TRAFFIC CALMING POLICY UPDATE

Town of Ajax
2020

PROJECT NO. 19M-00699-00

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EXECUTIVE SUMMARY

The Town of Ajax has updated its Traffic Calming Policy to make it more efficient and to be able to address more locations. It also reflects the Town's current long-term strategic plan, lessons learned from the existing warrant and the updated National guidelines.

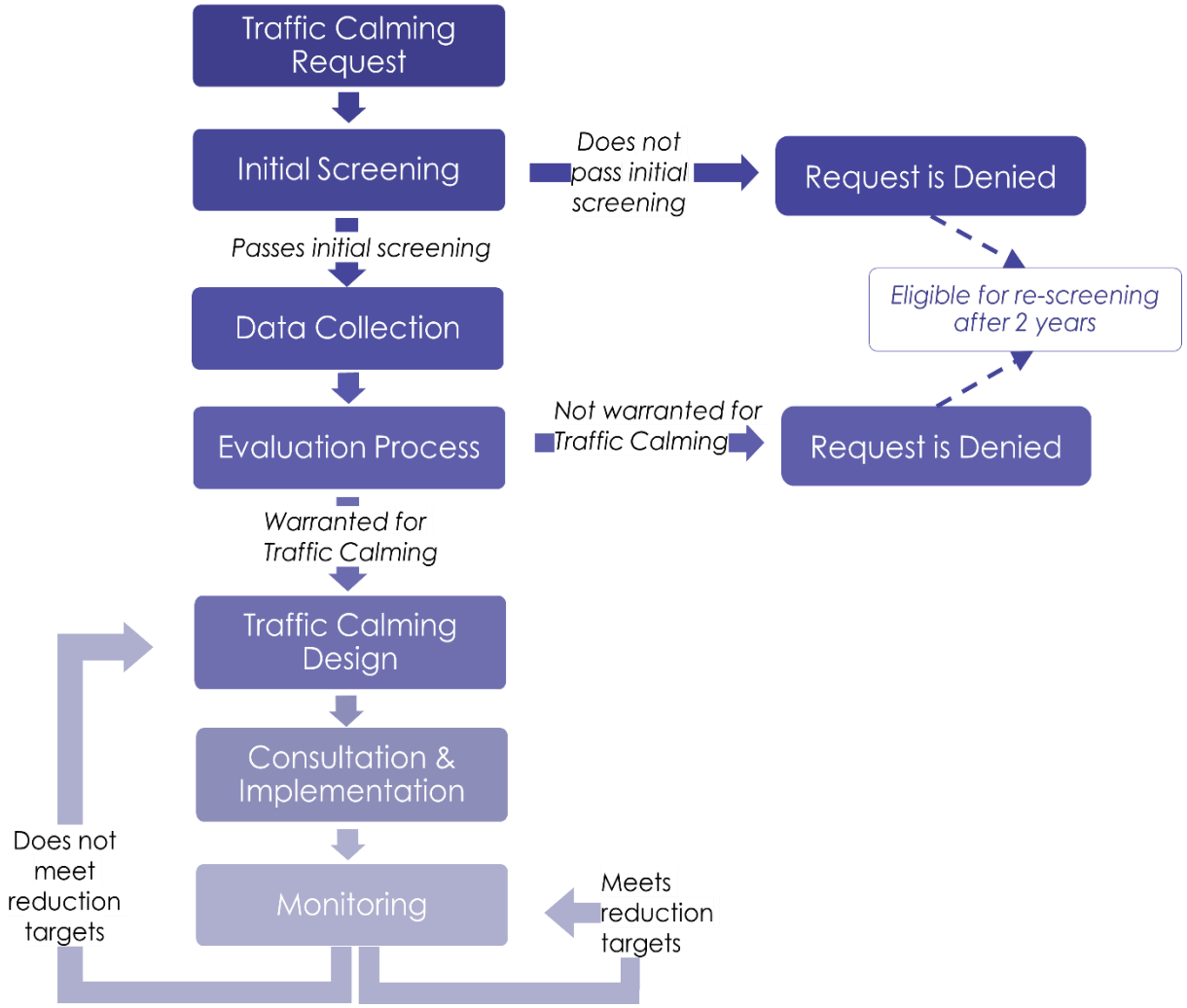
The main goal of traffic calming is to improve traffic and road safety for all road users and to encourage driver behaviour changes. The objectives of these traffic calming measures are to reduce the negative impacts of vehicle traffic on a specific road segment such as high vehicle speeds, high traffic volume and increased conflicts between road users.

The recommended process and traffic calming treatments in the updated National guidelines, Transportation Association of Canada's Canadian Guide to Traffic Calming in 2018 (CGTC), and other municipalities were reviewed. The updated policy includes key revisions such as:

- A standard submission form was developed for consistency.
- Elimination of the hierarchy list (general and priority list) that over-weighted locations with high traffic speeds in lower speed limit zones.
- The warrant criteria have been adjusted to better reflect the relative need and priority of different locations.
- Recommendation of two streams of treatments, minor and major adjustment treatments. The minor adjustment treatments are cost-effective to allow for more locations to be addressed in a year's budget. The major adjustments require significant infrastructural changes and are implemented where minor adjustment treatments have not been effective.
- Stronger emphasis on monitoring after implementation of the traffic calming measures. This helps confirm the effectiveness of the treatment and ensure that additional measures are not needed.

The warrant process (**Figure A**) follows seven steps: Request, Initial Screening, Data Collection, Evaluation, Traffic Calming Design, Consultation & Implementation and Monitoring.

Figure A – Traffic Calming Process Flow Chart



1 INTRODUCTION

The Town of Ajax's Traffic Calming Warrant is a policy tool that outlines when and how traffic calming should be used in the Town of Ajax. This Warrant has been updated with the consideration of the Town's current long-term strategic plan, lessons learned from the existing warrant and based on the review of the best practices nationally and in neighbouring municipalities. This warrant update was developed in consultation with Transportation Staff from the Town's Planning and Development Services Department.

1.1 WHAT IS TRAFFIC CALMING?

Traffic calming is used to improve traffic safety for all road users through mainly physical features to encourage driver behaviour changes. The objectives of these traffic calming measures are to reduce the negative impacts of vehicle traffic on a specific road segment such as high vehicle speeds, high traffic infiltration / cut-through traffic and increased conflicts between road users.

Traffic calming measures are selected depending on the specific concerns, geometric considerations and needs. The implementation of traffic calming should be applied consistently town-wide and with careful attention to the network impacts to ensure that volume and speed concerns are not transferred to adjacent streets.

1.2 STUDY BACKGROUND

The Town of Ajax published its first Traffic Calming Warrant Framework and Process in 2007 (2007 TCWFP). The update to the first warrant occurred in 2015 to make the process more efficient and fair and to be able to address all of the eligible locations within given resources and a reasonable timeline.

While the 2015 update addressed previously raised issues to 2007 TCWFP, since its adoption and use over the last five years, residents and Town staff have identified components of the 2015 warrant that this update will review, such as:

- Speeding concerns appear to be the main focus and are the only criteria that will allow the location to be prioritized;
- The overall process for the staff and for the residents should be better defined;
- Data collection procedures should be better defined;
- A well-defined monitoring program is not included in the process; and

- Overall the warrant could use more justification based on the best practices and industry standards.

1.3 PURPOSE AND OBJECTIVES

As the third edition of Traffic Calming Policy for The Town of Ajax, the updated policy is to provide an ongoing framework for addressing safety concerns in the residential neighbourhoods within the Town of Ajax. The desire for traffic calming is typically created by specific drive behaviour threatening the safety of all road users and the quality of life for adjacent property owners.

The objective of this traffic calming warrant review is to update the existing policy with the latest and best practices in traffic calming and with consideration of the local Ajax context to address the speeding and volume concerns raised by the residents. A review of current guidelines in other municipalities and the current Town policy will help ensure the warrant process is effective and suitable for the Town of Ajax. The intent is not to create an entirely new warrant but rather to add or improve on the components that have been identified as needing improvement through experience in Ajax.

2 FRAMEWORK

2.1 REVIEW OF AJAX'S 2015 WARRANT

The Town of Ajax's current warrant was developed in March 2015 and it outlined a six step processing when considering a road segment for traffic calming. Based on the review of the 2015 warrant, there were a number of opportunities to refine the elements of each step in order to establish a more efficient and effective process in the 2020 warrant. The Town Staff and stakeholder were involved to identify the following opportunities for improvement:

- For the overall process, improvements could be made to the data collection, evaluation, implementation steps, and to emphasize the need for monitoring within the new process.
- Eligible locations are categorized into either the general or the critical list, where the critical locations are prioritized. Speed is the only measure which would qualify a location to be categorized as a priority location. This allows locations with a high traffic speed to be prioritized over other locations where speeding wasn't as high, but traffic calming is also needed.
- While the existing list of available traffic calming measures includes current and conventional measures commonly used by Canadian municipalities. However, there was the opportunity to identify new measures which have become popular in the last five years, as well as others which would support the new overall process.

2.2 BEST PRACTICES AND COMPARABLE POLICIES

The national Canadian Guide to Traffic Calming and traffic calming policies from Ontario municipalities are reviewed as a comparison of relevant best practices. The four municipalities reviewed are: the Town of Whitby, City of Ottawa, City of Oshawa, and City of Pickering. When reviewing these policies, specific components in relation to the Town of Ajax and how it can be adapted to the Town are highlighted. Each municipality's' policy is summarized in the following section. The flow chart and details of each policy can be found in **Appendix A**.

2.2.1 TAC'S CANADIAN GUIDE TO TRAFFIC CALMING 2018

The Transportation Association of Canada (TAC) and the Institute of Transportation Engineers (ITE) jointly updated the 1998 Canadian Guide to Neighbourhood Traffic Calming and have published the second edition of the Canadian Guide to Traffic Calming in 2018 (CGTC). The CGTC has been widely accepted as a national guideline, and the CGTC was reviewed to assist the Town of Ajax and to be used as a reference.

In the CGTC, it is highlighted that traffic calming is used to maintain the road's intended function while keeping the safety of all road users at the forefront. Excessive speeding and traffic short-cutting are the two main triggers for traffic calming needs. Increasing the safety of the road users may be accomplished by decreasing the operating speed of vehicles and volume of traffic and heightening the awareness of other street users. To achieve this, traffic calming treatments are largely physical measures but appropriate signage, pavement marking, enforcement and educational/awareness programs can contribute to motorists' behaviour changes.

Some of the notable changes to the updated CGTC are:

- The eligible road classifications are local, collector and arterials roads. In the past, traffic calming was designed and implemented primarily in residential neighbourhood areas (local and collector only). It should be noted that the function of arterial roads should not be hindered and access restriction and diversion of traffic flow are not recommended on arterial roads.
- The characteristic of the area, rural or urban, is an important factor to consider when choosing traffic calming measures. The traffic calming measures are updated to include suitable measures in rural areas.
- The list of traffic calming devices has been updated to include well-accepted treatments in other municipalities and innovative solutions that have been used to address road safety and align with the objectives of traffic calming.
- In addition to literature reviews, data and performance outcomes of the listed treatments are included.

The Town of Ajax's updated policy follows the same framework and process steps as outlined in the CGTC - initiation, development, approval, implementation and evaluation. In addition, the list of potential traffic calming devices is aligned with the CGTC's categories and types. The Ajax traffic calming toolbox that indicates the suitability of each traffic calming device has been updated.

2.2.2 TOWN OF WHITBY

The Town of Whitby received Council approval of the Traffic Operational Review Policy in June 2017. The details from the policy are listed below:

- There are five steps in the Town of Whitby's process: Step 1 Initiation of Review, Step 2 Prioritization of Requests, Step 3 Initial Screening of Request, Step 4 Preliminary Assessment and Problem Identification, and Step 5 Ratification of Solutions.
- During Step 2, locations impacting schools, Town District Parks, and multi-unit senior's residence are prioritized.
- After the review of the criteria, and the location is deemed eligible, two potential solutions are provided: Minor and Major.
- Minor solutions include general advisory signs, minor pavement markings and minor curb/sidewalk adjustments.
- Public consultation is not conducted until a recommended solution is proposed.
- The use of bollards and pavement markings may be used as a temporary basis prior to considering permanent installation to assess results.

2.2.3 CITY OF OTTAWA

The City of Ottawa's traffic calming program includes the following options for approved requests: changing the posted speed limit, communication and enforcement measures, temporary traffic calming measure program, engineering measures, and enforcement.

- Residents can request to lower the posted speed limit to 40 km/h if the roadway is designated as a residential local roadway and with a minimum of 66 percent support from the neighbours through a petition process.
- The Temporary Traffic Calming Measures (TTCM) Program includes effective measures that are low in cost, easily installed and modified.
- Engineering Measures are implemented through road renewal projects, as part of new development or through the Neighbourhood Traffic Calming (NTC) Program.
- Communication and enforcement measures are to inform and educate motorists to drive appropriately through the use of signage, other educational campaign exercises, and targeted enforcement.

2.2.4 CITY OF OSHAWA

The City of Oshawa published its Neighbourhood Traffic Management Guide in March 2002 to address issues with unnecessary traffic on a particular road. Key elements of the Guide are listed below:

- The process for Oshawa's traffic management is in three stages to follow the Class EA Process: Stage 1 Identify the Problem, Stage 2 Develop a Plan, and Stage 3 Implement the Plan and Monitor the Results.
- Public involvement is early in the process and frequent.
- Eligible roadways are arterial, collector and local roads.
- Violation reports from the "Road Watch Program" is one of the sources used to identify a problem. The report is sent to the Oshawa Community Police Office.
- Additional data sources considered: seven-day traffic volumes, truck volumes, 24-hour speed distribution, origins and destinations of trips using the roadway, and pedestrian surveys.

2.2.5 CITY OF PICKERING

The City of Pickering published its Safer Streets Traffic Management Strategy in January 2003. It includes not only the traffic calming policy but also Neighbourhood Traffic Watch Program, 40 km/h Reduced Speed Policy, All-way Stop Sign Policy, and Community Safety Zones as a holistic approach to better manage traffic within the neighbourhood. The City's Traffic Calming Policy includes:

- Minimum requirements include: roadway classification, road segment, number of lanes, 85th percentile speed, and infiltration volume.
- The requests are on a first-come-first-served basis and will be evaluated through a number of initial criteria and points based evaluation criteria.
- Safer Streets Traffic Calming Review Committee made of internal City staff and residential representatives will review the proposed solution for comments.

2.3 RAVENSCROFT ROAD PILOT STUDY

In 2019, the Town decided that a pilot study would be carried out on Ravenscroft Road to test a traffic calming treatment which had not been used extensively in the Town previously. The pilot study involved the placement of flexible bollards on the centreline of the road and close to the curb to create two narrower “gateways” for traffic to go through (Figure 1). The use of these bollards is seen as a traffic calming solution which can be implemented quickly, is lower cost than many other traffic calming options and has a large amount of flexibility when it comes to the installation. If added to the available traffic calming measures in the updated warrant, the bollards had the potential to allow the Town to address more streets with the available budget.

Figure 1 Ravenscroft Pilot Project Implementation

2.3.1 RAVENSCROFT ROAD PILOT PROJECT RESULTS

The traffic calming bollards were installed on Ravenscroft in September 2019 and again in the summer of 2020. The 2020 installations included updates to the design and additional locations along the corridor based on the feedback received from 2019 installation. Traffic data was collected before and after in both years’ implementations to evaluate the effectiveness of the traffic calming bollards. The feedback received on the Pilot study from residents and Councillors were both positive and negative. Overall, the flexible bollards were seen as a traffic calming measure to be added to the list of options. The lessons learned from the 2019 pilot study, which have been carried forward are:

- Ensure the spacing between bollards is appropriate if the spacing is too long the effectiveness of the measure is reduced;
- When identifying the bollard placements, ensure you consider all potential impacts including loss of on-street parking, impacts to driveways and proximity to fire hydrants; and
- Data collection and monitoring is a vital component for all traffic calming measures. The implementation of a permanent data collection solution would be a valuable complement to any implemented measure.

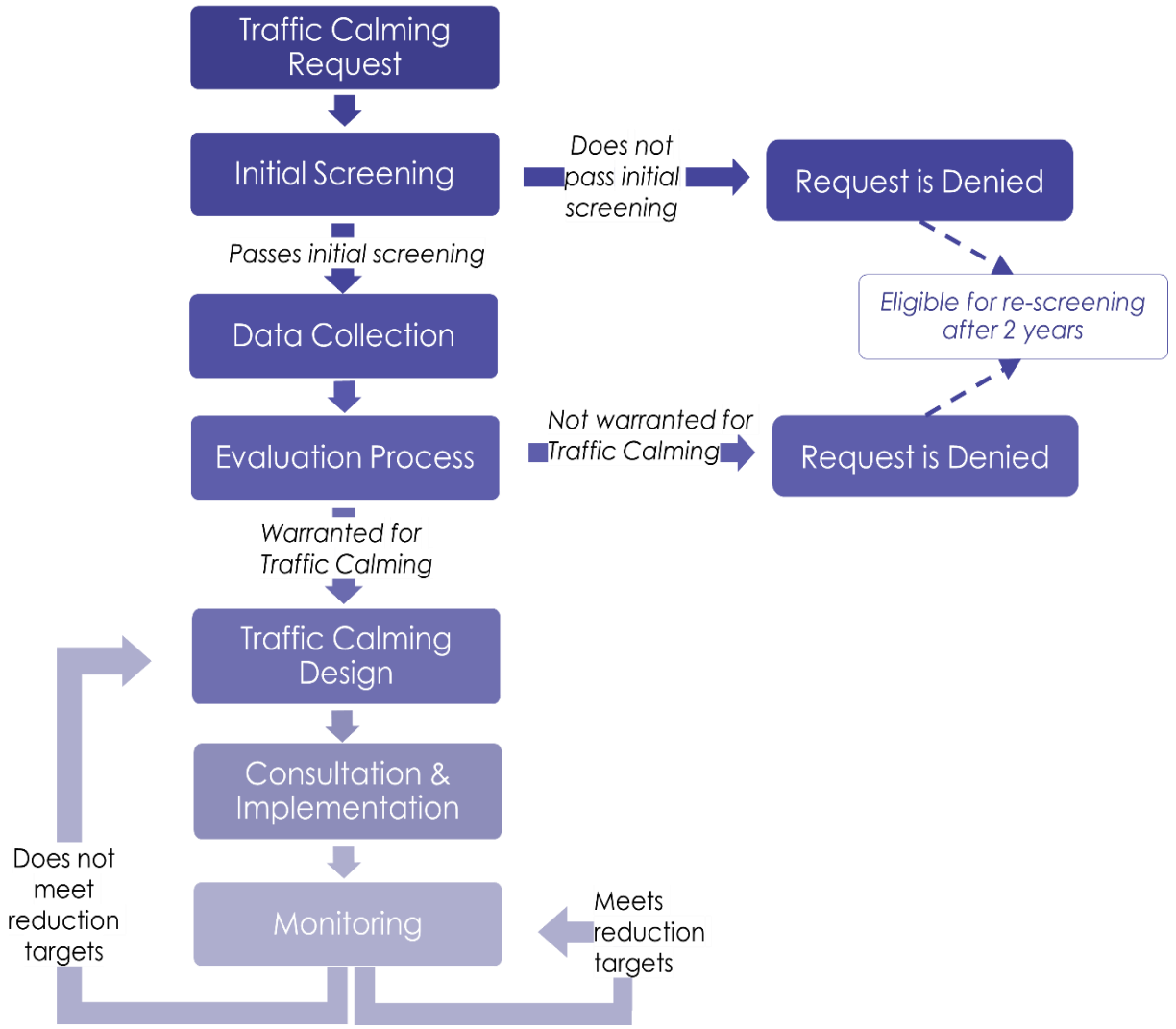
The Figure 2, shows data from three time periods; prior to the installation of any traffic calming measures, in 2019 after the installation of the first bollards and in 2020 after the installation of the additional bollards. The 2019 installation showed decrease in traffic volume at all locations along the corridor and reduction of traffic speed at some locations. The 2020 installation with relocation and additional bollards had a positive impact on lowering the speed of vehicles. Three of the four locations showed slower speeds and lower volume compared to after the 2019 installation and all four locations saw slower that speeds compared to before the installation of measures.

Figure 2 Before and After Data Comparison

3 WARRANT EVALUATION PROCESS

This section provides an overview of the updated Traffic Calming Warrant for Ajax. This updated warrant addresses the challenges, lessons learned and Town experience with the current warrant process while also incorporating the latest best practices. The flow chart in Figure 3 provides a visual overview of the new seven step traffic calming process. Following the flow chart there is a detailed description along with a summary of the key inputs, required data and decision required for each step in the process.

Figure 3 Traffic Calming Process Flow Chart



3.1 REQUEST FOR TRAFFIC CALMING

Traffic calming requests are received through many different methods including phone calls, emails and letters. They come from residents, Councillors and from time to time Town staff. When a request is received it is stored is a central location. With each request, staff should ensure that they collect basic information on the request, including;

- Name and the contact information of the requestor;
- Date the request was received;
- Street name (from/to), segment length; and
- Identified issues and concerns.

When the request is received, staff should provide a quick overview of the traffic calming request so the requestor is aware of the next steps. This overview should also indicate at which points in the process the requester should expect communications from Town staff.

To improve the requesting process, it is recommended that staff explore the development of a standard submission form for the initial screening process. This form should be placed on the Town's Traffic Calming webpage along with the warrant and other pertinent information. Staff could also explore the development of an electronic form which could be embedded right into the website. A sample Traffic Calming Request form is shown in **Appendix B.**

3.2 PRELIMINARY SCREENING PROCESS

Once the request is received by Town staff, a road segment will be screened with a list of initial criteria to confirm its eligibility for traffic calming. A segment must pass this preliminary screening to proceed to the full evaluation. These criteria, presented in Table 1, have been developed based on the review of nearby municipalities of similar size and TAC's CGTC, along with input from Town staff. Once the location is deemed eligible for traffic calming, it is added to the list of locations for data collection.

Table 1 Preliminary Screening Criteria

Criteria	Threshold	Notes
Road Classification	Local, Collector or Type 'C' Arterial	As classified in the Town's Official Plan, a segment must be Local, Collector or Type 'C' Arterial to be considered for Traffic Calming
Grade	Less than 8%	If the grade is greater than 8%, traffic calming is not permitted
Block Length	Greater than 110m	The distance between fully controlled intersections (disregard minor street stop controlled intersections) should be greater than 110m. Segments with shorter block lengths are not eligible for traffic calming
Collision History	Less than 6 (local) or 12 (collector / arterial) within the last three years	If the number of collisions on a segment is greater than the threshold, traffic calming may not be the appropriate solution. A full operational and safety review should be considered.
Previous Evaluation	Has not been evaluated in the last 24 months	If a road segment has not passed the preliminary screening or did not pass the traffic calming evaluation it is ineligible for re-evaluation for a period of 24 months.

If the location does not meet one of the screening criteria, the location is not eligible for traffic calming measures. Depending on the concerns raised by the requestor and desktop review of the location, passive traffic calming measures such as education materials (outreach programs like Neighbourhood Watch Programs, Active and Safe Routes to School) and use of temporary speed radar message boards could be applied.

3.3 DATA COLLECTION

The data required to assess locations can either exist in Town databases or needs to be collected following a request. The intent of the initial screening is to assess the eligibility of requested locations before significant time and effort is expended collecting information. The data collection process is focused on collecting two specific traffic characteristics for a given segment, the speed and volume of the traffic.

Speed and volume data are dynamic and can be time-sensitive therefore the data kept in the Town's databases should be updated regularly. If data in the database is more than two years old, consideration should be given to getting updated information to complete the Traffic Calming Warrant evaluation. Currently, the Town collects data at selected locations twice a year, in spring and fall. Additional locations can be selected for data collection throughout the year based on the needs and the Town's discretion. An Automatic Traffic Recorder (ATR) is recommended for the method of data collection as it can collect both the speed and volume information and is very cost-effective. The recommended length of time for data collection is for two days.

3.4 TRAFFIC CALMING WARRANT CRITERIA & SCORING SYSTEM

Once the location has been deemed eligible through the initial screening process and the required data is collected, the next step in the process is to evaluate based on the warrant criteria. Each warrant criterion has points assigned to it based on a road segment's characteristics. In order for a road segment to qualify for traffic calming it much score the minimum number of points based on its road classification as noted below.

- 35 points for a Local Road
- 40 points for a Collector Road
- 45 points for a Type 'C' Arterial Road

The warrant criteria and applicable points are shown in Table 2. If a road segment does not meet the minimum thresholds outlined for a given criterion, that location will be in-eligible for traffic calming.

Table 2 Warrant Criteria & Points Criteria

Criteria	Minimum Threshold	Points	Maximum Points
Operating Speed	85th percentile speed is higher than 10km/h above the posted speed limit	1 point for each km/h above posted speed PLUS 1 point for each 1% of vehicles over 15 km/h above posted speed	25
Traffic Volume	900 vehicles/day for Local roads 2,000 vehicles/day for Collector roads 5,000 vehicles/day for Type 'C' Arterial roads	1 point for each 50 vehicles above local threshold 1 point for each 100 vehicles above collector threshold 1 point for each 200 vehicles above arterial threshold	20
Collision History	Less than 6 (local) or 12 (collector / arterial) within the last 3 years	5 points for each qualifying collisions in excess of 3 *Qualifying collisions include collisions with vulnerable road users (pedestrians, cyclists) and collisions for which 'exceeding speed limit' or 'speed too fast for condition' is reported in the MVAR.	20
Pedestrian Generator		5 points for each school or park within the study area *Other Pedestrian Generators may be defined by Ajax and the study area includes the frontage of the road segment or within 300m	15
Pedestrian Facilities		10 points if there are no sidewalks in the study area 5 points if only on one side	10
Bicycle Facilities or Routes		5 points if bicycle lanes, sharrows, or routes are present on the road segment	5

3.5 TRAFFIC CALMING DESIGN

The locations with scores above the points threshold are eligible for traffic calming implementation. Based on the Town's available budget, each year the Town will implement the appropriate traffic calming measures at as many locations as possible. Traffic calming measures can be sorted into two categories, minor-adjustment measures and major-adjustment measures. The type of measure appropriate for a given location is identified based on the traffic and road characteristics and confirmed through consultation.

MINOR-ADJUSTMENT MEASURES

Minor adjustment measures include a combination of horizontal deflection, pavement markings and the use of signage. These measures are considered minor-adjustment measures because they do not require significant infrastructural changes. Some of the examples are bollards for road narrowing, speed monitoring radar for education and signage purposes and pavement markings for road guidance. A notable combination measure is the use of bollard markers along with pavement markings and speed radar boards. The benefits for minor adjustment measures are that they have minimal impacts to the Town's maintenance and operation, low cost, and relatively simple installation.

MAJOR-ADJUSTMENT MEASURES

Where the locations are deemed not appropriate for the minor-adjustment treatments due to physical conditions and traffic characteristics, other measures will be considered. Major adjustment measures include a combination of horizontal and vertical deflection measures. These measures are considered major-adjustment measures because they require significant infrastructural changes. Some examples are road narrowing through curb extensions, asphalt or concrete speed humps and raised crosswalks or intersections. These major-adjustment measures are more costly and complex to install. They also have a greater impact on the Town's maintenance and operation related to minor-adjustment measures.

The traffic calming toolbox for minor and major adjustment measures is shown in **Appendix C** and can be used to determine what the most suitable traffic calming measure may be for a given road segment.

3.6 CONSULTATION AND IMPLEMENTATION

There are three primary categories of stakeholders: requestor, the general public and the Town staff/Council.

The requestor is involved in the entire process of a request and is in contact with Town staff at multiple points throughout the process. The requestor is notified:

- When their request is received and when the results of the screening is completed;
- If the request proceeds to evaluation, they are notified the results of the evaluation;
- For warranted projects, they are notified when the preliminary design is ready for review and would be invited to the public consultation; and
- They are then notified one final time prior to implementation.

With all traffic calming projects, the general public is invited to the public consultation of the preliminary design. This gives them the opportunity to provide feedback on the proposed traffic calming design prior to implementation. At the consultation event, staff also take the opportunity to speak with the public to see if they have any roads which they want reviewed.

Town staff and Council are also invited to review and provide they input on the preliminary designs before implementation. In some cases, Council can be the requestor and in these cases they would be notified throughout the process as described above.

After a preliminary design is reviewed, staff will revise the design based on the feedback received before preparing the tender documents for implementation. The tender process is then completed followed by construction of the traffic calming measure.

3.7 MONITORING PROGRAM

All traffic calming measures are to be reviewed and evaluated after one year of installation. The monitoring results will determine whether additional traffic calming efforts are required. The evaluation will be based on the change in traffic speed, volume, and impacts on the adjacent roadways. With new data collected after the traffic calming treatment has been installed and traffic has adjusted, the location will be evaluated again against the same criteria and point system. If the location scores enough points to still be eligible for traffic calming, additional measures will be considered.

It is recommended that Town staff produce an annual Traffic Calming report that includes the list of requests received, considered, and the results of each of the requests. In addition, details on the selected locations that had traffic calming measures implemented, results after the implementation, and the total dollar amount spent as part of the traffic calming program should be included in the report. This annual report should be available publicly on the Town's website after being received by Council.

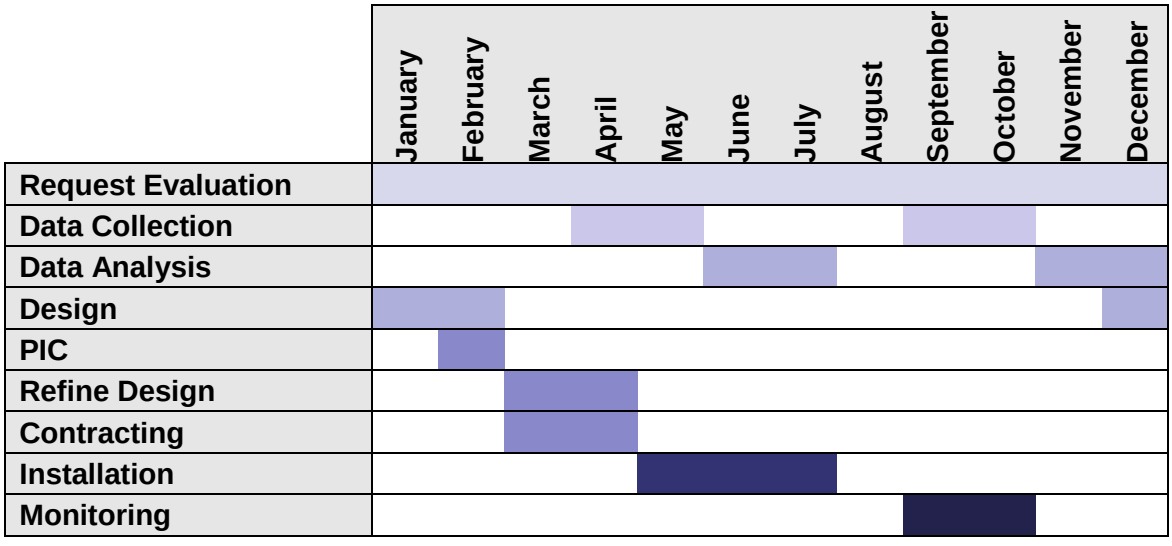
3.8 TRAFFIC CALMING PROCESS TIMELINE

This section outlines the expected timeline to complete a traffic calming process. The goal for staff with this new warrant and improved process is to be able to go from receiving a request to implementing a traffic calming solution where necessary within 16 to18 months. In order to meet this timeline, Council will need to continue to provide sufficient budget to the Traffic Calming program and staff will need to ensure they keep on schedule throughout the process.

A typical timeline for traffic calming is shown below and includes the following. Requests for evaluation are received throughout the year. Data collection takes places twice a year in spring (April-May) and fall (Sept-Oct). Following the data collection programs in spring and fall, the data is analyzed. In January, Town staff review which projects have been identified as warranted and determine the appropriate traffic calming solutions and their potential budget impacts. Preliminary designs are prepared for those which are being brought forward for completion that year.

Any project which is warranted, but cannot be completed in a given year due to budget restrictions, will remain on the list of warranted projects to be completed the following year. Currently there is a backlog of warranted projects which will take a few years to implement. Once this backlog is cleared, it is the Town's hope that with the new available measures and with the appropriate budget for the traffic calming projects, all warranted projects in a year will be implemented the following year.

Once the preliminary designs are completed, the public consultation is held early in the year followed by design refinement and contract award. Implementation of the traffic calming measures will take place in early summer.



4 TRAFFIC CALMING MEASURES

The traffic calming measures listed in the 2015 warrant were reviewed and compared to the CGTC. The objective of the review was to ensure the traffic calming types, benefits and disbenefits and suitability to certain locations and situations are up to date. This was important to ensure that the preferred options are included in the toolbox (**Appendix C**). The measures toolbox is updated with a number of changes including terminology and level of impact by measure. The types of measures and details of each measure are described in the following section and Appendix C.

4.1 TYPES OF MEASURES

Vertical Deflection	**Horizontal Deflection**
• Raised Crosswalk • Raised Intersection • Speed Cushion • Speed Hump/Speed Table	• Chicane, 1-Lane • Chicane, 2-Lane • Curb Radius Reduction • Lateral Shift
Surface Treatment	**Road Narrowing**
• Sidewalk Extension • Textured Crosswalk	• Flexible Bollards • Curb Extension
Obstruction	• Neckdown
• Directional Closure • Diverter • Full Closure • Intersection Channelization	• Lane Narrowing • On-Street Parking • Raised Median Island • Road Diet

The measures under the obstruction category are very extreme and will remove traffic and not just calm it. They should only be considered once other treatments have been consider and rejected or tested on-road and deemed ineffective. They are considered inappropriate for collector and arterial roads because they are inconsistent with the function of these road types.

All-way stop signs are not considered to be effective as a traffic calming measure and the Ontario Traffic Manual Book 5 Regulatory Signs includes recommended warrants for all-way stop implementation.

5 CONCLUSION

The update to the Town of Ajax's Traffic Calming Policy addresses the local traffic needs within neighbourhoods and provides an efficient and consistent process for the Town. The updated warrant process will streamline the assessment to evaluate more locations of concern and new cost-efficient treatments will help to potentially implement more locations within the given annual budget. The key revisions include:

- Elimination of the hierarchy list (general and priority list) which resulted in locations with high speeding traffic in a lower speed limit zones to be prioritized but did not adequately address locations where speeding was not the main problem. With the given budget for the year, some of these locations remained in the system as unresolved.
- Recommendation of minor adjustment treatments that are cost-effective measures. This allows for more locations to be addressed in a year with the given budget.
- The emphasis on monitoring for all traffic calming measures after their implementation. This helps confirm the effectiveness of a treatment and ensures that additional measures are not needed.
- The warrant criteria are modified to reflect the current standard practices while maintaining the criteria that worked well for the Town.
- The traffic calming measures are reviewed against the most up to date TAC guidelines (2018) and updated the types of measures to be installed within the Town, applicability, benefit and disbenefits of each measure.

Traffic is dynamic and its characteristics will change over time. It is recommended that staff continually monitor the overall traffic calming warrant and if necessary change the warrant points and thresholds to adapt to changing traffic patterns. It is recommended that a complete traffic calming warrant update be completed every five years to ensure the warrant is reflective of the industry best practices and traffic conditions found in the Town of Ajax.

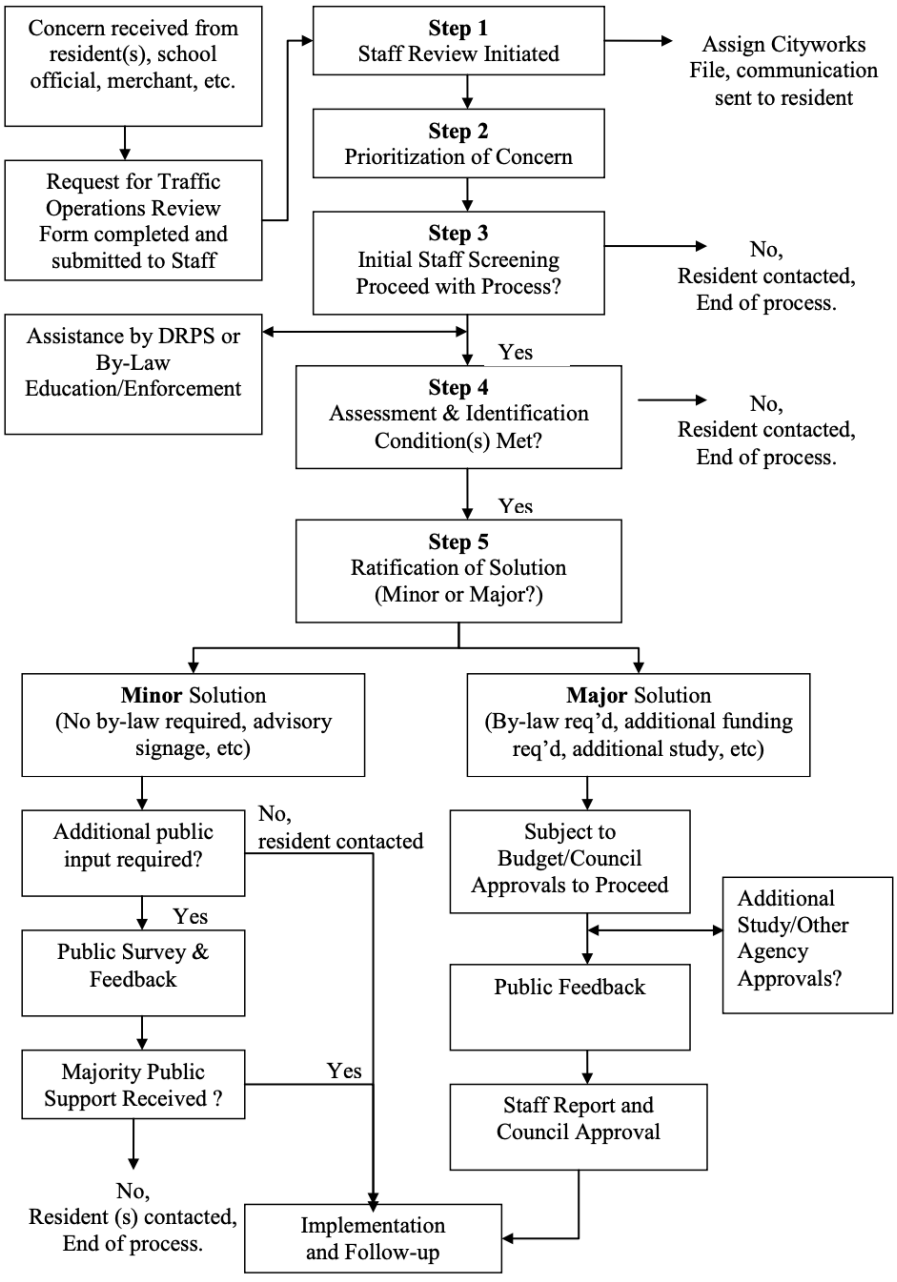
APPENDIX

A BEST PRACTICES REFERENCE – PROCESS

APPENDIX A

A.1 TOWN OF WHITBY

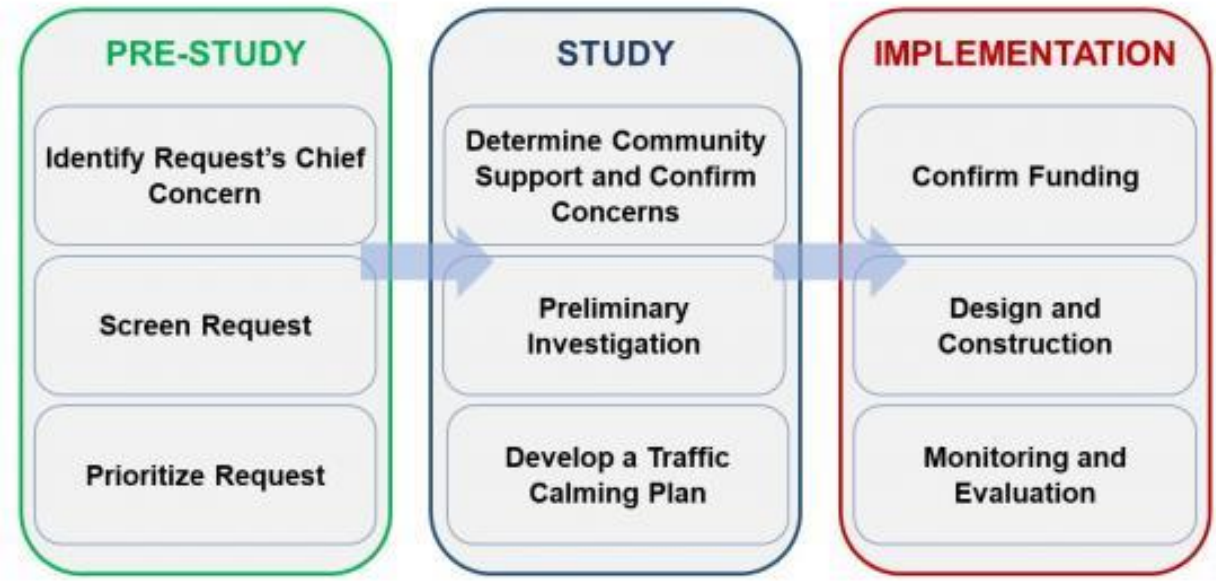
The Town of Whitby's Traffic Operational Review Policy includes five steps: Step 1 Initiation of Review, Step 2 Prioritization of Requests, Step 3 Initial Screening of Request, Step 4 Preliminary Assessment and Problem Identification, and Step 5 Ratification of Solutions.



Appendix 1:
TRAFFIC OPERATIONAL REVIEW POLICY FLOWCHART

A.2 CITY OF OTTAWA

The City of Ottawa's traffic calming program includes five methods to address road safety and traffic calming concerns. Of those, the Neighbourhood Traffic Calming (NTC) Program includes engineering measures through road renewal project and the NTC process is shown below.



A.3 CITY OF OSHAWA

The City of Oshawa's Neighbourhood Traffic Management Guide follows the MCEA process for traffic management projects as they are recognized by the MEA. "Traffic Calming Measures are defined as "physical measures designed to control traffic speeds and encourage driving behaviour appropriate to the environment." City of Oshawa's traffic calming process is summarized in three stages and the Class EA process is included into these stages.

Stage 1: Identify the Problem

- Problems can be based on either speeding, infiltration, and violation from Road Watch Program
- Community support has to be at least 25% from the residents on the subject street indicating their support for this process.

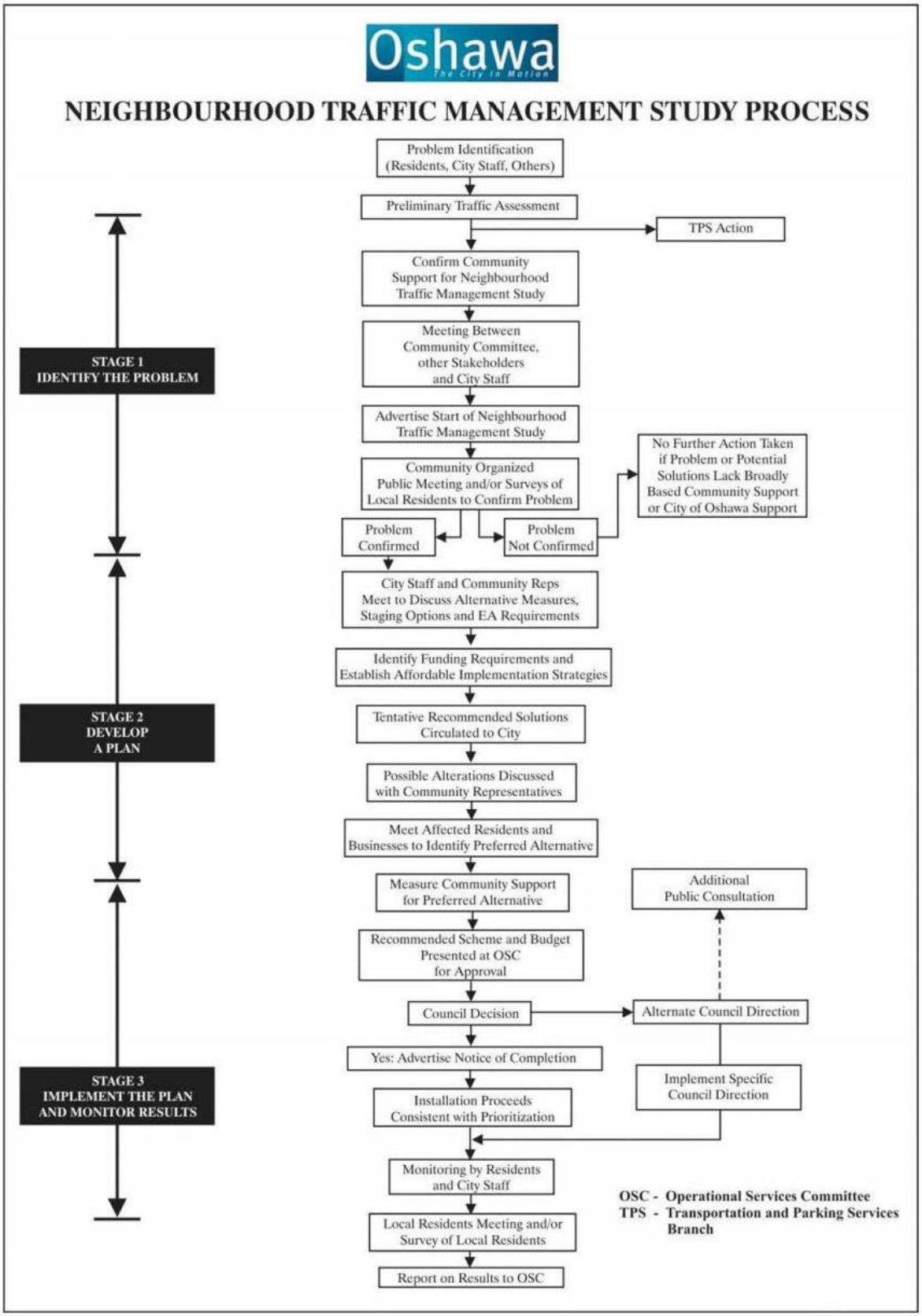
Stage 2: Develop a Plan

- A preferred option (including funding arrangements) is developed and evaluated by City staff and local community representatives. Then it is forwarded to all affected City of Oshawa and Region of Durham departments or other agencies for comment.
- Community and stakeholder approval is required. The plan is deemed acceptable with a survey response rate of 40% of the affected residents and an approval rate of 60% of those responses.
- When there are more locations recommended than funding available, the use of innovative funding arrangements such as municipality/community partnerships or local improvement bylaws may be incorporated to accelerate the implementation.

Stage 3: Implement the Plan

- The monitoring and assessment program is in place to compare the before and after data. As part of the monitoring program, follow-up surveys, meeting with the affected residents and a monitoring report to the Operational Services Committee are included.
- The request to remove the traffic calming devices after it was deemed successful, will be conducted, following the Class EA Process.

APPENDIX A


Oshawa
The City in Motion
NEIGHBOURHOOD TRAFFIC MANAGEMENT STUDY PROCESS
STAGE 1
IDENTIFY THE PROBLEM
STAGE 2
DEVELOP
A PLAN
STAGE 3
IMPLEMENT THE PLAN
AND MONITOR RESULTS
Problem Identification
(Residents, City Staff, Others)
Preliminary Traffic Assessment
TPS Action
Confirm Community
Support for Neighbourhood
Traffic Management Study
Meeting Between
Community Committee,
other Stakeholders
and City Staff
Advertise Start of Neighbourhood
Traffic Management Study
Community Organized
Public Meeting and/or Surveys of
Local Residents to Confirm Problem
No Further Action Taken
if Problem or Potential
Solutions Lack Broadly
Based Community Support
or City of Oshawa Support
Problem
Confirmed
Problem
Not Confirmed
City Staff and Community Reps
Meet to Discuss Alternative Measures,
Staging Options and EA Requirements
Identify Funding Requirements and
Establish Affordable Implementation Strategies
Tentative Recommended Solutions
Circulated to City
Possible Alterations Discussed
with Community Representatives
Meet Affected Residents and
Businesses to Identify Preferred Alternative
Measure Community Support
for Preferred Alternative
Additional
Public Consultation
Recommended Scheme and Budget
Presented at OSC
for Approval
Council Decision
Alternate Council Direction
Yes: Advertise Notice of Completion
Implement Specific
Council Direction
Installation Proceeds
Consistent with Prioritization
Monitoring by Residents
and City Staff
Local Residents Meeting and/or
Survey of Local Residents
Report on Results to OSC
OSC - Operational Services Committee
TPS - Transportation and Parking Services
Branch

A.4 CITY OF PICKERING

The City of Pickering's Safer Streets Traffic Management Strategy includes the traffic calming policy, Neighbourhood Traffic Watch Program, 40 km/h Reduced Speed Policy, All-way Stop Sign Policy, and Community Safety Zones.

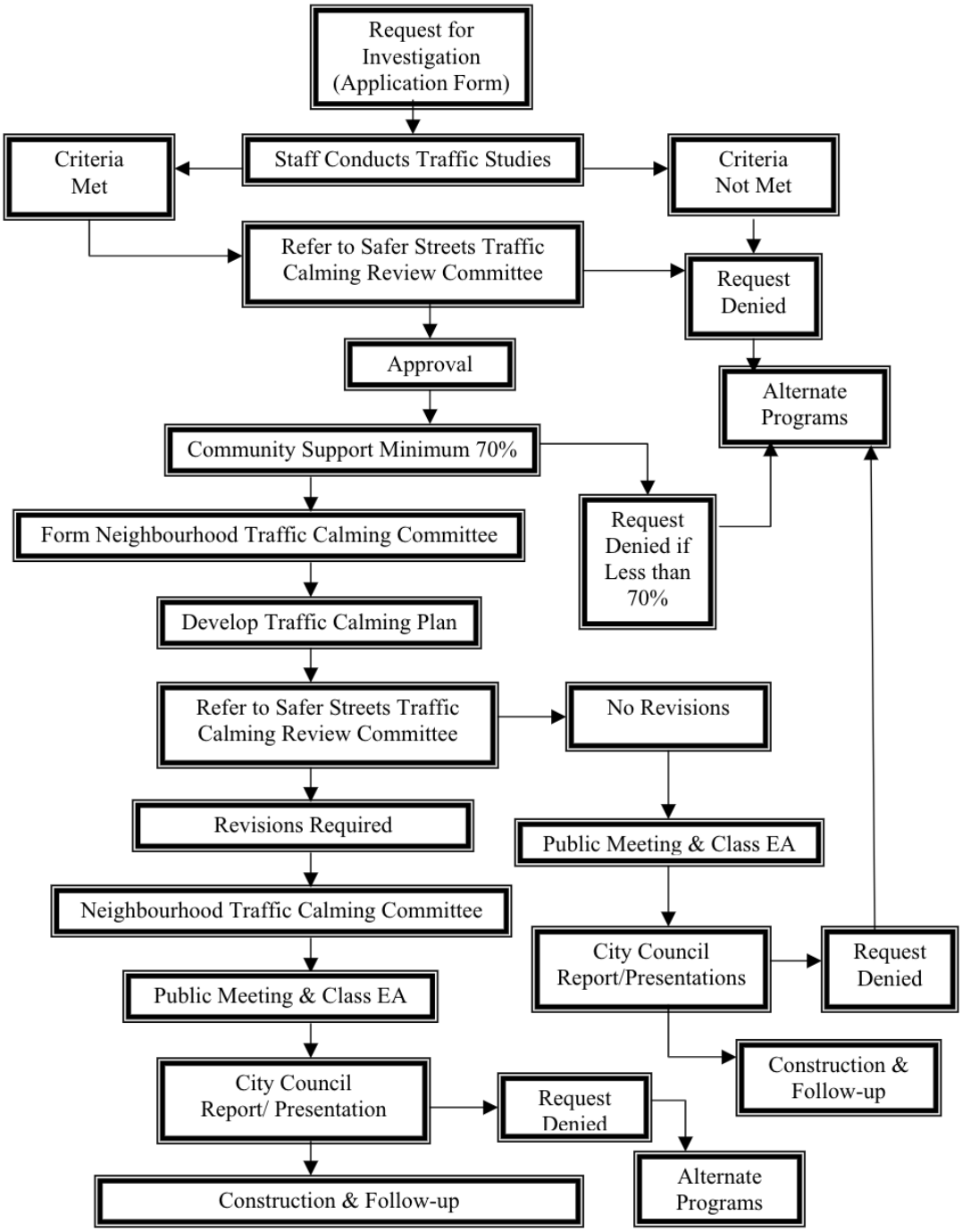
For the development of Traffic Calming Policy, the City of Pickering conducted a review of a series of installed traffic calming locations to determine the impacts on the roadways for the best approachable solutions. The review includes observations of the pilot traffic calming projects, traffic speed and volume studies, consultation with affected Emergency and City service agencies and questionnaires from residents of each traffic calmed area. Key findings from the pilot traffic calming projects and are listed below:

- The frequency of collisions had been reduced, if not eliminated, on most of the pilot project roadways
- Traffic calming is attractive to cyclists as it reduces speed and volume, and vertical deflections such as speed humps and raised intersections have an insignificant impact on cyclists. However, horizontal deflection measures should be designed carefully in consideration of the cyclists
- Similarly, reduced speed and volume due to traffic calming provide a sense of safety for pedestrians. Combining bollards when installing speed humps in rural areas will provide a designated area for pedestrians
- Careful consideration of public transit vehicles should be given when a requested roadway is on a transit route

APPENDIX A

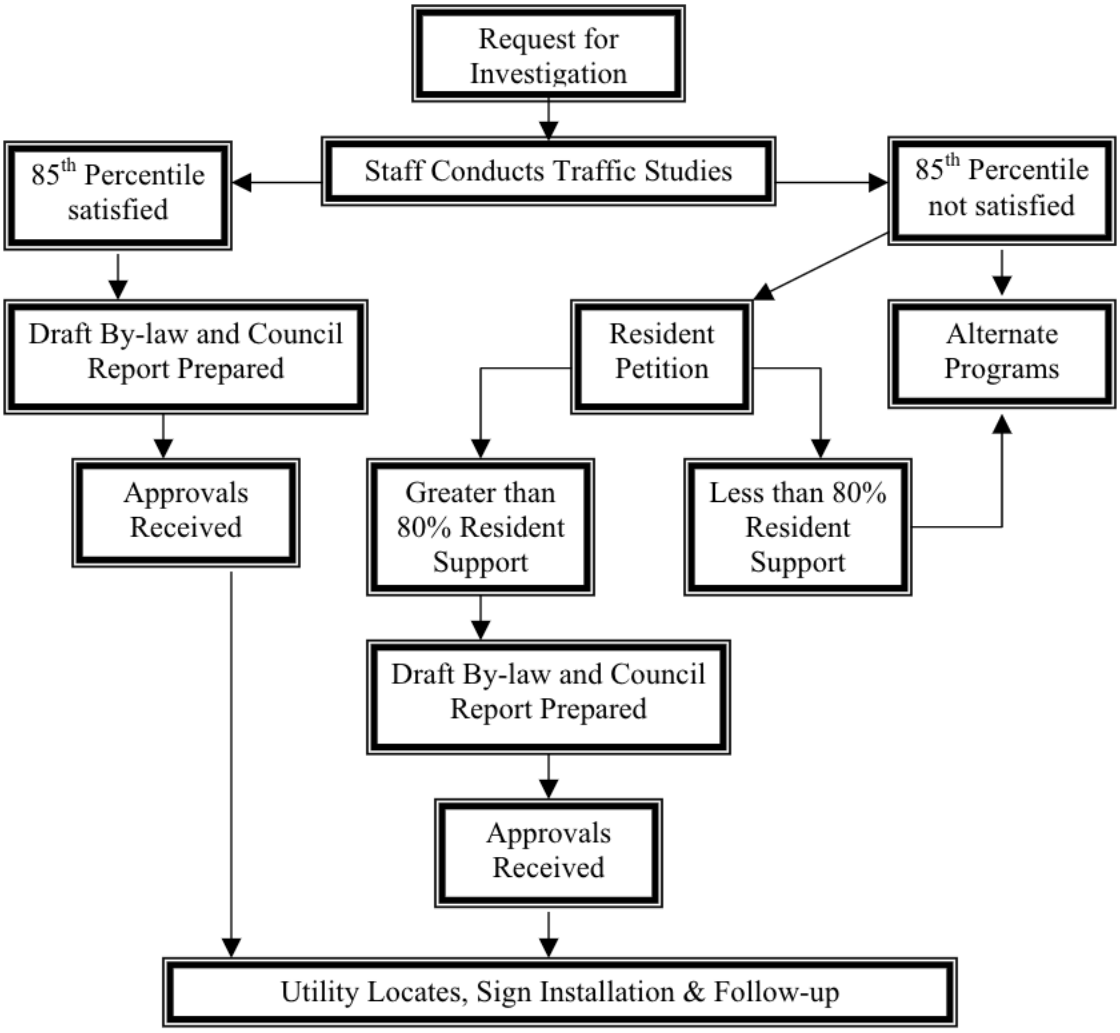
City of PICKERING

TRAFFIC CALMING INVESTIGATION FLOWCHART



APPENDIX A

40 KM/H REDUCED SPEED INVESTIGATION FLOWCHART



A.5 SUMMARY OF THE COMPARED POLICIES

Table 1 summarizes traffic calming policies in the Cities of Ottawa, Oshawa, Pickering and the Town of Whitby.

Table 1: Comparable traffic calming policies of municipalities in Ontario

Criteria	**City of Ottawa**	**City of Oshawa**	**City of Pickering**	**Town of Whitby**
Policy Document	Temporary Traffic Calming Measures Program Neighbourhood Traffic Calming Engineering Solutions for Traffic Calming Measures	Neighbourhood Traffic Management Guide	Safer Street Traffic Management Strategy	Traffic Operational Review Policy
Year of Release	2019	2002	2003	2017
Eligible Streets	Collector and local roads	Arterial, collector and local roads	Arterial (Type C), collector and local roads	Arterial, collector and local roads
Traffic Calming Measure Categories	• Vertical Deflections • Horizontal Deflections • Traffic Management Measures • Surface Treatments • Urban Design • Pavement Markings • Vertical Centreline Treatments • On-Street Parking • Communication and Enforcement	• Public Involvement & Education • Roadway Width, Direction and Elevation (vertical and horizontal deflection) • Roadway Access • Signage • System Improvements and Enforcement	• Vertical and horizontal deflections • Obstructions • Signage • Visual treatments	• Signage • Pavement markings • Intersection controls • Reduced speed zones • Vertical and horizontal deflections • Geometric modifications • Temporary road closure *Rumble strips and speed humps not recommended
Process Initiation	Request by residents, community associations, or Ward Councillors	A complaint is submitted to the City then the City conducts a preliminary traffic assessment	Submission of a “Traffic Calming Application” and traffic studies	Submission of a “Traffic Operational Review Form” to the Public Works

APPENDIX A

Criteria		City of Ottawa	City of Oshawa	City of Pickering	Town of Whitby
Initial/Minimum Screening Criteria		• Street designation • Concern definition • Operating speed	• 85th percentile Speed • Traffic infiltration volume	• Facility type • Length of the roadway • Number of lanes • 85th percentile Speed • Infiltrating Traffic	• High level review of the subject intersection or roadway • Review of traffic and collision data • Field Review
Initial Public Support		N/A	25% minimum resident support is required	70% minimum resident support is required	N/A
Warrant	Scoring or Ranking Description	Points system	No point system	Points system Review by the Safer Streets Traffic Calming Review Committee	Priority to locations with vulnerable communities First-come first-serve basis
	Speed	85th Percentile (max 10 points): for every 1 km/h above 50 km/h or posted speed if higher than 50 km/h 95th Percentile (max 10 points): for every 1 km/h above 55 km/h [or posted speed + 5km/h if posted speed is higher than 50 km/h]	If 85th percentile operating speed is 10 km/h over the speed limit, a neighbourhood traffic management study is warranted	85th percentile vehicle speed is considered in the Traffic Calming Review Checklist *Separate criteria for 40 km/h zones	Local street: 85th percentile is 5 km/h above posted Collector street: 85th percentile is 10 km/h above posted
	Volume	Local Streets (max 10 points): 1 pt for every 10 vehicles per hour [vph] above 120 vph Collector Streets (max 10 points): 1 pt for every 25 vph above 300 vph)	**Infiltration problem**: if non-local traffic is > 20% of the anticipated traffic generated from immediate local dwelling units **Collector road**: if non-local daily trips are 20% greater than anticipated number of daily trips estimated in an area study	Based on infiltration volume amount and whether the roadway is within capacity of over capacity Typical urban/rural local: <3000 vpd Typical urban collector: 1,000 – 12,000 vpd Typical urban collector: <5,000 vpd	Local street volume > 750 vpd Collector street volume > 2,000 vpd

APPENDIX A

Criteria		City of Ottawa	City of Oshawa	City of Pickering	Town of Whitby
	Collision History	Data reviewed but not included in the points system	N/A	1 Point for 3 collisions per year	Separate criteria for signalized intersections, unsignalized intersections and roadways segments
	Sidewalk	Pedestrian facilities (max 10 points): No facilities (10); insufficient facilities (5) based on the Ottawa Pedestrian Plan Crossing facilities (max 5 points): Crossing spacing (1 point for every 50m above 200m)	N/A	N/A	N/A
	Other Factors	Equity and Reach (max 10 points): Supporting Disadvantaged Neighbourhoods (5) and area classification (5) Activity Generator (schools & parks)	N/A	Transit Route Emergency Route Residential frontage	Volume of Heavy Vehicle Parking infractions related to injuries
Opportunities for Community Participation		During the first stage of 'Determine community support to confirm concerns' During the third stage of 'Traffic Calming Plan' to confirm detailed concerns and to determine the functional design	In all stages, the community involvement is required: Identifies and confirms problem; Analyzes solutions and alternatives; Provides support; and Provides post-implementation feedback	Neighbourhood Traffic Calming Committee Neighbourhood walkabouts, workshops and focus groups, open houses and public meetings 70/80% community support required based on case	Survey sent out to all directly impacted residents identifying the proposal
Alternative Measures if Initial Screening Criteria is not met		Temporary Traffic Calming Measures Program	'Identification of Alternative Solutions' must be completed as part of Class EA	'Identification of Alternative Solutions' must be completed as part of Class EA	Resident contacted, process ended

APPENDIX A

Criteria	**City of Ottawa**	**City of Oshawa**	**City of Pickering**	**Town of Whitby**
Additional Community Support Approval Processes	N/A	During the evaluation and selection of the final proposed measures, minimum of 60% of approval rate is required from a minimum of 40% of response rate As part of the monitoring program, a follow-up survey of all residents in the affected area is required	During the evaluation and selection of the final proposed measures, feedback can be provided at a public meeting	Follow up survey after implementation
Degree of Process Complexity	High	High	High	Medium
Monitoring and Evaluation Methods	Evaluation and monitoring are on a case-by-case basis to assess impacts and improvements for each implemented solutions and to draft the evaluation memo to make recommendations for adjustments	Monitoring and assessment program includes follow-up surveys, meeting with to the affected residents and a monitoring report to the Operational Services Committee	Follow up is required	Data comparison (speed, volume, collision) of before and after implementation Stakeholder feedback including City Staff, emergency services and residents

APPENDIX

B TRAFFIC CALMING REQUEST FORM

Date of the Request
_____ /____ /____

TRAFFIC CALMING REQUEST FORM

Thank you for your interest in calming traffic in your neighbourhood. Please take a moment to read and fill out this form which will assist staff with responding to your request. For your information, the Town Traffic Calming Policy is available on our website at : https://www.ajax.ca/en/inside-townhall/traffic-calming.aspx

PRIMARY CONTACT INFORMATION OF THE REQUESTOR

Name:

Phone Number:

Email:

Address: **Postal Code:**

LOCATION OF CONCERN

Street:

From: **To:**

Describe your concern. Please indicate whether your concerns relate to the speed or amount of traffic and any other comments that might be helpful to Town staff.

_____

_____

_____

_____

_____

_____

_____

Thank you for taking the time to complete this Traffic Calming Request Form. The Town staff will contact you with the progress after reviewing this form. Please email this form to traffic@ajax.ca.

APPENDIX

C TRAFFIC CALMING MEASURES TOOLBOX

Appendix C: Toolbox of Traffic Calming Measures

Traffic Calming Measure		Measure Type	APPLICABILITY			POTENTIAL BENEFITS			POTENTIAL DISBENEFITS						Cost
			Local	Collector	Type 'C' Arterial	Speed Reduction	Volume Reduction	Conflict Reduction	Environment	Local Access	Emergency Response	Active Transportation	Enforcement	Maintenance	
Vertical Deflection	Raised Crosswalk	Major	✓	◆	×	●	○	◒	◢	□	◢	◢	□	◢	Low to Moderate
	Raised Intersection	Major	×	◆	◆	◒	○	◒	◢	□	◢	◢	□	◢	High
	Speed Cushion	Major	✓	◆	×	●	◒	●	◢	□	□	◢	□	◢	Low to Moderate
	Speed Hump/Speed Table	Major	✓	◆	×	●	◒	●	◢	□	◢	◢	□	◢	Low to Moderate
Surface Treatment	Sidewalk Extension	Major	✓	×	×	◒	○	◒	□	□	□	□	□	◢	Moderate
	Textured crosswalk	Major	◆	◆	◆	○	○	◒	◢	□	□	◢	□	◢	Low to Moderate
Horizontal Deflection	Chicane, 1-Lane	Major	✓	×	×	●	●	●	◢	□	◢	◢	□	◢	Moderate to High
	Chicane, 2-Lane	Major	✓	◆	◆	◒	○	◒	◢	□	□	□	□	◢	Moderate
	Curb Radius Reduction	Major	✓	✓	◆	◒	○	○	◢	□	□	◢	□	◢	Low to Moderate
	Lateral Shift	Minor	✓	◆	◆	◒	○	◒	◢	□	□	□	□	◢	Moderate
Road Narrowing	Flexible Bollards	Minor	✓	✓	◆	●	◒	●	◢	□	□	□	□	■	Low
	Curb Extension	Major	✓	✓	✓	◒	○	○	■	□	□	◢	□	◢	Low to Moderate
	Neckdown	Minor	✓	✓	◆	◒	○	○	■	□	□	◢	□	◢	Low to Moderate
	Lane Narrowing	Minor	✓	✓	✓	◒	○	○	◢	□	□	◢	□	◢	Low to Moderate
	On-Street Parking	Minor	✓	✓	◆	◒	○	○	◢	□	◢	◢	□	◢	Low to Moderate
	Raised Median Island	Major	✓	✓	✓	◒	○	◒	□	◢	□	□	□	◢	Low to Moderate
	Road Diet	Minor	×	◆	×	●	○	◒	◢	□	◢	◢	□	◢	Low to Moderate
Obstruction	Directional Closure	Major	◆	×	×	○	●	◒	◢	◢	□	◢	◢	◢	Moderate
	Diverter	Major	◆	×	×	○	●	◒	◢	◢	◢	◢	□	◢	Moderate to High
	Full Closure	Major	◆	×	×	○	●	●	◢	■	■	◢	□	◢	Moderate to High
	Intersection Channelization	Major	◆	×	×	○	◒	◒	◢	◢	◢	□	□	◢	Moderate to High

Appropriate Measure(✓) Use with Caution(◆) Not Recommended(×) Significant Benefits(●) SignificantDisbenefits(■) | Minor Benefits(◒) Minor Disbenefits(◢) | No Benefit(○) No Disbenefit(□)