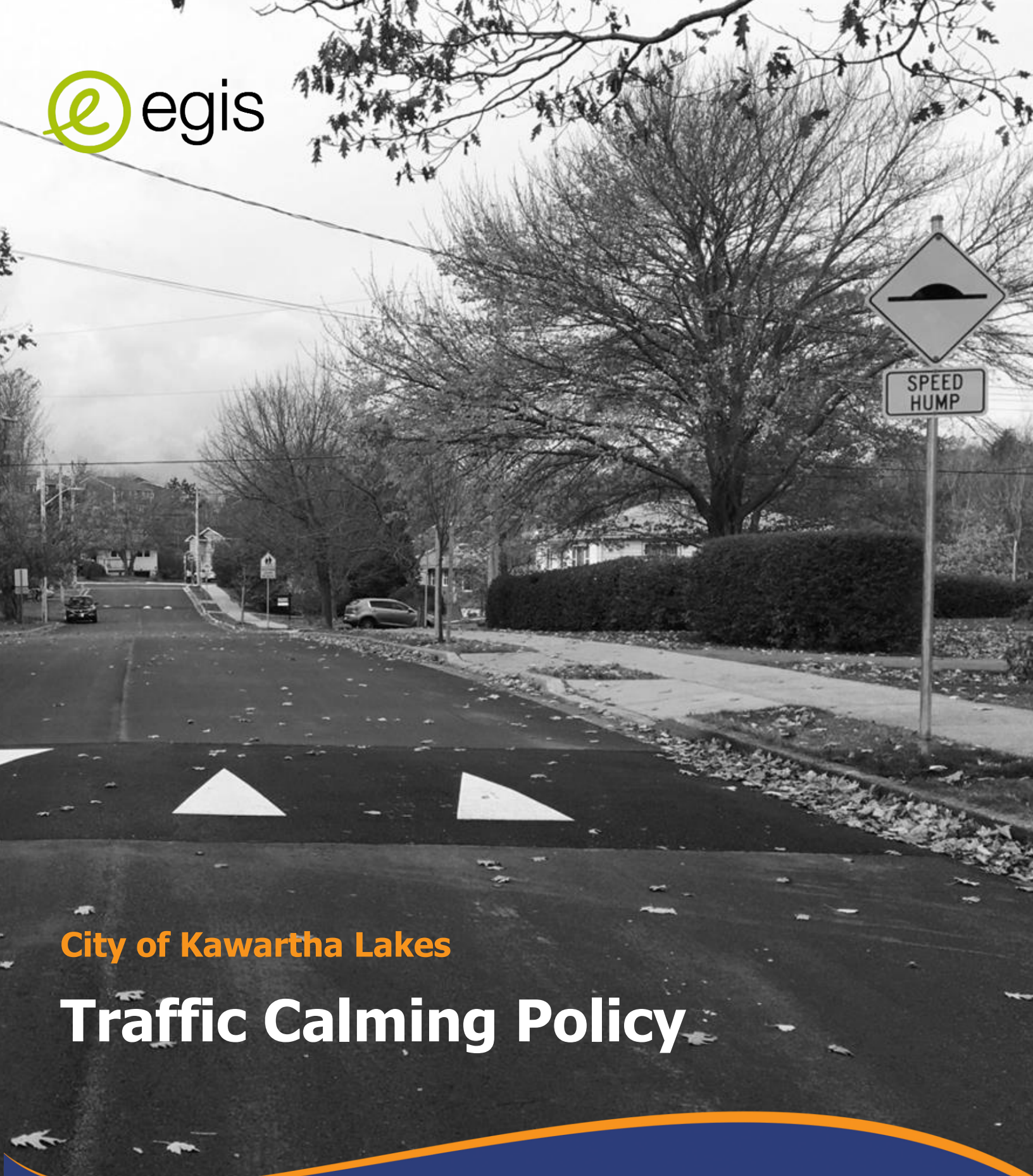
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City of Kawartha Lakes

Traffic Calming Policy

Kawartha Lakes

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1.0 Introduction

The City of Kawartha Lake's envisions to build a safe and efficient roadway system for all users and to achieve that a traffic calming policy is needed. When applied appropriately, traffic calming measures can positively impact travel speeds, traffic volumes and overall road safety. They are also needed to restore the roadway to its intended function and ensure rules of the road are followed. Traffic calming measures are specifically intended to enhance the pedestrian and cyclist environment to make area residents feel safe when walking or cycling through local neighbourhoods and can aide in enhancing a community's identity.

1.1 Background

Speed management is a significant challenge for small, urban communities where the main road through the community serves a dual role. Outside the community, the road provides high-speed travel over long distances; within the built-up area, however, the same road accommodates local access, pedestrians of all ages, on-street parking, bicycles, and many other features unique to the character of a community. This convergence of road purposes presents both an enforcement challenge for the community and a potential safety concern for the public.

The City of Kawartha Lake's Engineering and Public Works Department receives numerous concerns each year regarding speeding, poor sight lines, excessive volumes, and overall neighbourhood safety. In an effort to address these concerns, the City has decided to implement a comprehensive and consistent policy approach to formally address traffic related concerns from the public. This policy outlines the prerequisites, process, and criteria to consider when traffic calming concerns are voiced by residents within the City.

1.2 Purpose and Scope

The purpose of this policy is to provide a systemic procedure for the initiation, investigation, and implementation of traffic calming measures for existing and future roadways in the City of Kawartha Lake's. The ideal resolution for traffic calming under this policy is to reduce high traffic speeds within residential neighbourhoods and improve safety for pedestrians, cyclists, and area residents. It is intended to supplement the **TAC's Canadian Guide to Traffic Calming and Geometric Design Guide for Canadian Roads** with "Kawartha Lake -specific" considerations. It should be emphasized that this document is a policy guideline and should be used in conjunction with other technical/policy guidance combined with sound engineering judgement. These Guidelines are not (and should not be interpreted as) comprehensive street design guidelines. The details of any traffic calming design must comply with all relevant City of Kawartha Lake' design and construction standards and specifications.

The goal of this policy document is to provide a clear and concise procedural framework from which the City Administration and the public may initiate, investigate, and implement traffic calming measures on roads within the City's jurisdiction. This document also provides design guidance via typical applications/configurations and refers to existing standards where applicable. This policy also ensures that there is a formal process defined by which all traffic calming requests can be evaluated against the same screening criteria.

1.3 What is Traffic Calming?

Traffic calming is defined as the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behaviour and improve conditions for non-motorized street users[1]. Traffic calming can be an effective tool to combat issues related to vehicle speed, unsafe behaviours of drivers, and overall neighbourhood safety. It uses geometric design and other physical measures to improve the safety for motorists, pedestrians, and cyclists. Traffic calming is designed to encourage safe, responsible driving, improve the quality of life of residents/non-motorized street users on calmed streets, and reduce the overall motor vehicle volumes. Overall, it aims to improve the active transportation conditions of a community by implementing proven methods to reduce overall traffic speeds and volumes.

Engineering, education, and enforcement are the three main approaches used to change drivers' behaviour and improve road safety and the liveability of neighbourhoods.

1.4 Goals and Objectives

The fundamental goal of all traffic calming strategies is to make streets slower in support of their intended purpose, thereby preserving and enhancing the quality of individual communities. To address the undesirable traffic conditions such as poor sight lines, speeding and excessive volumes on local and collector roads, the main objectives of traffic calming and this policy document are to:

1. Increase the Safety of Neighbourhoods

Excessive traffic volume and speeding in residential roads is the basis for many of the concerns received from residents. Therefore, using physical measures can alter driver behaviour through reducing the risk of collisions and injuries and can improve the safety of neighbourhood streets and urban communities. As a result, the reduction in volume and speed will foster a safe environment for all residents including, cyclists, children, disabled persons, and seniors.

[1] Canadian Guide to Traffic Calming, Institute of Transportation Engineers, 2018, Page 1

2. Improve the Livability of Neighbourhoods

Traffic calming is intended to uphold and restore the livability and sense of community within neighbourhoods by minimizing the volume and speed of through traffic. This results in minimizing negative impacts such as, excessive noise, air pollution, visual intrusion, and potential safety hazards. In addition, when attractively designed, traffic calming can enhance the aesthetics of a neighbourhood and improve streetscapes. Residents also report feeling safer when traffic calming efforts are put in place to minimize the speed and volume of through traffic.

3. Restore Streets to their Intended Function

Local roadways are intended to accommodate low to moderate volumes of traffic travelling at low speeds in and out of neighbourhoods or from points of origin to the collector road system. Local roadways provide direct vehicle access to residences that typically front onto these roads, therefore, through traffic should be discouraged from using local roadways. The City's collector roads are intended to provide access to properties as well as linkages between local roadways and other collector and arterial roadways at lower operating speeds.

4. Encourage Active Transportation through Infrastructure Safety Modifications

Traffic calming measures incorporate the preferences and requirements of the people using the area along the streets or at intersections which results in safe and attractive streets and promotes pedestrian and cycle use.

5. Maintain Access Routes and Minimize Impact to Emergency Services, Maintenance Services, and Public Transit

The potential impacts to these services were considered in the development of this policy and will continue to be considered throughout the implementation of the traffic calming measures. The needs of these services will be balanced against the need to slow and/or reduce traffic. Furthermore, this policy outlines the process through which all potentially impacted services will have the opportunity to comment on any proposed plans before implementation.

6. Promote Public Participation and Community Support

Traffic calming measures directly impact neighbourhoods and their residents. Therefore, resident communication and feedback is of utmost importance as it leads to finding the appropriate solution to specific local traffic issues. Community involvement provides staff with the opportunity to explain to residents the benefits of traffic calming measures while deterring them from less effective counter measures.

1.5 Traffic Calming Advantages and Disadvantages

The main advantages and disadvantages of traffic calming measures are outlined below:

Advantages	Disadvantages
• Reduce motor vehicle speeds • Reduce vehicle traffic volume • Discourage through vehicle traffic • Improve overall road safety • Improve neighbourhood livability and quality of life for residents • Reduce conflicts between roadway users • Increase compliance with regulatory signs	• Increase emergency vehicle response time • Reduce ease of vehicle access to/from neighbourhoods • Results in expensive solutions (time and resources) • Direct vehicle traffic onto neighbourhood roads • Increase maintenance time and costs (e.g. snow clearing, garbage pickup) • Result in implementation of some visually unattractive measures

1.6 Additional Considerations

The implementation of permanent engineered traffic calming measures can be costly and difficult to modify. Therefore, several topics must be discussed prior to implementing a traffic calming measure, particularly if existing policies or standards may preclude or contradict the proposed initiatives. It is also important to note that when effectiveness of a proposed solution is not known, most cities begin with a pilot project before committing to permanent infrastructure. Pilot projects or programs should be prioritized in the planning process to gather valuable data and community feedback. This approach ensures that any permanent solutions are effective and aligned with the needs of residents.

1.6.1 Potential Liability

Municipal decision-makers are often concerned by potential liabilities that may result from the introduction of traffic calming measures on public roadways under their jurisdiction. Although these concerns continue to be voiced, experience has proven that the most effective means of mitigating the risk of litigation is to establish and follow a set

procedure/policy document. Policy documents should include an approval guide, defined process, design guideline and standards, a uniform approach to signing and marking roadway environments, and a prudent maintenance program that addresses the additional attention required when operating in traffic-calmed areas. Although the applied procedures and/or policy document may not eliminate potential liability exposure risks, it is believed that the benefits associated with traffic calming far outweigh the risks involved. It should also be noted that the road authority may be held liable due to their inaction, particularly if procedures, policies, and/or reports conclude that traffic calming measures are warranted within the context of a community.

1.6.2 Accessibility

The design of traffic calming measures needs to consider the accessibility of road users of all ages and abilities, and not impede or negatively impact their independence or safety. Features impacting pedestrians specifically should provide a barrier-free path and designed to address a range of capabilities.

1.6.3 Enforcement

Enforcing speed limits and other traffic regulations constantly can be challenging and costly solely with police patrol. However, some traffic calming measures can reduce the need for police enforcement. Measures that calm traffic through vertical deflection (e.g. speed hump, raised crosswalk) and horizontal deflection (e.g. curb extension, raised median island) are considered self enforcing and do not require police presence to be effective.

1.6.4 Emergency Services

When traffic calming has the potential to slow down motor vehicle traffic, it can also affect emergency service response times. Traffic calming designs have progressed in mitigating impacts to emergency service vehicles; however, prior to implementation, the proposed traffic calming measures should be evaluated with respect to the City's emergency response times and equipment to ensure that the recommended changes are compatible with efficiencies required by emergency services.

1.6.5 Maintenance and Operations

Consultation with operations and maintenance staff is recommended to ensure that traffic calming measures do not conflict with general road maintenance operations. Traffic calming measures mainly impact maintenance needs and costs, which must be considered in addition to the upfront capital costs. Snow clearing, street sweeping, drainage, and infrastructure damage are common concerns expressed by operations and maintenance workers.

1.6.6 Modes of Transportation

As traffic calming is intended to enhance the safety of all right-of-way users, active transportation must be considered in the application of the traffic calming measures. For example, traffic calming measures support active transportation by reducing vehicle speeds and volumes, creating safer and more inviting streets for all users. By implementing traffic calming strategies, we enhance the environment for both pedestrians and cyclists.

1.6.7 City's Land Use and Transportation Master Plans

Traffic calming policies and the implementation of traffic calming measures should be incorporated into other short-term and long-term plans to ensure uniformity across the entire City as they include all modes of travel and policies or guidance regarding traffic calming.

1.6.8 Legislation and Reduction in Serious Injuries and Fatalities

The implementation of traffic calming in a community may be impacted by existing legislation and or by-laws. While the City has no control over provincial legislation, slight modifications to by-laws may be required to ensure that the traffic calming policy does not conflict with current and relevant by-laws. Reducing loss of life through traffic calming is very important. Traffic calming measures are designed to slow down vehicle speeds and reduce traffic volumes, leading to safer road environments. By implementing these strategies, communities often see a significant decrease in serious injuries and fatalities. Slower speeds give drivers more time to react, enhance visibility for pedestrians and cyclists, and create a more inviting atmosphere for all road users, ultimately improving overall safety.

2.0 Traffic Calming Measures

There are two main categories of traffic calming measures which are known as physical and non-physical. These are provided in the subsequent sections.

2.1 Physical Measures

Physical traffic calming measures are classified either as speed control or volume control measures. Physical measures are also known as engineering measures and involve physically altering the road layout or appearance to reduce traffic speeds actively or passively. These include:

- Raised Crosswalks
- Roundabouts

- Raised Intersections
- Speed Cushions
- Speed Humps
- Speed Tables
- Traffic Circles
- Curb Extensions
- On-Street Parking Spaces
- Raised Median Islands
- Road Diets
- Textured Crosswalks

For specifics on each physical traffic calming measure and its respective advantages and disadvantages, please refer to **Appendix A.**

2.2 Non-Physical Measures

Most non-physical traffic calming methods are intended to visually reduce the effective lane width for a vehicle operator, consecutively reducing the comfortable operating speed. They are usually implemented through enforcement, signage, and pavement markings and include:

- Pavement Marking Legends
- Speed Enforcements
- Speed Display Devices
- Targeted Education Programs

2.3 Additional Measures

Apart from the main traffic calming measures listed above, there are some additional traffic calming initiatives that can be considered to ensure safe communities.

2.3.1 Community Based Initiatives

Community based traffic calming initiatives are tools and programs that residents can implement with support from the City. This approach reflects the desire by some residents, community groups and other stakeholders to address concerns in areas where City-led interventions are not yet planned or committed. Some examples include:

- Road Safety Lawn Sign Program: Residents can encourage safe driving on their street by picking up a "Slow Down" lawn sign. These can provide visual cue reminding drivers to check their speed and slow down while driving in a residential neighbourhood and be on the lookout for other road users.

- Community Pace Car Program: Drivers in the City can get a rear window decal or trunk magnet by displaying the Community Pace Car logo to encourage safer driving throughout the City. This can show the commitment of drivers to drive at or below the speed limit, follow the rules of the road, and be courteous and cautious around pedestrians and cyclists.
- Road Watch Program: This initiative gives residents and visitors the opportunity to report dangerous and aggressive drivers to the police. It is usually operated by the City's police department and Citizen Report Forms can be picked up from the Stations or obtained online.

2.3.2 Community Safety Zones

Community Safety Zones (CSZ) are a distinct and regulatory tool that are intended to remind motorists that they are driving in an area with higher volumes of pedestrians and vulnerable road users. Schools, daycares, playgrounds, parks, and hospitals are some of the where safety is a special concern. They help change driver behavior including reducing speed and distracted driving. The rules of the road don't change within these zones, but the penalties for violations are increased. Under the Highway Traffic Act, many set fines are doubled such as speeding and traffic signal-related offences.

3.0 Traffic Calming Policy

3.1 Consideration for Traffic Calming

Traffic calming measures should be considered under the following circumstances:

a) When there is a demonstrated concern regarding safety, speed (e.g. 85th % > 10 kph over posted speed limit) or short-cutting traffic and all acceptable alternative measures have been addressed.

b) When education and enforcement efforts have failed to produce the desired results.

c) When consideration has been given as to whether an area-wide plan versus a street-specific plan is more suitable: an area wide plan should be considered if a street-specific plan would likely result in displacement of traffic onto adjacent streets.

d) When applications for new plans of subdivision are being reviewed. Consider traffic calming during site plan or other infill projects as well.

e) Can be predominantly restricted to one-way or two-lane roads.

f) Will support non-motorized, alternative modes of transportation and be designed to encourage pedestrian and cycling traffic.

g) Not impede emergency and transit services access unless alternate measures are agreed upon.

h) Maintain reasonable automobile access to City roads.

i) Balances the parking needs of residents with the equally important functions of traffic, emergency vehicle access, transit, bicycle, and pedestrian movement and considers introducing on-street parking on a project-by-project basis in a residential area which is also a traffic calming strategy.

j) Only be installed after staff has investigated existing traffic conditions and the necessary approvals have been received, or after piloting projects/programs.

k) Be monitored; follow-up studies will be conducted to assess effectiveness and the results will be communicated to the community and council.

3.2 City Administration Involvement

Broader administration (public works, emergency services, etc.) should be consulted in each application. However, following internal circulation of the proposal and consideration of the resulting commentary, any final decisions should be made at the discretion of Engineering Services. Monitoring and follow-up studies should be completed to evaluate effectiveness of the prescribed treatment. Ideally, a before / after study should be undertaken, with the results provided to the affected community and to Council.

3.3 Community Involvement

To achieve the goal of restoring neighbourhoods to their intended function and improving overall livability, community involvement and support is of utmost importance. Throughout the process, residents are encouraged to participate in the development of the traffic calming plan suitable to the neighbourhood and the concerns within it.

Communication with residents should be made at various stages throughout the process as the traffic calming plan is developed and implemented. Traffic calming measures should be developed with an understanding of current and historical traffic patterns within the area under investigation. To ensure the success of a traffic calming plan, the community must support and be committed to the solution proposed. Therefore, to gain this commitment the residents should be involved and informed of the study location being considered for traffic calming measures.

Community involvement is beneficial as it generates support for a traffic calming program and assists in the implementation of a plan without significant opposition upon completion. It also enhances the credibility of the program especially when it is presented to Council for approval.

The success of any traffic calming endeavor is typically determined by neighbourhood support, enforcement, education of motorists, bicyclists and enforcement, and education of all road users, appropriate engineering applications, and economics. To obtain a working partnership with the community, meetings will be scheduled, and surveys delivered to residents affected by the implementation of traffic calming measures. This will provide the community with an opportunity to offer input into the development of the plan, as well as publicize and increase awareness of the study. Therefore, to ensure the success of the project, a cooperative partnership between the City and affected residents is essential.

3.4 Future Developments

A traffic calming review should be conducted during the draft plan design stage for new area developments. It should be discussed during pre-consultation and included as part of the Transportation Impact Study (TIS) submission, at the road authority's discretion. Any recommended traffic calming measures should then be added to the respective development's draft plan conditions after a review of the traffic calming plan.

It is important to incorporate speed control as a design objective in road design guidelines for new developments. Wide and straight roadways tend to encourage speeding. While the total travel modes and volumes may not be fully determined, forecasted traffic volumes will be available. The design within the right-of-way such as landscaping, active transportation facilities, accessibility treatments, and horizontal and vertical deflections are elements that can be considered and included. The goals are to use these designs as passive speed control devices and to set the expectation from the beginning. Speed control measures should be described as part of the development application.

Monitoring and evaluation of traffic is a critical next step once the location is fully developed and occupied. Prior to the City assuming responsibility for a road, a traffic review should be completed to evaluate whether active traffic calming is needed.

3.1 Municipal Class Environmental Assessment Process

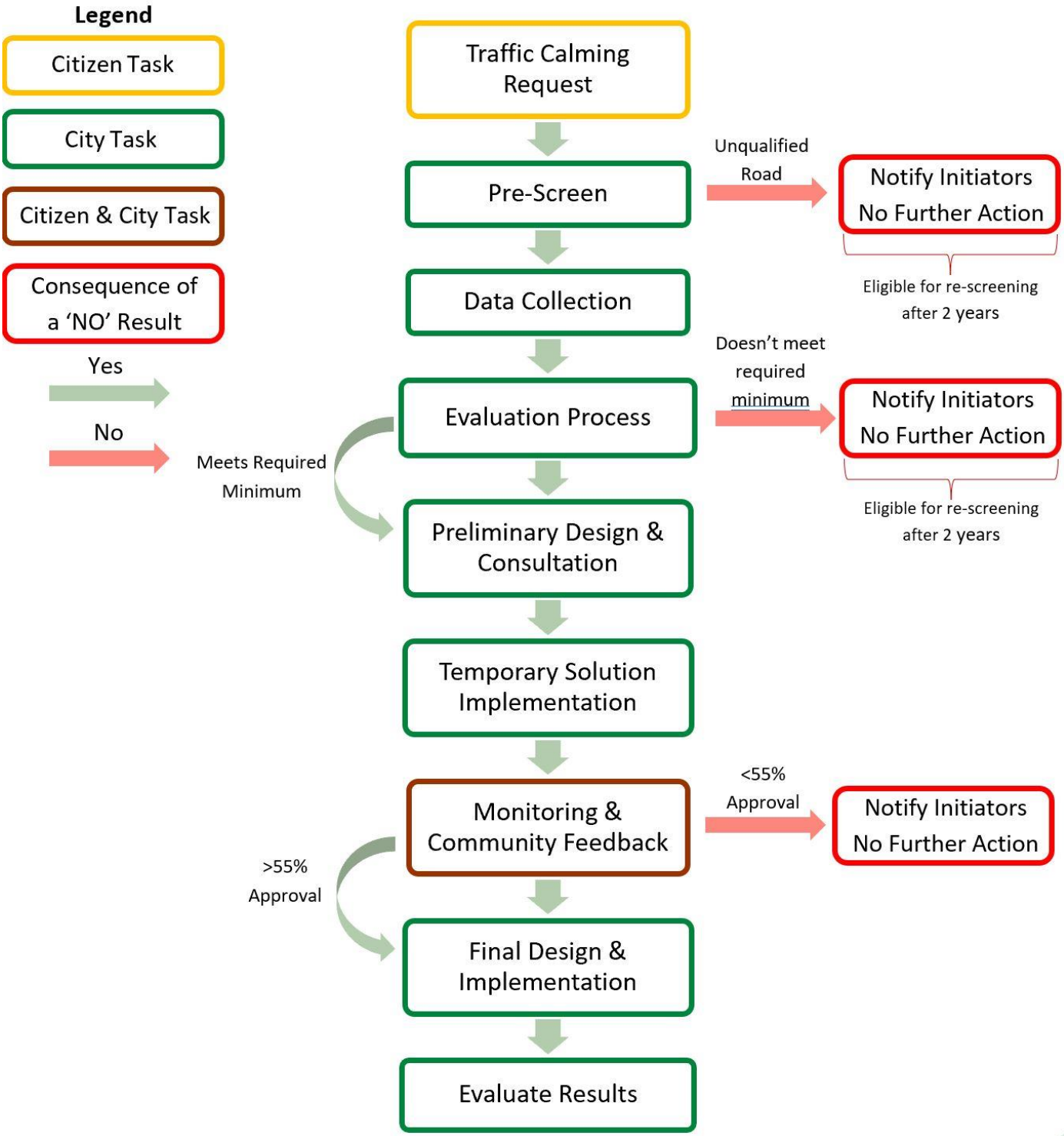
Traffic calming is exempt from the Ontario Environmental Assessment Act and is not an undertaking subject to the Municipal Engineers Association Municipal Class Environmental Assessment (2023). However, public consultation elements from the Municipal Class Environmental Assessment (MCEA) have been incorporated in this policy as a best practice where appropriate.

4.0 Traffic Calming Process

The purpose of establishing a formal process is to provide consistency and fairness in determining whether traffic calming is warranted and implemented. To implement traffic calming methods, the process shown in

Figure 1 should be applied:

Figure 1 – Traffic Calming Process



4.1 Traffic Calming Request

To initiate the traffic calming process, residents with traffic related concerns are instructed to submit a Traffic Calming Request Form to the City by mail or drop it off at the City's office address for the City to investigate traffic calming within their neighbourhood. A standard submission form to start the traffic calming process is provided in **Appendix B.**

4.2 Pre-screening

Following a successful request for traffic calming consideration, City staff will conduct a speed study to determine if the requested roadway meets the criteria provided in the following "Initial Screening Criteria" template, provided in **Table 1.**

Table 1 – Pre- screening Form

Initial Screening Criteria	Yes	No
Roadway Is it a Local or Collector Roadway maintained by the City of Kawartha Lakes?		
Posted Speed Urban: Is the posted speed 50 km/h or lower? Rural: Is the posted speed 60 km/h or lower?		
Annual Average Daily Traffic (AADT) Does the location have a minimum AADT volume of 500 vehicles?		
Street Length Does the road have a minimum uncontrolled (i.e. no stop signs or traffic signals) length of 120 metres?		
Previous Evaluation Has the road been evaluated within the last 24 months for traffic calming?		
Zoning Is the zoning primarily residential?		

If the initial screening indicates a "Yes" response to the above questions, the City will relay the results to residents and whether their location meets the initial screening criteria. Residents will then receive information about the traffic calming process. At the discretion of the road authority, roadways that do not meet the above-noted criteria may still be eligible for other mitigating measures and / or police enforcement initiatives. For road sections with restrictive horizontal and / or vertical alignment (restricted sight lines), traffic calming measures should be considered in conjunction with reduced speed limits and adequate warning signs.

4.2.1 Ineligibility for Traffic Calming based on Pre-Screening

For locations that do not meet the above-noted criteria, staff will consider front-line mitigating measures to address the neighbourhood traffic concerns. These methods could include tools such as the use of driver feedback boards, targeted police enforcement, sign installation and pavement marking modifications. These measures may require monitoring and evaluation to assess their effectiveness.

4.3 Data Collection

If the requested location meets the initial screening criteria, then analysis will commence. The collection of additional data as deemed necessary by City Staff will serve to provide a better understanding of the current traffic conditions and to prioritize locations for the investigation of traffic calming.

Staff will conduct the necessary traffic studies to quantify and qualify the submitted traffic concerns. The data collected may include traffic volumes and composition (cars and trucks), vehicle speeds, collisions, sight lines related to deficient horizontal and/or vertical alignment and stopping distance, pedestrian activity, and origin/destination study if the request related to short-cutting traffic, and historical site-specific information.

For vehicle speeds, it is not prudent to consider the highest speed at which motorists drive. Rather the 85th percentile speed is considered which is the speed at which 85% of the total traffic volume on a road is travelling at or below. Ideally, the 85th percentile speed should be ±10 km/h of the posted speed limit.

With respect to sight distances and the need for traffic calming to reduce travel speeds upon approach to intersections, the existing sight distances at intersections must be less than the distances outlined in **Table 2** for traffic calming to be warranted. As a factor of speed, for lower speed roads, the design speed is typically taken as 10 km/h over the posted speed, whereas for higher speed roads, design speed is 20 km/h greater.

Table 2 – Stopping Sight Distance Considerations

Design Speed	Minimum Sight Distance
40 km/h	45 m
50 km/h	65 m
60 km/h	85 m

Design Speed	Minimum Sight Distance
70 km/h	110 m
80 km/h	130 m

Once collected and summarized, the data will be used in the overall assessment to determine the need for traffic calming and assist in setting priority for locations of consideration.

4.4 Point Assessment System

The point assessment system is a screening process focused on various attributes of a roadway in order to quantify its potential need for traffic calming. By means of assigning weighted points based on the severity of certain road attributes (e.g. 85th percentile speed), this process will bring forth roadways requiring consideration while quantifying the current conditions. The point system can be found in **Appendix C.**

The point system will also be used to prioritize locations for consideration. Those location with an extremely high point assessment will be given priority based on the quantitative nature of the point system. Depending on funding availability, the locations will be selected based on the point system which those locations with the highest points addressed first. If funding does not permit all locations to be constructed in one year, roadways will be carried forward to the next year when they will be re-prioritized to include new locations. However, City staff will continue to address the concerns of the residents through front-line mitigation measures.

The minimum threshold required to proceed with the investigation of traffic calming measures differs based on the classification of road in keeping with the objective of restoring roads to their intended function. Local and Collector roads are designed and expected to convey varying levels of traffic volume. This, in turn, has a bearing on the minimum point value required to proceed, as traffic volume is a major consideration. Based on this, the following are minimum point values for each road type:

1. Local road – 35 points
2. Collector road – 52 points

Should a location fail to meet this requirement, residents will be notified in writing that requests not attaining these minimum scores will only be considered for non-physical traffic calming measures such as education and enforcement.

4.5 Design Considerations

The data collected in combination with site visits, historical information, future maintenance and construction plans, as well as resident feedback will be taken into consideration to determine the potential traffic calming measures.

The appropriate traffic calming measures will be determined based on the list of traffic calming measures outlined in this policy. The traffic calming design should include one or more different types of traffic calming techniques. The proposed traffic calming measures will be in accordance with the design guidelines outlined in the **TAC Canadian Guide to Neighbourhood Traffic Calming** and the judgment and experience of City Staff.

While determining the potential permanent measure for traffic calming, the City can implement a temporary solution until removed (such as seasonal speed humps, radar feedback signs, speed posted bollards) and monitor it for one season prior to a final installation of the permanent measure. In doing so, the City will be able to gather community feedback and monitor the results to see if the measure is effective before implementing a more permanent solution. The City can also consider introducing a pilot project to collect data on traffic patterns, safety improvements, and community concerns. This approach would ensure that any final decision is well-informed and responsive to the needs of residents.

4.6 Consultation with Relevant Agencies

The preferred design will be presented to the relevant agencies (e.g.: emergency services, road maintenance department, transit services, etc.). Comments from the potentially affected services will be solicited and feedback with respect to possible impacts will be encouraged. City Staff will work with agencies to modify the design, as necessary. While it is preferable to modify the traffic calming design, if modifications are not able to remedy agency concerns, the traffic calming process will be discontinued for the road under consideration and residents will be notified.

4.7 Community Consultation

After approval from emergency and maintenance services, the public will be notified of the meeting being held to present the purpose, objectives, and implementation process corresponding to the recommended traffic calming measure.

Notification will be published on the City of Kawartha Lake's social media pages and official website. Staff may determine alternative notification methods at their discretion. The purpose of this notice is to provide notification to the public regarding the meeting date, time, and location of the community consultation. It will also present an opportunity to solicit comments on the alternative traffic calming measures.

City staff will then hold a public information meeting to present and explain the rationale behind the specific preferred traffic calming design. The public meeting will provide residents with the opportunity to become involved in the process, learn more about the proposed traffic calming treatment and to provide feedback. It will enable the City to obtain public feedback on analysis, alternatives and decisions as well as work directly with the public throughout the process to ensure their concerns and aspirations are consistently understood and addressed.

4.8 Community Support Survey

The feedback from the agencies and public will provide the preferred design. This design shall be distributed to the residents owning property on the roadway or flanking the roadway affected by the traffic calming methods to allow an opportunity to oppose the implementation of the methods.

The surveys at a minimum will contain:

- A brief description of traffic calming, including its advantages and disadvantages;
- The results of the traffic studies undertaken by staff;
- A survey question asking if residents are in favour, opposed or neutral to the implementation of traffic calming measures in the identified location(s);
- The preferred traffic calming design;
- A request for comments and feedback; and
- An indication that this is the final opportunity to modify and improve the preferred design to address any outstanding concerns and to incorporate resident input.

Fifty-five percent (55%) of the surveys returned to the City must be in support of the traffic calming methods. If less than majority support the traffic calming design, a written notice will be distributed to those members of the public directly affected informing them that the project will not proceed due to lack of public support. Written notice will also be delivered to those affected if the project is to proceed.

4.9 Finalize Preferred Traffic Plan

Using technical data, community feedback, and in keeping with the goals, objectives and principles set out in this guide staff will finalize the preferred traffic calming design to be put forward as the preferred traffic calming measure. In finalizing the preferred traffic calming measure, general consideration will be given to the various aspects of road design such as utility placement, landscaping, sign requirement and drainage.

4.10 Council Notification

A report recommending the implementation of the preferred traffic calming measure will be submitted to City Council if it is determined by City Staff that the traffic calming measure may be contentious. The recommendation will be accompanied by an amending By-law for the inclusion of traffic calming measures, as required.

4.11 Implementation

Following approval from council, notification to the residents and funding approval, traffic calming methods can be implemented. If it is feasible, City staff may decide to phase the traffic calming methods, to provide time to examine the impact of the methods and their effectiveness, prior to installing permanent methods.

4.12 Evaluation and Monitoring

City staff will monitor the implemented traffic calming methods annually. The monitoring will produce data that determines the effectiveness of the traffic calming methods and their impact on the traffic network. The data collected will provide information for future use of similar traffic calming measures.

4.13 Removal of Traffic Calming Measures

Traffic calming devices may be removed, at the request of residents provided that at least the same level of support exists to remove as was measured for installation. Traffic calming measures must be installed for at least a one (1) year trial before starting the process to remove them. If traffic calming devices are removed, the subject street must wait at least two (2) years before requesting a new traffic calming measure at which point the approval process will start over.

If a request to remove a single traffic calming device, within an overall traffic calming measure, is received, all traffic calming devices will be considered for removal. Depending on circumstances, it could be possible to remove a single device constructed as part of an overall plan, however, in most cases all devices work together to be effective and to ensure that traffic is not diverted where it should not be. The City reserves the right to remove traffic calming measures if it determines that they are ineffective or unsafe or if they have created a negative impact that cannot be corrected. The City will mail out a notification and advertise on the City's website and social media pages informing of its decision to remove traffic calming measures.

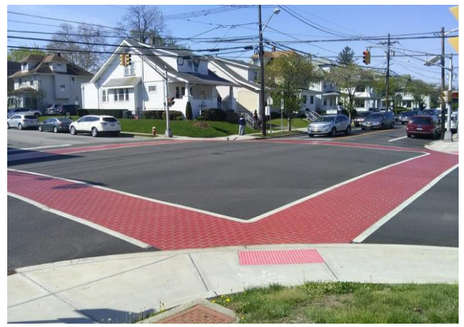
Appendix A - Traffic Calming Measures

Table 3 - A1.1 Permanent Measures

Permanent Measures				
Type	**Description**	**Advantages**	**Disadvantages**	**Picture[1]**
Curb Radius Reduction	The reconstruction of an intersection corner to accommodate a smaller (tighter) radius. The objective of curb radius reductions is to reduce speeds of right-turning vehicles, reduce crossing distances for pedestrians, and to improve visibility of pedestrians.	• Vehicle speeds are reduced for right turning traffic • Improve pedestrian visibility • Traffic noise may be reduced • Pedestrian crossing distance is reduced • Police enforcement is not required	• Emergency response may be delayed • Active transportation/transit operations may experience delay • Maintenance and roadway operations may be affected	
Curb Extensions	Also known as neckdown, choker, curb bulb, bulb-out is a horizontal intrusion of the curb visually and physically narrowing the roadway width. The curb may be on one or both sides of the roadway. The objective is to reduce vehicle speeds, reduce crossing distance for pedestrians and prevent parking too close to an intersection.	• Vehicle speeds are reduced • Improves pedestrian visibility • Pedestrian crossing distance is reduced • Police enforcement is not required	• Emergency response times may be delayed • Potential loss of on-street parking • May interrupt bike lanes • Maintenance and roadway operations times may be increased	
Raised Crosswalk	A marked pedestrian crosswalk constructed in a higher elevation than the adjacent roadway. The objective of a raised crosswalk is to enhance awareness of pedestrian crossings, reduce vehicle speeds, improve pedestrian visibility, and reduce pedestrian-vehicle conflict. *Note: Raised crosswalks implementation may include the implementation of appropriate level of PXO per OTM Book 18. Raised crosswalks will only be implemented at mid-block, unprotected pedestrian crossing locations and should be signed appropriately.*	• Vehicle speeds are reduced • Improves pedestrian visibility • Pedestrian crossing area is better defined • Traffic noise may be reduced • Police enforcement is not required	• Emergency response is slightly delayed • Active transportation/transit operations may experience delay • Maintenance and roadway operations may be affected	

Permanent Measures				
Type	**Description**	**Advantages**	**Disadvantages**	**Picture[1]**
Raised Intersection	An intersection that may include crosswalks and is constructed at a higher elevation than the adjacent roadway. The objective is to enhance awareness of pedestrian crossings, reduce vehicle speeds, improve pedestrian visibility, and reduce pedestrian-vehicle conflict.	• Vehicle speeds are reduced • Improves pedestrian visibility • Pedestrian crossing area is better defined • Traffic noise may be reduced • Police enforcement is not required	• Emergency response is slightly delayed • Active transportation/transit operations may experience delay • Maintenance and roadway operations may be affected • May impact drainage patterns	
Chicanes	A series of curb extensions on alternating side of the roadway, which narrow the roadway to force drivers to steer from one side of the roadway to the other to travel through the chicane. The objective is to discourage shortcutting and through traffic and reduce vehicle speeds.	• Vehicle speeds are reduced • Traffic volumes a • Traffic noise may be reduced • Increase motorist awareness • Discourage shortcutting • Police enforcement is not required	• Emergency response is delayed • Active transportation/transit operations may experience delay • Maintenance and roadway operations may be affected • Loss of on-street parking	
Traffic Circles / Roundabouts	A circular island located at the centre of an intersection, which requires vehicles to circulate through the intersection in a counter-clockwise direction. The objective is to reduce vehicle speeds and minimize the speed/impact of intersection conflicts.	• Vehicle speeds are reduced • Traffic volumes may be reduced • Collision rates are reduced • Traffic noise may be reduced • Police enforcement is not required	• Emergency response is may be delayed • Active transportation/transit operations may experience delay • Maintenance and roadway operations may be affected • Restricted access for trucks and longer school buses	

Permanent Measures				
Type	**Description**	**Advantages**	**Disadvantages**	**Picture[1]**
On-Street Parking	Reduces the roadway width available for vehicle movement, however, provides surplus parking opportunities along a street segment. The objective is to reduce traffic speeds by narrowing the effective roadway space and to discourage potential short-cutting.	• Vehicle speeds are reduced • Provides buffer between traffic and pedestrians on sidewalks • Traffic volumes may be reduced • Police enforcement is not required • Deters cut-through traffic	• Emergency response times may be delayed • Maintenance and roadway operations times may be increased • Driveway visibilities may be reduced • Increases risk of rear-end and sideswipe collisions	
Raised Median Island	An elevated median constructed at the centreline of a two-way roadway, reducing the overall width of the adjacent travel lanes. The objective of raised medians is to reduce traffic speeds by narrowing the effective roadway space and reduce the number of potential conflict areas.	• Vehicle speeds are reduced • Traffic volumes are reduced • Provides refuge for pedestrians • Police enforcement is not required	• Emergency response time may be delayed • May reduce on-street parking • May restrict driveway access • Additional maintenance required if landscaped	
Road Diet	A reconfiguration of the roadway whereby the number of travel lanes and/or effective width of the road is reduced. The objective us to reduce speeds by limiting vehicular servicing capacity and reallocating the reclaimed space for other uses (i.e. wider sidewalks, turning lanes, bus lanes, refuge islands, bike lanes, parking, etc.)	• Vehicle speeds are reduced • Traffic volumes are reduced • Provides refuge for pedestrians • Police enforcement is not required	• Emergency response time may be delayed • May reduce on-street parking • May restrict driveway access • Additional maintenance required if landscaped	

Permanent Measures				
Type	**Description**	**Advantages**	**Disadvantages**	**Picture[1]**
Textured Crosswalk	Comprised of different colour and/or texture than the roadway to highlight the pedestrian crossing area. The objective of textured crosswalks is to reduce potential pedestrian-vehicle conflicts by visually enhancing the controlled crossing areas.	• Vehicle speeds are reduced • Improves pedestrian safety • Police enforcement is not required	• Increased maintenance • Traction or stability problems for seniors, disabled individuals, wheelchairs, etc.	

[1]National Association of City Transportation Officials

Table 4 - A1.2 Temporary Measures

Temporary Measures				
Type	**Description**	**Advantages**	**Disadvantages**	**Picture[2]**
Flexible Bollards	Flexible plastic posts spaced evenly along a roadway. Without physically constraining the roadway environment, flexible bollards alert drivers of a separation requirement. The objective is to narrow the perceived roadway width and alter driver behavior.	• Vehicle speeds are reduced • Requires little to no maintenance • Police enforcement is not required	• Maintenance and roadway operations time may be increased	
Seasonal Speed Hump/Table	A rubber unit that is placed across an entire roadway width and causes the vertical upward movement if a traversing vehicle. The objective is to cause discomfort for drivers travelling at higher speeds and results in reduced vehicle speeds.	• Vehicle speeds are reduced • Easy to construct • Deters cut-through traffic • Police enforcement is not required	• Emergency response is delayed • Active transportation/transit operations may experience delay • Maintenance and roadway operations may be affected • Added wear-and-tear on vehicles over time	

Permanent Measures				
Type	**Description**	**Advantages**	**Disadvantages**	**Picture[3]**
Pavement Markings	Painted lines on a roadway, which aide in perceptively narrowing the travel lanes. These markings can be painted in various styles/configurations. The objective is to influence drivers to reduce speeds by creating optical effects that affect driver behaviour.	• Vehicle speeds are reduced • No impact to emergency vehicles • Can be implemented quickly	• Regular maintenance will be required • May be less effective in winter months due to snow	
Speed Display Device	An interactive sign that displays vehicle speeds as oncoming vehicles approach. Vehicle speeds are captured and reported using radar, and the device can flash when vehicles exceed a predetermined speed. The objective is to alert drivers to their errant or unsafe travel speeds.	• Vehicle speeds are reduced • Reduction in speed related collisions • Police enforcement is not required	• Requires regular maintenance • Driver behaviour may be unchanged if no further enforcement is observed	
Speed-Posted Bollards	Vertical posts installed at the edge of traffic lanes with the speed limit displayed. Without physically constraining the roadway environment, these bollards alert drivers of a separation requirement. The objective is to narrow the road, guide traffic, and encourage drivers to slow down so they can pass through safely.	• Vehicle speeds are reduced • Reduction in speed related collisions • Police enforcement is not required	• Maintenance and roadway operations time may be increased.	

[2]Federal Highway Administration
Transportation Association of Canada – Canadian Guide to Traffic Calming City of Sarnia
National Association of City Transportation Officials

Appendix B - Traffic Calming Request Form

Traffic Calming Measure Request Form		
Application Date:		
Name:		
Address:		
Contact Phone #:		
Email:		
Requesting Traffic Calming Measure:	☐ **Implementation**	☐ **Removal**
Description of Location: ***Provide sketch on back***		
Office Use Only		
STAFF REVIEWING:		
DATE:		
APPROVED/BYLAW:		

Mail or Drop off this form to:

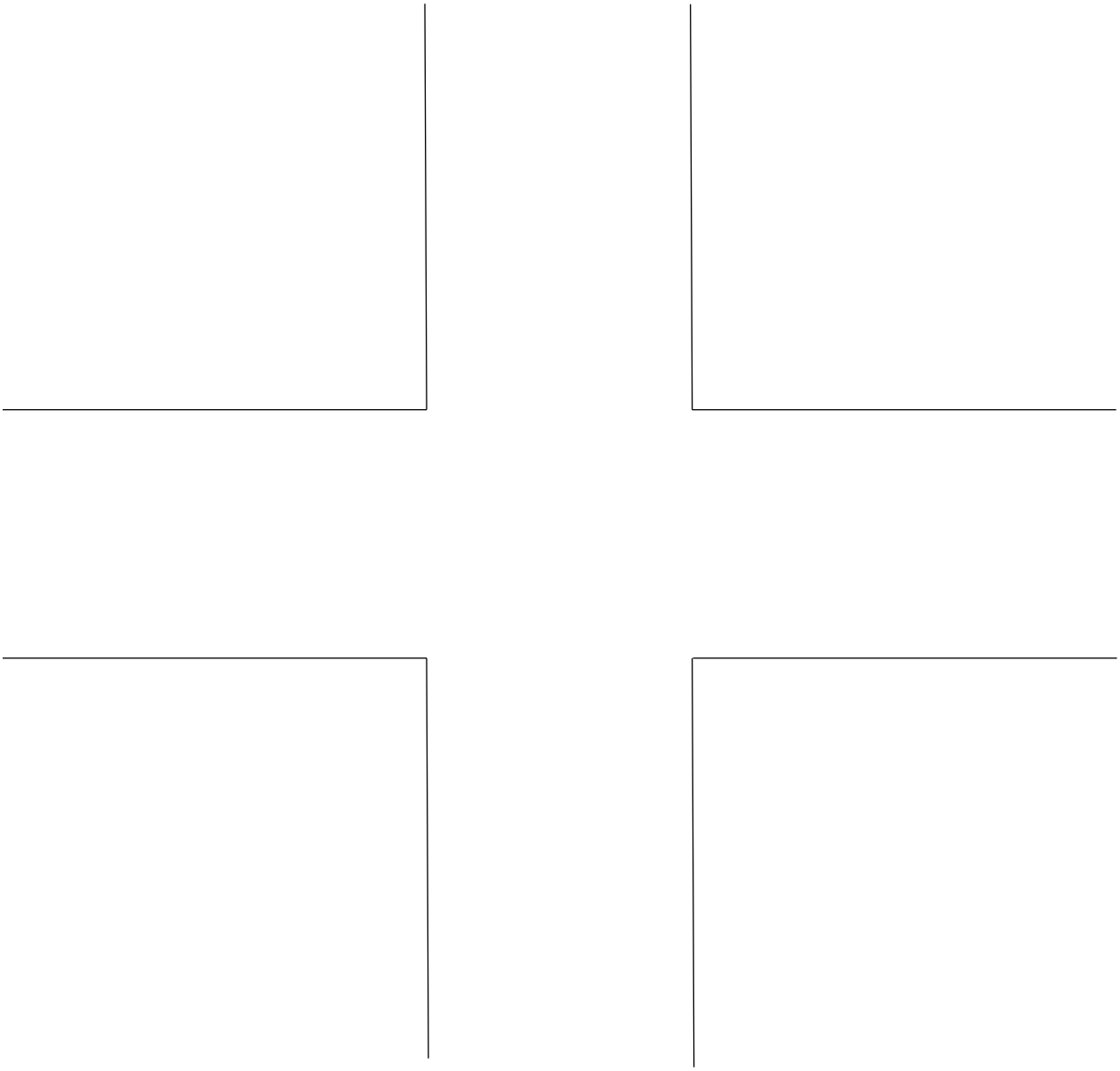
26 Francis Street

Lindsay, Ontario K9V 5R8

Tel: 705-324-9411

* Please provide a sketch of issues or concerns including street names and traffic control (stop signs or traffic signals if applicable)

Sketch



Appendix C - Traffic Calming Scoring Matrix

Traffic Calming Scoring Matrix

Road Section:_____ **Road Class:**_____

Prepared By:_____ **Date:**

Traffic Data

Features	Range	Criteria	Score
1. Speed	0 to 35	5 points for every 2km/h that the 85th percentile speed is greater than 10km/h over the posted speed limit	
2. High Speed	0 to 5	5 points if minimum of 5% of daily traffic exceeds posted speed by 15-20 km/h	
3. Volume	0 to 20	Local Roadways: 1 point for every 100 AADT Collector Roadways: 1 points for every 200 AADT	
4. Presence of Schools	0 to 15	7.5 points for each school located along the roadway 5 points for designated school walking routes that are along the roadway	
5. Other Pedestrian Generators	0 - 25	5 points for each community generator (i.e. park, school, recreation centre, senior's centre, community centre, place of worship) with a direct link to the roadway (frontage, trail, sidewalk, or other access point) 10 points for a singed bicycle route	
6. Short-Cutting Traffic	0 to 15	5 points if there is a presence of 25% or more short-cutting traffic, additional 5 points for every 10% increments above 25%	
7. Collision	1 to 10	1 point for every collision/year over a three-year period	

Road Characteristics

Features	Range	Criteria	Score
1. Sidewalks	0 to 5	10 points for no sidewalk with evidence of pedestrian activity; 5 points if sidewalk on only one side	
2. Pedestrian Generators	0 to 15	5 points for each nearby (must have direct connection to subject roadway) pedestrian generator such as a school, playground, community centre, library, retail centre, etc.	
3. Sight Lines	0 to 10	0 points for excellent sight lines 5 points for impaired sight lines 10 points for very poor sight lines	

Over All Characteristics

Does the location meet the minimum requirements?
Total Score:
Where does this location rank on the Priority List?
*Minimum **35 points** needed for Local Roads / Minimum **52 points** needed for Collector Roads*

Appendix D - Traffic Calming Measures Toolkit

Table 5 – D1.1 Potential Benefits and Implications of Traffic Calming Measures

Legend	■ Substantial Benefits ▣ Moderate Benefits □ No Benefits or Limited Data	● Substantial Disbenefits ◉ Moderate Disbenefits ○ No Disbenefit or Limited Data

Traffic Calming/ Speed Management Measures	Potential Benefits				Potential Disbenefits					
	Speed reduction	Volume Reduction	Conflict Reduction	Environment	Local Access	Emergency Response	Active Transportation	Enforcement	Parking	Maintenance
Vertical Deflection										
Raised Crosswalk	■	□	▣	▣	○	◉	◉	○	○	◉
Raised Intersection	■	□	▣	▣	○	◉	◉	○	○	◉
Speed Cushion	■	▣	■	▣	○	◉	◉	○	◉	◉
Speed Hump/Table	■	▣	■	▣	○	●	◉	○	◉	◉
Horizontal Deflection										
Chicane (One-Lane)	■	■	■	▣	○	◉	◉	○	●	◉
Chicane (Two-Lane)	▣	□	▣	▣	○	○	○	○	●	◉
Traffic Circle/Mini Roundabout	■	▣	■	■	○	◉	◉	○	◉	◉
Curb Radius Reduction	▣	□	□	▣	○	○	◉	○	○	◉
Roadway Narrowing										
Curb Extension/Neckdown/ Choker	▣	□	□	■	○	○	◉	○	●	◉
Lane Narrowing	▣	□	□	□	○	○	◉	○	◉	○
On-street Parking	▣	□	□	▣	○	◉	◉	○	○	◉

Traffic Calming/ Speed Management Measures	Potential Benefits				Potential Disbenefits					
	Speed reduction	Volume Reduction	Conflict Reduction	Environment	Local Access	Emergency Response	Active Transportation	Enforcement	Parking	Maintenance
Raised Median Island	◧	☐	◧	☐	◉	○	○	○	◉	◉
Road Diet	■	☐	■	■	○	◉	○	○	○	○
Vertical Centreline Treatment	◧	☐	☐	☐	○	○	○	○	○	◉
Surface Treatment										
Sidewalk Extension/Textured Crosswalk	◧	☐	◧	◧	○	○	◉	○	○	●
Textured Pavement	◧	☐	☐	◧	○	○	◉	○	○	●
Pavement Markings	■	☐	☐	☐	○	○	○	○	○	◉
Communication and Enforcement										
Speed Display Device	■	☐	☐	☐	○	○	○	◉	○	●
Speed Enforcement	■	☐	☐	☐	○	○	○	◉	○	●
Speed Watch Program	◧	☐	☐	☐	○	○	○	◉	○	○
Pace Car Program	☐	☐	☐	☐	○	○	○	○	○	○
Targeted Education Programs	☐	☐	☐	☐	○	○	○	○	○	○

Legend		
	■ Substantial Benefits	● Substantial Disbenefits
	◧ Moderate Benefits	◉ Moderate Disbenefits
	☐ No Benefits or Limited Data	○ No Disbenefit or Limited Data

Table 6 – D1.2 Potential Benefits and Implications of Traffic Calming Measures

Legend		
	■ Substantial Benefits	● Substantial Disbenefits
	▣ Moderate Benefits	◉ Moderate Disbenefits
	□ No Benefits or Limited Data	○ No Disbenefit or Limited Data

Traffic Calming/ Speed Management Measures	Potential Benefits				Potential Disbenefits					
	Speed reduction	Volume Reduction	Conflict Reduction	Environment	Local Access	Emergency Response	Active Transportation	Enforcement	Parking	Maintenance
Communication and Enforcement										
Speed Display Device	■	□	□	□	○	○	○	◉	○	●
Speed Enforcement	■	□	□	□	○	○	○	◉	○	●
Speed Watch Program	▣	□	□	□	○	○	○	◉	○	○
Pace Car Program	□	□	□	□	○	○	○	○	○	○
Targeted Education Programs	□	□	□	□	○	○	○	○	○	○

Table 7 - D1.3 Applicability of Traffic Calming Measures

Measure	Location Applicability						Cost
	Urban Streets			Rural Streets			
	Local	Collector	Arterial	Local	Collector	Arterial	
Communication and Enforcement							
Information Signage	✓	✓	✓	✓	✓	✓	$
Speed Display Device	✓	✓	✓	✓	✓	✓	$ $ $
Targeted Education Programs	✓	✓	✓	✓	✓	✓	$ $
Speed Enforcements	✓	✓	✓	✓	✓	✓	$
Pace Car Program	✓	✓	▲	✓	✓	▲	$
Speed Watch Program	✓	✓	✓	X	X	X	$
Vertical Deflection							
Raised Crosswalks	✓	✓	X	▲	▲	X	$ $ $
Raised Intersections	✓	✓	X	▲	▲	X	$ $ $ $ $
Speed Cushions	✓	✓	X	✓	✓	X	$ $
Speed Humps	✓	✓	X	✓	✓	X	$ $
Speed Tables	✓	✓	X	✓	✓	X	$ $ $
Flexible Bollards	✓	✓	X	✓	▲	X	$
Horizontal Deflection							
Chicanes	✓	✓	X	X	X	X	$ $ $ $ $
Curb Radius Reductions	✓	✓	▲	X	X	X	$ $ $ $
Traffic Circles	✓	✓	▲	X	X	▲	$ $ $ $
Roundabouts	✓	✓	▲	X	X	▲	$ $ $ $ $
Curb Extensions / Bulb-Outs	✓	✓	✓	X	X	X	$ $ $
On-Street Parking	✓	✓	▲	✓	✓	X	$
Raised Median Island	✓	✓	✓	X	X	✓	$ $
Road Diet	✓	✓	✓	✓	▲	X	$ $
Surface Treatments							
Pavement Markings	✓	✓	✓	✓	✓	✓	$
Textured Pavement	✓	✓	X	✓	✓	X	$ $

✓ = Appropriate Measure ▲ = Use with Caution X = Not Recommended