to through traffic and potential increase in rear end collisions that would likely occur with a traffic signal.

To warrant the installation of traffic signals, either Justification #1 or Justification #2 must be satisfied 100% or a combination of both Justifications #1 and #2 must be satisfied 80% or more. Each justification is a two-part test that considers traffic on the major road and traffic / crossing volumes on the minor road. For a justification to be satisfied both of the criteria a) and b) must be satisfied to 100%.

Table 5 - Minimum Traffic Signal Requirements for Current Vehicle/Pedestrian Volume:

Justification 1	Requirement	% Satisfied	Criteria Met?
1a) Total vehicular volume entering the intersection in an average hour	Volume exceeds 900 vehicles per hour	95%	**No**
1b) Total minor street volume entering the intersection in an average hour	Volume exceeds 255 vehicles per hour	14%	
Justification 2	Requirement	% Satisfied	Criteria Met?
2a) Total major road volume entering the intersection in an average hour	Volume exceeds 900 vehicles per hour	93%	**No**
2b) Total vehicles / pedestrians crossing major road in an average hour	Volume exceeds 113 vehicles per hour	20%	

Table 6 – Volume / Delay Combination Requirements for Current Vehicle/Pedestrian Volume:

Justification 3	Requirement	% Satisfied	Criteria Met?
3a) Justification #1 – Minimum Vehicle Volume	Satisfied to the extent of 80% or more	14%	**No**
1b) Justification #2 – Delay to Cross Traffic	Satisfied to the extent of 80% or more	20%	

Table 7 – Collision Experience Requirements

Justification 5	Requirement	% Satisfied	Criteria Met?
5a) Reportable collisions within a 12 month period averaged over 36 consecutive months susceptible to correction by a traffic signal	5	0%	**No**

Based on the results of the intersection review, in Table 5, Table 6 and Table 7, the vehicle and pedestrian crossing volume on Whitefield Drive was only 14% of the required volume needed to warrant traffic signal control. There have been no reportable collisions at this location over the past 3 years that would be corrected or avoided by the installation of traffic signals. Staff anticipates that future development of the remaining lands within the neighbourhood will not generate sufficient vehicle volume to warrant traffic signals at this location.