The Corporation of the Town of Ajax

COMMUNITY AFFAIRS AND PLANNING COMMITTEE

Monday, April 20, 2015 at 7:00 p.m.
Council Chambers, Town Hall
65 Harwood Avenue South

Confirmed by: _____

AGENDA

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S. Collier, Chair

1. Call To Order

2. Disclosure of Pecuniary Interest

3. Adoption of Minutes

3.1 **April 7, 2015**..... 2

4. Public Meeting

None

5. Presentations

5.1 **2015 Traffic Calming Warrant Update (2015TCWU),** P. Allore, Director of Planning & Development Services / H. Ng, Senior Transportation Planner 7

6. Reports

None

7. Adjournment

Minutes of the
Community Affairs & Planning Committee Meeting
Held in the Council Chambers, Ajax Town Hall,
At 7:00 p.m. on April 7, 2015

Alternative formats available upon request by contacting:
accessibility@ajax.ca or 905-619-2529 ext. 3347

Present:	Chair - Regional Councillor	S. Collier
	Regional Councillor	C. Jordan
	Councillors	M. Crawford
		J. Dies
		P. Brown
	Mayor	S. Parish

1. Call to Order

Chair Collier called the meeting to order at 7:00 p.m.

2. Disclosure of Pecuniary Interest

There were no disclosures of pecuniary interest.

3. Adoption of Minutes

Moved by: P. Brown
Seconded by: J. Dies

That the Minutes of the Community Affairs and Planning Committee Meeting held on March 23, 2015, be adopted.

CARRIED

4. Public Meetings

4.1 Site Plan Application SP2/14
Windcorp Grand Harwood Place Ltd.

Gary Muller, Manager of Planning, delivered a presentation which provided a history of the Ajax Plaza, outlined future development goals for the area, and offered a detailed overview of the Site Plan Application for Grand Harwood Place. Particular focus was placed on the sustainable elements of the proposed development, as well as the construction and parking management plans for the various phases of development. Next steps were overviewed, including completion of the Sales Pavilion and the requirement for Windcorp to meet the Economic Feasibility Requirement by July 15, 2015 as stipulated in an agreement with the Town.

Committee members posed several questions to Planning staff; the following information was provided in response to questions:

- Windcorp will not be the constructor of the project; a qualified constructor will be contracted to carry out construction activities;
- Windcorp has not yet secured financial backing to finance the Grand Harwood development;
- Windcorp, once taking ownership of the lands, may not sell the lands to another party without the consent of the Town;
- Construction of the Sales Pavilion is expected to re-commence in May, with expected completion in October 2015;
- Available parking supply during future construction phases will be adequate to meet the demand, based on a thorough study of parking lot use in the area;
- Under its current agreement with Windcorp, the Town must approve the submitted site plan no later than April 15th, 2015.

Chair Collier declared the meeting to be a public meeting and invited comments.

Frank Wick, 66 Falby Court, indicated concerns that there may not be sufficient accessible parking on the site both during construction and post-construction. Mr. Muller noted that staff would review plans for barrier-free parking to ensure that the supply is adequate.

Omar Anderson, 33 Station St, inquired as to how the proposed development would affect the parking supply adjacent to his business. Mr. Muller responded that there would be 39 parking spaces in the area upon completion of the development, which is a net increase compared to the existing parking supply in the area.

Jules Polazza, 30 Exeter Rd, inquired as to whether the goals of the proposed development are to replace or enhance existing businesses; Mr. Muller responded that the ultimate goals of the development are to revitalize the downtown and provide for the optimal use of land; the Town's intent is to support existing businesses wishing to locate within the new downtown. In response to landscape-related questions from Mr. Polazza, Mr. Muller provided information on the third-floor landscape podium and plans for trees and planter boxes around the perimeter of Grand Harwood Place.

Sylvia Warriner, 40 Station St, commented on the unsightly condition of the construction site adjacent to her business (Station Street Grill), noting that she believes a recent downturn in sales compared to previous years is attributable to the condition of surrounding areas and unattractive construction and litter issues in the area. Ms. Warriner inquired as to how the Town/Windcorp could address this issue in the short-term to mitigate impacts on her business.

There being no further comments, Chair Collier closed the public meeting.

Laura Starr, Windcorp Developments, responded to questions and concerns posed by Committee members and local residents/business owners, citing several reasons for the delayed construction of the sales pavilion. It was explained that prior to pausing construction activities for the winter months, the site was left clean and free of debris. Committee members emphasized concern over construction delays for the sales pavilion, and the current state of the site which appears half-finished and is aesthetically unattractive.

In response to questions from Committee members, Ms. Starr provided the following information:

- Windcorp has not yet posted securities for the construction of Grand Harwood Place Sales Pavilion and has not yet secured financing for the overall project;
- The sales pavilion will be a tool to assist in selling condominium units but will be used for other purposes as well;
- The owners of the utility lands have agreed in principle to sell their lands, but are awaiting confirmation that the project will proceed;
- When construction on the project commences, the constructor or Windcorp will ensure that a contact person is available all days of the week to respond to concerns from local residents/business owners;

Committee members made summary comments, stressing the importance of this development as a step in realizing Council's ultimate vision for Downtown Ajax. Emphasis was placed on the need for all parties involved to deliver on their commitments, and the importance of ensuring that existing merchants and businesses in the Ajax Plaza can continue to do business in Ajax into the future.

Moved by: M. Crawford
Seconded by: S. Parish

1. That Council endorse Site Plan Application SP2/14 filed by Windcorp Grand Harwood Place Ltd. subject to all detailed engineering, landscaping and elevation and technical drawings being finalized to the satisfaction of the Town of Ajax;

2. That the Mayor and Clerk be authorized to execute a Site Plan Agreement between the Town of Ajax and Windcorp Grand Harwood Place Ltd. as it applies to a 0.98 hectare (2.7 acre) property on the west side of Harwood Avenue known as Part 1, Plan 40R-28209 to permit a ten-storey residential and commercial mixed-use development as described within this report.

CARRIED

4.2 **Zoning By-law Amendment Z3/13**
Town of Ajax Initiated Zoning By-law Amendment
Downtown Enhanced Retail Permissions

Sean McCullough, Development Planner, delivered a presentation on the proposed Zoning By-law Amendment, overviewing the purpose of the application, the subject lands and surrounding uses, and Official Plan and Zoning By-law considerations. The results of a Retail Impact Study were highlighted which indicated that additional retail space was needed in the area and would not have a negative impact on other areas. Mr. McCullough overviewed public consultation efforts to date on this matter.

Committee members requested that staff monitor the area into the future to assess whether the ZBA was effective in achieving desired outcomes in the area. Mr. McCullough explained some of the ways in which this would be tracked and monitored.

Chair Collier declared the meeting to be a public meeting and invited comments from members of the public. There being none, Chair Collier closed the public meeting.

Moved by: J. Dies
Seconded by: C. Jordan

That Town Initiated Zoning By-law Amendment Application Z3/13, to permit "Retail Store" to a maximum individual Gross Leasable Floor Area of 4,645 m² (50,000 ft²) as a permitted use on the lands generally bound by Commercial Avenue, Mills Road, Station Street and Hunt Street be approved, and that staff be authorized to prepare and forward an implementing By-law to Council for its consideration at a future meeting, as provided within Attachment 1 to this report.

CARRIED

4.3 **Zoning By-law Amendment Application Z4/15**
Site Plan Application SP8/15
IBI Group (Guthrie Farm Temporary Pan-Am parking Lot)
709 Taunton Road East

Geoff Romanowski, Development Approvals Coordinator, presented in respect to several planning applications necessary to permit the temporary parking lot to be used for the Pan-Am Games in Ajax. An overview of the relevant planning framework was provided. Details were provided in respect to the temporary parking lot's construction and set up, maintenance, access, amenities and wayfinding, and post-Pan-Am rehabilitation. Various public consultation efforts were highlighted.

In response to questions from Committee, Mr. Romanowski noted that a full rehabilitation of the land is expected and will be complete by Sept. 1. Mr. Romanowski also responded to questions related to parking lot access from both Taunton Rd and Lakeridge Rd.

Chair Collier declared the meeting to be a public meeting and invited comments.

Bob Jarrett, whose family member resides in a home adjacent to the parking lot (in Whitby), noted concerns around litter and debris control blowing from the site into surrounding areas, as well as traffic impacts on residents who live nearby. IBI Group, who will be responsible for litter control on the site, confirmed that the site will be kept clean throughout each day and receptacles will be emptied on a daily basis. Traffic impacts will be a reality, but will be substantially mitigated by various modifications made to the traffic management plans (right-in/right-out at both entrances), and the fact that vehicle queuing can be contained on the site as opposed to on the roads. It is unlikely that there will be a dedicated police presence at the Lakeridge entrance, but DRPS officers will be present in the general area throughout the games.

Frank Wick, 66 Falby Court, expressed concerns related to possible groundwater contamination on the site and the potential for contaminants to reach the nearby creek. A representative from IBI Group addressed these concerns, highlighting the various compaction and soil quality tests to be undertaken before and after the Games to determine and mitigate any impacts on the site condition. Various tests have also confirmed that the plans meet CLOCA requirements and that setbacks are sufficient to ensure that no toxic chemicals reach the creek. Spill kits and other measures will also be in place should spills occur during the Games. Throughout the month of August, plowing and other activities may be necessary to restore the site to its previous condition.

There being no further comments, Chair Collier closed the public meeting.

Moved by: S. Parish
Seconded by: P. Brown

1. That Zoning By-law Amendment Application Z4/15 submitted by IBI Group be approved, and that staff be authorized to prepare and forward the implementing By-law to Council for its consideration at a future meeting, as provided within Attachment 1 of this report; and

2. That Site Plan Application SP8/15 submitted by IBI Group be endorsed, and that staff be authorized to grant final site plan approval subject to all drawings including detailed engineering, landscaping and related details being finalized to the satisfaction of the Town of Ajax.

CARRIED

5. Reports

None.

6. Adjournment

Moved by: M. Crawford
Seconded by: C. Jordan

That the April 7, 2015 meeting of the Community Affairs and Planning Committee be adjourned. (9:15 p.m.)

CARRIED

N. Wellsbury, Deputy Clerk

TOWN OF AJAX
REPORT

REPORT TO: Community Affairs and Planning Committee

SUBMITTED BY: Paul Allore, MCIP, RPP
Director of Planning and Development Services

PREPARED BY: Hubert Ng, P.Eng.
Senior Transportation Planner

SUBJECT: **2015 Traffic Calming Warrant Update (2015TCWU)**

WARD: All

DATE OF MEETING: April 20, 2015

REFERENCES: Traffic Calming Warrant Framework and Process, November 2007
Community Action Plan: Strategic Development and Economic Prosperity

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RECOMMENDATIONS:

1. **That the report to Community Affairs and Planning Committee entitled "2015 Traffic Calming Warrant Update" dated April 20, 2015, be received for information.**

2. **That the 2015 Traffic Calming Warrant Update be adopted and endorsed to address the existing and future traffic calming related requests in the Town of Ajax.**

1.0 BACKGROUND:

The Town's original entitled Traffic Calming Warrant Framework and Process (2007TCW) was approved by Council in November 2007 to address traffic calming related issues on Town roads. The 2007TCW documented a process for Town staff to evaluate and implement traffic calming requests along Town roads.

Since the implementation of the 2007TCW, the Town has experienced a population increase of approximately 39% to 125,000 in 2014. This corresponds with an increase in public inquiries received by the Town regarding traffic infiltration, volumes, collision frequency and excessive speeds. Further, the Town has received numerous inquiries and requests for traffic calming, but through the administration of the existing warrant achieved only limited success in the actual implementation of traffic calming projects.

A 2014 Resident Survey by the Environics Research Group indicates that transportation is the most important social issue facing Ajax. Therefore based on the relatively recent population growth in the Town together with the experience Town staff have had on the application of the original warrant, there is a need to review and update the 2007TCW to provide a more appropriate, efficient and flexible framework and procedure to address traffic calming requests. This update will provide additional flexibility in project identification, improve efficiencies in the

screening and evaluation processes, and will allow the Town to focus its resources on locations which have the greatest speeding concerns.

2.0 DISCUSSION:

CIMA+ was retained in September of 2014 to undertake a traffic calming warrant update. Their review and assessment was directed toward identifying deficiencies in the current warrant, a best practices research of 14 Canadian municipalities, Town staff's experience using the 2007TCW and the local Ajax context. Based on their review, criteria for the updated warrant was developed and tested through an iterative process. Public and stakeholder consultations were held to gather feedback and to address comments. The pilot testing component of the project was used to refine the updated warrant criteria and informed the recommended warrant document and the supporting software tools. This newly recommended warrant was applied to all of the Town's previous traffic calming requests to establish an updated traffic calming program. A copy of the 2015 Traffic Calming Warrant Update and the supporting Appendices are provided in Attachment 1.

2.1 Simplified Procedure for Public Support

Under the existing 2007TCW framework, once a traffic calming project is approved by Council through the budget process, two stages of public support are required for project initiation and for the approval of the final design.

For public support, a survey is mailed out to the residents that would be directly affected by the traffic calming project. A minimum survey response rate of 50% is required. Of the 50% survey response rate, a 60% support rate is required. On numerous occasions, resident survey response rates for traffic calming projects were not sufficient to meet the requirements. This has resulted in the cancellation of traffic calming projects that would have otherwise been technically warranted and had local Councilor support, but lacked the resident survey responses.

Similarly, a 50% resident survey response rate with a 60% support rate is required for the approval of the final design. At this stage of the traffic calming project, the Town would have already applied considerable financial and staff resources through the design process. Again, resident response for these surveys did not meet the warrant, leading to the cancellation of past projects.

To minimize the risk of project cancellations, staff have worked to maximize public support response rates. Such tasks included follow up phone calls, door to door information sessions and providing digital surveys. In spite of these efforts, increases in public response was only nominal.

The 2015TCWU simplifies and refocuses the public input requirement process. Public input for specific traffic calming projects is focused at the critical juncture of the design process. Once the design alternatives (inclusive of a do-nothing alternative) have been established, a public consultation process would be held to receive feedback. The public input received would then be taken into account for the development of the final design. The final design of the project would in turn be presented to the public for feedback.

Staff are of the view that this new approach will enable a more effective public consultation process, and will achieve more meaningful and tangible results.

2.2 Consideration of Alternative Strategies for Traffic Calming

The 2007TCW does not provide any guidance on unique traffic calming requests. For example, if a request meets the collision history criteria but scored relatively low in other categories (speed, volume and through traffic), the request would proceed directly to a scoring process. Such requests would result in low ranking scores, running the risk that such requests would be surpassed by other requests that ranked higher even though collisions were not experienced. Factors other than speeding may contribute to the traffic inquiry, but the existing warrant does not provide any direction or discretion to properly address such cases.

The 2015TCWU provides high level guidance that allows for the conduct of a full Operational and Safety review to determine an alternate approach for those requests where traffic calming solutions cannot adequately address the issue. Under this new warrant, if the collision history threshold is met, the request does not proceed directly to the scoring process. Rather, the threshold indicates that a full Operations and Safety review should be considered. The warrant also specifies other situations where traffic calming may not be the best strategy. This may include locations where a sequence of small-radius horizontal curves, visibility limitations or traffic infiltration considerations are present.

2.3 Screening Process

When a traffic calming request is made to the Town, a screening process determines if the request is eligible to be scored. All of the screening criteria needs to be met (with the exception of collision history) to being eligible for scoring.

Block length will be incorporated as a new screening criteria in the 2015TCWU. The block length of the section of roadway of interest, between two stop signs, should be equal to or greater than 110m. Sections where block lengths are less than 110m would be ineligible to proceed to the scoring process since vehicles are unlikely to be able to reach excessive speeds over and above the posted speed limit before having to slow down or stop.

The existing warrant only requires the 85th percentile operating speeds to be above the posted speed limit. This criteria allowed many requests that may not be warranted for traffic calming to proceed to the scoring process. The minimum threshold of 10km/h was established as a screening criterion for 85th percentile speeds. Given the dynamics of driving behaviour, 10km/h above the posted speed limit is an appropriate threshold for traffic calming consideration.

The 2015TCWU also established critical speeds for Local, Collector and Type C Arterial Roads. If the 85th percentile operating speeds meet or exceed the critical speeds, such requests will proceed directly to the “Priority List” of traffic calming projects. The “Priority List” is discussed in Section 2.4. The critical speeds for Local, Collector and Type C Arterial Roads are 15, 20 and 25km/h over the posted speed limit, respectively.

2.4 Evaluation Scoring Process

Under the existing 2007TCW, once a traffic calming request has passed the screening process, a series of points are awarded for each of the factors to determine an overall score. For a request to be eligible for traffic calming, a minimum score of 30 had to be achieved. The 30 point threshold is applicable to Local, Collector and Type C Arterial Roads.

The 2015TCWU revised the scoring criteria based on best practices research to consider local context. A minimum of 30, 45 and 50 points are required for Local, Collector and Type C Arterial Roads to be eligible for traffic calming.

The criteria for the evaluation scoring process has also been refined to include bicycle facilities and routes, and high end speeders. The non-local traffic volume factor was removed since it is already considered as part of the traffic volume factor.

2.5 Project Identification Process

The existing 2007TCW utilized a ranking process. Any traffic calming locations that passed the screening process and scored a minimum of 30 points were ranked. The locations at the top of the list had the highest scores while those at the bottom of the list had the lowest scores. This ranking process resulted in a situation where the lower-scoring requests would be indefinitely ranked at the bottom of the list as newer and higher-scoring requests would take priority.

The new 2015TCWU addresses this issue by removing the ranking process and introducing two lists of locations that are eligible for traffic calming. The first list is the "Priority List" where the 85th percentile operating speeds exceed the critical speeds. The second list is the "General List" where 85th percentile operating speeds are at or over the minimum threshold speed but less than the critical speed, and having the minimum score requirements for the respective type of roadway. These locations would be listed in chronological order (based on date of the inquiry) as opposed to being ranked based on their score. This would allow any eligible and lower scoring locations to proceed to the budget approval stage in a systematic and predictable fashion.

2.6 Traffic Calming Toolbox Update

The 2007TCW Toolbox of traffic calming devices is outdated. The traffic calming devices are limited and do not include those devices that have emerged and are widely used in the industry. The toolbox only provided the applicability of such devices on Local, Collector and Type C Arterial Roads.

The 2015TCWU Toolbox has been updated with additional traffic calming devices that are widely used in the industry based on the best practices research. The additional traffic calming measures included in the 2015TCWU include the following:

Vertical Deflection Measures

- Rumble Strip
- Speed Table
- Speed Cushion
- Textured Pavement
- Textured Sidewalk

Horizontal Deflection Measures

- Chicane, 2-lane
- Lateral Shift
- Neckdown
- Lane Narrowing
- Road Diet

Additional information on the above traffic calming measures can be found in the attached 2015TCWU Appendices.

The Signage category was removed from the toolbox altogether due to their minimal effects on speed reduction, and since they are not classified as true traffic calming measures. Further,

unwarranted signage such as unwarranted Stop Signs can create adverse impacts on traffic operations by providing pedestrians with a false sense of security at these locations and they also lead to decreasing driver compliance.

In addition to providing information on the applicability of measures on the different types of roadways, the new toolbox provides additional information to allow Town staff to select the most appropriate traffic calming treatment. This additional information includes the level of effectiveness of each measure in the reduction of traffic speeds, volumes and conflicts. It also provides the level of potential disbenefits on local access, emergency response, active transportation, enforcement, maintenance and cost.

2.7 Traffic Calming 6-Step Methodology

The 2015TCWU includes a six step process to address traffic calming requests. A brief summary of the six steps is as follows:

Step 1: Request for Traffic Calming
Requests for traffic calming typically stem from residents, staff, business owners, schools or Members of Council. Planning and Development Services staff are responsible for traffic calming assessments starting at the request stage.

Step 2: Screening Process
Once the relevant traffic data is collected, the next step is an initial screening of the requests. The screening process sets technical requirements for a location to be eligible to be evaluated using the scoring system. The screening process consists of factors that include the grade, block length, collision history, consideration of alternative strategies and operating speeds. If the 85th percentile speed is equal to or higher than the critical speed limit of the corresponding roadway classification, then the request is added to the Priority List.

Step 3: Evaluation Scoring
Requests that pass the initial screening process that are not on the Priority List are scored based on the evaluation criteria. A request is eligible for traffic calming if the minimum score for the roadway classification is met. Local, Collector and Type C Arterial Roads require a minimum of 30, 45, 50 points respectively in order to be eligible for traffic calming and are placed on the General List. Any location that does not meet the minimum points for its road classification is denied for traffic calming for a period of three years.

Step 4: Available Traffic Calming Measures
The traffic calming toolbox provides information on the various types of measures, the applicability of each measure on the different types of roadways, the level of effectiveness as well as the potential disbenefits.

Step 5: Council Approval for Capital Budget
During the budget process, Town staff propose traffic calming locations for Council approval.

Step 6: Design, Approval, Implementation
Once traffic calming projects are approved by Council, staff ascertain the need for professional engineering consultation. The design process includes the development of appropriate alternative designs based on the toolbox and consideration to the public and stakeholders. Once the design is finalized, staff would implement the traffic calming measures. A more detailed description of the six steps can be found in the attached 2015TCWU.

2.8 Application of the 2015 Traffic Calming Warrant Update

The Town currently maintains a list of traffic calming requests since 2012 that were assessed through the 2007TCW process. Out of the 97 traffic calming requests, 63 locations were eligible and 34 locations were ineligible for traffic calming. Given that the Town only typically budgets for one or two traffic calming projects per year, the work program of 63 traffic calming locations would take at least 32 years to implement. There is a high likelihood that those eligible locations with low to medium scores may never be implemented since newer and higher scoring requests would be inevitably received.

Further, based on the industry standard, traffic data is only deemed valid for analytical purposes for two to three years. If an eligible traffic calming project has not been initiated for three years, new traffic data would have to be collected to reconfirm if speeding is still an issue. Traffic data would need to be recollected to support the significant number of traffic calming requests.

The 2015TWCU process was applied to the existing 97 traffic calming requests and resulted in 8 eligible locations on the Priority List and 12 eligible locations on the General List, respectively. These results are summarized in **Table 1**.

Table 1: Traffic Calming Priority and General Lists

Priority (Ascending Order Via Date Assessed)					
Date	**Street**	**Limit 1**	**Limit 2**	**Classification**	**Ward**
5/12/2012	**SEWARD DR**	Marriner Cres	Williamson Dr	Local	2
5/29/2012	**RAVENSCROFT RD**	Beverton Ct	Taunton Rd	Collector	1
6/25/2012	**OLD HARWOOD AVE**	Magill Dr	Chapman Dr	Local	2
6/25/2012	**OLD HARWOOD AVE**	Fishlock St	Magill Dr	Local	2
7/3/2012	**WARNER DR**	Taunton Dr	Williamson Dr	Collector	2
7/25/2012	**LINTON AVE**	Sherwood Rd	Kearney Rd	Local	1
9/17/2012	**WILLIAMSON DR**	Gillett Dr	Portelli Cres	Arterial	1
6/10/2014	**SIMMS DR**	Genner Dr	Sykes St	Local	1
General (Ascending Order Via Date Assessed)					
Date	**Street**	**Limit 1**	**Limit 2**	**Classification**	**Ward**
5/29/2012	**DELANEY DR**	Ravenscroft Rd	Westney Rd	Arterial	1
5/29/2012	**ELIZABETH ST**	Old Kingston Rd	Kearney Rd	Arterial	1
5/29/2012	**DELANEY DR**	Church St	Ravenscroft Rd	Arterial	1
6/25/2012	**RITCHIE AVE**	Westney Rd	Kingston Rd	Collector	3
7/24/2012	**ELM ST**	Windsor Ave	Beatty Rd	Local	3
7/24/2012	**RAVENSCROFT RD**	Brennan Rd	Matthews St	Collector	1
7/24/2012	**RAVENSCROFT RD**	Ventris Dr	Westney Rd	Collector	1
7/24/2012	**ROTHERGLEN RD**	Kingston Rd	Ventris Dr	Collector	3
7/27/2012	**SULLIVAN DR**	Westney Rd	Magill Dr	Collector	2
10/1/2012	**ROTHERGLEN RD**	Kingston Rd	Bramwell Dr	Collector	3
4/29/2013	**MIDDLECOTE DR**	Taunton Dr	Williamson Dr	Collector	2
6/10/2014	**SIMMS DR**	Rea St	Genner Dr	Local	1

The traffic calming locations would be listed in chronological order based on the date that the request was assessed. Any new eligible traffic calming locations would be situated at the bottom of the appropriate list to ensure that lower scoring requests continue to be addressed and are not lost or continually superceded.

The results of eligible traffic calming locations provides staff with a clear and predictable traffic calming program. The general approach is to select one project from each list per year for Council approval through the budget process.

Table 2 summarizes the Town's *potential* traffic calming work program that consists of seven projects for 2015 to 2018 as identified by the 2015TCWU, subject to Council approval through the budget process. These projects were selected based on the assumption of two projects per year, with consideration to the Priority and General Lists and on fair allocation of resources for each Ward. The remaining 13 projects identified in the Priority and General Lists will be undertaken beyond 2018.

An additional project for 2015 was approved through the 2014 budget process without a predetermined location due to not meeting the public requirements through the 2007TCW process. Rather than having staff resources attempting to meet the public requirements through the 2007TCW process, staff have focused on finalizing the 2015TCWU to select the second project for 2015.

Based on staff's evaluation using the new warrant, staff suggest that the second traffic calming project for 2015 is Seward Drive between Marriner Crescent and Williamson Drive, which was selected from the Priority List.

Table 2: Traffic Calming Projects based on 2015TCWU (Subject to Council Approval)

Project Year	Street	Limit 1	Limit 2	Classification	Ward
2014*	**CLEMENTS RD**	Monarch Ave	Harwood Ave	Collector	3
2015**	**EMPEROR ST**	Burcher Rd	Turnbull Rd	Collector	4
2015**	**SEWARD DR**	Marriner Cres	Williamson Dr	Local	2
2016	**RAVENSCROFT RD**	Beaverton Ct	Taunton Rd	Collector	1
2016	**RITCHIE AVE**	Westney Rd	Kingston Rd	Collector	3
2017	**OLD HARWOOD AVE**	Magill Dr	Chapman Dr	Local	2
2017	**OLD HARWOOD AVE**	Fishlock St	Magill Dr	Local	2
2018	**DELANEY DR**	Ravenscroft Rd	Westney Rd	Arterial	1
2018	**ELM ST**	Windsor Ave	Beatty Rd	Local	3

** Design of traffic calming for Clements Road has been approved for budget and completed.*
***Designs of traffic calming for Emperor Street and Seward Drive are approved for budget and will to begin in 2015.*

Table 2 was created based on the assumption of budgeting two traffic calming projects per year. This list would be subject to Council approval through the annual budgeting process.

FINANCIAL IMPLICATIONS:

Traffic calming projects are addressed through the annual Capital Budget and Long Range Capital Forecast.

COMMUNICATION ISSUES:

A Public Information Centre was held on January 21, 2015 at the Town of Ajax Council Chambers. The primary concerns raised by residents related to individual speeding concerns at specific locations as opposed to the overall traffic calming warrant process itself. The individual requests

for traffic calming were noted and assessed under the 2015TCWU. The residents will be notified of the results once the 2015TCWU is approved by Council.

A Stakeholders Consultation meeting was held in the Simcoe Point Room at Town Hall on February 13, 2015. Ajax Fire and Emergency Services and Durham Region EMS staff met with CIMA+ and Town staff discuss project and any concerns. Durham Region Transit staff were invited but did not attend the meeting.

The primary concern from the Ajax Fire and Emergency Services department is that they are opposed to any traffic calming measures that would necessitate any emergency vehicles having to slow down as their objective is to minimize response times. The implementation of traffic calming devices is intended to encourage vehicular traffic to travel at or near the posted speed limits to reduce the frequency and severity of collisions, especially those that involve pedestrians or cyclists.

Staff will continue to work with emergency service personnel prior to the implementation of any traffic calming devices. The presentation and correspondence at the Stakeholders Consultation is documented in the attached 2015TCWU Appendices.

CONCLUSION:

The 2015 Traffic Calming Warrant Update provides additional flexibility in project identification, efficiencies in the screening and evaluation processes, and allows the Town to focus its resources on locations which have the greatest speeding concerns.

ATTACHMENTS:

ATT-1: Traffic Calming Report Update and Appendices

Hubert Ng, P.Eng – Senior Transportation Planner

Gary Muller, MCIP, RPP – Manager of Planning

Paul Allore, MCIP, RPP – Director of Planning and Development Services

Town of Ajax

Traffic Calming Warrant Update

Final Report

March 2015

B000468

CIMA
Partners in excellence

Town of Ajax

Traffic Calming Warrant Update

Final Report

March 2015

B000468

Executive Summary

CIMA was retained by the Town of Ajax to update the Town's Traffic Calming Warrant process, adapting it to better address the increase in public inquiries received by the Town regarding traffic infiltration, volumes, collision frequency and excessive speeds. The updated process is expected to provide a more appropriate, efficient and flexible framework to address traffic calming requests.

The Town of Ajax Traffic Calming Warrant process update included several steps to ensure that the end result would be both consistent with the practices of other municipalities, and adequate to address the Town's particularities. This was accomplished by means of a Best Practices Research conducted with other municipalities in Ontario and across Canada; Public and Stakeholder Consultations, to inform residents and provide an opportunity to submit ideas, comments and concerns, and to gather feedback from Ajax Fire and Emergency Services, Durham Region EMS, and Durham Region Transit Commission regarding the Toolbox of Traffic Calming Measures; and Pilot Testing conducted with previous requests to ensure the adequacy of the updated screening and scoring system.

The basic structure of the warrant process is similar to the previous version, including the following six steps: Request for Traffic Calming; Screening Process; Evaluation; Available Traffic Calming Measures; Council Approval for Capital Budget; and Design, Approval and Implementation. The main modifications to the process are the following:

+ Lists of Eligible Locations:
  - Creation of two separate lists of eligible locations: General List and Priority List;
  - Elimination of a ranking based on scores;
  - Prioritization of projects based on date of request;
+ Screening Process:
  - Inclusion of Block Length as a screening criterion;
  - Removal of traffic volumes and non-local traffic as screening criteria;
  - Increased flexibility to recommend an approach other than traffic calming based on engineering judgement;
  - Prioritization of locations with extremely high operating speeds (Priority List);
+ Scoring Process:
  - Removal of Non-Local Traffic, Emergency Services, Transit and Truck Routes;
  - Inclusion of Percentage of High-End Speeders;
+ Public and Stakeholder Input:
  - Simplified procedure for public and stakeholder input;

The Toolbox of available traffic calming measures was expanded based on available literature and on results from a jurisdictional review conducted by CIMA. In addition to the applicability of each measure to different types of roads, present in the previous version, the new Toolbox also presents

potential benefits and disbenefits as well as general costs in a qualitative format. This should provide Town staff with a comprehensive set of criteria to select the most appropriate measure to address the needs of each specific project.

Finally, the automatic spreadsheet tool was updated to include the changes to the warrant process, and database functionality was added for Town staff's convenience.

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1. Introduction

The Town of Ajax (the Town) receives numerous public inquiries each year regarding traffic, especially traffic calming requests. Since the implementation of the original Traffic Calming Warrant Framework and Process in November 2007 (2007TCW) the Town has experienced a population increase by approximately 39% to 125,000 in 2014. This corresponds with an increase in public inquiries received by the Town regarding traffic infiltration, volumes, collision frequency and excessive speeds. Further, a 2014 Resident Survey by the Environics Research Group indicates that transportation is the most important social issue facing Ajax. Therefore, there is a need to review and update the 2007TCW to provide a more appropriate, efficient and flexible framework to address traffic calming requests.

1.1 Study Background and Objectives

Since the implementation of the Town's traffic calming process in 2007, Town staff has identified some opportunities for improvements to make the process more efficient and fair. Some of these opportunities included:

- Refine the screening and scoring process to allow the Town to focus its resources on locations experiencing highly undesirable conditions;
- The previous warrant worked with a scoring and ranking system. This could result in lower-scoring requests being indefinitely ranked at the bottom of the list as newer, higher-scoring requests would take priority over them, therefore never having any traffic calming measures implemented;
- The previous warrant included two cumbersome phases requiring public support for each individual project. This made the process slow and costly with many projects stalling prior to the implementation stage;
- The previous warrant did not take into account high end speeders at locations where 85th percentile speeds might not be excessive. Depending on traffic volumes, this may be a considerable safety concern even if the majority of speeds are relatively low;
- The previous warrant did not account for the possibility of traffic calming not being the best strategy to address a request based on existing conditions; and
- The update and enhancement of the list of approved measures and devices (Toolbox of Traffic Calming Measures) available for use in the Town. This involves the provision of a general evaluation framework for each measure in terms of benefits, disbenefits and costs.

The objectives of the warrant update were to address the opportunities for improvements listed above, and to incorporate other modifications that reflect current industry practices. In order to accomplish this, the study included the following major tasks:

- Review and assessment of existing warrant;
- Best Practices research;
- Proposed warrant updates;

- Public and stakeholder consultation;
- Pilot testing of proposed updates; and
- Final warrant document.

1.2 Report Overview

This report updates the previous Town's traffic calming warrant process from November 2007, incorporating findings from a Best Practices research (summarized in **Appendix A**) conducted with other municipalities in Ontario and across Canada. A literature review was also conducted with the purpose of updating the Toolbox of traffic calming measures.

The warrant methodology consists of six steps, two of which can be considered its core: *screening* and *scoring*. **Section 2** describes the warrant methodology in detail, covering all aspects of the traffic calming process from initial request to final approval and implementation.

Section 3 summarizes the results of a pilot study conducted to assess the adequacy of the screening and scoring criteria.

Finally, CIMA has developed an updated version of the automatic spreadsheet used to assist the Town in the screening and scoring process. **Section 4** discusses the updated version of the automatic spreadsheet.

A vital aspect of a successful traffic calming program is public involvement. As such, a Public Information Centre (PIC) held in the Town of Ajax Council Chambers on January 21, 2015. This PIC sought to inform residents as well as provide an opportunity to submit ideas, comments and concerns to the Project Team. Details of this PIC and the materials presented can be found in **Appendix B.**

In order to ensure the continued cooperation between a variety of stakeholders (i.e. Ajax Fire and Emergency Services, Durham Region EMS, and Durham Region Transit Commission), the Town held a meeting in the Simcoe Point room at the Ajax Town Hall on February 13, 2015. This meeting strived to inform the stakeholders with a high-level understanding of the warrant update while providing an opportunity to submit feedback regarding the Toolbox of Traffic Calming Measures. Further information regarding this meeting and the materials presented can be found in **Appendix B**.

While this report does discuss some of the reasoning for changes made to the 2007TCW, it primarily focuses on the end results that encompass the new traffic calming warrant process. Additional details of the warrant update process, particularly discussions between CIMA and Town staff following the Best Practices Research and preceding the Pilot Testing, are provided in **Appendix A.**

A list of acronyms, 'technical' jargon or otherwise ambiguous terms used in this report can be found in **Appendix F**.

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2. Methodology

The following sections describe a six-step process for the implementation of traffic calming measures on Town roads, beginning with a request for traffic calming and ending with design, approval and

implementation. **Exhibit 1** contains a flowchart of the entire process (a larger version can be found in **Appendix C**), and the relevant sections of the flowchart are included within each step in the following subsections.

From initial request to final approval, the traffic calming warrant process consists of six steps and has three possible outcomes:

- The request is denied;
- The request is added to the General List; or
- The request is added to the Priority List.

If a request is denied, the applicants and affected residents are notified, and the road is prohibited for traffic calming consideration for a period of three years beginning at the date of their assessment.[1] The General List contains locations that passed the screening process and achieved the **Threshold Score** in the evaluation scoring. The Priority List contains locations that passed the screening process with 85th percentile speeds equal to or greater than the **Critical Speed**.

The selection process for future projects should equally involve locations from the Priority and General Lists in accordance with budgetary requirements. In the event that an odd number of projects is required, selecting an additional location from the Priority List is desirable. The selection should be based on the chronological order of the requests – i.e. older requests should be implemented first. Locations are no longer ranked based on the scores. With the previous systems, locations that met the warrant with lower scores could potentially never be selected for implementation, since newer requests with higher scores would take precedence. The new system ensures that all warranted locations may eventually receive traffic calming measure, while still maintaining some differentiation based on technical criteria with the creation of the priority list.

The following subsections contain details about each of the steps in the traffic calming warrant process.

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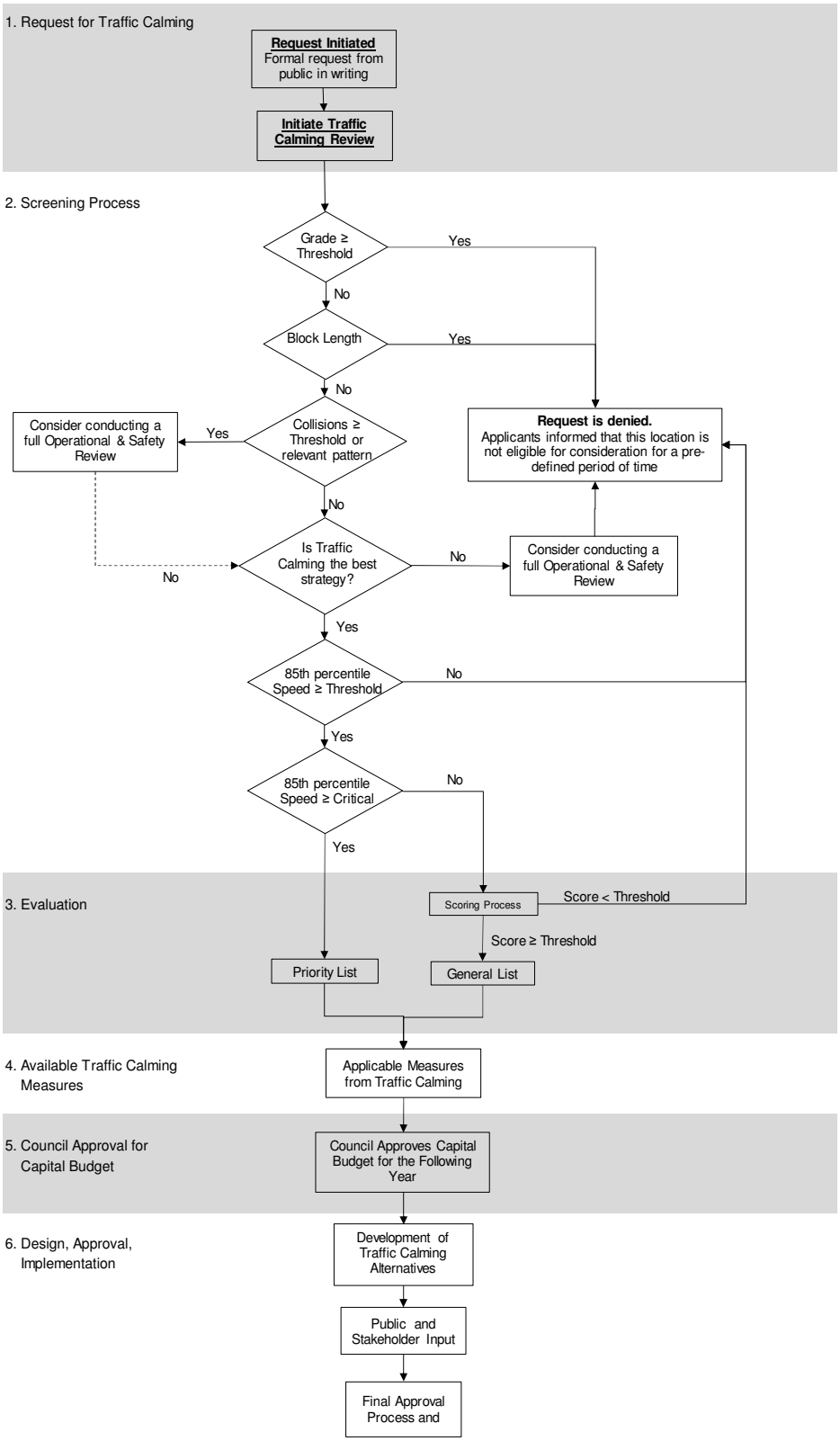
[1] Every location which received a request for traffic calming, from 2012 onwards, was re-evaluated using the new criteria. The period of ineligibility for those requests which were subsequently denied begins from the date of the Traffic Calming Warrant Update's approval by Council.

Exhibit 1: Town of Ajax Traffic Calming Warrant Process



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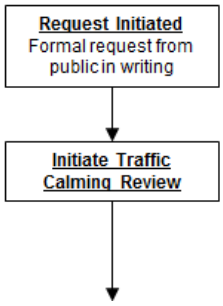
2.1 Step 1: Request for Traffic Calming

Requests for traffic calming typically come from Town residents, business owners, schools or members of Council. Identification of potential locations may also come from ongoing staff reviews. Planning and Development Services staff are responsible for the review of all requests.

Exhibit 2 describes the request process. In the case of a request from the public, a formal request in writing is required. Town staff would then initiate a Traffic Review, described in **Section 2.2**.

Exhibit 2: Step 1: Request for Traffic Calming



2.2 Step 2: Traffic Calming Screening Process

The next step in the process is an initial screening process undertaken by Town staff. The screening process sets requirements that must be met for a location to be eligible to be evaluated using the scoring system. The screening process can be summarized as follows:

- **Grade**: if the grade of the roadway is equal to or greater than the **maximum threshold of 8%,** then traffic calming is not permitted on the roadway at all. This is consistent with other jurisdictions and is due to the fact that traffic calming devices implemented on steep grades could cause safety concerns.
- **Block Length**: if the distance between stop-controlled intersections along the requested route (intersections with stop control only on the side street are not considered) is **shorter than 110 m**, traffic calming is not permitted. One of the main goals of traffic calming is to reduce speeds by using physical interventions to influence driver behavior. At locations where, for example, the distance between two adjacent stop-controlled intersections is too short, drivers may not have sufficient space to develop high speeds before having to slow down again for the next stop sign (i.e. a minimum amount of space is required to build up speed to contribute to a problem). This is consistent with other jurisdictions practices.
- **Collision History**: if the number of qualifying collisions within the past three years is equal to or greater than the maximum threshold, or if a relevant pattern of collisions is identified, the location should be **considered for a full Operations and Safety Review**. The collision history thresholds are the same as in the previous version of the warrant (6 for Local roads; 12 for Collector and Type 'C' Arterial roads), however collisions alone do not directly qualify locations for the scoring process as it was before. Instead, the threshold is used to suggest that consideration be given to conducting a full Operations and Safety Review. Typical numbers of qualifying collisions in past

request range between 0 and 4, meaning that the collision threshold is expected to be reached on rare occasions. A collision frequency significantly higher than the typical may indicate that the location could present other collision contributing factors. The definitions of *qualifying collisions* and *relevant pattern*, for the purposes of the traffic calming warrant, are the following:

- *Qualifying collisions* are those that can be potentially corrected by traffic calming, and include collisions with **vulnerable road users** (pedestrians, bicycles) and collisions for which **'exceeding speed limit'** or **'speed too fast for condition'**[2] is reported in the MVAR.
- *Relevant pattern* means a clear pattern of reoccurring collisions where speed is not a factor. These are not restricted to qualifying collisions as defined above, and may include, for example, intersection-related collisions, winter condition related collisions, etc.

+ **Best Strategy**: if, based on existing conditions, **traffic calming is not the best strategy** to address the request, the subject location is not eligible for traffic calming. Examples of existing conditions for which traffic calming may not be the best strategy include:
  - Where the location presents a sequence of small-radius curves;
  - Where the location presents visibility restrictions;
  - Where similar locations would typically not receive traffic calming;
  - Where arterial network improvements could reduce cut-through traffic and volumes, potentially solving the concern that originated the request.

  Additional conditions may also be considered incompatible with traffic calming measures based on engineering judgement.
+ **Operating Speeds:** if the 85th percentile speed is **equal to or greater than the Critical Speed**, the location is added directly to the Priority List; if the 85th percentile speed falls **between the Critical and the Minimum Threshold speeds**, the location proceeds to the scoring process; if the 85th percentile speed is **less than the Minimum Threshold Speed** the location is not eligible for Traffic Calming. The Minimum Threshold Speed is defined as 10 km/h above the posted speed limit; the Critical Speed varies by road classification, as follows:
  - 15 km/h above the posted speed limit for Local roads;
  - 20 km/h above the posted speed limit for Collector roads; and
  - 25 km/h above the posted speed limit for Type 'C' Arterial roads.

Exhibit 3 summarizes the screening criteria and associated thresholds, and **Exhibit 4** graphically represents the screening process.

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[2] For collisions where *'speed too fast for condition'* is indicated, the analyst should use their best judgement based on the police officer's description of the collision to determine whether it could have been prevented by traffic calming. This would not be the case if, for example, the condition referred to were exclusively weather related.

Exhibit 3: Criteria and Thresholds

Criteria	Threshold		Notes
	Local Road	Collector / Type 'C' Arterial[3]	
Grade	< 8%		If the grade is equal to or greater than 8%, traffic calming is not permitted
Block Length	≥ 110 m		If the distance between stop-controlled intersections along the requested route (disregard stop control only on side streets) is shorter than 110 m, traffic calming is not permitted
Collision History	< 6 or Relevant pattern identified	< 12	If the number of qualifying collisions within the last three years is equal to or higher than the threshold, or if a relevant collision pattern can be identified, an alternative approach (for example, full operational and safety reviews) should be considered
Is traffic calming the best strategy for the location?	Yes		If traffic calming is not the best strategy to address the request, based on existing conditions, an alternative approach (for example, full operational and safety reviews) should be considered
Operating Speeds	≥ Minimum Threshold Speed & < Critical Speed		If the 85th speed is equal to or higher than the Minimum Threshold Speed (10 km/h above the posted speed limit), but lower than the Critical Speed, the location proceeds to the scoring evaluation
Operating Speeds	≥ Critical Speed		If the 85th speed is equal to or higher than the Critical Speed (15, 20 or 25 km/h above the posted speed limit, depending on the road classification), the location is added to the **Priority List**

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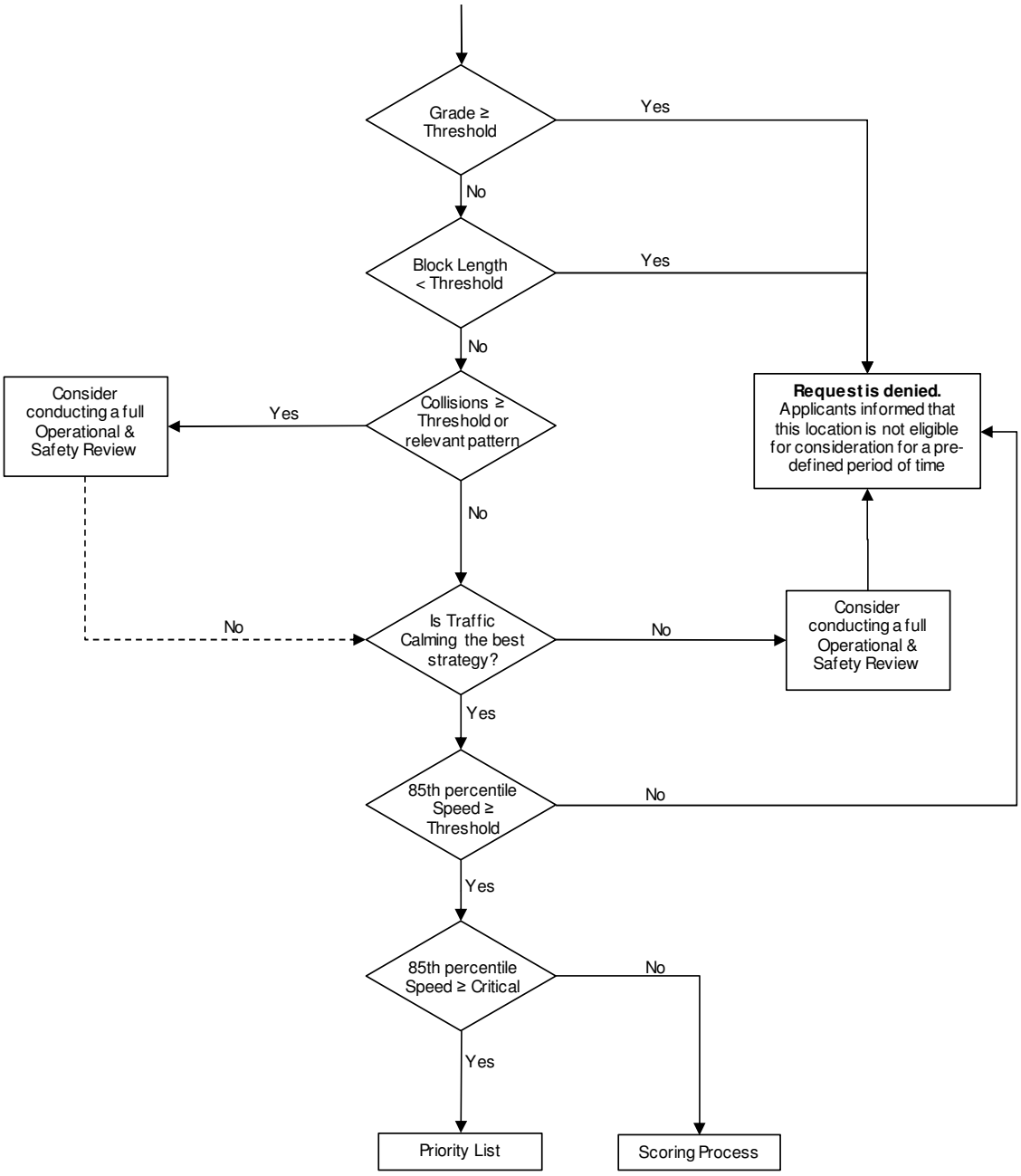
[3] While arterial roads are not ideal candidates for traffic calming, some of Town of Ajax's *Type 'C' Arterials* effectively function as collectors.

Exhibit 4: Step 2: Screening Process



2.3 Step 3: Evaluation Scoring

Requests that pass the initial screening and that are not directly added to the Priority List are evaluated based on 7 criteria established by the Town of Ajax. Each location evaluated receives a number of points for each of the criteria, as shown in **Exhibit 5** and **Exhibit 6**, and the total number of points (Score) determines whether the location will be added to the General List or the request will

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be denied. The minimum thresholds to add a location to the General List, for each road classification, are:

- 30 points for Local roads;
- 45 points for Collector roads; and
- 50 points for Type 'C' Arterial roads.

Therefore, any location that does not obtain its minimum score based on its classification is ineligible for traffic calming.

The minimum scores were determined through pilot testing, further discussed in **Section 3**. Town staff may conduct periodic assessments and adjustments to the scoring system to better represent changing speed or volume patterns.

Exhibit 5: Step 3: Points System for Local Roads

FACTOR	POINT CRITERIA	MAXIMUM POINTS
Collision History	5 points for each qualifying collisions in excess of 3	20
Traffic Speeds	1 point for each km/h above posted speed, and 1 point for each 1% of vehicles over 15 km/h above posted speed	25
Traffic Volumes	1 point for each 50 vehicles above threshold	20
Pedestrian Generators	5 points for each school or park within the study area (other Pedestrian Generators may be defined by Ajax)	n/a
Pedestrian Facilities	5 points if there are no sidewalks in the study area	5
Bicycle Facilities or Routes	5 points if bicycle lanes, sharrows, or routes are present in the study area	5
Adjacent Land Uses (residential)	1 point for each 20% of residential land use	5

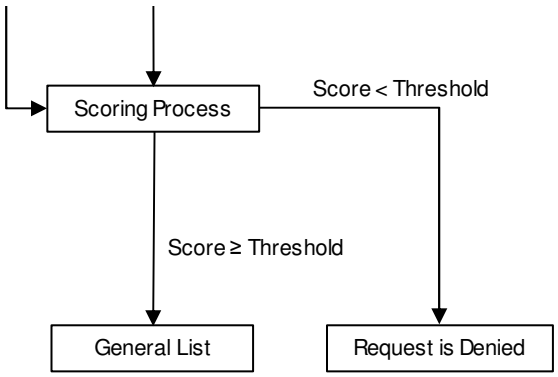
Exhibit 6: Step 3: Points System for Collector and Type 'C' Arterial Roads

FACTOR	POINT CRITERIA	MAXIMUM POINTS
Collision History	5 points for each qualifying collisions in excess of 3	15
Traffic Speeds	1 point for each km/h above posted speed, and 1 point for each 1% of vehicles over 15 km/h above posted speed	25
Traffic Volumes	1 point for each 100 vehicles above threshold	20
Pedestrian Generators	5 points for each school or park within the study area (other Pedestrian Generators may be defined by Ajax)	n/a
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 in the study area	5
Adjacent Land Uses (residential)	1 point for each 20% of residential land use	5

The traffic volumes used in the warrant are two-way average daily traffic, recorded over a 24-hour period, and their thresholds are:

- 900 vehicles/day for Local roads;
- 2,000 vehicels/day for Collector roads; and
- 5,000 vehicles/day for Type 'C' Arterial roads.

Exhibit 7: Step 3: Evaluation Scoring



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2.4 Step 4: Available Traffic Calming Measures

The list of available traffic calming measures (Toolbox) from the previous version of the warrant was reviewed and expanded based on available literature, including the ***Canadian Guide to Neighbourhood Traffic Calming*** (TAC, 1998), the ***Traffic Calming: State of the Practice Report*** (ITE/FHWA, 1999), as well as results from a jurisdictional scan conducted by CIMA for previous projects. Further to the inclusion of additional traffic calming measures, the new Toolbox presents potential benefits, potential disbenefits and costs in a qualitative format – the previous version contained only the applicability of each measure to different types of roads.

The Town's Fire Department and the Region of Durham's Transit and Emergency Medical Services (EMS) representatives were invited to provide comments regarding the proposed Toolbox. The Fire Department provided their perceived level of disbenefits for each of the traffic calming measures, and the information was added to the final version of the Toolbox. Transit and EMS did not provide additional comments.

In the new process, Town staff will continue to take the input of Emergency Services into account when developing a traffic calming plan, using careful engineering judgment when selecting a traffic calming measure.

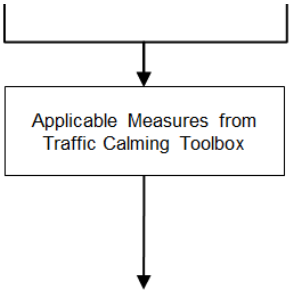
The new Toolbox maintains its use of Vertical Deflection, Horizontal Deflection and Obstruction types of traffic calming measures. Traffic Calming measures added to the updated Toolbox include:

- Vertical Deflection:
  - Rumble Strip;
  - Speed Table;
  - Textured pavement; and
  - Textured crosswalk;
- Horizontal Deflection:
  - Chicane, 2-Lane;
  - Lateral Shift;
  - Neckdown;
  - Lane Narrowing; and
  - Road Diet.

Signage measures were removed because of their minimal effects on speed reduction. Furthermore, unwarranted signs such as stop signs can create adverse effects such as an increased frequency of rear-end collisions and a decrease in driver compliance. Signage should only be used as a complement to, or warning for, other traffic calming measures.

The new Toolbox of traffic calming measures is included in **Appendix D**.

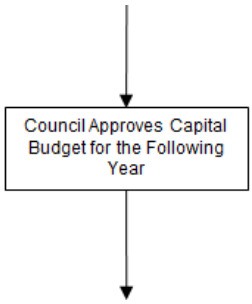
Exhibit 8: Step 4: Available Traffic Calming Measures



2.5 Step 5: Council Approval for Capital Budget

In this step, Town staff would prepare preliminary estimates for the requests at the top of each list (General and Priority) and forward the following year's recommended project(s) to Council for approval, in full awareness of the allotted Traffic Calming budget. If there are no projects in the Priority List in a specific year, projects wholly selected from the General List are forwarded for Council approval.

Exhibit 9: Step 5: Council Approval for Capital Budget



2.6 Step 6: Design, Approval, Implementation

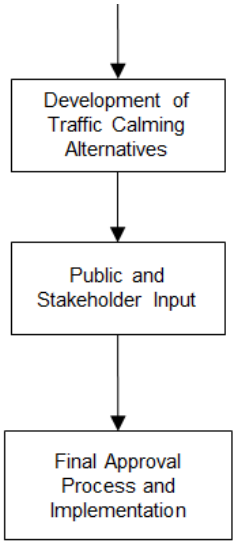
Exhibit 10 shows the final step of design, approval and implementation.

Once Council approves the projects in principle and the budget is established, Town staff ascertains the need for professional consultation. Preliminary designs shall be carefully developed based on the Toolbox of traffic calming measures and with special consideration to impacts on Emergency Services.

The alternatives are then presented through a dual stage public consultation process. Stage one introduces the public to the preliminary design alternatives and provides the public the opportunity to be directly engaged with the Project Team at the critical juncture of the process. The feedback received at this stage will be considered for incorporation into the alternative designs. A second stage will present the public with the final design of the project.

After incorporating the public and stakeholder input into the alternatives, Town staff shall select the most appropriate option and proceed to final design. The plan is then submitted to council for final approval, after which the process of tendering, implementing and evaluating the plan commences.

Exhibit 10: Step 6: Design, Approval, Implementation



3. Pilot Testing

A pilot test was conducted with four locations selected by Town Staff. The four locations were reviewed and the warrant process was followed in order to:

- Verify or refine the thresholds such as percentage of high-end speeders, Critical Speed and number of points warranting inclusion in the General List; and
- Confirm the adequacy of the number of points provided in each of the scoring system criteria.

In order to maximize exposure to the warrant process, two of the locations were assessed by CIMA and two were assessed by Town staff. The locations reviewed were:

- Pearce Drive between Delaney Drive and Coughlen Street (CIMA);
- Rands Road between Finley Avenue and Westney Road (CIMA);
- Williamson Drive between Thackery Drive and Salem Road North (Town staff); and
- Elizabeth Street between Kearney Drive and Old Kingston Road (Town staff).

Previous warrant analyses conducted by the Town at these four locations are summarized in **Exhibit 11**.

Exhibit 11: Locations Assessed in the Pilot Study

Road Section	Class	Posted Speed	85th %ile Speed	Volume	Collisions	Previously Eligible
Rands Road [Finley Ave – Westney Rd]	Local	40	49	2448	2	Yes
Pearce Drive Pearce Drive [Delaney Dr – Coughlen St]	Collector	40	47	1501	1	No

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Road Section	Class	Posted Speed	85th %ile Speed	Volume	Collisions	Previously Eligible
Williamson Drive [Thackery Dr – Salem Rd N]	Arterial	40	52	1934	1	No
Elizabeth Street [Kearney Dr – Old Kingston Rd]	Arterial	40	54	7199	0	Yes

Additional analysis was conducted by Town staff to further refine both screening and scoring criteria. This analysis included thirty-six locations. Further details about both pilot tests can be found in **Appendix E**.

4. Traffic Calming Warrant Spreadsheet Tool

As part of this assignment, CIMA updated the existing spreadsheets used by the Town of Ajax in the traffic calming warrant process. The tool consists of an analysis worksheet and a summary report table.

4.1 Traffic Calming Warrant Analysis Worksheet

The Traffic Calming Warrant Analysis Worksheet is designed to aid Town staff in determining if a site is eligible for traffic calming, and in which list (General or Priority) a location should be included. The worksheet is divided into four sections, as shown in **Exhibit 12**.

Exhibit 12: Traffic Calming Warrant Analysis Worksheet

Town of Ajax
Planning and Development Services
Traffic Calming Warrant Analysis Worksheet

Clear Worksheet | Save to Database | Go to Database

1.

Location:	
Date of Request:	
Requested By:	
Description of Complaint:	
Analyst	
Date of Analysis:	

2.

Preliminary Screening		
Criteria	Value	Result
Posted Speed (km/h)		
Road Type		
Grade (%)		
Block Length (m)		
Collision History		
Collision Pattern Identified?		
Full Operational/Safety Review?		
Is Traffic Calming the Best Strategy?		
85th Percentile Speed (km/h)		

3.

Scoring Evaluation		
Criteria	Value	Points
Collision History		Enter collision data
Traffic Speeds (km/h)		Enter speed data
High End Speeds (%)		
Traffic Volumes (veh/day)		
Pedestrian Generators		
Pedestrian Facilities		
Bicycle Facilities or Routes		
Adjacent Land Uses (residential)		
Total		

4. Clear Worksheet | Save to Database | Go to Database

When completing the worksheet, all information should be entered in the yellow cells; the white cells are either headers or calculations results. When the user clicks on the yellow cells, a message with instructions about how to enter the information will be displayed. If the information is entered in an incorrect format, an error message will be displayed.

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1. **General Information.** Includes description of the location, dates of request and analysis, and other relevant information. The information

   - **Location**: descriptive information about the site;
   - **Date of request**: date of the original request for the subject location;
   - **Requested By**: the name of the resident, group or business requesting traffic calming;
   - **Description of Complaint**: text field for entry of problem/complaint;
   - **Analyst**: Town of Ajax staff; and
   - **Date of Analysis**: the date of completion of the analysis; also used to determine the new eligibility date for sites that fail to meet the minimum criteria.

2. **Preliminary Screening.** This is the initial criteria that will determine if the site is eligible for traffic calming.

   - **Posted Speed**: enter the posted speed of the study area in km/h;
   - **Road Type**: select the road type from the drop-down menu;
   - **Grade**: enter the grade of the study area as a percentage (do not type '%'; it will be automatically added by Excel);
   - **Block Length**: enter the distance, in metres, between stop-controlled points along the road;
   - **Collision History**: enter the number of qualifying collisions in the past three years (refer to Section 2.2 for details);
   - **Collison Pattern Identified?**: select "Yes" if a collision pattern not involving speeds can be identified (refer to Section 2.2 for details); select "No" otherwise;
   - **Full Operational/Safety Review?**: Select "Yes" if, based on the collision history, a full operational and safety review is a more adequate approach to evaluate the subject location (refer to Section 2.2 for details); select "No" otherwise;
   - **Is Traffic Calming the Best Strategy?**: Select "Yes" if, based on existing conditions, traffic calming is the best strategy to address the request; select "No" otherwise (refer to Section 2.2 for details);
   - **85th Percentile Speed**: enter the 85th percentile speed in km/h; and

3. **Scoring Evaluation.** If the Preliminary Screening section indicates "Proceed to Scoring Evaluation", enter the required information in the yellow cells under this section (the white cells will retrieve the required information from the Preliminary Screening section).

   - **High End Speeders:** enter the percentage of users driving at speeds of 15 km/h or more over the posted speed limit (do not type '%'; it will be automatically added by Excel);
   - **Traffic Volumes**: enter the two-way average daily traffic (ADT) in vehicles/day;

- **Pedestrian Generators**: enter the number of schools, parks, and other pedestrian generators in the study area;
- **Pedestrian Facilities**: select whether sidewalks are not present in the study area, present on one side of the street, or present on both sides of the street;
- **Bicycle Facilities or Routes**: Select "Yes" if the study area has bicycle lanes, sharrows or bicycle routes; select "No" otherwise; and
- **Adjacent Land Uses (residential)**: enter the percentage of residential land uses within the study area (do not type '%'; it will be automatically added by Excel).

4. **Macro Buttons.** These buttons are used to save the results from the warrant analysis into the database, to clear the worksheet so a new analysis can begin, and to view the database.

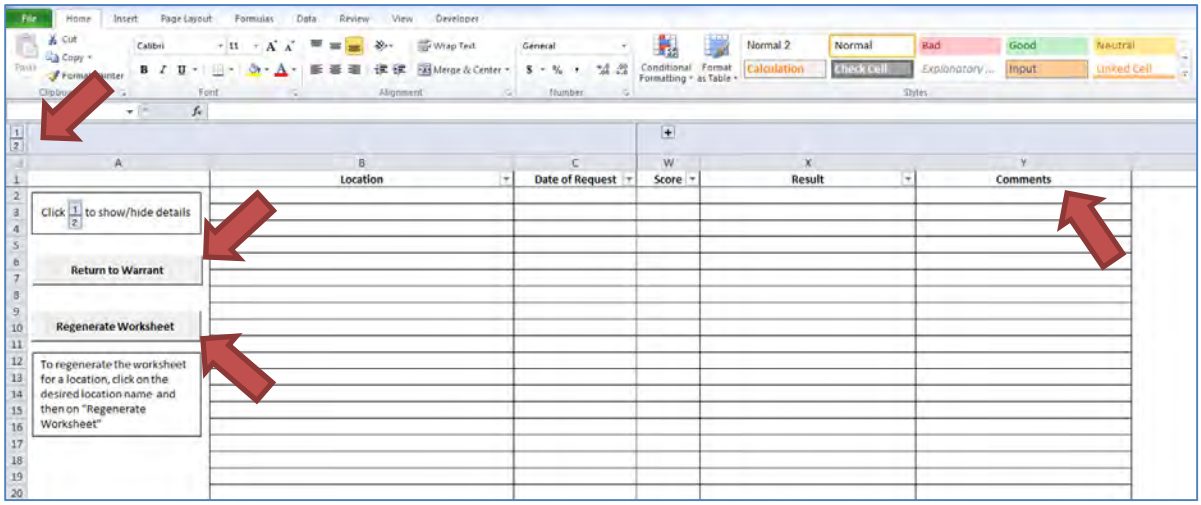
   - **Clear Worksheet**: this button will delete all data from the previous analysis from the worksheet so a new analysis can be conducted;
   - **Save to Database**: this button will add the data from a completed analysis to a database contained in the Excel file; and
   - **Go to Database**: this button leads to the database included all locations and their respective analysis results that have been therein previously saved.

4.2 Traffic Calming Warrant Database

The spreadsheet tool includes a database where data from all previous analyses can be saved. The database contents can be manipulated freely, allowing users to sort and filter the data at their convenience. **Because the contents of the database are not protected, it should be handled carefully so information is not lost. It is recommended that backup copies of the spreadsheet be created upon completing analysis for each request.**

The database includes a macro button to return to the warrant worksheet, and the user can show and hide details by clicking on the **[1]** and **[2]** buttons in the top left corner of the spreadsheet. Users are also able to add comments manually in column Y, as well as regenerate the warrant worksheet by clicking on the corresponding macro button. A screenshot of the database is shown in **Exhibit 13** highlighting all these options.

Exhibit 13: Traffic Calming Warrant Database



5. Conclusion

This report represents the final component of the traffic calming warrant update initiated by the Town of Ajax with the purpose of making the process more efficient and fair. The new warrant addresses local needs identified by Town staff over several years using the previous version of the warrant.

Some of the highlighted improvements include the elimination of a score-based ranking and the creation of two chronological lists, including a General List and a Priority List (for requests experiencing the highest speeds); the consideration for high end speeders, which can represent a safety concern even when overall speeds are within acceptable levels; and the reduction in the number of occasions of public involvement throughout the process, making it faster and less costly.

The new warrant has been evaluated by means of pilot testing to ensure the updated criteria are reasonable considering local characteristics. Since traffic is dynamic and its characteristics may change over time, Town staff may periodically revise the warrant points and thresholds to adapt to eventual changes in traffic patterns, ensuring the process remains fair over time.

6. Recommendation

The intent of this warrant update was to create a fair and flexible process which allows the Town to focus its resources on highly problematic locations. Despite this, it is possible that the reassessment of the requests from 2012 through 2014 will yield a larger pool of warranted locations than can be accommodated by the current budget. This becomes exceptionally problematic where traffic data, Town staff, and resources are concerned. Standard application in the industry is that traffic data is valid for two years, with three year old data used in rare circumstances where very little development occurred. Thus, if current budgetary concerns require a location to be scheduled outside of the two year validity period, staff would then be obligated to recollect the data, and reassess the location to confirm whether the operational characteristics have changed. Consideration should be given to

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increasing the annual Traffic Calming Budget to clear the newly developed Priority and General Lists in as short a time as is possible.

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Appendix A: Summary of Best Practices Research and Discussion on Proposed Modifications to the Warrant

Jurisdiction	Road Classification	Spacing	Grade	Speed	Collisions	Volumes	Through Traffic	Pedestrians & Schools	Other Criteria	Older Requests Prioritized?	Public Input	Active Transportation Notes	Ranking System	Explicitly Outlined Process	Post Installation	Comments	Full Safety Review if Certain Conditions Present	Funding Conditions	Study of Area in Isolation or Spillover	Presentation of Counter Measure
Ajax 2007	Local Collector Type C Arterial	Score for 50 m increments between stop-controlled points	Less than 8%	85th percentile greater than posted speed	6 or more within last 3 years for local roads 12 or more within last 3 years for collectors/type C arterials	900 vpd or more for local roads 2000 vpd or more for collectors 5000 vpd or more for type C arterials	30% or more 'non-local traffic'	Score for each school or park within study area Other pedestrian generators may be defined Score for absence of sidewalks	Score for EMS, truck, transit routes Score for residential land use	No	Request Council approval for plan development 50% response & 60% support to develop a plan Input from Fire, EMS, Transit... 50% response & 60% support of final plan Final council approval					Minimum 30 warrant points out of 100 possible to qualify				
Burlington 2013	Local Collector	At least 250 m long At least 1 segment with spacing between traffic control devices of more than 250 m	Less than 8%	85th percentile greater than 10km/h over posted speed More than 5% of traffic more than 15 km/h over P.S. If 85th percentile 15 km/h or more, no other warrant needs to be met; points granted for 85th percentile speeds above posted	Score for every preventable collision in past 3 years	1500 vpd or more for local roads 4500 vpd or more for collectors; points awarded for additional volumes	More than 15% for local roads More than 30% for collectors	Pedestrian or cyclist generators exist on the street that creates higher than average ped/cyclist activity; missing sidewalks grant points; schools, playgrounds, multiuse trail/path		No, reevaluation minimum 2 year wait period	Request Poll Street (50% +1) Open house meeting #1 re: traffic calming plan Input from Fire, EMS, Transit... Open house meeting #2 if major changes required Final approval	points granted for cycling routes or generators	Yes	Step 1. Request Processed Step 2.Pre-Evaluation Criteria (Screening) Step 3. Resident Poll Step 4. Warrant Evaluation and Development of Alternatives Step 5. Alternatives Ranking Step 6. Approval Step 7. Implementation and Evaluation	Following a period of approximately one year, staff will carry out an evaluation of the traffic calming plan to determine if it has alleviated the identified concern(s). This will include reviewing the before and after traffic data and comparing the results against the warrant criteria thresholds.	Minimum of 3 out of 6 warrants must be met, or 85th percentile over 15km/h Points awarded to all criteria for ranking	no	where funding exists for individual projects; accommodations made on a case by case basis	case by case, may be extended to adjacent streets	No list of measures used; Minimum warrant criteria listed but no specific solutions to problem
Hamilton 2007	Local Minor Collector	Minimum block length: 200 m	Less than 5%	Must be at least 50 km/h posted (points deducted if 40) 85th percentile 8km/h or more over posted speed If 85th percentile 15km/h or more over posted speed, no minimum volume required	Score for preventable collisions within last 3 years	750 vpd for local roads Between 2500 and 5000 vpd for collectors	-	There must be a sidewalk on at least one side of the road Points awarded for presence of pedestrian generators or signed bicycle route	Not allowed along transit or primary EMS routes	Only if two projects have identical scores (oldest has priority)	Initial request by Council or public Minimum response of 70% of directly affected residences and 50% of indirectly affected residences. Residents are mailed a copy of the plan; meeting may be required to clarify or resolve issues Final approval by Council		Yes	Not explicit						
Hamilton 2013 (proposed)	Local Collector Arterial (under special circumstance)	Min block length 150 m	Less than 5%	Points awarded for each km/h 85th percentile speed is above posted	Points granted for each collision in previous 3 years	Points awarded per 200vpd	Points for each % above 15% cut through (non local traffic)	Points awarded for: Park, school, church; Others (mall etc) No sidewalk (single or both sides)	EMS and Transit must be consulted for each request	no	Request made and evaluated Residents informed of results (and if acceptable) proposed solution, given survey for support; Req 20% response w/ 50% approval (no response above 20% considered "yes" vote).	designs which incorporate cycling lanes and plans are encouraged to promote cycling initiatives	Yes	Step 1. Request Processed Step 2.Screening Step 3. Evaluation Step 4. Consultation Step 5. Implementation and Monitoring	Staff will monitor the effectiveness of the traffic calming/management measures and their associated impacts to the transportation system. This data will be essential in recommending similar measures in the future. Data would ideally be collected between six (6) months to one (1) year after installation to allow travel patterns to normalize. The data will be compared with the before data collected as part of the implementation process. If the findings indicate any adverse effects associated with traffic calming/management	Could not determine if changes were approved. Available document does not contain all information; Installation monitored and reported on 6-12 months later.	moving towards a traffic management/traffic calming program	funded through capital projects; city is moving to a dedicated system for traffic management involving traffic calming on an individual basis with dedicated funding	currently in isolation unless major community improvements planned and can accommodate full redesign; moving towards a traffic management/traffic calming program to specialize; not consistent, but can involve larger communities	No list of measures used; Minimum warrant criteria listed but no specific solutions to problem
Kingston 2013	Urban Local; Urban Collector	not explicitly noted	not explicitly noted	Must be less than 50 km/h 85th percentile must be greater than 50km/h Points granted for each km/h exceeding 45(Tier 1), 55 (Tier 2)	Points granted for each collision in previous 5 years Points granted for each injury collision in previous 5 years	Min 1000 vpd Points granted per each 200 vpd	Not explicitly stated	Points granted for adjacent school Points granted for nearby school Points granted if no continuou sidewalk on at least one side Points granted for pedestrian generator (not school)		no	Min 1 public meeting in conjunction with other public engagement, as required Residents fronting or flanking to receive notification	Points granted for on-street bike lane or route; additional points for number of cyclists during 8 hr period; policy works in conjunction with the Cycling and Pathways Study (2003); policy outlines incorporation of cycling facilities in design phases	Yes	Not explicitly stated	The Engineering Department will monitor the effectiveness of traffic calming measures through the completion of before and after studies that consider vehicle volumes, vehicle speeds and general roadway operations.	If screened out, candidate street cannot be resubmitted for consideration for 5 years unless significant changes to the street warrant consideration Opportunities to incorporate complete streets during design to improve a priority Does not include community safety zones	Not explicitly stated	traffic calming a dedicated phase for consideration during redesign and reconstruction efforts throughout city; for retroactive installation, there are limited funds and ranking required	Not explicitly stated	No list of measures used; Minimum warrant criteria listed but no specific solutions to problem

Jurisdiction	Road Classification	Spacing	Grade	Speed	Collisions	Volumes	Through Traffic	Pedestrians & Schools	Other Criteria	Older Requests Prioritized?	Public Input	Active Transportation Notes	Ranking System	Explicitly Outlined Process	Post Installation	Comments	Full Safety Review if Certain Conditions Present	Funding Conditions	Study of Area in Isolation or Spillover	Presentation of Counter Measure
Ajax 2007	Local Collector Type C Arterial	Score for 50 m increments between stop-controlled points	Less than 8%	85th percentile greater than posted speed	6 or more within last 3 years for local roads 12 or more within last 3 years for collectors/type C arterials	900 vpd or more for local roads 2000 vpd or more for collectors 5000 vpd or more for type C arterials	30% or more 'non-local traffic'	Score for each school or park within study area Other pedestrian generators may be defined Score for absence of sidewalks	Score for EMS, truck, transit routes Score for residential land use	No	Request Council approval for plan development 50% response & 60% support to develop a plan Input from Fire, EMS, Transit... 50% response & 60% support of final plan Final council approval					Minimum 30 warrant points out of 100 possible to qualify				
Toronto 2002	Local Collector	Minimum block length: 120 m	Less than 5%	85th percentile greater than 10km/h over posted speed (40km/h only?) If 85th percentile 15km/h or more over, volume warrant does not need to be met	Score for preventable collisions (takes into consideration injury collisions)	Min. 1000 vpd, max. 8000 vpd for local roads Min. 2500 vpd, max. 8000 vpd for local roads	-	There must be a sidewalk on at least one side of the road, or considered for installation before traffic calming Score for each pedestrian generator Score for signed bicycle route	No significant impact on transit routes	No	Petition sign by at least 25% of households Consultation with EMS and TTC Formal poll (needs 50%+1 response, 60% support)					No minimum score, only ranking				
Toronto 2010	Local Collector	Minimum block length: 120 m	less than 5%; Indication that up to 8% considered	85th percentile speed must be greater than 10 km/h over posted and satisfy volume requirements; If 15km/h over, volume requirements not needed	not explicitly stated	Local roads - 1000<vpd<8000 Collector roads - 2500<vpd<8000	Depends on street and nearby/adjacent streets; reviewed on case by case basis	Must be sidewalk on at least one side for local roads or both for collector; Where no sidewalk exists, installation of sidewalk must be considered before traffic calming measures; pedestrian generators and cycling grant points	If proposed street traffic calming expected to have significant impact on nearby streets, study will include other streets; Consultation with EMS to ensure support; Consultation with TTC to ensure impacts to service not significant, often not installed on routes	No	Petition signed by at least 25% of affected households (10% for rental units; Polling stage requires 50% response by directly affected and 60% in favour	points granted for cycling routes or generators; signed cycling routes and plans integral part of evaluation.	Yes	General: Step 1. Warrant 1 Step 2. Warrant 2 Step 3. Warrant 3 Step 4. Polling Council Process: (a)Semi-formal initiation; (b)Consideration of area-wide impacts; (c)Basic road safety/design review; (d)Consultation with emergency services and TTC staff; (e)Traffic study and technical evaluation; (f)Consideration of options; (g)Report to Community Council. i.If traffic calming is technically supportable, the report will seek to: authorize poll, authorize road	n/a	-	no	dedicated budget; excess to be determined through ranking; requirement for reporting to council for excess budget to specifically be used for traffic calming iniitatives on reconstruction	Always consideration of spillover effecs and inclusion of adjacent streets	No list of measures used; Refer to Canadian Guide to Neighbourhood Traffic Calming
City of Vaughan 2010	Bounded by collector or arterial roads; Not considered on arterials or collectors with ROW of 26m or more;	Not explicitly stated	Not explicitly stated	Posted speed <50km/h; 85th percentile speed >10km/h over speed limit;	Not explicitly stated	For Speed Humps or Crosswalks = Trip Generation >9.57 trips/house/day;	Not explicitly stated	Not explicitly stated	Determination of primary emergency response route in consultation with EMS, Fire Departments	No	Community meetings held to discuss (not during June, July, August and not later than 7 pm); Resident response must be 75% reflective of community in road network supplied by Eng. Services and be 75% in favour;	Not explicitly stated	No	Step 1. Establish Plan Step 2. Resident Support Step 3. Data Collection Step 4. Developing the Plan Step 5. Community Meeting Step 6. Approval of the Plan Step 7. Dealing with Additional Requests Step 8. Evaluating the Plan Step 9. Future Modifications	Unless a health and safety issue has been identified by Engineering Services staff, no modifications will be considered to the traffic calming measures for a minimum period of 5 years following implementation. The procedure for any future modifications will begin at Section 2 – Resident Support and then continue through remaining stages of the policy.	Requires formal request by resident(s) or rate payer association; petition initiated for support; Must be assumed by city for minimum of 5 years; Extensive use of Canadian Guide to Neighbourhood Traddif Calming; Measurements at data colleciton phase must be compared to Warrants 1,2 according to local policy; Vertical measures such as speed humps/raised crosswalks and the like, are to be discontinued on feeder/primary, collector and arterial	Not explicitly stated	Local roadways – $30/metre of road; Feeder/Primary/2 lane Collector roadways - $65/metre of road	Not explicitly stated	List of accepted measures; Must satisfy specific internally defined "warrants"; varies between new and existing project roads
Waterloo (unknown date)	Not on collector or arterial		Less than 8%	85th percentile speed greater than 10km/h over speed limit		At least 900 vpd			Must not significantly affect EMS and operational services; Should not affect transit services at all		Once considered and meets criteria, 40% response rate with 60% of affected residents or affected area in support	The implementation of bicycle lanes will have an affect towards traffic calming, however, they are not primarily used for this purpose and would not be subject to the Traffic Calming policy.	No	General: Step 1. Warrant 1 Step 2. Warrant 2 Step 3. Warrant 3 Specific Process: Step 1. Inquiry Step 2. Investigation Step 3. Evaluation of Warrant and Criteria Step 4.a Evaluation of Alternatives Step 4.b Consultation with Public under EA Step 5. Final Approval	n/a	Once considered, can only be reconsidered after 2 years	not explicitly noted	Not explicitly noted; All traffic calming measures will require approval for funding from City Council	Not explicitly stated	List of possible measures; No indication of applicability or crtieria

Jurisdiction	Road Classification	Spacing	Grade	Speed	Collisions	Volumes	Through Traffic	Pedestrians & Schools	Other Criteria	Older Requests Prioritized?	Public Input	Active Transportation Notes	Ranking System	Explicitly Outlined Process	Post Installation	Comments	Full Safety Review if Certain Conditions Present	Funding Conditions	Study of Area in Isolation or Spillover	Presentation of Counter Measure
Ajax 2007	Local Collector Type C Arterial	Score for 50 m increments between stop-controlled points	Less than 8%	85th percentile greater than posted speed	6 or more within last 3 years for local roads 12 or more within last 3 years for collectors/type C arterials	900 vpd or more for local roads 2000 vpd or more for collectors 5000 vpd or more for type C arterials	30% or more 'non-local traffic'	Score for each school or park within study area Other pedestrian generators may be defined Score for absence of sidewalks	Score for EMS, truck, transit routes Score for residential land use	No	Request Council approval for plan development 50% response & 60% support to develop a plan Input from Fire, EMS, Transit... 50% response & 60% support of final plan Final council approval					Minimum 30 warrant points out of 100 possible to qualify				
Kitchener 2013	Not on Arterial (consideration for scenic heritage); Individual consideration for roadways bisected by Arterial	not explicitly stated	not explicitly stated	85th percentile of actual speed >55km/h; 85th percentile of actual speed >65km/h does not require min volume	not explicitly stated	Min 1000 vpd	not explicitly stated	not explicitly stated	Consideration of impacts to transit (not retroactively though); No vertical deflection on EMS; Conditional consideration for Transit	no	Min 25% residents in favour fronting road required to initiate Min 50% response rate on consultation stage w/ 60% in favour	Complete Streets and incorporation of cycling master plan	Yes	Step 1. Request made Step 2. Data collection Step 3. Staff report Step 4. Survey for initial approval with public and agencies; PIC Step 5. Development of alternatives Step 6. 2nd PIC and input; second survey Step 7. Priority Ranking Analysis and Implementation	All retrofit traffic calming measures will be reviewed after a period of one year. Removal of measures can occur if a minimum of 60% of the residents directly fronting the roadway under review respond to a staff initiated survey and a minimum of 60% of those that responded request	Must be designed in conjunction with cycling master plan and infrastructure improvements; complete streets approach; to retrofit, min wait period is 1 year and requires 60% of residents fronting the road in favour	not explicitly noted	Capital funds will be allocated to the Capital Budget for traffic calming studies and measures annually.	Not explicitly stated	Measures listed with description and amount of invasiveness to drivers
Milton 2011	Local and Collector (minor @1000 to 3000 vpd and major @3000+vpd)	150m section road minimum	not explicitly stated	max 50km/h posted	not explicitly stated	500 AADT	not explicitly stated	not explicitly stated	Transit impactconsideration of transit impacts	No	Resident request examined through Initial Screening Criteria; Minimum 51% households in favour fronting or flanking at petition stage; 25% return on survey for proposed implementation strategy with 60% in favour of the proposal	not explicitly stated	Yes	Step 1. Process Initiation Step 2. Data Collection and Analysis Step 3. Traffic Calming Design Considerations Step 4. Comments from Emergency/Transit/Maintenance Services Step 5. Define Survey Canvas Area Step 6. Public Input Step 7. Finalize Preferred Traffic Calming Plan Step 8. Detailed Traffic Calming Design Step 9. Recommend Final Plan to Committee Step 10. Resident Notification Step 11. Implementation of Traffic Calming Measures	Traffic engineering staff will monitor the roadway to determine the effectiveness of the utilized measures and their impact on the surrounding road network. This information will be used in recommending similar measures in the future. In addition to conducting before and after speed studies, 4-6 months after implementation, the Town will conduct studies to assess if the traffic calming plan has resulted in significant amounts of traffic diverting to adjacent, parallel streets. These after studies will be compared with the Town's 'before'	Road must be assumed and maintained by city; Review 4-6 months after implementation on effects (diversion of traffic, impact on driver behaviour); Min Points Local = 35 Min Points Collector = 52	not explicitly noted	Not explicitly noted; Depending on funding availability, locations will be selected based on the point system with those locations with the highest points constructed 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 then be re-prioritized to include any new locations.	Spillover always investigated	List of measures in matrix indicating applicability on type of road
Oakville 2003	All	not explicitly stated	not explicitly stated	Posted 40 km/hr = 85th % Speed > 50 km/hr, High end > 55 km/hr; 50 km/hr = 85th % Speed > 61 km/hr, High End > 68 ; 60 km/hr = 85th % Speed > 72 km/hr, High End > 80 km/hrkm/hr;	Collision history considered at request stage along with speed data; not specific on data requirements (case by case)	Considered with speed data on case by case basis	not explicitly stated	Score for pedestrian facilities including schools, parks; roads without sidewalks	EMS and transit routes to be given special consideration and provide input; Require involvement regarding vertical solutions; Can veto proposals	no	Request reviewed and historical data combined with field investigations will be initiated; Warrant based on speeds must be satisfied and then passive options implemented; If fails to reduce speed and ineffective, physical installation reviewed and requires 50% approval by stakeholders; public input on design solutions to be ascertained at public information meeting	consideration for implemnetated based on bike lanes and designated routes	Yes following passive options	Step 1. Project Initiation and Screening Step 2. Traffic Calming Warrants and Problem Definition Step 3. Identify and Implement Passive Calming Measures Step 4. Evaluation and Refined Problem Definition Step 5. Identify and Evaluate Alternative Physical Traffic Calming Measures Step 6. Identification of Preferred Alternative and Public Voting Process Step 7. Priority Ranking Analysis and Implementation Step 8. Post Implementation Study	Only states that there is a post implementation study	Passive installations first, then revisited upon 50% approval of stakeholders (along, near, on, flanking roadway); Site installation revisisted for review 6-12 months later	not explicitly noted	Capital funds will be allocated to the Capital Budget for traffic calming studies and measures annually; The year in which a particular project may be implemented will be dependent on the priority of the project, the amount of funding allocated to the traffic calming program in the capital works budget, and construction activities identified in the 10 Year Capital Works forecast.	Not explicitly stated	No list of measures; Case by case; Passive always used first

Jurisdiction	Road Classification	Spacing	Grade	Speed	Collisions	Volumes	Through Traffic	Pedestrians & Schools	Other Criteria	Older Requests Prioritized?	Public Input	Active Transportation Notes	Ranking System	Explicitly Outlined Process	Post Installation	Comments	Full Safety Review if Certain Conditions Present	Funding Conditions	Study of Area in Isolation or Spillover	Presentation of Counter Measure
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Windsor 2005	Local Collector	not explicitly stated	not explicitly stated	Points granted starting at 85% percentile speed 10km/h above posted up to 20km/h	Number of accidents in previous 3 years diveded by length of street, If Result 0 > 1 then 5 Points Awarded. If Result 1 > 3 then 10 Points Awarded. If Result 3 < then 15 Points Awarded.	3000vpd, points granted for every additional 500vpd; 6000vpd points granted for every additional 500vpd; 9000vpd points granted for every additional 500vpd	not explicitly stated	Generators grant points including schools, religious buildings, community centers, libraries neighbour	Points granted based on percent frontage	No	Signature support of 66% of affected residents for initiation; two public meetings for design input and approval	If part of bike lane or route, given additional points	Yes	Step 1. Public Input Step 2. Warrant Study Step 3. Development of Alternatives, including do nothing; notice of results Step 4. Petition Circulation Step 5. Public Approval Step 6. Environmental Assessment; PIC; Alternatives; PIC 2 Step 7. Council Approval	n/a		not explicitly noted	New developments have specifications and conditions which need to be followed including standard calming for various subdivision configurations; Council will be asked to include the funding in the capital works budget.	Not explicitly stated	Checklist provided with points; choose the appropriate street and match the number of points across small number of criteria; easy to follow and apply
Surrey 2014	Local Collector (school only)	Examined case by case	Less than 6%	85th percentile of actual speed higher than 10km/h above posted speed limit	Examined case by case	at least 500vpd	Examined case by case	Examined case by case	Consideration of impacts to transit and EMS;	No	To initiate, requires 67% of local stakeholders signatures; School zones require school administrator signature (not local stakeholders); Survey following a review must yield 50% response w/ 60% in favour;	Examined case by case	yes; based on other projects for the year and funding available for year; "If the above criteria for traffic calming are met, the applicable street or neighbourhood will be placed on a priori zed list for the development and funding of a traffic calming plan."	Step 1. Petition Step 2. Review of Location Step 3. Develop a Plan Step 4. Seek Neighbourhood Input Step 5. Design, Funding and Construction Step 6. Post Traffic Calming Study	6-12 months after completion, after study completed to determine success or needs changes.	passive solutions take priority if possible;	not explicitly noted	only states that funding will be allocated; does not state from where;	Spillover where necessary	Only descriptions of measures available
Calgary 2010	Local; Low Volume Collector only	No restrictions	less than 8%; as of 2010, 4% is max with special consideration for 6%; must have sight distance	less than 50km/h; 85th percentile speeds prioritized across pool of candidate streets; indication usually requires actual speed greater than 20% of posted	investigated case by case over previous 3 years	Local roads - vpd<1500 Low volume collector - 1500<vpd<5000; no minimum	Not explicitly stated	Points granted for fewer sidewalks; Points granted for more pedestrian generators, including schools as priority	Review with other applicable departments where required; Consultation with EMS and Transit always for route appropriateness	No	Process starts with complaint or report from resident; Residents need to demonstrate community support, no specified amount of support necessary, but more will increase priority; community support grants more points	points granted for on-street bike lane or route; points for bike support and relevant plans for bikes	Yes	Step 1. Screening, Problem Identification Step 1a. Resident submits report to city Step 1b. Internal review by city Step 1c. Reponse to residents Step 2. Evaluation and Prioritization; Traffic Plan Step 2a. Data collection Step 2b. Evaluate community issues Step 2c. Prioritize requests Step 3 Implementation Step 3a. Work with highest priority projects Step 3b. Develop traffic management plan Step 4. Project completion	Monitor traffic conditions following 2 to 4 months after project completion	Initial screening involves local support more than technical satisfaction of criteria; Streets within the pool of candidate streets are subjectively and relatively ranked against one another for attention beyond the initial screening phase; Technical criteria requirements become rated 0-20 with 20 being worst case;	No	Depends on the conditions surrounding the installation; If due to temporary means, should be paid by host of temporary event/incident; Most funds come from general transportation revenues and capital expenditures; consideration made for new developments and ongoing maintenance as a result of new development measures	Study can expand as much as needed	Matrices available with measures across street types and applicability across volumes

Jurisdiction	Road Classification	Spacing	Grade	Speed	Collisions	Volumes	Through Traffic	Pedestrians & Schools	Other Criteria	Older Requests Prioritized?	Public Input	Active Transportation Notes	Ranking System	Explicitly Outlined Process	Post Installation	Comments	Full Safety Review if Certain Conditions Present	Funding Conditions	Study of Area in Isolation or Spillover	Presentation of Counter Measure
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Halifax 2004 (Shortcutting policy, as of October 2014, a specific traffic calming policy will be developed)	Local; Residential; Bounded by collector and arterial roads	Case by case	Case by case	Case by case	Case by case	Less than 3000	Case by case	Higher consideration placed on school zones and around school neighbourhoods	Road cannot be a main road for traffic, as outlined by policy: Potential project streets which through time have evolved into an important link in the area's roadway network, such that redistribution of traffic cannot reasonably be absorbed by the area's major roadway network, are not eligible for application of this Neighbourhood Short-Cutting Policy; Transit and EMS cannot be impacted.	No	Multiple opportunities: 1 -Request and initiatiion 2- PIC 1 3- PIC 2 4- PIC 3 5-Trial installation involves vote (min 50% approval)	Not a specifically traffic calming policy, active transportation not addressed (short cutting is the main goal)	No	Step 1. Project Request and Preliminary Review Step 2. Initial Public Meeting Step 3a. PIC1 Step 3b. Plan Development; Alternatives Generated Step 3c. PIC 2 Step 4. PIC 3 Step 5 Trial Installation vote Step 6. Evaluation of test installation. Step 7. Regional approval of permanent installation	For projects that can be installed on a temporary basis , a trial will be implemented, usually for a minimum of 6 months, subject to the approval of the Traffic Authority and the Municipal Engineer. During the trial period the measures implemented will be evaluated to ensure that they achieve the objectives of the neighbourhood short-cutting reduction plan, and in particular that volumes on nearby local residential streets do not exceed the allowable traffic	Some indication of "trial" period where before the installation, a confirmation vote by affected residents is conducted and evaluation of installation is completed; Depending on project, can be temporary with trial purpose, or permanent ; If permanent, installation is voted on after 6 months of monitoring; Many trial installations do not commence until 18-24 months after request	Not explicitly stated	Not explicitly stated	Always spillover study; Heavy use of traffic diversion limits provided in policy as it is a short cutting plan	Matrices available with measures across the various problems they solve
St Johns 2011	Local; Collector	points granted for every 50 m increment greater than 100	less than 8%	less than 50km/h , 85th percentile actual speeds higher than posted considered; must be more than 5km/h over limit for collector	Points given for each collision involving vulnerable road users in past 3 years	Local >900 vpd, Collector >3000vpd; points granted for vehicle volume above the screen volumes	30% of non local traffic for local roads, no minimum for collector	points granted for school and "safe routes to school"; Points for no sidewalk; points for pedestrian generators excluding schools	EMS and Transit routes will be considered but without vertical deflection options; points removed for transit	if previously rejected, min 24 month wait	Initial request by Council or public with 60% of community in favour; sent to traffic dept, ems, agencies for prelim design; Preliminary design to be approved by public; changes based on recommendations and final produced; final design to be approved by public; sent to council for final approval; two meetings minimum throughout process	Points given for bike routes, existing or future	yes points given following screening for each criteria	Step 1. Request for traffic calming and review initiated Step 2. Traffic calming screening process Step 3. Scoring and ranking Step 4. Traffic calming toolbox Step 5. Project selection and study approval Step 6. Design, public support, final council approval and implementation	Temporary Measures: In some cases it may not be clear exactly what needs to be done to address a particular request. For example, it might not have been clear until after implementation that a traffic problem would shift to an adjacent street. Many traffic calming measures can be installed on a temporary basis and monitored for performance. It is less expensive to remove a temporary device than a permanent device if it becomes necessary, and it	in screening, local will pass only if two of the four possibilities (grade, volume, speed, non local traffic threshold) must be satisfied; for collector speed and volume is satisfactory criteria, If does not pass screening, will be given consideration for other less invasive solutions	no	new developments will be considered;	Spillover where necessary to community wide	List of measures in matrix indicating applicability on type of road

Town of Ajax

Traffic Calming Warrant Update

Proposed Warrant Updates

INTERIM REPORT

November 2014

B000468

CIMA Partners in excellence

Town of Ajax

Traffic Calming Warrant Update

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1. Introduction

The purpose of this document is to communicate our recommended improvements to the Town of Ajax's Traffic Calming Warrant. The proposed improvements were based on best-practices research conducted by CIMA staff which included 14 Canadian municipalities, most of which are located within the Province of Ontario. The traffic calming warrants and/or policies reviewed are listed in **Table 1**.

Each recommendation is accompanied by a brief description of the current warrant related by the topic under review, the issues we understand that arise from the current process, a brief summary of the findings from the best practices research, and the advantages and disadvantages associated with each recommendation.

Table 1 - List of Traffic Calming Warrants and Policies Reviewed

Municipality	Source
City of Burlington, ON	http://cms.burlington.ca/AssetFactory.aspx?did=24444
City of Calgary, AB	http://www.calgary.ca/Transportation/TP/Documents/transportation_solutions/traffic-calming-policy.pdf
City of Halifax, NS	http://www.halifax.ca/traffic/calming/Shortcut_Policy.php
City of Hamilton, ON	https://www.hamilton.ca/NR/rdonlyres/2E7EB619-F5D7-40B5-93FA-4C8E17A8FD03/0/Dec03PW07150.pdf (2007) http://www.hamilton.ca/NR/rdonlyres/44A70190-A83E-4EEC-91B2-9B5FADB08F63/0/Nov0682PW07150a.pdf (2013 - proposed)
City of Kingston, ON	https://www.cityofkingston.ca/documents/10180/20847/Traffic+Calming+Policy/da476901-42a0-4c9a-9aaf-0e76222de438
City of Kitchener, ON	http://www.kitchener.ca/en/livinginkitchener/resources/Traffic_Calming_Policy/POLICY.pdf
Town of Milton, ON	https://www.milton.ca/en/live/resources/traffic_calming_policy.pdf
Town of Oakville, ON	http://www.oakville.ca/assets/general%20-%20residents/TCPolicy.pdf
City of St. John's, NL	http://www.stjohns.ca/sites/default/files/files/publication/TrafficCalmingPolicy%5B1%5D_0.pdf
City of Surrey, BC	http://www.surrey.ca/city-services/766.aspx
City of Toronto, ON	https://www1.toronto.ca/city_of_toronto/transportation_services/traffic/files/pdf/traffic_calming_policy_summary.pdf
City of Vaughan, ON	https://www.vaughan.ca/services/residential/traffic_services/traffic_calming/General%20Documents/Traffic%20Calming%20Policy%20%20Procedure.pdf
City of Waterloo, ON	http://www.waterloo.ca/en/contentresources/resources/government/traffic_calming_policy.pdf
City of Windsor, ON	http://www.citywindsor.ca/residents/Traffic-And-Parking/Transportation-Planning/Documents/TrafficCalmingPolicySeptember2005.pdf

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2. Proposed Improvements

2.1 Road Classification

Current Policy

The road classes currently considered in the Town's Traffic Calming Warrant include Local, Collector and Type 'C' Arterial roads. The Town's warrant describes the primary function of Type 'C' Arterials as follows (page 12):

The primary function of a Type 'C' Arterial is to connect with other arterial and collector roads and have limited local road access […]

Issues

Traffic calming measures are typically most appropriate and effective on urban local and collector streets; they are not as appropriate and effective on arterial streets or rural roads.[1]

However, the Town has indicated that Type 'C' Arterial roads in fact function as collectors.

Best Practices Research

The research indicated that most municipalities only consider local and collector roads for traffic calming implementation.

Recommendation

Our suggested improvement to the Town's warrant is to include a statement in the warrant document clarifying that Type 'C' Arterial roads function as collectors.

Advantages

Although no significant changes to the warrant process itself would be made with this recommendation, it would provide greater consistency with typical traffic calming guidelines and best practices.

Disadvantages

None.

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[1] Canadian Guide to Neighbourhood Traffic Calming. Transportation Association of Canada. 1998.

2.2 Block Length

Current Policy

The Town of Ajax does not screen locations based on block length. Points are awarded to 50-metre increments.

Issues

One of the main goals of traffic calming is to reduce speeds by using physical interventions to influence driver behavior. At locations where, for example, the distance between two adjacent stop-controlled intersections is too short, drivers may not have sufficient space to develop high speeds before having to slow down again for the next stop sign.

Best Practices Research

Some municipalities state a minimum length of road segment to be required for consideration. This could be highlighted in Toronto's policy where it demonstrates that a minimum amount of space is required to build up speed to contribute to a problem. The minimum screening segment length explicitly stated was 120 metres (Toronto 2010). However, most jurisdictions do not specifically state any minimum block length.

Recommendation

Our suggested improvement to the Town's warrant is to include a "minimum block length" screening criterion (for example, 100 or 150 metres).The exact block length should be determined based on local experience.

Advantages

Establishing a minimum block distance as a screening criterion would potentially reduce data collection efforts and costs, as it would screen out locations early in the process that are less likely to benefit from traffic calming measures. This would eliminate the need for conducting a speed study or reviewing other data during the screening process for these locations.

Disadvantages

A small number of locations that could potentially benefit from traffic calming measures could end up being removed from consideration without further investigation if the established minimum block length is too long.

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2.3 Speed Criteria

Current Policy

The Town of Ajax does not explicitly screen locations based on posted speed. It does, however, use the posted speed as a threshold for one of the screening criteria; if the 85th percentile speed is found to be greater than or equal to the posted speed limit, the speed criterion in the screening process is met.

Issues

Posted speeds for urban local and collector roads are typically 50 km/h or less, while higher posted speeds are more common on arterial roads where mobility has a greater weight than accessibility.

Operating speeds, most commonly represented by the 85th percentile speeds, are generally expected to be slightly above the posted speed limit without representing a safety concern. This often occurs where 'artificially' set speed limits are in place (i.e. not consistent with prevailing topographical and development conditions).[2]

Best Practices Research

Nearly every municipality states that a maximum of 50 km/h posted speed road segment can be a candidate for traffic calming. Almost all municipalities and regions use the 85th percentile benchmark to judge speed conditions, with most employing a minimum of 10km/h over the posted speed limit and variations depending on road type. The City of Burlington does not require other criteria to be met if 85th percentile is more than 15 km/h over the posted speed.

Recommendation

Our suggested improvements to the Town's warrant are to:

- Screen out locations with posted speed over 50 km/h (perhaps a separate speed limit review should be considered first);
- Screen out locations with 85th percentile speed less than 10 km/h over the posted speed; and
- Proceed directly to the ranking process if 85th percentile speed is more than 15 km/h over the posted speed.

Advantages

The proposed changes would potentially reduce data collection efforts and costs, as it would screen out locations early in the process that at less likely to benefit from traffic calming measures, as well as advancing locations more likely to be experiencing a speeding problem, and therefore could potentially benefit from traffic calming measures, directly to the evaluation and ranking process.

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[2] Geometric Design Guide for Canadian Roads. Transportation Association of Canada. 1999 (updated 2007).

Disadvantages

Locations where the posted speed limit is not artificially set could be screened out early in the process. Such locations could in fact be experiencing speed-related problems, although they are expected to be rare, since posted speed limits that are not artificially set are more likely at locations with posted speeds of 60 km/h or greater.

2.4 Collision Criteria

Current Policy

The Town of Ajax uses collisions involving vulnerable road users and collisions potentially corrected by traffic calming measures as a screening criterion. We note that a clear definition of 'potentially corrected by traffic calming measures' is not provided (other jurisdictions also use the term 'preventable'). Additionally, if the minimum collisions are met, no other screening criteria are required to be met.

Issues

Although the collision screening criterion only considers collisions with vulnerable road users and collisions potentially corrected by traffic calming measures, the remaining screening criteria (volume, speed, through traffic) provide valuable information for assessing potential contributing factors to collisions, at least on a preliminary basis. Even though these parameters are still taken into account in the ranking process, if they present low values, a location that fits this condition could end up ranking lower in the traffic calming warrant and not being properly addressed, when in fact other contributing factors may be leading to a higher collision rate.

Best Practices Research

Almost all jurisdictions use the number of collisions in the ranking process. Usually this entails assigning 1 point per collision in the previous 3 years towards its ranking, but not as a screening criterion. City of Kingston differentiates between injury and non-injury collisions, awarding 1 point for each non-injury collision per kilometer, and 5 points for each injury collision per kilometer. The City of Toronto considers injury collisions with a 2:1 ratio over non-injury collisions.

Recommendation

Our suggested improvements to the Town's warrant are:

- Include a clear definition of "collisions potentially corrected by traffic calming" in the warrant text;
- If minimum collisions are met, but other criteria (volume, speed, through traffic) are not, the location should be considered for a full operational/safety review;
- Award more points to injury collisions than to non-injury collisions in the ranking process (e.g. 2:1 or 3:1)

Advantages

Including a clear definition of "collisions potentially corrected by traffic calming" in the warrant text would ensure consistency in the analysis of different locations;

Locations where collision frequency is high but other traffic calming related parameters (speed, volume, through traffic) are not, could have contributing factors that are not necessarily addressed by traffic calming (for example, visibility restrictions or substandard design elements). In these cases, a full operational/safety review would be a more appropriate approach to investigate the collision issue.

Awarding more points to injury collisions in the ranking process would be consistent with typical traffic safety prioritization methods used in the industry (network screening). It assigns more weight to locations that present greater potential for safety improvement.

Disadvantages

A full operational/safety review could eventually yield recommendations related to traffic calming, which would represent increased costs for reviewing these locations.

2.5 Pedestrians and Schools

Current Policy

The Town of Ajax awards points in the ranking process for each school/park/other pedestrian generators, and awards points to locations where no sidewalks are present.

Issues

Since vulnerable road users are a key consideration in traffic calming measures, reducing their exposure to vehicular traffic should be prioritized over influencing driver behavior. Locations with no sidewalks, for example, have greater pedestrian exposure to vehicular traffic than locations with sidewalks. Implementing traffic calming measures before providing appropriate facilities may not be the most effective approach, since the vulnerable road users will continue to be exposed to vehicular traffic.

Best Practices Research

Most municipalities assign points for the presence of “pedestrian generators”, bicycle facilities, parks, playgrounds, schools, community centers and other high traffic locations. Some jurisdictions award points for the absence of sidewalks, while others do not consider traffic calming if there is no sidewalk on at least one side of the street (installation of sidewalk should be considered before traffic calming).

Recommendation

Our suggested improvement to the Town’s warrant is to consider installation of sidewalks where they are not present before traffic calming measures are considered.

Advantages

Consideration of sidewalks prior to traffic calming measures would be a more appropriate approach to addressing concerns with vulnerable road users, and would potentially lead to more effective results.

Disadvantages

Some locations may not be feasible for sidewalk installation due to physical restrictions, for example. It could eventually be found that traffic calming measures are the recommended approach. This could create delays in addressing safety concerns at such locations.

2.6 Bicycle Facilities

Current Policy

The Town's current warrant does not award points to bicycle facilities or routes in the ranking process.

Issues

Bicyclists are considered vulnerable road users, and locations where bicycle facilities or routes are present usually indicate higher volumes of these users compared to other locations.

Best Practices Research

Most municipalities specifically mention giving priority to cycling and pedestrians. Some mention a requirement to consider "Complete Streets" guidelines. Points are almost always granted for routes, lanes and paths dedicated for cycling.

Recommendation

Our suggested improvements to the Town's warrant are:

- Rename the Pedestrian Generators factor in the Scoring criteria to Active Transportation Generators and Facilities; and
- Include bicycle facilities or routes as a defined element to which points are assigned in the ranking process.

Advantages

Awarding points to locations with bicycle facilities or routes would give greater priority to locations where more vulnerable users are expected, which are more likely to effectively benefit from traffic calming measures.

Disadvantages

The presence of bicycle facilities or routes may not carry the same weight as schools or parks in terms of the number of vulnerable road users since they might present a demand (i.e. bicycle volume) lower than anticipated. This could lead to some locations scoring higher where in fact the number of vulnerable road users is not as high as locations with schools or parks. However, this could be overcome by awarding a smaller number of points to bicycle facilities or routes (for example, 2 or 3 points) compared to schools or parks (currently awarded 5 points).

2.7 EMS and Transit

Current Policy

The Town's current warrant considers EMS and Transit routes in its ranking system, and requires input from these services in the development of a Traffic Calming Plan for each location that reaches the design phase.

Issues

The involvement of EMS and Transit services on a case-by-case basis occurs relatively late in the process. By the time their input is required, 5 out of 6 phases of the entire process have already been completed, including Request, Screening, Ranking, Selection of Traffic Calming Measures, and Project Selection & Council Approval. It also represents increased effort and cost, since each traffic calming plan requires individual review.

Best Practices Research

There is some variability in the way other municipalities consider EMS and Transit routes. While some also require input on a case-by-case basis, others such as the City of Kitchener, for example, "*has removed the connection to transit and emergency services from the weighting system entirely, recognizing that emergency services and transit should not be a factor of whether traffic calming is warranted and how roadways are ranked, but rather a determination of potential measures that are installed along these roadways.*"[3]

Recommendation

Our suggested improvement to the Town's warrant is to eliminate the case-by-case consultation with EMS and Transit, and rather to present the updated toolbox of traffic calming measures for overall prior approval by EMS and Transit services as part of the warrant update process.

Once the toolbox is approved by EMS and Transit, these stakeholders would not provide input on a case by case basis. The toolbox could be reviewed and adjusted periodically.

Advantages

A pre-approved toolbox of traffic calming measures is expected to reduce efforts and costs of developing traffic calming plans, mainly for two reasons: first, it reduces the amount of staff time dedicated to discussing appropriate measures for each individual location; second, it could define situations for which traffic calming measures are not acceptable earlier in the process, eliminating unnecessary analysis of locations that could eventually be rejected by EMS and Transit services.

Disadvantages

Some extraordinary cases could be overlooked, however Town staff could still request input from EMS and Transit services if they deem it necessary.

[3] City of Kitchener, Traffic Calming Policy

2.8 Prioritization of Older Requests

Current Policy

The Town's policy does not assign any kind of priority based on request date.

Issues

Locations that meet the minimum score to warrant traffic calming measures, but present a relatively low score in the ranking process, may remain in the waiting list for several years without ever receiving the requested traffic calming measures, as newer requests with higher scores receive priority.

Best Practices Research

Hamilton was the only policy giving consideration to older requests. If two projects have identical scores in the ranking process, the oldest request has the priority. This method, however, still presents a high chance that these locations will continue to score low and remain in the waiting list indefinitely.

Recommendation

Our suggested improvement to the Town's warrant is to consider requests older than 3 years that meet the minimum score to the top of the ranking.

Alternatively, additional points could be awarded based on how old the request is (for example: requests older than 3 years receive 5 extra points, or 1 extra point is awarded for each year since the initial request, up to a limit of 5 points).

Advantages

Moving older requests to the top of the ranking would ensure that all locations that meet the minimum score have traffic calming measures implemented within a reasonable timeframe.

Awarding extra points to older requests would include at least a small level of prioritization to older requests.

Disadvantages

If older requests are moved to the top of the ranking, an increased budget for traffic calming projects could be required in future years so that high-scoring locations are not neglected.

If extra points are to be awarded, no reference was found in other municipalities to indicate what would be fair in terms of the number of points or how old the requests are. This could lead to locations in more need of traffic calming measures being surpassed by others in less need.

2.9 Through Traffic

Current Policy

The Town's current warrant requires a minimum of 30% Non-Local Traffic in the screening stage of the warrant process. Additionally, points are awarded at the ranking stage for 10% increments in Non-Local Traffic above 20%.

The warrant also presents four different methods to estimating the amount of non-local traffic within a study area.

Issues

Using non-local traffic as a screening criterion is unnecessary. Whether non-local traffic in fact represents a problem at a specific location tends to be determined by the tolerance of the neighborhood and community for traffic and will be addressed accordingly by support.

Further, the effort to collect data, the accuracy of the data collection and the cost of the four methods presented for estimating the amount of non-local traffic vary considerably. It is important that the method of estimation of non-local traffic for different locations be consistent, since the results will eventually contribute to the final ranking of requests. Using different methods, with different accuracy levels, could distort the final results.

Best Practices Research

Most municipalities do not explicitly state a required amount of through traffic to consider traffic calming measures. The policies reviewed that do use through traffic as a screening criterion are City of Burlington (minimum 15% for local roads and 30% for collector roads) and City of St. John's (minimum 30% for local roads, not applicable to collector roads).

Information about methods for estimating non-local traffic is scarce. City of Vaughan's policy makes only a reference to infiltration studies.

Recommendation

Our suggested improvements to the Town's warrant are to:

- Remove through traffic from the screening criteria, unless there are valid reasons to maintain it; and
- Consider using only one method for estimating non-local traffic in the ranking process for consistency purposes. Method 1 appears to provide an acceptable level of accuracy with a reasonable cost (unless there is a sound rationale supporting method 2).

Advantages

Removing non-local traffic as a screening criterion would eliminate one unnecessary step in the process. If non-local traffic is a significant issue, this will be identified by the community support, as well as reflected in the ranking process.

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Using only one method for estimating non-local traffic would provide consistency between different locations, as well as increased fairness in the ranking results.

Disadvantages

Removing non-local traffic as a screening criterion could increase the number of requests advancing to the ranking process, as well as the number of low-scoring requests. If the primary recommendation in Section 2.8 (Prioritization of Older Requests) is implemented, this could increase the budget needs for traffic calming projects.

2.10 Public Input

Current Policy

The Town's current policy involves three instances of public input (not considering Council involvement): the initial request (typically from residents, business owners, schools or members of Council), public support to develop a plan, and public support of final plan.

Issues

A high number of opportunities for public input involves high efforts and costs for analyzing requests, and developing and finalizing a plan (if supported). The current warrant adds potential inefficiencies to the process, since several requests could be analyzed in the screening and ranking process, but later rejected by lack of public support.

Best Practices Research

Generally, policies present a common pattern for public input:

1. Require one individual (anyone) or community to submit a request to the traffic department for consideration.
2. Investigate for initial conditions and screening. Once determined, the department returns with an approval for consideration.
3. Sometimes, an initial public event is held at this point and/or a required survey for community support.
4. Some will then go ahead with a review of solutions depending on their findings without public engagement.
5. The solution(s) are discussed and given a final draft of options.
6. A public event is usually held to discuss alternatives.
7. Usually proposed to council for final approval.

The City of Hamilton (2007) requires a municipal Councillor to gather residents' support and file the initial request.

Recommendation

Our suggested improvement to the Town's warrant is require a Town Councillor to make the initial request for traffic calming measures at a location, after gathering sufficient public support from the residents. Public support would only be required once, at the end of the process, for the final plan.

Advantages

Gathering public support at the initial stage of the process would reduce staff effort and costs involving data collection and analysis to review locations that would eventually be rejected by lack of public support.

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Disadvantages

This modification could increase political pressure for implementing traffic calming measures at the location of the request even if the warrant is not met, since public support will have been expressed from the beginning.

2.11 Expansion of Study Area

Current Policy

The current warrant provides general guidelines to determining the 'Local Area', depending on the type of road being reviewed.

Issues

If the recommendation outlined in Section 2.10 (Public Input) is adopted, gathering of public support cannot be limited to affected residents of a specific road for which the request is being submitted. Residents of all potentially affected roads should be consulted. Since this would be done in the early stages of the process, prior to Town staff involvement, the need to expand the study area could be overlooked.

Best Practices Research

No municipality mentioned that a study was specific to one street or segment of road. Most of the municipalities did mention instead that under extreme conditions or if the problem was a community wide or multi street issue, there would be a consideration or investigation of a wider area. Some mention that there are specific measures and phases of data collection and investigation to ensure that nearby streets are not affected by attempts to bypass the proposed traffic calming measures.

Recommendation

Our suggested improvement to the Town's warrant is for Town Staff to determine the study area and inform the Councillor during the initial request phase. The Councillor would initially express the interest to consider traffic calming at a specific location. Town Staff would then determine the study area (or 'Local Area') according to the existing guideline, and the Councillor would expand the 'polling area' as required.

Advantages

Determining a proper study area early in the process will ensure that gathering of public support is adequate in terms of how many potentially affected residents must be consulted.

Disadvantages

None.

2.12 Full Operations and Safety Review for Particular Situations

Current Policy

The only particular situation addressed by the Town's current policy is the case of roads that present very high speed, but do not meet the volume criteria, and therefore do not qualify for traffic calming under the formal warrant process.

Issues

In certain cases, traffic calming may not be the most adequate strategy to address a safety concern. Examples include road sections with horizontal curves (or sequence of curves), or where a relevant collision pattern is identified.

Best Practices Research

No specific provisions were found in the policies reviewed regarding this condition.

Recommendation

Our suggested improvements to the Town's warrant are to consider a full operational and safety review for:

- Where a relevant collision pattern is identified; and
- Where existing conditions suggest that traffic calming is not the most adequate strategy to address the problem (for example, road sections with curves, or where improvements to the arterial road network would be more effective to reduce cut-through traffic).

Advantages

Increased likelihood that the most adequate solution will be implemented to address the concern.

Disadvantages

Full operations and safety reviews can be time consuming and costly.

2.13 Toolbox of Traffic Calming Measures

Current Policy

The current version of the warrant presents the traffic calming measures in terms of appropriateness (*Appropriate, Use with Caution, Not Recommended*) to different road classifications (*Local, Low-Volume Collector, Other Collector, Type 'C' Arterial*).

Issues

The existing toolbox does not provide information about what types of issues each traffic calming measure addresses, or their expected level of effectiveness.

Best Practices Research

Some manuals present which types of issues each traffic calming measure addresses (speeds, conflicts, etc.), and/or a qualitative level of expected effectiveness. City of Windsor's Traffic Calming Policy presents very comprehensive tables (**Figure 1**) containing the expected effect of each traffic calming measure on each type of issue, including speed reduction, volume reduction, conflict reduction, and environment. Different tables are presented for each road class.

Recommendation

Our suggested improvement to the Town's warrant is to present the toolbox of traffic calming measures based on applicability to the problems they address (e.g. reduce speed, reduce volume, etc.) and the expected effectiveness of each measure, similar to the City of Windsor's policy. The toolbox could also present information on whether each measure is pedestrian and bicycle friendly.

Advantages

Presenting the traffic calming measures as suggested would provide consistency in the application of different types of measures based on the types of issues they most effectively address.

Disadvantages

This modification could restrict flexibility in the selection of traffic calming measures, although a provision could be included allowing for the use of engineering judgment in particular situations.

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Appropriate Traffic Calming Devices For Local Roads

Level 1 Calming – Score 21<36	**Signing**				
Measure	Speed Reduction	Volume Reduction	Conflict Reduction	Environment	Reference
Maximum Speed	Minor	Nil	Nil	Nil	S-1
Right or Left Turn Prohibited	Nil	Minor	Minor	Minor	S-2
Through Traffic Prohibited	Nil	Minor	Minor	Minor	S-3
Passive signage (ie: Traffic Calmed Neighbourhood)	Nil	Nil	Nil	Minor	S-4
Level 2 Calming – Score 36<56	**Horizontal Deflection**				
Measure	Speed Reduction	Volume Reduction	Conflict Reduction	Environment	Reference
Chicane - Two Lane	Minor	Nil	Minor	Minor	H-1
Curb Radius Reduction	Minor	Nil	Nil	Minor	H-2
On Street Parking	Minor	Nil	Nil	Minor	H-3
Lane Narrowing	Minor	Nil	Nil	Minor	H-4
Raised Median Island	Minor	Nil	Minor	Nil	H-5
Level 3 Calming – Score 56<76	**Horizontal Deflection**				
Measure	Speed Reduction	Volume Reduction	Conflict Reduction	Environment	Reference
Chicane - One Lane	Substantial	Substantial	Substantial	Minor	H-6
Curb Extension	Minor	Nil	Nil	Substantial	H-7
Traffic Circle	Substantial	Minor	Substantial	Substantial	H-8
	Diversion				
Measure	Speed Reduction	Volume	Conflict Reduction	Environment	Reference
Intersection Channelization	Nil	Minor	Minor	Minor	O-1
Raised Median Through Intersection	Nil	Substantial	Minor	Minor	O-2
Right in / Right out Island	Nil	Substantial	Minor	Minor	O-3
Level 4 Calming – Score 76 < Max	**Vertical Deflection**				
Measure	Speed Reduction	Volume Reduction	Conflict Reduction	Environment	Reference
Raised Crosswalk	Substantial	Nil	Minor	Minor	V-1
Raised Intersection	Minor	Nil	Minor	Minor	V-2
Sidewalk Extension	Minor	Nil	Minor	Nil	V-3
Speed Hump	Substantial	Minor	Substantial	Minor	V-4
Textured Crosswalk	Nil	Nil	Minor	Minor	V-5
	Diversion				
Measure	Speed Reduction	Volume Reduction	Conflict Reduction	Environment	Reference
Directional Closure	Nil	Substantial	Minor	Minor	O-4
Diverter	Nil	Substantial	Minor	Minor	O-5
Full Closure	Nil	Substantial	Substantial	Minor	O-6

Figure 1: City of Windsor Toolbox of Traffic Calming Measures

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Town of Ajax

Traffic Calming Warrant Update

Proposed Warrant Updates

INTERIM REPORT

January 2015

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1. Introduction

The purpose of this document is to communicate our recommended improvements to the Town of Ajax's Traffic Calming Warrant. The proposed improvements were based on best-practices research conducted by CIMA staff which included 14 Canadian municipalities, most of which are located within the Province of Ontario. The traffic calming warrants and/or policies reviewed are listed in **Table 1**. Each recommendation is accompanied by a brief description of the current warrant related by the topic under review, the issues we understand that arise from the current process, a brief summary of the findings from the best practices research, and the advantages and disadvantages associated with each recommendation.

Table 1 - List of Traffic Calming Warrants and Policies Reviewed

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City of Halifax, NS	http://www.halifax.ca/traffic/calming/Shortcut_Policy.php
City of Hamilton, ON	https://www.hamilton.ca/NR/rdonlyres/2E7EB619-F5D7-40B5-93FA-4C8E17A8FD03/0/Dec03PW07150.pdf (2007) http://www.hamilton.ca/NR/rdonlyres/44A70190-A83E-4EEC-91B2-9B5FADB08F63/0/Nov0682PW07150a.pdf (2013 - proposed)
City of Kingston, ON	https://www.cityofkingston.ca/documents/10180/20847/Traffic+Calming+Policy/da476901-42a0-4c9a-9aaf-0e76222de438
City of Kitchener, ON	http://www.kitchener.ca/en/livinginkitchener/resources/Traffic_Calming_Policy/POLICY.pdf
Town of Milton, ON	https://www.milton.ca/en/live/resources/traffic_calming_policy.pdf
Town of Oakville, ON	http://www.oakville.ca/assets/general%20-%20residents/TCPolicy.pdf
City of St. John's, NL	http://www.stjohns.ca/sites/default/files/files/publication/TrafficCalmingPolicy%5B1%5D_0.pdf
City of Surrey, BC	http://www.surrey.ca/city-services/766.aspx
City of Toronto, ON	https://www1.toronto.ca/city_of_toronto/transportation_services/traffic/files/pdf/traffic_calming_policy_summary.pdf
City of Vaughan, ON	https://www.vaughan.ca/services/residential/traffic_services/traffic_calming/General%20Documents/Traffic%20Calming%20Policy%20%20Procedure.pdf
City of Waterloo, ON	http://www.waterloo.ca/en/contentresources/resources/government/traffic_calming_policy.pdf
City of Windsor, ON	http://www.citywindsor.ca/residents/Traffic-And-Parking/Transportation-Planning/Documents/TrafficCalmingPolicySeptember2005.pdf

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2. Proposed Improvements

CIMA Original Recommendation	Recommendation Modified with Town's Comments
2.1 Road Classification Our suggested improvement to the Town's warrant is to include a statement in the warrant document clarifying that Type 'C' Arterial roads function as collectors.	Our suggested improvement to the Town's warrant is to include a statement in the warrant document clarifying that some Type 'C' Arterial roads function as collectors.
2.2 Block Length Our suggested improvement to the Town's warrant is to include a "minimum block length" screening criterion (for example, 100 or 150 metres).The exact block length should be determined based on local experience.	Our suggested improvement to the Town's warrant is to include a minimum block length of 110 metres as a screening criterion.
2.3 Speed Criteria Our suggested improvements to the Town's warrant are to: + Screen out locations with posted speed over 50 km/h (perhaps a separate speed limit review should be considered first); + Screen out locations with 85th percentile speed less than 10 km/h over the posted speed; and + Proceed directly to the ranking process if 85th percentile speed is more than 15 km/h over the posted speed.	Our suggested improvements to the Town's warrant are to: + Proceed directly to a priority status if 85th percentile speed is more than 15 km/h over the posted speed; and + Assign 0.5 additional points for each 1% of vehicles over 10 km/h above the posted speed (*appropriate score to be confirmed in pilot study*).
2.4 Collision Criteria Our suggested improvements to the Town's warrant are: + Include a clear definition of "collisions potentially corrected by traffic calming" in the warrant text; + If minimum collisions are met, but other criteria (volume, speed, through traffic) are not, the location should be considered for a full operational/safety review; + Award more points to injury collisions than to non-injury collisions in the ranking process (e.g. 2:1 or 3:1)	Our suggested improvements to the Town's warrant are: + Include a clear definition of "collisions potentially corrected by traffic calming" in the warrant text: collisions with pedestrians or bicycles, and collisions where 'exceeding speed limit' or 'speed too fast for condition' is reported in the Motor Vehicle Accident Report (*when 'speed too fast for condition', use judgement based on police officer description*); + If the number of collisions meets the current minimum threshold (and/or if a clear pattern of reoccurring collisions can be identified), the location should be considered for a full operational/safety review (*current threshold is 6 collisions for Local roads and 12 collisions for Collector/Type 'C' Arterial roads*); + Award 5 points for each qualifying collision in excess of 3 (*appropriate score to be confirmed in pilot study*). This is expected to reduce potential bias due to the typical low number of collisions from past requests.
2.5 Pedestrians and Schools Our suggested improvement to the Town's warrant is to consider installation of sidewalks where they are not present before traffic calming measures are considered.	Unchanged from original warrant. *(We suggest, however, that lane narrowing with the use of sidewalks be given priority as a countermeasure if a significant number of pedestrians is expected in the subject location)*

CIMA Original Recommendation	Recommendation Modified with Town's Comments
2.6 Bicycle Facilities/Routes Our suggested improvements to the Town's warrant are: + Rename the Pedestrian Generators factor in the Scoring criteria to Active Transportation Generators and Facilities; and + Include bicycle facilities or routes as a defined element to which points are assigned in the ranking process.	Our suggested improvement to the Town's warrant is to include bicycle facilities or routes as a factor in the ranking process and assign 5 points if present.
2.7 EMS and Transit Our suggested improvement to the Town's warrant is to eliminate the case-by-case consultation with EMS and Transit, and rather to present the updated toolbox of traffic calming measures for overall prior approval by EMS and Transit services as part of the warrant update process. Once the toolbox is approved by EMS and Transit, these stakeholders would not provide input on a case by case basis. The toolbox could be reviewed and adjusted periodically.	*Unchanged*
2.8 Prioritization of Older Requests Our suggested improvement to the Town's warrant is to consider requests older than 3 years that meet the minimum score to the top of the ranking. Alternatively, additional points could be awarded based on how old the request is (for example: requests older than 3 years receive 5 extra points, or 1 extra point is awarded for each year since the initial request, up to a limit of 5 points).	A system with 2 lists will be created: + Priority List (based on speed with no sufficient collisions to consider full safety review); + Pass/Fail chronological list (General List).
2.9 Through Traffic Our suggested improvements to the Town's warrant are to: + Remove through traffic from the screening criteria, unless there are valid reasons to maintain it; and + Consider using only one method for estimating non-local traffic in the ranking process for consistency purposes. Method 1 appears to provide an acceptable level of accuracy with a reasonable cost (unless there is a sound rationale supporting method 2).	Through Traffic will be completely removed from the warrant.
2.10 Public Input Our suggested improvement to the Town's warrant is require a Town Councillor to make the initial request for traffic calming measures at a location, after gathering sufficient public support from the residents. Public support would only be required once, at the end of the process, for the final plan.	The new process will include public consultation for Traffic Calming alternatives developed by Town staff. The goal of the consultation will be to obtain input for incorporation to the alternatives prior to final approval, as opposed to the current process requiring multiple instances of public support.

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CIMA Original Recommendation	Recommendation Modified with Town's Comments
2.11 Expansion of Study Area Our suggested improvement to the Town's warrant is for Town Staff to determine the study area and inform the Councillor during the initial request phase. The Councillor would initially express the interest to consider traffic calming at a specific location. Town Staff would then determine the study area (or 'Local Area') according to the existing guideline, and the Councillor would expand the 'polling area' as required.	*Removed*
2.12 Full Operations and Safety Review for Particular Situations Our suggested improvements to the Town's warrant are to consider a full operational and safety review for: + Where a relevant collision pattern is identified; and + Where existing conditions suggest that traffic calming is not the most adequate strategy to address the problem (for example, road sections with curves, or where improvements to the arterial road network would be more effective to reduce cut-through traffic).	*Unchanged (expanded in previous sections)*
2.13 Toolbox of Traffic Calming Measures Our suggested improvement to the Town's warrant is to present the toolbox of traffic calming measures based on applicability to the problems they address (e.g. reduce speed, reduce volume, etc.) and the expected effectiveness of each measure, similar to the City of Windsor's policy. The toolbox could also present information on whether each measure is pedestrian and bicycle friendly.	*See proposed toolbox attached*

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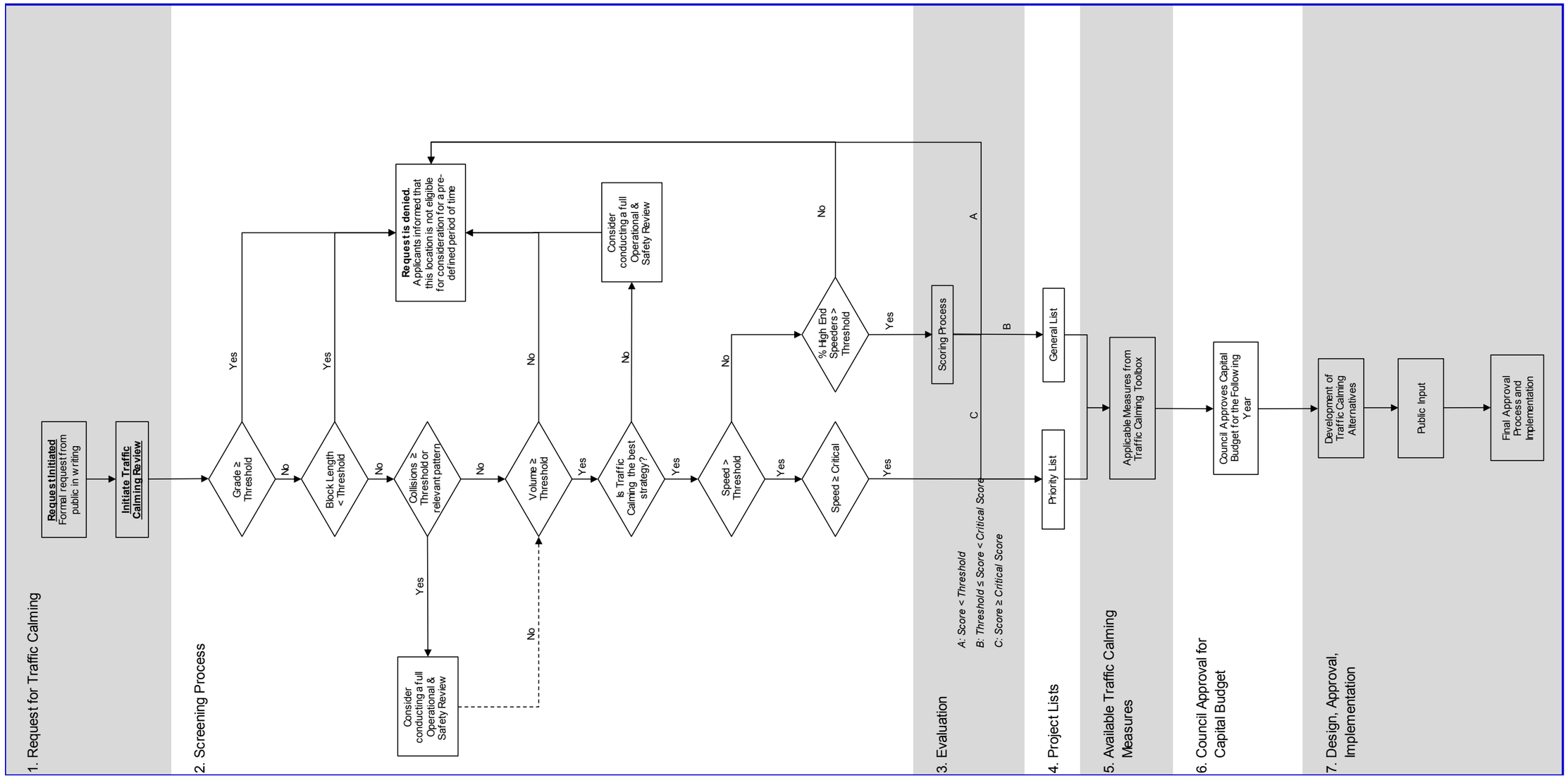
3. Proposed Warrant Flowchart



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4. Proposed Warrant Scoring

Scoring for Local Roads

Factor	Point Criteria	Maximum Points
Collision History	5 points for each qualifying collision in excess of 3	20
Traffic Speeds	1 point for each km/h above posted speed, and 0.5 points for each 1% of vehicles over 5 km/h above posted speed	25
Traffic Volumes	1 point for each 50 vehicles above threshold	20
Pedestrian Generators	5 points for each school or park within the study area (other Pedestrian Generators may be defined by Ajax)	n/a
Pedestrian Facilities	5 points if there are no sidewalks in the study area	5
Bicycle Facilities or Routes	5 points if bicycle lanes, sharrows, or routes are present in the study area	5
Adjacent Land Uses (residential)	1 point for each 20% of residential land use	5
		80

Scoring for Collectors and Type 'C' Arterial Roads

Factor	Point Criteria	Maximum Points
Collision History	5 points for each qualifying collision in excess of 3	15
Traffic Speeds	1 point for each km/h above posted speed, and 0.5 points for each 1% of vehicles over 5 km/h above posted speed	25
Traffic Volumes	1 point for each 100 vehicles above threshold	20
Pedestrian Generators	5 points for each school or park within the study area (other Pedestrian Generators may be defined by Ajax)	n/a
Pedestrian Facilities	10 points if there are no sidewalks in the study area, 5 if only on one side	10
Bicycle Facilities or Routes	5 points if bicycle lanes, sharrows, or routes are present in the study area	5
Adjacent Land Uses (residential)	1 point for each 20% of residential land use	5
		80

** Passing score will be determined in the pilot test*

B000468

5. Proposed Toolbox of Traffic Calming Measures

		APPLICABILITY				POTENTIAL BENEFITS				POTENTIAL DISBENEFITS						
Measure		Local Road	Low-Volume Collector	Other Collector	Type 'C' Arterial	Speed Reduction	Volume Reduction	Conflict Reduction	Environment	Local Access	Emergency Response	Active Transportation	Enforcement	Maintenance	Cost	
Vertical Deflection	Raised Crosswalk	✓	◆	×	×	■	□	▣	▣	□	▣	▣	□	▣	Low to Moderate	
	Raised Intersection	×	×	◆	◆	▣	□	▣	▣	□	▣	▣	□	▣	High	
	Rumble Strip	×	×	×	×	□	□	□	□	□	□	▣	□	■	Low to Moderate	Not recommended due to noise
	Sidewalk Extension	✓	×	×	×	▣	□	▣	□	□	□	□	□	▣	Moderate	
	Speed Hump	✓	◆	×	×	■	▣	■	▣	□	▣	▣	□	▣	Low to Moderate	
	Speed Table	✓	◆	×	×	■	□	▣	▣	□	▣	▣	□	▣	Low to Moderate	Very similar to raised crosswalk
	Speed Cushion	✓	◆	×	×	■	▣	■	▣	□	□	▣	□	▣	Low to Moderate	Assumed same effects as speed hump. May have smaller effect on speed reduction
	Textured pavement	◆	◆	×	×	▣	□	□	■	□	□	▣	□	▣	Moderate to High	Assumed similar characteristics as textured crosswalk, adapted to larger area
	Textured crosswalk	◆	◆	◆	◆	□	□	▣	▣	□	□	▣	□	▣	Low to Moderate	May create additional noise; may create traction/stability problems for seniors, wheelchairs, bicycles,etc
Horizontal Deflection	Chicane, 1-Lane	✓	×	×	×	■	■	■	▣	□	▣	▣	□	▣	Moderate to High	
	Chicane, 2-Lane	✓	◆	◆	◆	▣	□	▣	▣	□	□	□	□	▣	Moderate	Assumed applicability similar to Lateral Shift
	Lateral Shift	✓	◆	◆	◆	▣	□	▣	▣	□	□	□	□	▣	Moderate	Assumed same effects as chicane 2-lane; applicability similar to chicane in combination with ITE Traffic Calming: State of the Practice (1999)
	Curb Extension	✓	✓	✓	✓	▣	□	□	■	□	□	▣	□	▣	Low to Moderate	
	Neckdown	✓	✓	✓	◆	▣	□	□	■	□	□	▣	□	▣	Low to Moderate	Assumed same effects and applicability as curb extension/curb radius reduction combination
	Curb Radius Reduction	✓	✓	✓	◆	▣	□	□	▣	□	□	□	□	▣	Low to Moderate	
	On-Street Parking	✓	✓	✓	◆	▣	□	□	▣	□	▣	▣	□	▣	Low to Moderate	
	Raised Median Island	✓	✓	✓	✓	▣	□	▣	□	■	□	□	□	▣	Low to Moderate	
	Mini Roundabout	×	◆	◆	◆	■	▣	■	■	□	▣	▣	□	▣	High	Assumed same effects and applicability as traffic circle, with higher cost
	Lane Narrowing	✓	✓	✓	✓	▣	□	□	▣	□	□	▣	□	▣	Low to Moderate	Assumed approximately same effects as of curb extension or on-street parking (depending on criteria)
	Road Diet	×	◆	◆	×	■	□	▣	▣	□	▣	▣	□	▣	Low to Moderate	Assumed similar to Lane Narrowing with consideration to function of roads. (Edmonton research)
	Traffic Circle	✓	✓	×	×	■	▣	■	■	□	▣	▣	□	▣	Moderate to High	
Obstruction	Directional Closure	✓	◆	×	×	□	■	▣	▣	▣	□	▣	▣	▣	Moderate	
	Diverter	✓	◆	×	×	□	■	▣	▣	▣	▣	▣	□	▣	Moderate to High	
	Full Closure	◆	×	×	×	□	■	■	▣	■	■	▣	□	▣	Moderate to High	
	Intersection Channelization	✓	✓	◆	◆	□	▣	▣	▣	▣	▣	□	□	▣	Moderate to High	
	Raised Median Through Intersection	✓	✓	×	×	□	■	▣	▣	▣	▣	▣	□	▣	Low to Moderate	
	Right-In/Right-Out Island	✓	◆	×	×	□	■	▣	▣	▣	▣	▣	▣	▣	Moderate	
Signing	Maximum Speed	×	×	×	×	▣	□	□	□	□	□	□	■	□	Low	
	Right (Left) Turn Prohibited	◆	◆	◆	◆	□	□	▣	▣	▣	□	□	■	□	Low	Remove Signing per Town's request
	One Way	◆	◆	×	×	□	■	▣	▣	▣	▣	▣	□	□	Low	Add discussion explaining signs are not TC devices due to minimal effect,
	Stop	×	×	×	×	□	▣	▣	□	□	▣	□	■	□	Low	and unwarranted signs such as Stop signs may potentially lead to rear end collisions, etc...
	Through Traffic Prohibited	◆	◆	◆	◆	□	▣	▣	▣	▣	□	□	■	□	Low	
	Traffic-Calmed Neighbourhood	✓	✓	◆	◆	□	□	□	▣	□	□	□	□	□	Low	
	Warning Signs (playground, school, etc.)	◆	◆	◆	◆	□	□	□	▣	□	□	□	□	□	Low	
	Yield	×	×	×	×	□	□	▣	□	□	□	□	□	□	Low	

✓= Appropriate Measures ◆=Use with Caution ×=Not Recommended ■=Substantial (Dis)Benefits ▣=Minor (Dis)Benefits □=No (Dis)Benefit

Note: Signing was removed per Town`s request.

B000468

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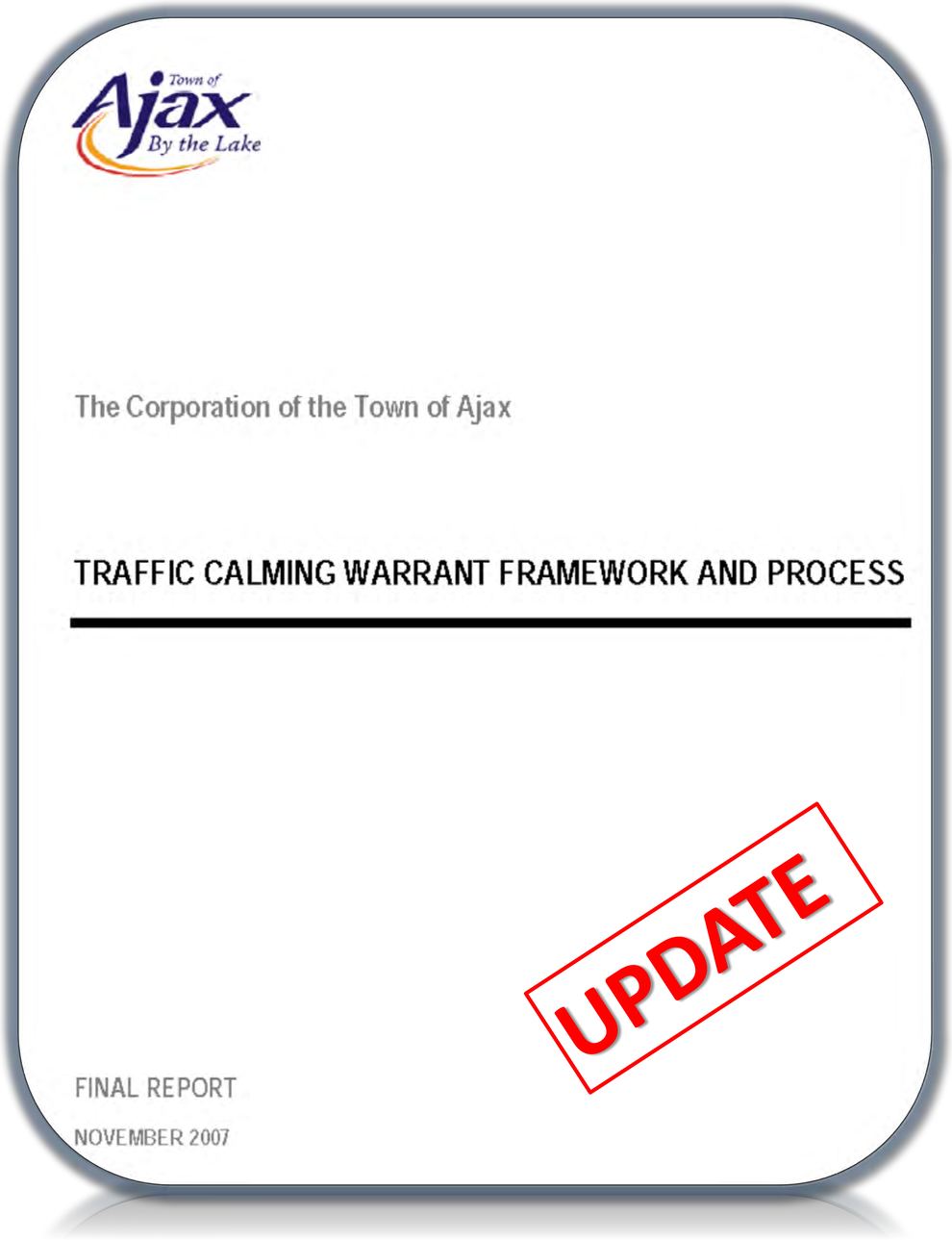
Appendix B: Public and Stakeholders Consultation



The Town of Ajax

Traffic Calming Warrant Update

Public Information Centre (PIC)

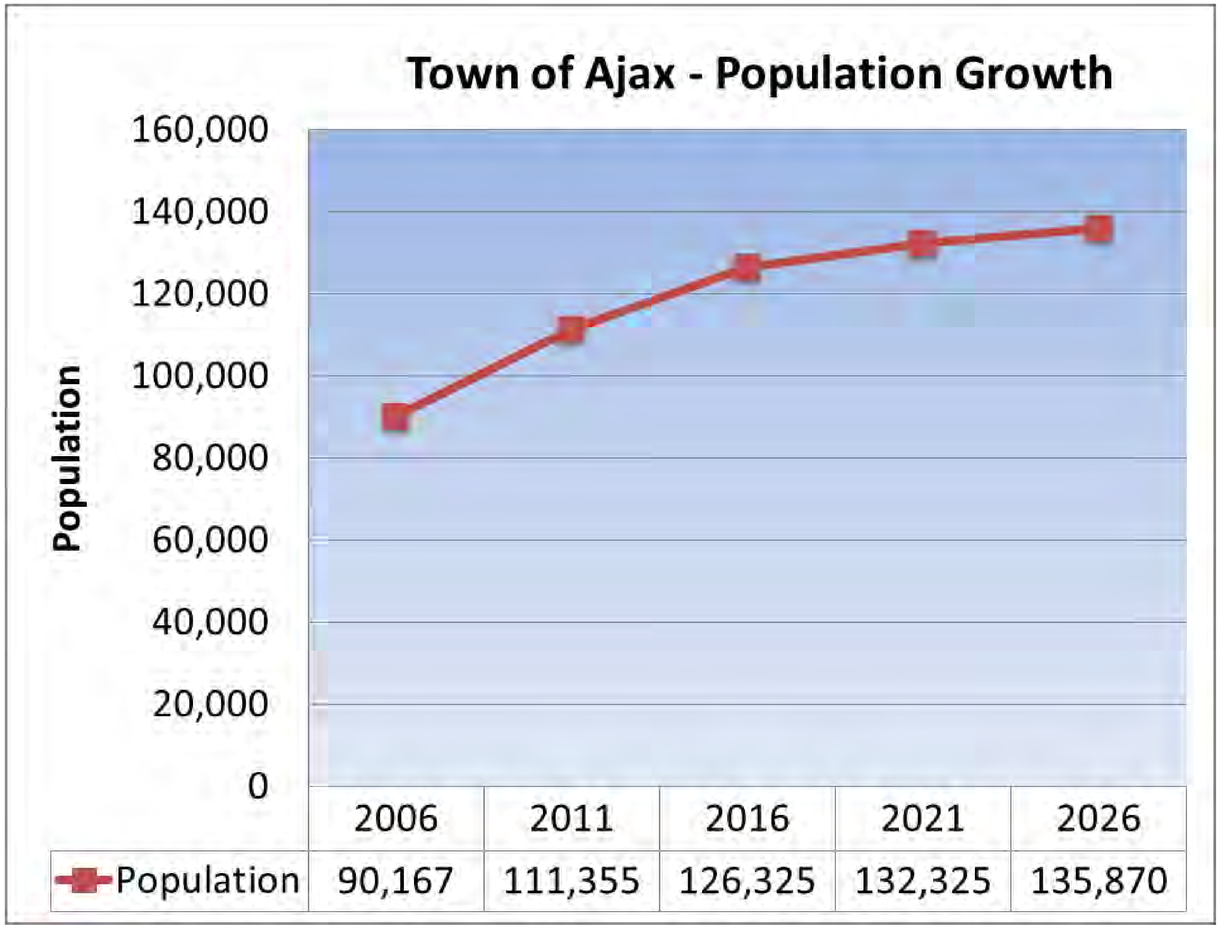
January 21, 2015

Agenda

- **Introduction**
- **Background**
- **Purpose**
- **Process**
  - Review and Assessment
  - Warrant Updates
- **Next Steps**

- **This Public Information Centre (PIC) is an opportunity to provide feedback on the Town's Traffic Calming Warrant Update.**

- **Enquiries regarding individual traffic calming requests will not be addressed during this PIC.**

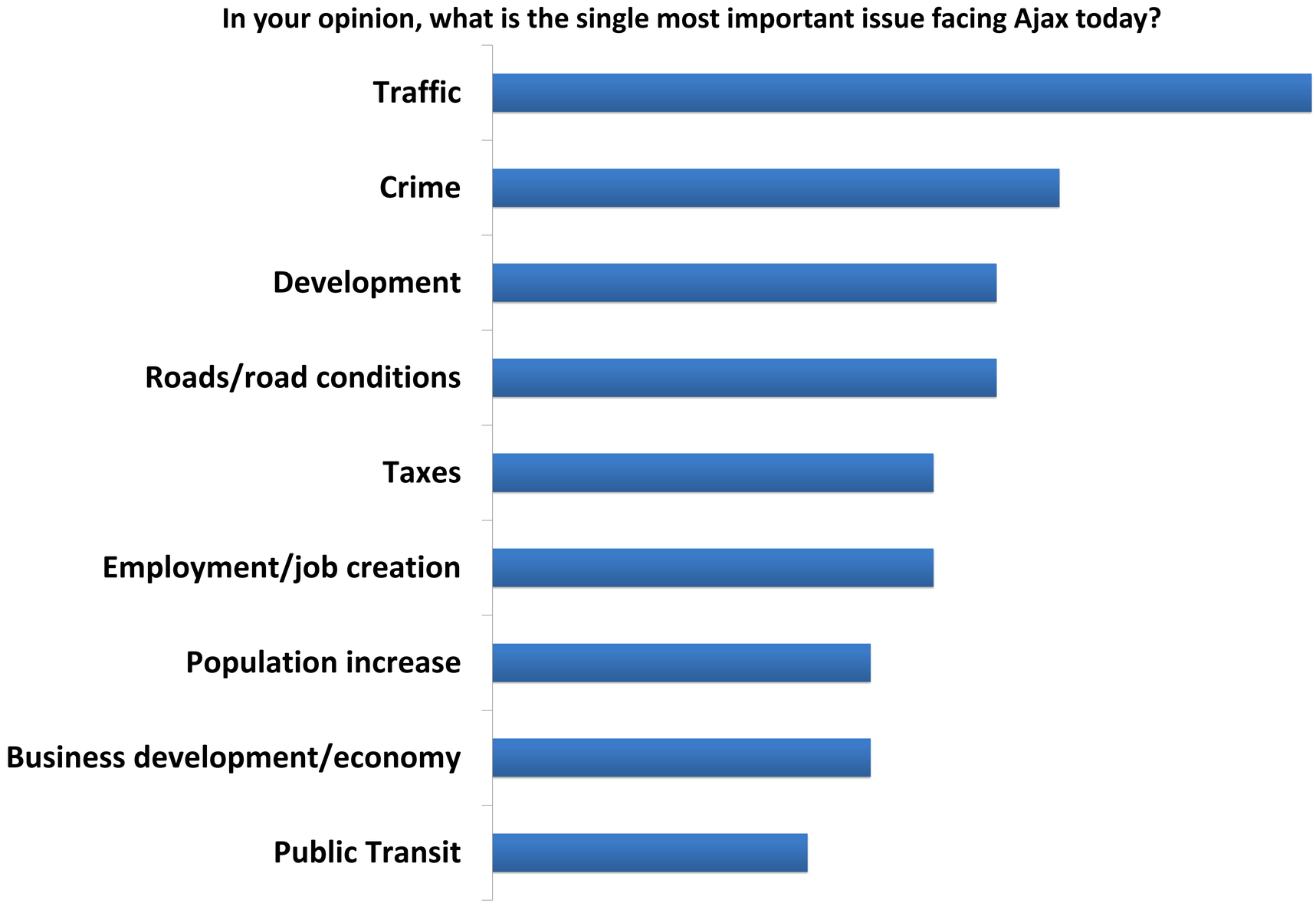


- Substantial population growth since the 2007 Traffic Calming Warrant was approved.

- Traffic Enquiries have increased 45% since 2012.

Community Action Plan Strategy Session
December, 2014

Town of Ajax – Resident Survey 2014; Environics Research Group



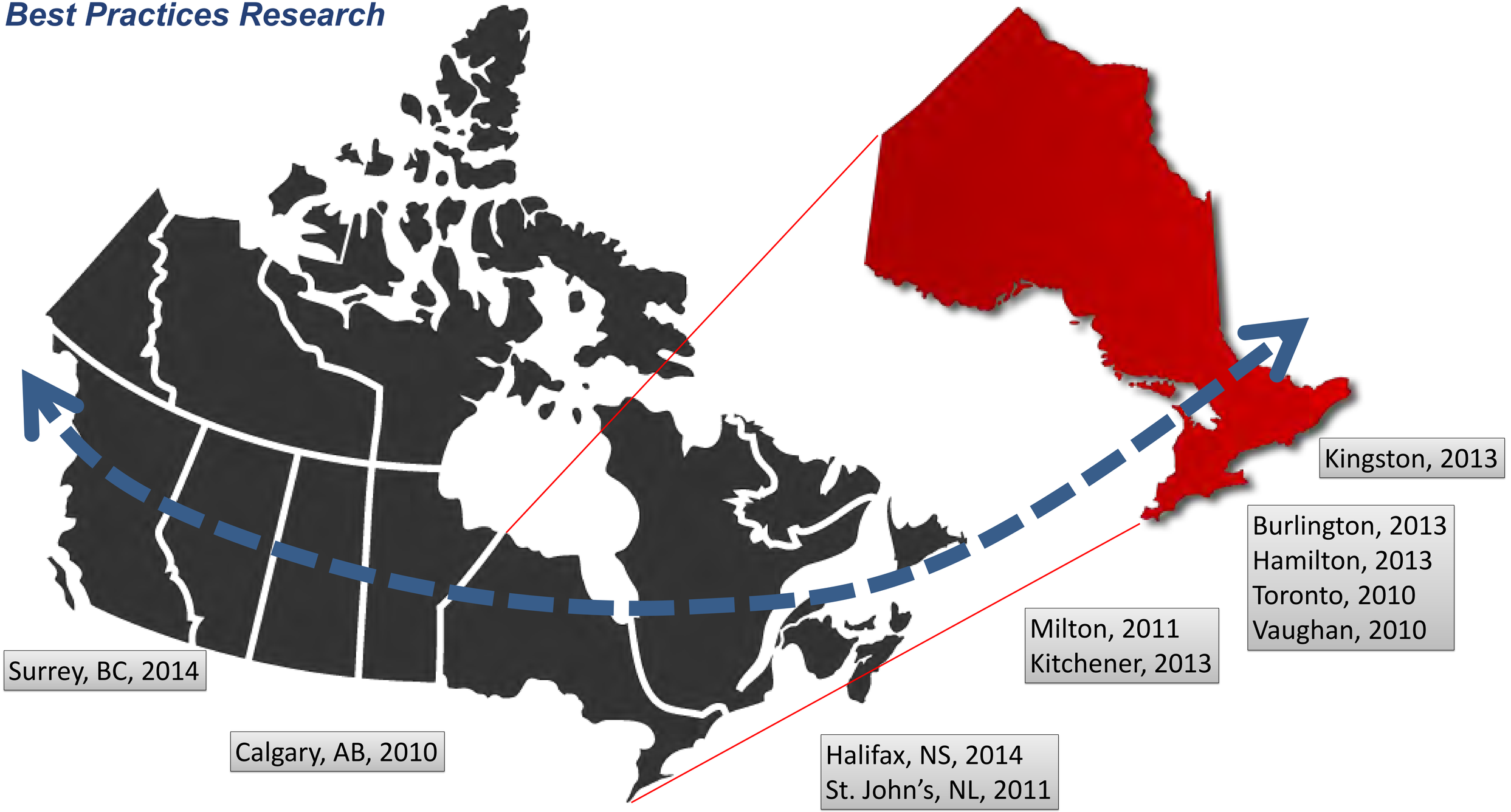
https://www.ajax.ca/en/insidetownhall/resources/Environics-TownofAjax2014-FinalReport.pdf

+To create a more **Appropriate**, **Efficient** and **Flexible** Traffic Calming Warrant Framework and Process.

Process


Review of Background Documents
Assessment of the 2007 Traffic Calming Warrant
Best Practices Research
Proposed Warrant Updates
Public and Stakeholder Consultation
Warrant Update
Pilot Testing of the Warrant Update
Review and Assessment
Warrant Updates

Best Practices Research



Review and Assessment

Items identified for review and assessment

Request for Traffic Calming

Public Input

Screening Process

Road Classification

Block Length

Speed Criteria

Collision Criteria

Presence of Pedestrians and Schools

Expansion of Study Area

Full Operations and Safety Review for Particular Situations

Through and Non-Local Traffic

Project Selection and Council Approval

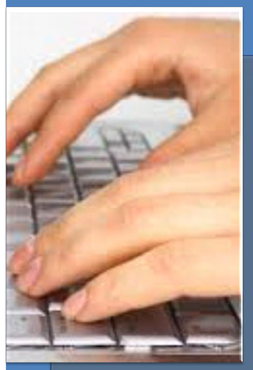
Prioritization of Older Requests

Available Traffic Calming Measures

Emergency Services and Transit

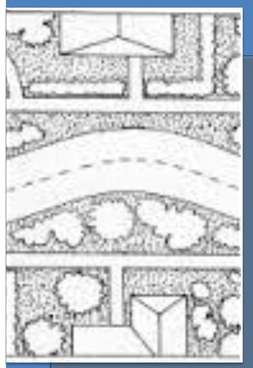
Toolbox of Traffic Calming Measures

Public Input



Content

Procedure



Toolbox

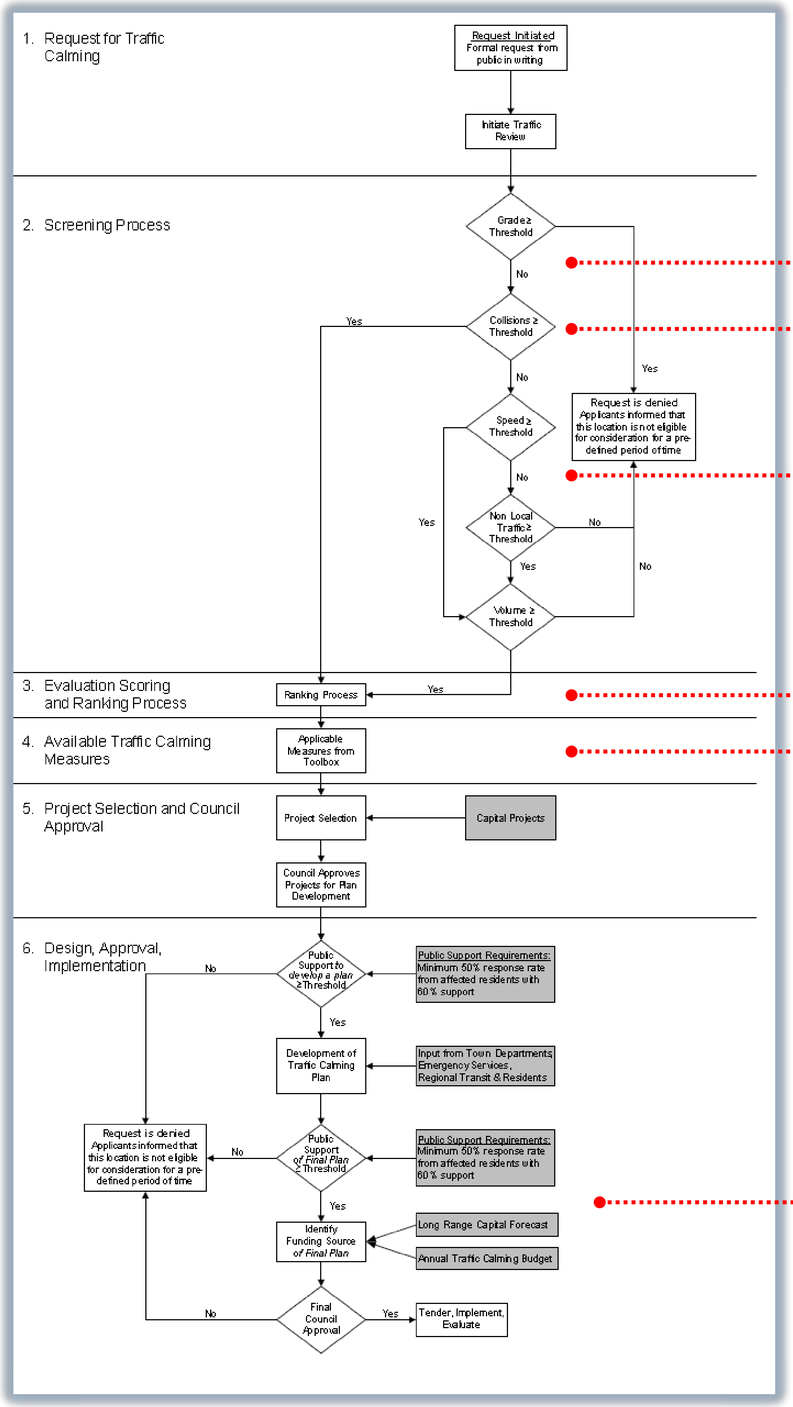
Evaluation

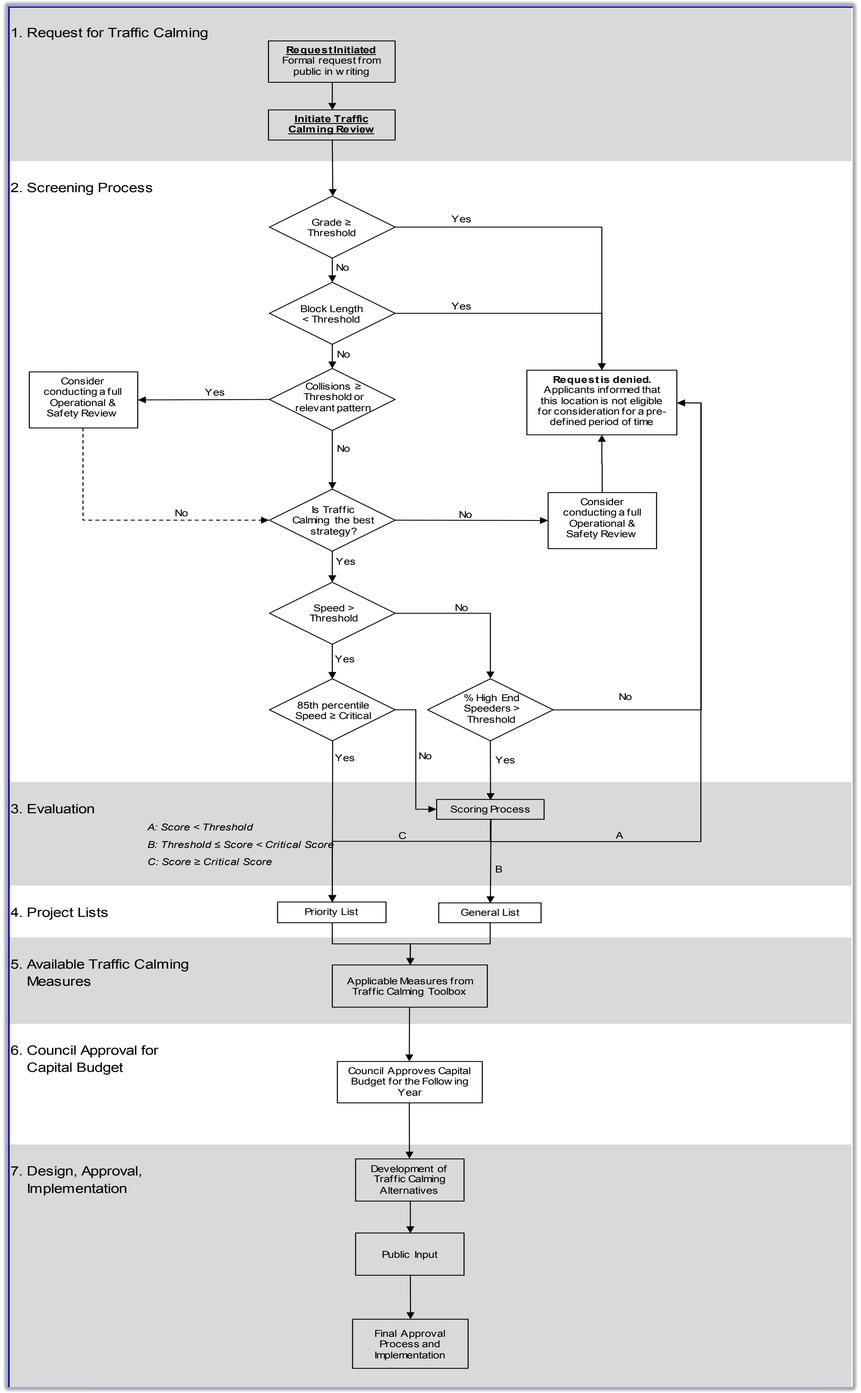
Warrant Updates – Content

Public Input	•Enhance Public Engagement Opportunities •Expand Public Feedback Options •Increase Efficiency – Request to Resolution
Road Classification	•Planned Classification vs Present Function
Collision Criteria	•Recurring Issue vs Single Occurrence
Through Traffic	•Appropriate Channel for Resolution

Warrant Updates – Procedure

2007 Traffic Calming Warrant





Warrant Updates – Evaluation

Factor	Point Criteria Local Roads	Point Criteria Local Roads
Collision History	5 points for each qualifying collision in excess of 3	5 points for each qualifying collision in excess of 3
Traffic Speeds	1 point for each km/h above posted speed, and 0.5 points for each 1% of vehicles over 5 km/h above posted speed	1 point for each km/h above posted speed, and 0.5 points for each 1% of vehicles over 5 km/h above posted speed
Traffic Volumes	1 point for each 50 vehicles above threshold	1 point for each 100 vehicles above threshold
Pedestrian Generators	5 points for each school or park within the study area (other Pedestrian Generators may be defined by Town)	5 points for each school or park within the study area (other Pedestrian Generators may be defined by Town)
Pedestrian Facilities	5 points if there are no sidewalks in the study area	10 points if there are no sidewalks in the study area
Bicycle Facilities or Routes	5 points if bicycle lanes, sharrows, or routes are present in the study area	5 points if bicycle lanes, sharrows, or routes are present in the study area
Adjacent Land Uses (residential)	1 point for each 20% of residential land use	1 point for each 20% of residential land use

Warrant Updates - Toolbox

Type of Traffic Calming Measure	Applicability	Potential Benefits	Potential Limitations
Vertical Deflection	Local Road	Speed Reduction	Local Access
Horizontal Deflection	Low-Volume Collector	Volume Reduction	Emergency Response
Obstruction	Other Collector	Conflict Reduction	Active Transportation
	Type ‘C’ Arterial	Environment	Enforcement
			Maintenance
			Cost

Submit your comments by January 30, 2015:

Town of Ajax	CIMA Canada Inc.
Hubert Ng, P.Eng. Senior Transportation Planner Planning and Development Services hubert.ng@ajax.ca 905-619-2529 x 3209	Jaime Garcia, P.Eng., Ph.D. Project Manager jaime.garcia@cima.ca Tel: 289-288-0287 ext. 6814

Following this PIC, we will:

- Review your Comments
- Complete the Draft Warrant Update
- Test the Traffic Calming Warrant Update Process
- Finalize the Warrant Update

TRAFFIC CALMING WARRANT UPDATE

Questions?

Partners in excellence

Public Input

A public meeting for this project was held in the Town of Ajax Council Chambers on January 21, 2015. A notice was included in the Traffic Calming Page of the Town of Ajax website to invite public participation at the Public Information Centre (PIC). Alternatively, the public was invited to submit their questions/comments on the study by contacting the Town or Consultant Project Manager identified in the Notice.

The PIC venue was arranged as an informal drop-in centre with display boards presenting information on the study. A copy of the display boards is provided in this Appendix, and their contents are summarized below:

- Introduction
- Purpose
- Process – Review and Assessment
- Process – Warrant Updates
- Next Steps

In addition, a PowerPoint presentation was delivered by CIMA Canada Inc. and Town of Ajax staff presenting the following information: a high-level explanation of the purpose and objectives of the traffic calming warrant update study, findings of the review and assessment process and the proposed updates of the warrant process.

Representatives of the Project Team, as identified below, were present to answer questions and discuss the next steps in the study.

- Hubert Ng (Town of Ajax);
- Robert Salewytsch (Town of Ajax);
- Jaime Garcia (CIMA Canada Inc.);
- Stephen Keen (CIMA Canada Inc.); and
- Sonya Kapusin (CIMA Canada Inc.).

Altogether, eight (8) people signed in at the PIC. Attendance included Councillors Colleen Jordan, Joanne Dies, Renrick Ashby, Pat Brown, and Marilyn Crawford. Comments were requested by January 30, 2015.

Received comments or suggestions regarding the material presented during the PIC are included in this Appendix.

Comments Received in the Public Information Centre

I recently attended a town meeting regarding traffic calming on Jan 21, 2015. My interest began after a concern was brought up at my School Council meeting regarding the speed limit on Church St S and the safety of our children attending St Francis de Sales Catholic Elementary School. The typical speed limit in surrounding primary schools in Ontario is 40km/h, and I have yet to find a single primary school in The GTA that has a speed limit greater than 40km/h… with the exception of Church St S in front of St Francis de Sales . If there is another Primary school with a school zone speed limit higher than 40 km/h in Ajax I'd like to be informed of it.

I understand the Highway Traffic Act does not dictate this speed, but allows municipalities to set the speed in school zones at their discretion. I have been advised after contacting the municipality that the limit in this section has been set per road classification however it seems that the limits are inconsistent and may be up for debate.

I have been reviewing official documents prepared by the Government of Ontario as well as the Town of Ajax and per the TOWN OF AJAX OFFICIAL PLAN OFFICE CONSOLIDATION prepared Jan 5, 2015 - Pg. 239 Schedule B- Environmental, I noticed that the area from Bayly to the 401 is a combination of 'Environmental Protection' as well as 'Built Environment' & Church North of the 401 to Kingston Rd is "Built Environment' Per the document all of Church St North of Bayly is an Arterial Type B. Also per the same document travelling speeds on that classification of road is 60 km/h in Urban Areas, 80 km/h outside Urban Area. However, as per the same document, Pickering Village speed limit is to be a maximum of 50 km/h as stated on Pg. 141.

Interestingly, Church St North of Rossland is also classified by the same map (TOWN OF AJAX OFFICIAL PLAN OFFICE CONSOLIDATION prepared Jan 5, 2015 - Pg. 239 Schedule B- Environmental) as a combination of 'Environmental Protection', 'Built Environment' as well as 'Open Area' and the posted speed limit is only 60 km/h north of Rossland, well beyond Taunton. So why is it necessary for the area south of the 401 to be so high at 80 km/h with the same classification and characteristics that make it more relevant to be 60 km/h for such a short piece of road leading directly into a residential area and school zone?

Furthermore, on PG 23 of THE TOWN OF AJAX MASTER PLAN UPDATE – FINAL REPORT DECEMBER 2007, it describes "Church St (North of Kingston Rd), the Town's portion of Church St is a Type 'B' Arterial road from the Town's Northern limits (5th Concession Rd) to Kingston Rd. Church St serves residential development in the West end of Ajax, North of highway 401. It currently has two travel lanes with posted speed limits ranging from 40km/h in school zones to 80km/h in Northern sections."

SFDS is the only primary school on this road in a school zone that is not 40km/h.

My question is simple: Why is Church St classified as Arterial Type B and set at 50 km/h from the 401 to well beyond Taunton Rd, except for the two school zones immediately North of Kingston Rd which is 40km/h, yet the school zone immediately South of Kingston Rd remains at 50 km/h? Why is this one school zone being excluded? Perhaps make it 60 all the way from Bayly until the school zone North of the 401 underpass like its Northern section, then in the school zone it can be dropped to 40 km/h to maintain consistency. With all of these speed limits differing around town there is no sense of uniformity in the

decision to post a speed, which just increases the amount of drivers violating speeds as well as making it more difficult for the police to enforce speed limits.

I'd like to request a Road Watch speed study by the Town and DRPS in the area between the 401 and Kingston Rd in the St Francis de Sales school zone. You will find the people travelling Northbound from Bayly do not slow down to anywhere near 50 km/h during school release times as there is nothing stopping them, they are expected to go from an excessive speed of 80 km/h to 50 km/h with no stops between speeds. They may reduce their speed slightly but they are going at least 10 -30 km/m over the speed limit. Additionally, there is also no crossing guard at Mill St to help ensure the children get safe passage across the street.

As you can see I have found several disconnects highlighting why I feel the classification and current speed limits are incorrect on Church St south of Kingston Rd and should be reviewed and changed. Now I'd like to share my motivation behind reducing the speed limit. I'd like you to seriously review the impact of speed in a pedestrian collision, especially a collision with a pedestrian under the age of 14 (which covers the ages of all primary school students). I have researched many documents, including several prepared by the region and Town of Ajax, as well as the DRPS and found a frightening and direct correlation between injury severity and speed.

Here are some disturbing facts from Safe Kids Canada, (National Injury Prevention Program of the Hospital for Sick Children), Child Pedestrian Injuries Report 2007-2008.

- *Child pedestrian injuries are a leading cause of injury related death for Canadian children aged 14 yrs or younger.*
- *Pedestrian related injuries contribute to almost 15% of all injury related deaths of children younger than 14 years.*
- *On average, 30 child pedestrians younger than 14 years are killed and 2,412 are injured every year.*
- *Children aged 10-14 years have the highest risk of pedestrian injuries and deaths.*
- *More than half of all child pedestrian deaths and most injuries (95%) occur in urban areas.*
- *Children are particularly vulnerable to pedestrian injuries because they are exposed to traffic threats that exceed their cognitive, physical, sensory and auditory development.*
- *Reducing vehicle speed has been proven to be effective in preventing crashes and reducing the severity of injuries.*

It is estimated that a pedestrian struck by a car travelling at 50 km/h is 8 times more likely to be killed than a pedestrian struck at 30 km/h. For each 1.6 km/h reduction in average speed, collision frequency is reduced by 5%. Recommendations from the Safe Kids Canada study can be found on page 10 and topping the list at number 1 is Reduce Driver Speed.

In another report on accidental pedestrian deaths from Jan 1st, 2010 to Dec 31st, 2010 from the Office of the Chief Coroner for Ontario entitled Pedestrian Death Review here are some points from the executive summary pgs 10-11:

When:

- *Peak hours for pedestrian collisions were between 2pm and 10 pm daily*

Where:

- *76% of fatalities occurred in urban areas and 24% in rural areas.*
- *75% of pedestrian fatalities occurred on arterial roads, which are wide, signalized streets that carry high volumes of traffic.*

Why:

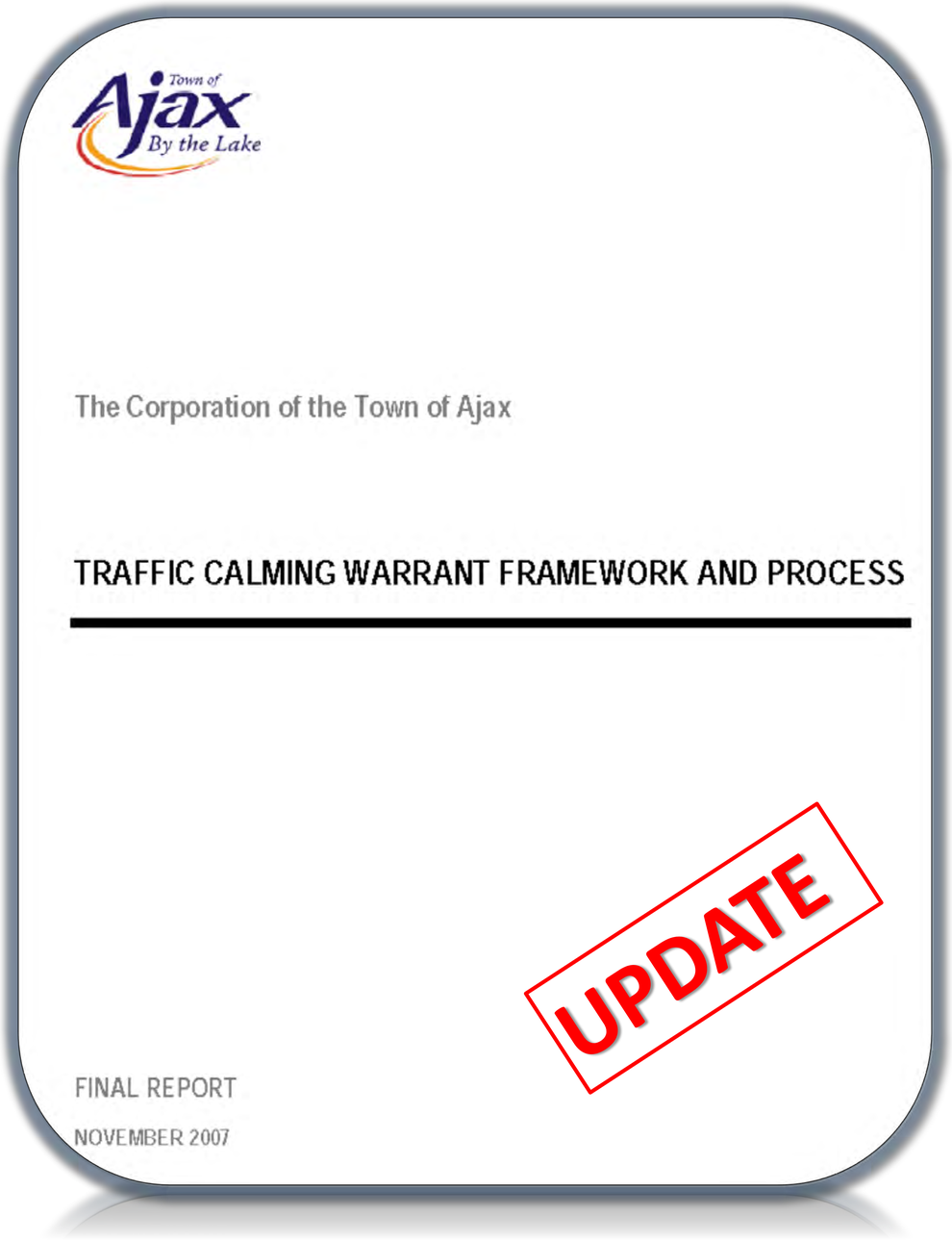
- *Vehicle Speed: 67% of the deaths occurred on roads with posted speeds beyond 50 km/hr, and only 5% on roads below 50 km/hr. For the remainder, the posted speed was unknown*
- *Distractions: Approximately 20% of pedestrians may have had some form of distraction, such as using a cell phone; MP3 player; a mobile device; pushing a shopping cart; walking a dog; or riding a skateboard.*
- *Driver Inattention: 14% of pedestrians were hit on a sidewalk or shoulder of the road, which may be due to loss of control of the vehicle. Inattention may occur when drivers utilize personal communication devices, computers and music in their vehicles which can lead to loss of control. The use of such communication devices by drivers could not be quantified in our study.*

I would like to acknowledge that the reduction of speed will not be the only thing that can and should be done to ensure the continued safety of Ajax's youngest citizens, and everyone else for that matter. Through the school council, I would like to set up an information session for students (a visit from DRPS?) and send helpful information home for parents to use to help educate their children, and perhaps remind themselves about safe behaviours when on and around roadways. Ajax moves 3 ways may have some ready to use information.

Additionally enforcement needs to be present. As an experienced motorist and a pedestrian I can say that when there is increased police presence in an area, drivers are more likely to slow down and comply with the rules of the road. And even after a police blitz has been completed and the police are no longer in the area daily, motorists are still likely to behave long after as they are not sure when the cop may return.

Thank You for taking the time to accept my comments. Unfortunately I could not send attachment with this message as the file size kept rejecting the messages to you.

Also, is it possible to send me the presentation file from the meeting?



The Town of Ajax

Traffic Calming Warrant Update

Stakeholder Meeting

February 13, 2015

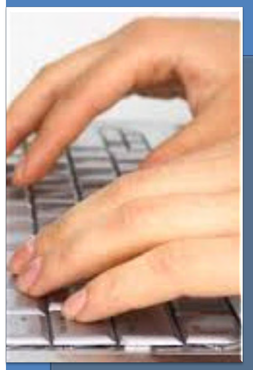
Agenda

- **Introduction**
- **Purpose**
- **Process**
  - Review and Assessment
  - Warrant Updates - Toolbox
- **Next Steps**

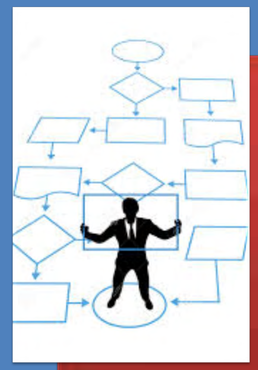
To create a more Appropriate, Efficient and Flexible Traffic Calming Warrant Framework and Process.

Process

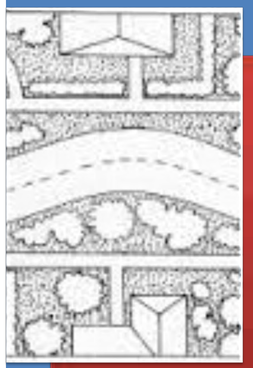

Review of Background Documents
Assessment of the 2007 Traffic Calming Warrant
Best Practices Research
Proposed Warrant Updates
Public and Stakeholder Consultation
Warrant Update
Pilot Testing of the Warrant Update
Success
Excellent
Very Good
Average
Below Average
Review and Assessment
Warrant Updates



Content



Procedure

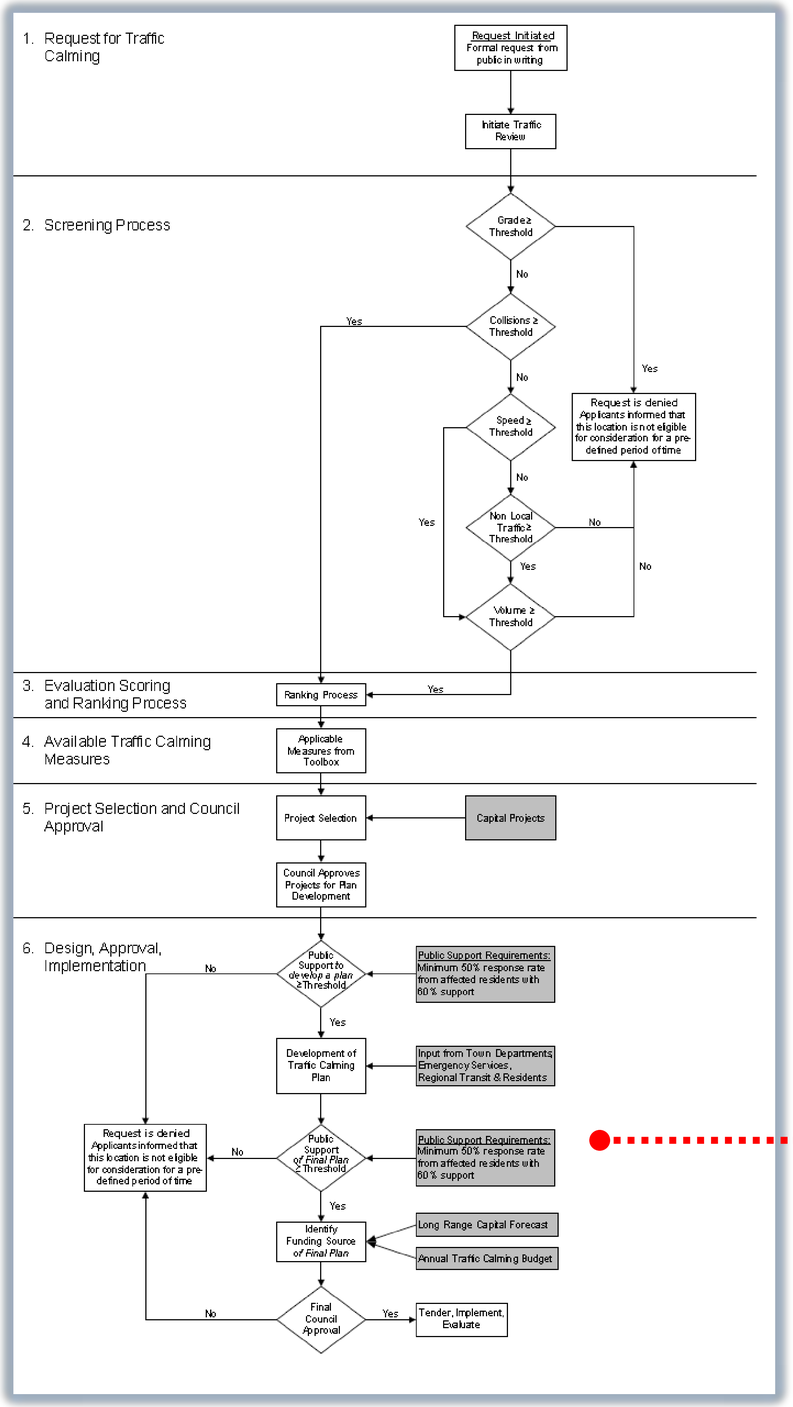


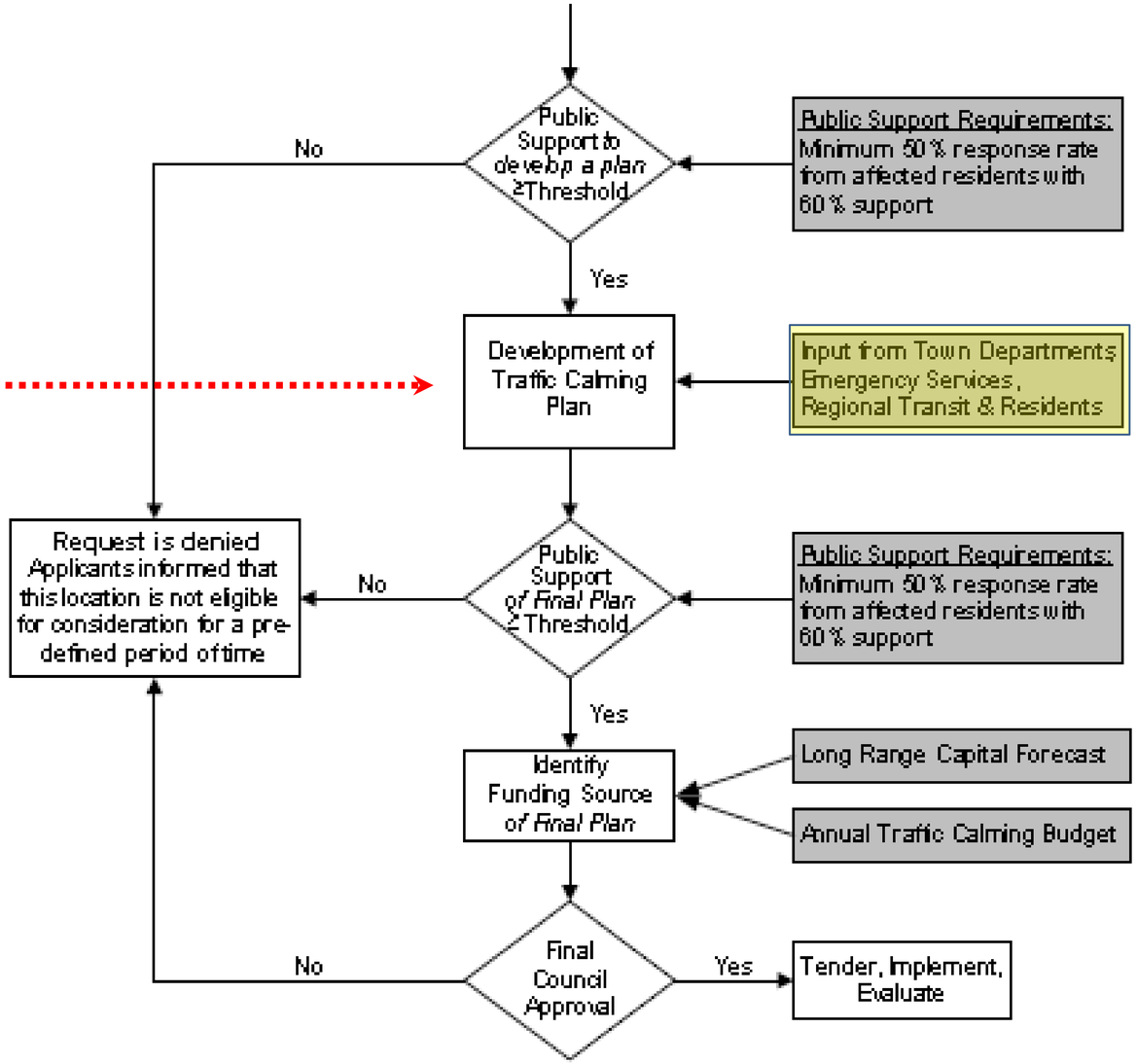
Toolbox

Evaluation

Warrant Updates – Procedure

2007 Traffic Calming Warrant





Warrant Updates - Toolbox

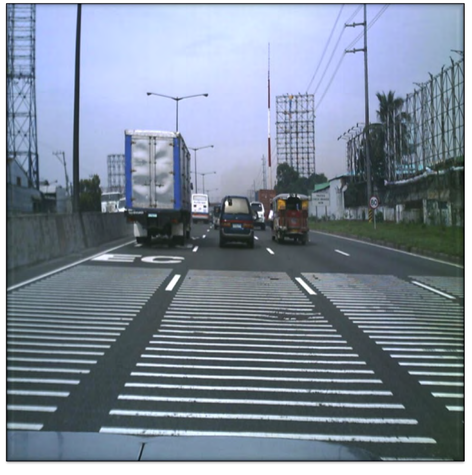
Type of Traffic Calming Measure	Applicability	Potential Benefits	Potential Limitations
Vertical Deflection	Local Road	Speed Reduction	Local Access
Horizontal Deflection	Low-Volume Collector	Volume Reduction	Emergency Response
Obstruction	Other Collector	Conflict Reduction	Active Transportation
	Type ‘C’ Arterial	Environment	Enforcement
			Maintenance
			Cost

Warrant Update – Vertical Measures

Raised Crosswalk

Raised Intersection

Rumble Strip



Sidewalk Extension

Speed Hump

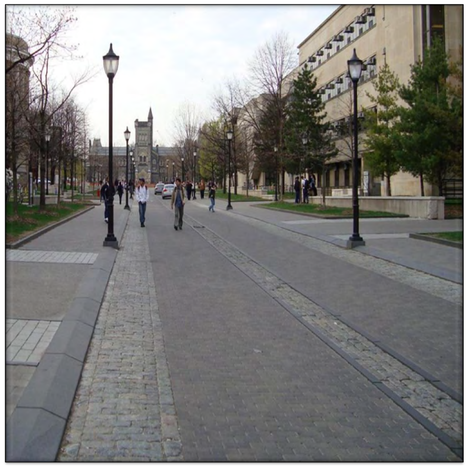
Speed Table

Warrant Update – Vertical Measures

Speed Cushion

Speed Cushion

Texture Pavement



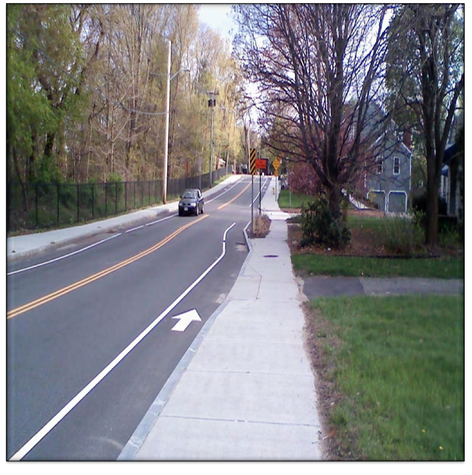
Textured Crosswalk

Warrant Update – Horizontal Measures

Chicane 1-Lane

Chicane 2-Lane

Lateral Shift



Curb Extension

Neckdown

Curb Radius Reduction

Warrant Update – Horizontal Measures

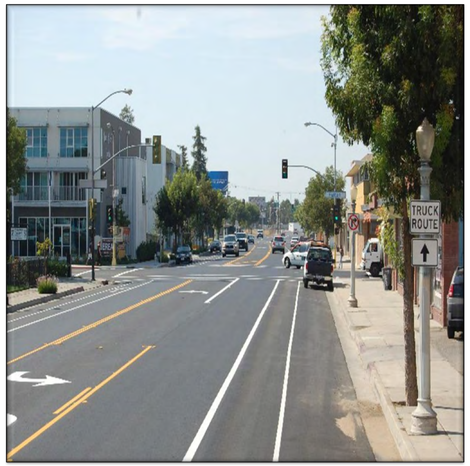
On-street Parking

Raised Median

Mini Roundabout

Lane Narrowing

Road Diet



Traffic Circle

Warrant Update – Obstruction Measures

Directional Closure

Diverter

Full Closure

Intersection Channelization

Raised Median

Right-in-Right-out

Warrant Updates - Toolbox

Measure		APPLICABILITY				POTENTIAL BENEFITS				POTENTIAL DISBENEFITS					
		Local Road	Low-Volume Collector	Other Collector	Type 'C' Arterial	Speed Reduction	Volume Reduction	Conflict Reduction	Environment	Local Access	Emergency Response	Active Transportation	Enforcement	Maintenance	Cost
Vertical Deflection	Raised Crosswalk	✓	◆	✗	✗	■	□	▣	▣	□	▣	▣	□	▣	Low to Moderate
	Raised Intersection	✗	✗	◆	◆	▣	□	▣	▣	□	▣	▣	□	▣	High
	Rumble Strip	✗	✗	✗	✗	□	□	□	□	□	□	▣	□	■	Low to Moderate
	Sidewalk Extension	✓	✗	✗	✗	▣	□	▣	□	□	□	□	□	▣	Moderate
	Speed Hump	✓	◆	✗	✗	■	▣	■	▣	□	▣	▣	□	▣	Low to Moderate
	Speed Table	✓	◆	✗	✗	■	□	▣	▣	□	▣	▣	□	▣	Low to Moderate
	Speed Cushion	✓	◆	✗	✗	■	▣	■	▣	□	□	▣	□	▣	Low to Moderate
	Textured pavement	◆	◆	✗	✗	▣	□	□	■	□	□	▣	□	▣	Moderate to High
	Textured crosswalk	◆	◆	◆	◆	□	□	▣	▣	□	□	▣	□	▣	Low to Moderate
Horizontal Deflection	Chicane, 1-Lane	✓	✗	✗	✗	■	■	■	▣	□	▣	▣	□	▣	Moderate to High
	Chicane, 2-Lane	✓	◆	◆	◆	▣	□	▣	▣	□	□	□	□	▣	Moderate
	Lateral Shift	✓	◆	◆	◆	▣	□	▣	▣	□	□	□	□	▣	Moderate
	Curb Extension	✓	✓	✓	✓	▣	□	□	■	□	□	▣	□	▣	Low to Moderate
	Neckdown	✓	✓	✓	◆	▣	□	□	■	□	□	▣	□	▣	Low to Moderate
	Curb Radius Reduction	✓	✓	✓	◆	▣	□	□	▣	□	□	□	□	▣	Low to Moderate
	On-Street Parking	✓	✓	✓	◆	▣	□	□	▣	□	▣	▣	□	▣	Low to Moderate
	Raised Median Island	✓	✓	✓	✓	▣	□	▣	□	■	□	□	□	▣	Low to Moderate
	Mini Roundabout	✗	◆	◆	◆	■	▣	■	■	□	▣	▣	□	▣	High
	Lane Narrowing	✓	✓	✓	✓	▣	□	□	▣	□	□	▣	□	▣	Low to Moderate
	Road Diet	✗	◆	◆	✗	■	□	▣	▣	□	▣	▣	□	▣	Low to Moderate
	Traffic Circle	✓	✓	✗	✗	■	▣	■	■	□	▣	▣	□	▣	Moderate to High
Obstruction	Directional Closure	✓	◆	✗	✗	□	■	▣	▣	■	□	▣	▣	▣	Moderate
	Diverter	✓	◆	✗	✗	□	■	▣	▣	■	▣	▣	□	▣	Moderate to High
	Full Closure	◆	✗	✗	✗	□	■	■	▣	■	■	▣	□	▣	Moderate to High
	Intersection Channelization	✓	✓	◆	◆	□	▣	▣	▣	■	▣	□	□	▣	Moderate to High
	Raised Median Through Intersection	✓	✓	✗	✗	□	■	▣	▣	■	▣	▣	□	▣	Low to Moderate
	Right-In/Right-Out Island	✓	◆	✗	✗	□	■	▣	▣	■	▣	▣	▣	▣	Moderate

✓= Appropriate Measures ◆=Use with Caution ✗=Not Recommended ■=Substantial (Dis)Benefits ▣=Minor (Dis)Benefits (Dis)□=No (Dis)Benefit

Warrant Updates – Vertical Measures

Effect of vertical deflection measures on fire vehicles travel time

CITY	STUDY	FINDINGS
Portland, OR	Study the effect of traffic calming on fire vehicle travel times. Using 6 different vehicles and conducting 4 test runs/vehicle on 6 different streets at speeds of 25, 30, 35, 40 mph	22-foot speed hump: 0 -9.2 sec delay / hump 14-foot speed hump: 1.1 -9.4 sec delay / hump
Austin, TX	Measure the average delay per speed hump for a total of six 14-foot humps	14-foot hump: 2 – 10 sec delay/hump EMS increase in delay range from 6% (without patient) - 23% (with patient)
Montgomery County, MD	Study the effect of speed humps on response time	Average delay of 2.8-7.3 sec / hump
Berkeley, CA	Study conducted on a street with six 12-foot speed humps and on a street with two 22-foot flat speed hump	12-foot hump: 10 sec delay/hump 22-foot hump: 3-13 sec/hump

Town of Ajax – Fire-Rescue Apparatus

Rubber Speed Cushion

Rubber Speed Cushion

Rubber Speed Cushion

Town of Ajax – Fire-Rescue Apparatus

Rubber Speed Cushion

Rubber Speed Cushion

Warrant Updates – Horizontal Measures

Effect of horizontal deflection measures on fire vehicles travel time

CITY	Research Findings	Source
City of Portland, Oregon	1.2 to 10.7 seconds of delay per circle Longer vehicles are most affected	Michael A. Coleman, 1995, ”The Influence of Traffic Calming Devices upon Fire Vehicle Travel Times”, Portland Department of Transportation
City of Bellevue, Washington	1.3 to 9.2 seconds of delay per circle Longer vehicles are most affected	Steven R. Nuttall, 1999, “The Impact of Traffic Calming Devices on Emergency Fire Response”, Bellevue Fire Department, 1999
Montgomery County, Maryland	3.2 to 7.0 seconds of delay per circle Longer vehicles are most affected	Montgomery County, 1997, “The Effects of Speed Humps and Traffic Circles on Responding Fire-Rescue Apparatus in Montgomery County, Maryland”, Fire and Rescue Commission, 1997

TRAFFIC CALMING WARRANT UPDATE

Questions?

Partners in excellence

Stakeholder Consultation

As part of the consultation process, the following agencies/organizations were reached during the completion of the assignment for feedback and input regarding the proposed Toolbox of Traffic Calming Measures:

- Ajax Fire and Emergency Services;
- Durham Region EMS; and
- Durham Region Transit Commission.

A stakeholder meeting for this project was held in the Town of Ajax Town Hall – Simcoe Point Room on February 13, 2015. During the meeting CIMA Canada Inc. staff presented the following information: a high-level explanation of the purpose and objectives of the traffic calming warrant update study, findings of the review and assessment process and the proposed updates of the Toolbox of Traffic Calming Measures. A copy of the presentation is provided in this Appendix.

The following representatives of the Project Team and Stakeholders were present during the review and discussion of the proposed Toolbox of Traffic Calming Measures:

- Hubert Ng (Town of Ajax);
- Jaime Garcia (CIMA Canada Inc.);
- Harmon Allen(Durham Region EMS);
- Dave Lang (Ajax Fire and Emergency Services); and
- David Sheen (Ajax Fire and Emergency Services).

Comments provided during the meeting by the representatives of the Durham Region EMS as well as the Ajax Fire and Emergency Services highlighted the opposition to “any measures that necessitate any emergency vehicle slowing down, or deflecting vertically”.

At the conclusion of the meeting, Town Staff requested the representatives of Ajax Fire and Emergency Services to provide additional comments and brief explanation of the potential effects of the proposed traffic calming measures – from a Fire and Emergency Services perspective, to supplement the discussion sustained during the meeting.

Comments provided by Mr. Sheen on February 23, 2015 as well as the response provided by Mr. Ng on March 05, 2015 are included as part of this Appendix**.**

Comments Received from Stakeholders

Subject	**Re: Traffic Calming Warrant Update Materials**
From	Hubert Ng
To	David Sheen; Christopher Norris; harmon.allen@durham.ca
Cc	Gary Muller; Paul Allore; Robert Salewytsch; Jaime Garcia
Sent	March-05-15 3:28 PM

Hi David,

Thank you again for your comments on behalf of Fire Services. In general, we certainly understand and appreciate that one of the primary objectives of the Fire Services Department is to minimize response times. On the other spectrum, the implementation of traffic calming devices is to encourage vehicular traffic to travel at or near the posted speed limits to reduce the frequency and severity of collisions, especially those that involve pedestrians or cyclists. Previously, Planning and Development has always been cognizant of the needs of Fire Services and has worked closely with your staff prior to the implementation of any traffic calming devices. Moving forward as we are approaching the completion of the Traffic Calming Warrant Update, Planning and Development Service intends to maintain or even improve on our understanding of each department's needs to ensure that reasonable solutions are reached.

Typically, during the design process of a traffic calming device, it is our intent to consider solutions that are not only effective for the general purpose vehicles but also having the least impact for Emergency Vehicles. If such solutions cannot be utilized on certain roadways and if traffic calming tools that have a relatively higher impact on fire vehicles are considered, we typically work closely with your staff to determine if there are any mitigative measures that can be considered in the design to minimize such impacts.

With that being said, we have gathered our internal team and reached out to our traffic calming warrant update consultant, CIMA, to discuss your comments. One of CIMA's key staff is Kevin Decoste, who is a Certified Engineering Technologist in Ontario with over 25 years of transportation engineering experience and is also a professional firefighter (attained his rank of A/Captain with the Town of Oakville's Fire Department). Kevin brings a unique view point combining expertise in both transportation engineering and firefighting.

Our discussions focused on those measures that you have classified as having "substantial disbenefit" based on your perception. We have suggested some mitigative measures that could minimize the effects on emergency response times and are outlined as follows:

Vertical Deflections (focused Raised Crosswalks, Raised Intersections, Speed Humps and Speed Tables): Through the best practices review, several studies have shown that these noted traffic calming measures can delay EMS and Fire vehicle response times anywhere between 2 to 10 seconds depending on the emergency vehicle and response types. These delay times are in general, inline with those delay

times for emergency vehicles that are caused by an all-way-stop intersection. Regardless, in order to minimize the effects on emergency vehicle response times, the following mitigation measures may be considered during the traffic calming design and implementation process:

- The proposed number of traffic calming measures and locations should avoid a substantial accumulated increase in response times.
- A recommended operational speed of 25 kilometres per hour or less when crossing such traffic calming measures.
- The flat surface of speed tables and raised crosswalks should be a minimum of 6 metres long.
- An EMS-friendly design of speed tables, speed humps and raised crosswalks should be explored during implementation process.

On-Street Parking: In the event that on-street parking is considered for traffic calming purposes, the Town will ensure that there is at least 6 m of lateral clearance. This allow a fire vehicle of approximately 3 m in width to allow 2 m operate the fire hose under non-restricted water flow conditions and another metre for doors and equipment operation. Please note that the 6 m of lateral clearance for fire vehicles is not required or specified in either the Ontario Building Code or the Ontario Fire Code. Rather, the Fire Access Standards of the City of Calgary's Fire Department provided this specification. On-Street parking is not typically preferred by the Town as any traffic calming effects would be diminished if no vehicles are parked in the designated areas.

Raised Median. Although this measure does not generate a vertical deflection, you had noted during the stakeholders meeting as well as by Mr. Decoste, that a raised median may obstruct the use of the opposite side of the roadway to by-pass stopped traffic. To minimize this potential disbenefit it is recommended that the design of a raised median should consider the introduction of mountable sections to facilitate the crossing of emergency vehicles to the opposite side of the roadway.

Horizontal Deflections. It was noted by the Fire Chief during the stakeholder meeting that traffic calming measures such as chicanes, curb extensions, neckdowns and curb radius reductions may affect the operation of emergency service. Some drivers may "freeze" during the presence of an emergency vehicle response and could obstruct the path of an emergency vehicle. Although this potential scenario is not a direct consequence of the traffic calming measure, Town Staff will certainly consider the roadway geometric conditions prior to the implementation of these types of traffic calming measures and confirm that if the traffic apparatus can undertake the turn using the entire section of the roadway. With respect to traffic calming measures that partially of fully obstruct access to a roadway, the following steps are recommended as part of the implementation process:

- Identify the location of the nearest emergency service station and confirm with Fire Services that the proposed location of the traffic calming measure is not included in the main response route.
- Identify and confirm that another access to the entire area is available.

We hope that the above narrative provides you with a better understanding of our approach and that we will make our best effort work closely with you and your staff prior to implementing any traffic calming measures. Please let me know if you have any further comments or questions.

Thanks,

Hubert Ng, P.Eng.
Senior Transportation Planner
Planning and Development Services
Town of Ajax
hubert.ng@ajax.ca
905-619-2529 x 3209

>>> David Sheen 2/23/2015 11:28 AM >>>
Hubert

Thank you for the opportunity to formally comment on the Town of Ajax Traffic Calming Warrant update.
Firstly, please note that as a matter of principal, Fire Services is opposed to any measures that necessitate any emergency vehicle slowing down, or deflecting vertically, as we continually dedicate extensive resources to lower our response times.

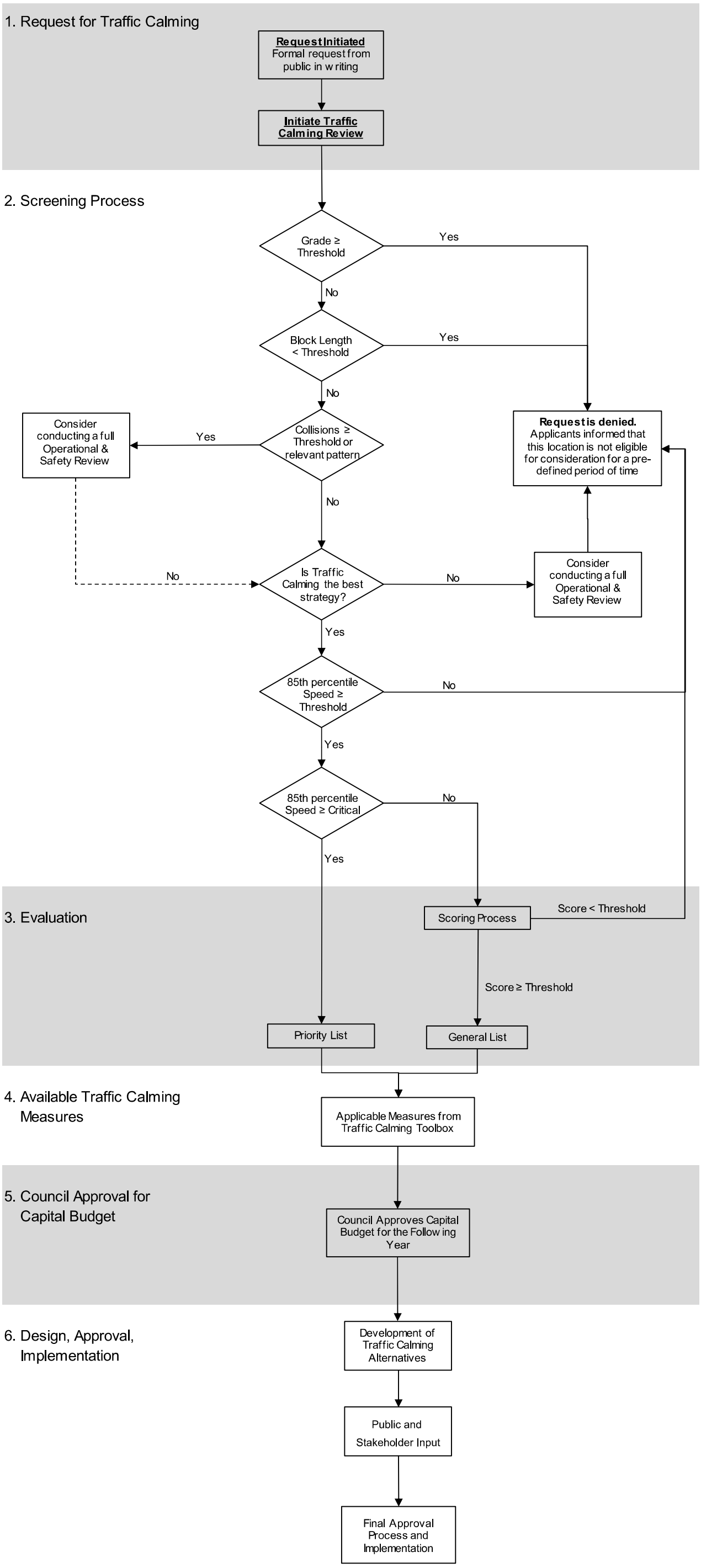
In thoroughly reviewing the proposed toolbox, I would respectfully suggest the following should be the Potential disbenefits of the various measures;

Substantial Disbenefits - Raised Crosswalk, Raised Intersection, Speed Hump, Speed Table, Chicane-1 lane, On-Street Parking, Raised Median Island, Mini Roundabout, Full Closure and Raised Median Through Intersection.
Minor Disbenefits - Rumble Strip, Sidewalk Extension, Chicane-2 Lane, Lateral Shift, Curb Extension, Neckdown, Curb Radius Reduction, Raised Median Island, Lane Narrowing, Road Diet, Traffic Circle, Directional Closure, Diverter, Intersection Channelization, Right-In/Right-out Island.
No Disbenefit - Speed Cushion, Textured Pavement, Texture Crosswalk.

Please do not hesitate if there are any questions.

Appendix C: Traffic Calming Warrant Process

Town of Ajax Traffic Calming Warrant Process



Appendix D: Toolbox of Traffic Calming Measures

Toolbox of Traffic Calming Measures

Traffic Calming Measure		APPLICABILITY				POTENTIAL BENEFITS				POTENTIAL DISBENEFITS					
		Local Road	Low-Volume Collector	Other Collector	Type 'C' Arterial	Speed Reduction	Volume Reduction	Conflict Reduction	Environment	Local Access	Emergency Response	Active Transportation	Enforcement	Maintenance	Cost
Vertical Deflection	Raised Crosswalk	✓	◆	×	×	■	□	▣	▣	□	▣	▣	□	▣	Low to Moderate
	Raised Intersection	×	×	◆	◆	▣	□	▣	▣	□	▣	▣	□	▣	High
	Rumble Strip	×	×	×	×	□	□	□	□	□	□	▣	□	■	Low to Moderate
	Sidewalk Extension	✓	×	×	×	▣	□	▣	□	□	□	□	□	▣	Moderate
	Speed Hump	✓	◆	×	×	■	▣	■	▣	□	▣	▣	□	▣	Low to Moderate
	Speed Table	✓	◆	×	×	■	□	▣	▣	□	▣	▣	□	▣	Low to Moderate
	Speed Cushion	✓	◆	×	×	■	▣	■	▣	□	□	▣	□	▣	Low to Moderate
	Textured pavement	◆	◆	×	×	▣	□	□	■	□	□	▣	□	▣	Moderate to High
	Textured crosswalk	◆	◆	◆	◆	□	□	▣	▣	□	□	▣	□	▣	Low to Moderate
Horizontal Deflection	Chicane, 1-Lane	✓	×	×	×	■	■	■	▣	□	▣	▣	□	▣	Moderate to High
	Chicane, 2-Lane	✓	◆	◆	◆	▣	□	▣	▣	□	□	□	□	▣	Moderate
	Lateral Shift	✓	◆	◆	◆	▣	□	▣	▣	□	□	□	□	▣	Moderate
	Curb Extension	✓	✓	✓	✓	▣	□	□	■	□	□	▣	□	▣	Low to Moderate
	Neckdown	✓	✓	✓	◆	▣	□	□	■	□	□	▣	□	▣	Low to Moderate
	Curb Radius Reduction	✓	✓	✓	◆	▣	□	□	▣	□	□	□	□	▣	Low to Moderate
	On-Street Parking	✓	✓	✓	◆	▣	□	□	▣	□	▣	▣	□	▣	Low to Moderate
	Raised Median Island	✓	✓	✓	✓	▣	□	▣	□	■	□	□	□	▣	Low to Moderate
	Mini Roundabout	×	◆	◆	◆	■	▣	■	■	□	▣	▣	□	▣	High
	Lane Narrowing	✓	✓	✓	✓	▣	□	□	▣	□	□	▣	□	▣	Low to Moderate
	Road Diet	×	◆	◆	×	■	□	▣	▣	□	▣	▣	□	▣	Low to Moderate
	Traffic Circle	✓	✓	×	×	■	▣	■	■	□	▣	▣	□	▣	Moderate to High
Obstruction	Directional Closure	✓	◆	×	×	□	■	▣	▣	■	□	▣	■	▣	Moderate
	Diverter	✓	◆	×	×	□	■	▣	▣	■	■	▣	□	▣	Moderate to High
	Full Closure	◆	×	×	×	□	■	■	▣	■	■	▣	□	▣	Moderate to High
	Intersection Channelization	✓	✓	◆	◆	□	▣	▣	▣	■	■	□	□	▣	Moderate to High
	Raised Median Through Intersection	✓	✓	×	×	□	■	▣	▣	■	■	▣	□	▣	Low to Moderate
	Right-In/Right-Out Island	✓	◆	×	×	□	■	▣	▣	■	■	▣	■	▣	Moderate

✓= Appropriate Measures ◆=Use with Caution ×=Not Recommended ■=Substantial (Dis)Benefits ▣=Minor (Dis)Benefits (Dis)□=No (Dis)Benefit

Appendix E: Pilot Testing

Town of Ajax

Traffic Calming Warrant Update

Pilot Test Results

February 2015

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Town of Ajax

Traffic Calming Warrant Update

Pilot Test Results

February 2015

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1. Introduction

The purpose of this document is to present the findings of the pilot test and to provide additional recommendations to further improve the previously proposed Traffic Calming Warrant process.

To this purpose, two locations selected by Town Staff were reviewed and the warrant process was followed in order to:

1. Define and/or verify the thresholds such as percentage of high-end speeders and number of points warranting inclusion in the General or Priority lists, and;
2. Confirm the adequacy of the number of points provided in each of the scoring system criteria.

The locations reviewed were:

+ Pearce Drive between Delaney Drive and Coughlen Street; and
+ Rands Road between Finley Avenue and Westney Road.

Previous warrant analyses conducted by the Town are summarized in **Table 1**: Locations included in the Pilot Test

.

Table 1: Locations included in the Pilot Test

Road Section	Class	Posted Speed	85th %ile Speed	Volume	Collisions	Previously Eligible
Rands Road [Finley Ave – Westney Rd]	Local	40	49	2448	2	Yes
Pearce Drive Pearce Drive [Delaney Dr – Coughlen St]	Collector	40	47	1501	1	No

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Additional data, including collision reports, volume and speed studies were provided by the Town and used as part of this analysis. The following sections describe the application of the proposed warrant as of February 3, 2015.

2. Initial assumptions

The following initial assumptions were utilized during this analysis:

1. "High End Speeders": more than 15 km/h above posted speed;
2. Threshold Speed (85th percentile): posted + 5 km/h;
3. Critical Speed (85th percentile): posted speed + 15 km/h;
4. Threshold for percentage of high end speeders: 5%[1];
5. Scoring system: see **Table 2** and **Table 3**
6. Minimum score to warrant inclusion in General List: 30[2];
7. Minimum score to warrant inclusion in Priority List: 60[3].

Table 2: Scoring for Local Roads

FACTOR	POINT CRITERIA	MAXIMUM POINTS
Collision History	5 points for each qualifying collisions in excess of 2	20
Traffic Speeds	1 point for each km/h above posted speed, and 1 point for each 1% of vehicles over 15 km/h above posted speed	25
Traffic Volumes	1 point for each 50 vehicles above threshold	20
Pedestrian Generators	5 points for each school or park within the study area (other Pedestrian Generators may be defined by Ajax)	n/a
Pedestrian Facilities	5 points if there are no sidewalks in the study area	5
Bicycle Facilities or Routes	5 points if bicycle lanes, sharrows, or routes are presented in the study area	5
Adjacent Land Uses (residential)	1 point for each 20% of residential land use	5
		80

[1] After review of different speed studies provided by the Town, it was found that high end speeders are typically between 3% and 6%, therefore 5% is a reasonable threshold for the warrant purposes.
[2] Same as previous warrant.
[3] Intermediate value between minimum score for General List (30) and maximum points (90, considering a location with 2 pedestrian generators; a location could score higher if more pedestrian generators are present).

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Table 3: Scoring for Collectors and Type "C" Arterial Roads

FACTOR	POINT CRITERIA	MAXIMUM POINTS
Collision History	5 points for each qualifying collisions in excess of 2	15
Traffic Speeds	1 point for each km/h above posted speed, and 1 point for each 1% of vehicles over 15 km/h above posted speed	25
Traffic Volumes	1 point for each 100 vehicles above threshold	20
Pedestrian Generators	5 points for each school or park within the study area (other Pedestrian Generators may be defined by Ajax)	n/a
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 presented in the study area	5
Adjacent Land Uses (residential)	1 point for each 20% of residential land use	5
		80

3. Location #1: Rands Road between Finley Avenue and Westney Road

This location, illustrated in **Figure 1**, presents a series of consecutive curves, sometimes with small radii and large deflection angles, which could limit visibility along the curve. The use of traffic calming measures under these conditions is not desirable. For this reason, the study area was reduced to the tangent section between Banner Crescent and Medley Lane (**Figure 2**).

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Additionally, since the intersection of Rands Road and Swanston Crescent (east) is All-Way Stop controlled, the analysis was conducted separately for the segments east and west of the stop sign.[4]

This procedure may be useful to narrow down the location along the segment where the traffic calming measure may be installed. The next tables follow the screening and scoring processes for the two road segments.

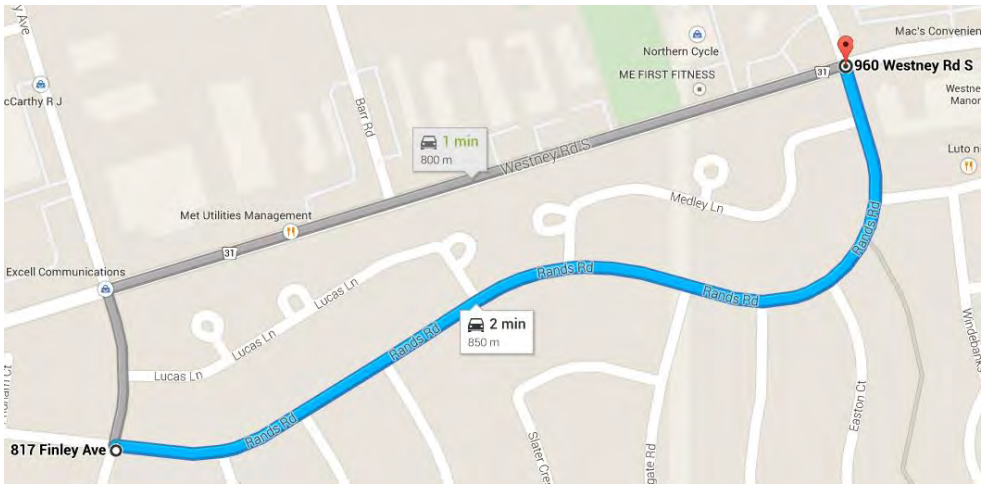

Figure 1: Rands Road between Finley Avenue and Westney Road

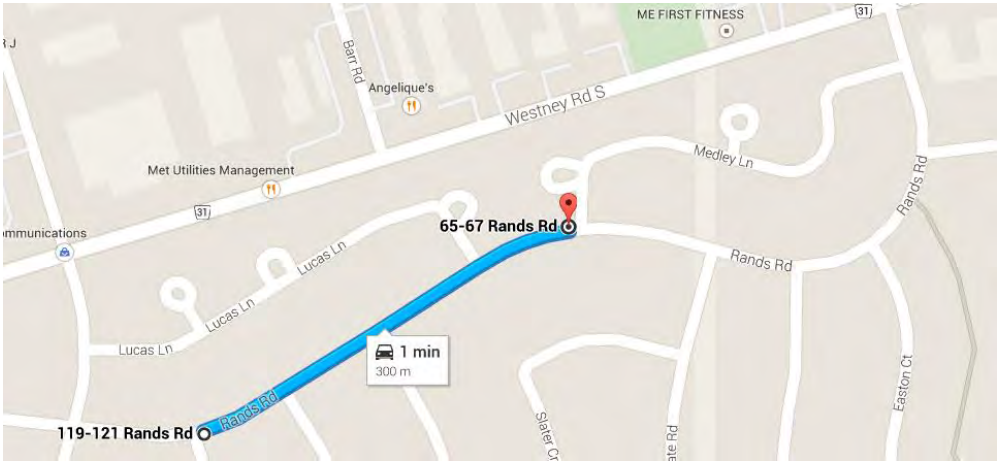

Figure 2: Adjusted study area

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[4] When assessing similar situations in the future, it is recommended to determine whether the stop sign is actually warranted or whether it is being used as a traffic calming device. If the latter is the case, the sign should be removed and the analysis be conducted for the entire segment.

Table 4: Screening Rands Road between Banner Crescent and Swanton Crescent

Characteristics	Value	Screening Outcome
Road Type	Local	N/A.
Posted Speed	40 km/h	N/A.
Grade	0% *(> threshold)*	Eligible; proceed to Block Length
Block Length	150 m *(> threshold)*	Eligible; proceed to 'Best Strategy'.
Is Traffic Calming the best strategy?	Assumed 'Yes'	Eligible; proceed to Collision History.
Collision History	0 qualifying collisions *(< threshold)*	Proceed to 85th Percentile Speed
85th Percentile Speed	48 km/h *(> threshold; < critical)*	**Proceed to Scoring Process**

Table 5: Scoring Rands Road between Banner Crescent and Swanton Crescent

Characteristics	Value	Points
Road Type	Local	N/A.
Posted Speed	40 km/h	N/A.
Collision History	0 qualifying collisions	0 points
85th Percentile Speed	48 km/h	1 x (48 – 40) = 8 points
High End Speeders	3.3%	1 x 3.3 = 3.3 points
Traffic Volumes	2,262 veh/day	1 x [(2,262 – 900) / 50] = 27.2 → 20 points

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Characteristics	Value	Points
Pedestrian Generators	0	0 points
Pedestrian Facilities	One side	0 points
Bicycle Facilities	No	0 points
Residential Land Use	100%	1 x (100 / 20) = 5 points
TOTAL	-	**36.3 points (General List)**

Table 6: Automated Spreadsheet Rands Road between Banner Crescent and Swanton Crescent

Town of Ajax
Planning and Development Services
Traffic Calming Warrant Analysis Worksheet

Location:	Rands Road between Banner Crescent and Swanton Crescent
Date of Request:	28/01/2015
Requested By:	Town of Ajax
Description of Complaint:	Pilot test for warrant update
Analyst	CIMA Canada Inc.
Date of Analysis:	29/01/2015

Preliminary Screening

Criteria	Value	Result
Posted Speed (km/h)	40	Continue with analysis
Road Type	Local	Continue with analysis
Grade (%)	0.0%	Continue with analysis
Block Length (m)	150	Continue with analysis
Collision History	0	Continue with analysis
Collision Pattern Identified?	No	Continue with analysis
Full Operational/Safety Review?		Continue with analysis
Is Traffic Calming the Best Strategy?	Yes	Continue with analysis
85th Percentile Speed (km/h)	48	Proceed to Scoring Evaluation
High End Speeders	3.3%	Proceed to Scoring Evaluation

Proceed to Scoring Evaluation

Scoring Evaluation

Criteria	Value	Points
Collision History	0	0.0
Traffic Speeds (km/h)	48	11.3
High End Speeds (%)	3.3%	
Traffic Volumes (veh/day)	2262	20.0
Pedestrian Generators	0	0.0
Pedestrian Facilities	Yes - One Side	0.0
Bicycle Facilities or Routes	No	0.0
Adjacent Land Uses (residential)	100%	5.0
Total		**36.3**

Add location to General List

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Table 7: Screening Rands Road between Swanton Crescent and Medley Lane

Characteristics	Value	Screening Outcome
Road Type	Local	N/A.
Posted Speed	40 km/h	N/A.
Grade	0% *(> threshold)*	Eligible; proceed to Block Length
Block Length	170 m *(> threshold)*	Eligible; proceed to 'Best Strategy'.
Is Traffic Calming the best strategy?	Assumed 'Yes'	Eligible; proceed to Collision History.
Collision History	1 collision with pedestrian in 2009 (0 qualifying collisions) *(< threshold)*	Proceed to 85th Percentile Speed
85th Percentile Speed	50 km/h *(> threshold; < critical)*	**Proceed to Scoring Process**

Table 8: Scoring Rands Road between Swanton Crescent and Medley Lane

Characteristics	Value	Points
Road Type	Local	N/A.
Posted Speed	40 km/h	N/A.
Collision History	0 qualifying collisions	0 points
85th Percentile Speed	50 km/h	1 x (50 – 40) = 10 points
High End Speeders	3.9%	1 x 3.9 = 3.9 points

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Characteristics	Value	Points
Traffic Volumes	2,385 veh/day	1 x [(2,385 – 900) / 50] = 29.7 → 20 points
Pedestrian Generators	0	0 points
Pedestrian Facilities	One side	0 points
Bicycle Facilities	No	0 points
Residential Land Use	100%	1 x (100 / 20) = 5 points
TOTAL	-	**38.9 points (General List)**

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Table 9: Scoring Rands Road between Swanton Crescent and Medley Lane

Town of Ajax
Planning and Development Services
Traffic Calming Warrant Analysis Worksheet

Location:	Rands Road between Swanton Crescent and Medley Lane
Date of Request:	28/01/2015
Requested By:	Town of Ajax
Description of Complaint:	Pilot test for warrant update
Analyst	CIMA Canada Inc.
Date of Analysis:	29/01/2015

Preliminary Screening

Criteria	Value	Result
Posted Speed (km/h)	40	Continue with analysis
Road Type	Local	Continue with analysis
Grade (%)	0.0%	Continue with analysis
Block Length (m)	170	Continue with analysis
Collision History	0	Continue with analysis
Collision Pattern Identified?	No	Continue with analysis
Full Operational/Safety Review?		Continue with analysis
Is Traffic Calming the Best Strategy?	Yes	Continue with analysis
85th Percentile Speed (km/h)	50	Proceed to Scoring Evaluation
High End Speeders	3.9%	Proceed to Scoring Evaluation

Proceed to Scoring Evaluation

Scoring Evaluation

Criteria	Value	Points
Collision History	0	0.0
Traffic Speeds (km/h)	50	13.9
High End Speeds (%)	3.9%	
Traffic Volumes (veh/day)	2385	20.0
Pedestrian Generators	0	0.0
Pedestrian Facilities	Yes - One Side	0.0
Bicycle Facilities or Routes	No	0.0
Adjacent Land Uses (residential)	100%	5.0
Total		**38.9**

Add location to General List

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4. Location #2: Pearce Drive between Delaney Drive and Coughlen Street

This road section also presents a horizontal curve, however for a shorter distance than the previous case. Traffic calming measures may be acceptable at this location, since visibility limitations may be less significant than at the previous site.[5]

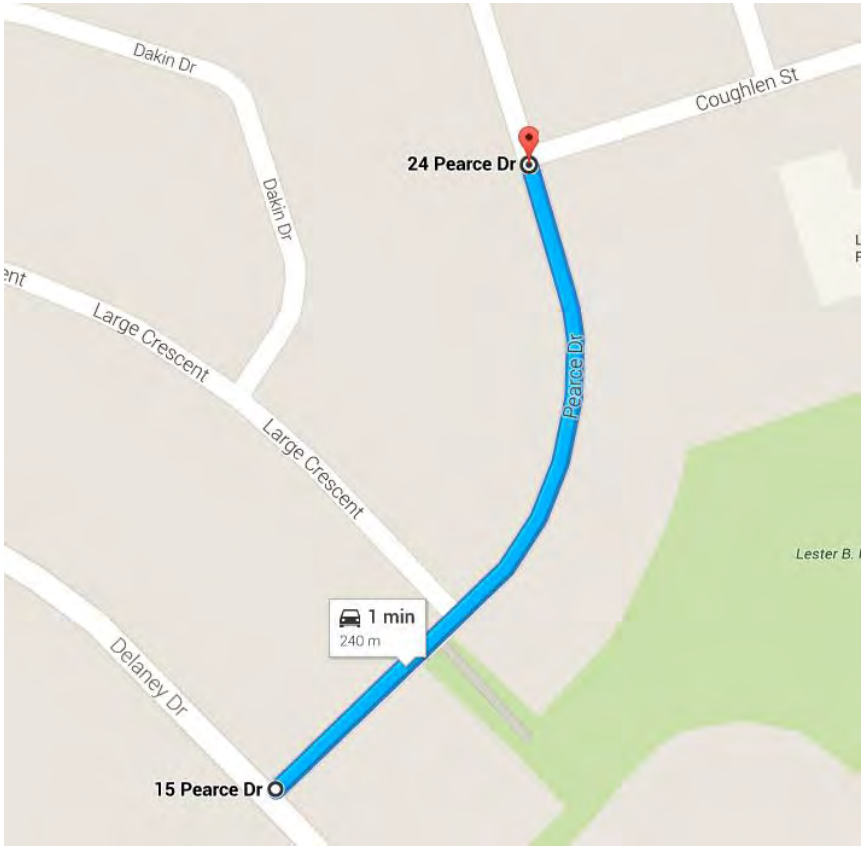

Figure 3: Pearce Drive between Delaney Drive and Coughlen Street

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[5] Engineering judgement should be used for these particular cases. In the warrant, this would be addressed during the screening process, in the "*Is Traffic Calming the best strategy?*" step.

Table 10: Screening Pearce Drive between Delaney Drive and Coughlen Street

Characteristics	Value	Screening Outcome
Road Type	Collector	N/A.
Posted Speed	40 km/h	N/A.
Grade	0% *(> threshold)*	Eligible; proceed to Block Length
Block Length	240 m *(> threshold)*	Eligible; proceed to 'Best Strategy'.
Is Traffic Calming the best strategy?	Assumed 'Yes'	Eligible; proceed to Collision History.
Collision History	2 collisions with parked vehicles in 2009 (0 qualifying collisions) *(< threshold)*	Proceed to 85th Percentile Speed
85th Percentile Speed	49 km/h *(> threshold; < critical)*	**Proceed to Scoring Process**

Table 11: Scoring Pearce Drive between Delaney Drive and Coughlen Street

Characteristics	Value	Points
Road Type	Collector	N/A.
Posted Speed	40 km/h	N/A.
Collision History	0 qualifying collisions	0 points
85th Percentile Speed	49 km/h	1 x (49 – 40) = 9 points
High End Speeders	4.3%	1 x 4.3 = 4.3 points

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Characteristics	Value	Points
Traffic Volumes	1,775 veh/day	1 x [(1,775 – 2000) / 100] = -2.25 → 0 points
Pedestrian Generators	0	0 points
Pedestrian Facilities	One side	5 points
Bicycle Facilities	Yes	5 points
Residential Land Use	100%	1 x (100 / 20) = 5 points
TOTAL	-	**28.3 points (Not Warranted)**

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Table 12: Automated Spreadsheet Pearce Drive between Delaney Drive and Coughlen Street

Town of Ajax
Planning and Development Services
Traffic Calming Warrant Analysis Worksheet

Location:	Pearce Drive between Delaney Drive and Coughlen Street
Date of Request:	28/01/2015
Requested By:	Town of Ajax
Description of Complaint:	Pilot test for warrant update
Analyst	CIMA Canada Inc.
Date of Analysis:	29/01/2015

Preliminary Screening

Criteria	Value	Result
Posted Speed (km/h)	40	Continue with analysis
Road Type	Collector	Continue with analysis
Grade (%)	0.0%	Continue with analysis
Block Length (m)	240	Continue with analysis
Collision History	0	Continue with analysis
Collision Pattern Identified?	No	Continue with analysis
Full Operational/Safety Review?	No	Continue with analysis
Is Traffic Calming the Best Strategy?	Yes	Continue with analysis
85th Percentile Speed (km/h)	49	Proceed to Scoring Evaluation
High End Speeders	4.3%	Proceed to Scoring Evaluation

Proceed to Scoring Evaluation

Scoring Evaluation

Criteria	Value	Points
Collision History	0	0.0
Traffic Speeds (km/h)	49	13.3
High End Speeds (%)	4.3%	
Traffic Volumes (veh/day)	1775	0.0
Pedestrian Generators	0	0.0
Pedestrian Facilities	Yes - One Side	5.0
Bicycle Facilities or Routes	Yes	5.0
Adjacent Land Uses (residential)	100%	5.0
Total		**28.3**

Traffic Calming is not warranted at this location

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5. Findings

Based on the locations reviewed, the following was found:

Eligibility (Threshold Score)

Both locations presented the same eligibility under the proposed warrant as under the existing warrant (i.e. Rands Road is eligible and Pearce Drive is not eligible). Therefore, the minimum threshold of 30 points for warranting traffic calming seems to be adequate.

Speed

The scoring system for speeds seems to be adequate, with a good balance between 85th percentile speed and percentage of high end speeders. The maximum score for speed (25 points) may be achieved with high 85th percentile speeds and percentage of high end speeders (for example, 14 km/h and 11%, respectively). A typical score for speeds, assuming expected speed study results, would be around 15 points (85th percentile speed 10 km/h over posted speed, with 5% high end speeders), which by itself does not warrant traffic calming.

We reviewed the *Traffic Calming Assessment Tracker 2012-2014*, provided by the Town, and found that, for Type C arterials, 7 locations out of 17 (41%) would be eligible for the priority list for having the 85th percentile speed 15 km/h or more over the posted speed limit. Although this is a relatively high percentage, we do not recommend changing the critical speed for inclusion in the priority list, since these roads may in fact present a speeding problem. Rather, we suggest that Type C arterials be more carefully evaluated during the screening process in determining whether traffic calming is the best strategy, or whether a full operational and safety review would be more adequate.

Collisions

The lower limit for awarding points to collisions seems to be low. The proposed scoring system awards 5 points for each qualifying collision in excess of 3. The purpose of doing this is to reduce the impact of random collisions' influence on the traffic calming warrant analysis. We reviewed the *Traffic Calming Assessment Tracker 2012-2014*, provided by the Town, and only 1 out of 97 requests would be awarded any points for collisions. We suggest modifying the points system to award points for each qualifying collisions in excess of 2. While we recognize that the criteria to define *qualifying collisions* has been reworded and may increase the number of qualifying collisions compared to the existing process, we don't expect this to have a significant impact in terms of assigning a large number of points to many location. Under the new proposed threshold, 5 out of 97 locations would be awarded points for collisions. This is still a relatively low proportion; however a lower threshold may not avoid the issue of random collisions.

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Volumes

It was found that traffic volumes have a very high impact on whether traffic calming at a location is warranted or not, especially for local roads. The proposed scoring system awards:

+ 1 point for each 50 vehicles above 900 vehicles per day on local roads;

- 1 point for each 100 vehicles above 2000 vehicles per day on collector roads;
- 1 point for each 100 vehicles above 5000 vehicles per day on Type C arterial roads.

For local roads, the maximum score for volumes (20 points) is achieved with 1900 vehicles per day. We reviewed the *Traffic Calming Assessment Tracker 2012-2014*, provided by the Town, and found that 16 out of 36 (44%) local roads would be awarded at least 15 points out of 20 possible. 15 (42%) would be awarded some points (up to 15), and the remaining 5 locations (14%) would be awarded no points (**Figure 4**).

The problem with many locations receiving volume scores close to the maximum is that the volume will end up determining whether these locations achieve the minimum warrant score of 30 points. For example, a local road with 1900+ vehicles per day would receive 20 points for volumes, and very likely another 5 for the residential land use. If, for example, the 85th percentile speed is 6 km/h above the posted speed limit, and the percentage of high end speeds is 2%, the location would reach 33 points and be added to the general list, although it does not necessarily have a speeding problem.

We tested a minimum volume threshold to award points of 1200 vehicles per day. With this threshold, the number of locations in the same sample receiving 15 points or more drops from 16 to 5 (from 22% to 14%); 18 locations out of 36 (50%) receive some points (up to 15); and 13 locations (42%) receive no points. This is a more reasonable distribution which still allows for some locations to achieve maximum points, while providing a more even distribution in the intermediate points range (5 to 15).

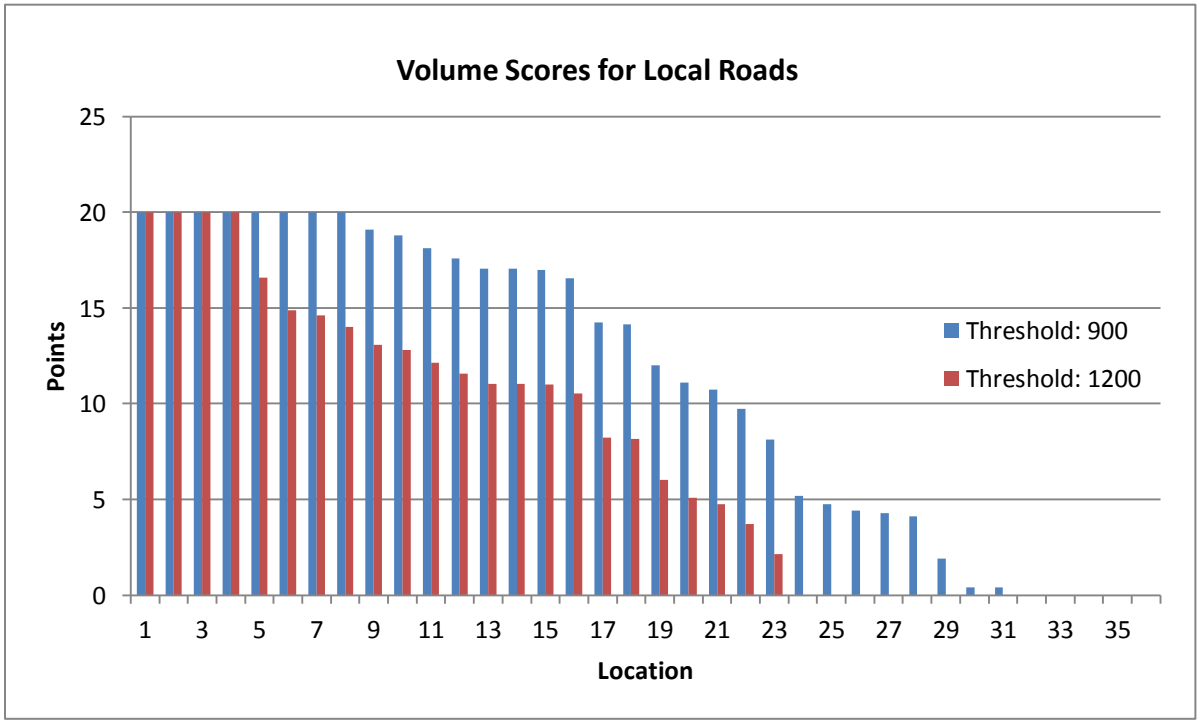

Figure 4: Volume Scores for Local Roads

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For Collector Roads (**Figure 5**), the current minimum threshold of 200 vehicles per day to award points seems adequate. Out of 44 locations, 13 (30%) are awarded 15 points or more; 20 locations (45%) were awarded some points (up to 15), and 11 locations (25%) were not awarded points.

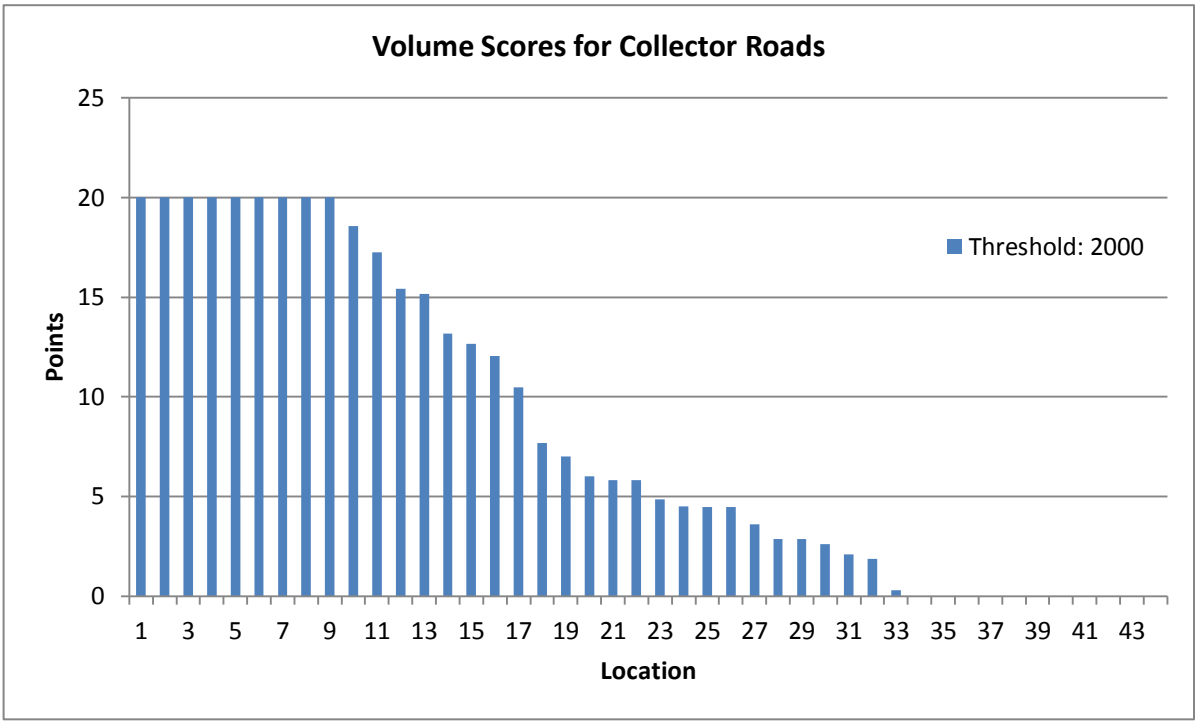

Figure 5: Volume Scores for Collector Roads

For Type C arterials, the high minimum volume threshold (5000 vehicles per day) makes most locations not be awarded any points (**Figure 6**). Out of the 6 locations that receive points, 5 receive 15 or more, and the remaining one receives approximately 12 points. However, the sample for Type C arterials is only 17 locations, and there is a gap between the volumes of 4300 and 6200, which would correspond to the lower range of points.

If the points awarded are changed from 1 for each 100 vehicles to 1 for each 250 vehicles, the number of locations not receiving any points remains unchanged, however most locations that do receive points stay under 10 points.

Considering all of the above, it is likely that the existing scoring system for volumes on Type C arterial is adequate. We do not recommend modifying it unless a larger sample is reviewed.

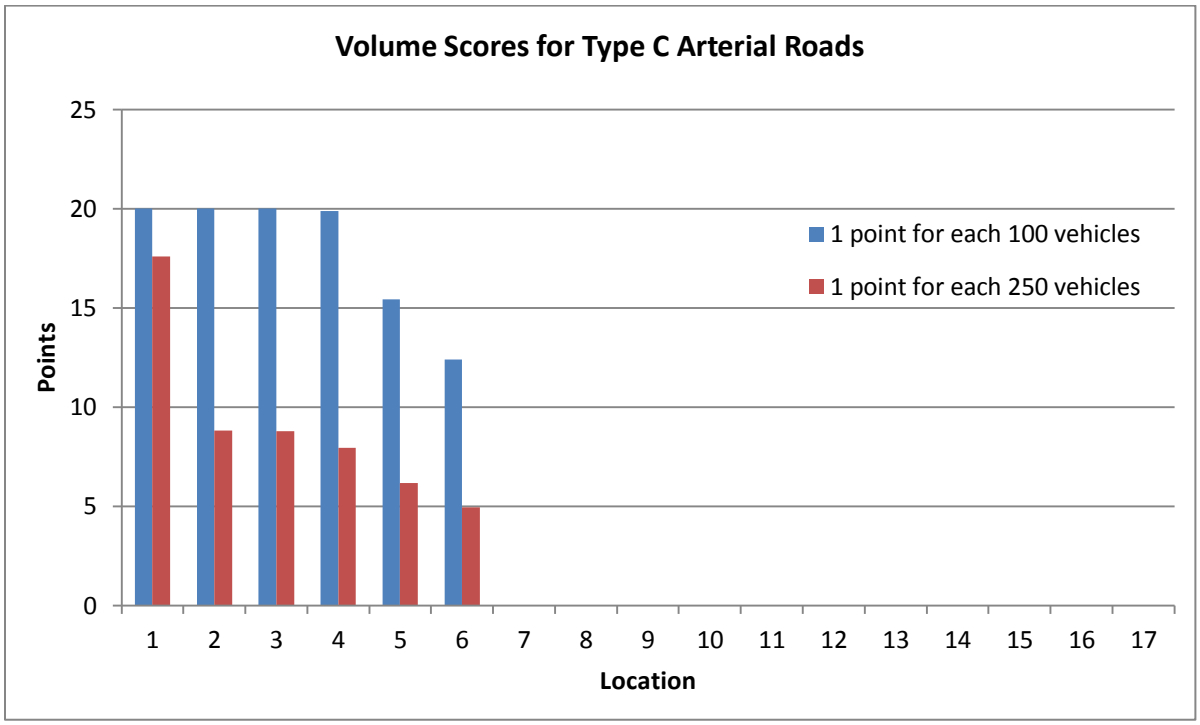

Figure 6: Volume Scores for Type C Arterial Roads

Critical Score

We tested the point system to verify whether the initial assumption of 60 points to include a location in the priority list is reasonable. Considering a location similar to Rands Road between Swanston Crescent and Medley Lane, reviewed for this report, the following conditions could be reasonably expected to exist which would result in a score of 60 points or more:

- 3 qualifying collisions: 5 points;[6]
- 85th percentile speed = 54 km/h: 14 points;
- 8% high end speeders: 8 points;
- 2,300 vehicles per day: 20 points;
- 2 pedestrian generators: 10 points;
- 100% residential land use: 5 points;
- **Total = 62 points.**

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[6] Assuming the suggested modification previously discussed is implemented;

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Addendum: Pilot Test Results

1. Location #3: Williamson Drive between Thackery Drive and Salem Road North

This road section contains a roundabout at Middlecote Drive which is approximately the midway point. Speeds are consistent throughout the roadway, and thus any speed reductions required by the horizontal deflection are quickly lost as drivers return to their desired speed. Three pedestrian generators (2 schools and a park) are present on the south side of this segment.

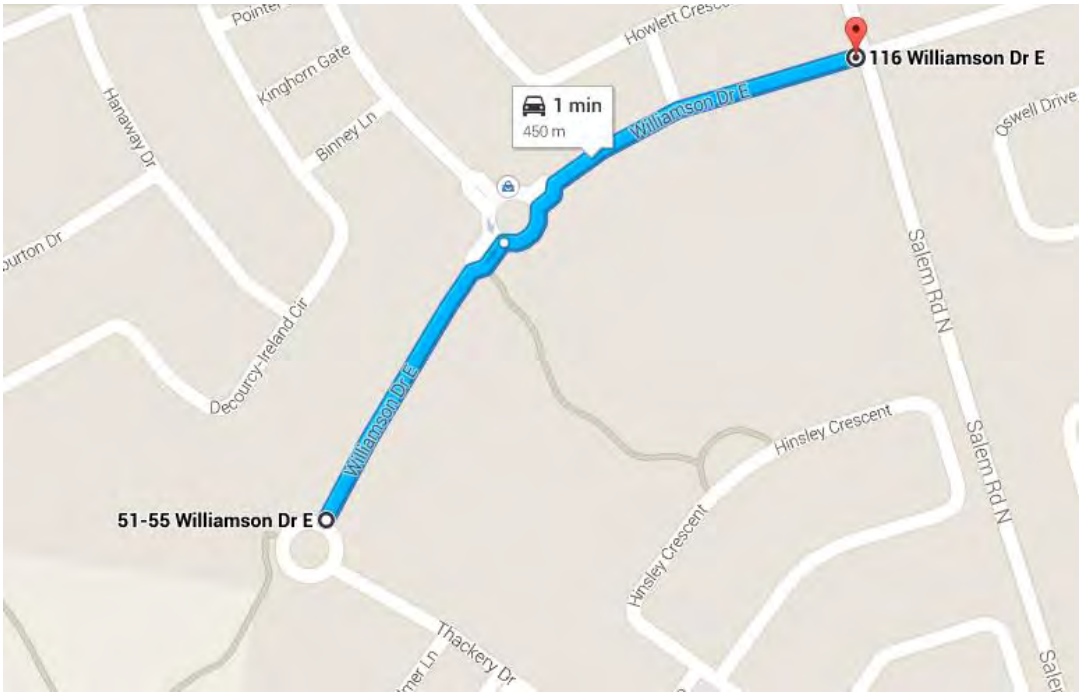

Figure 1: Williamson Drive between Thackery Drive and Salem Road N

Table 1: Screening Williamson Drive between Thackery Drive and Salem Road

Characteristics	Value	Screening Outcome
Road Type	Arterial	N/A
Posted Speed	40 km/h	N/A
Grade	2% (< threshold)	Eligible; proceed to Block Length

Block Length	450	Eligible; proceed to 'Best Strategy'
Is Traffic Calming the best strategy?	Assumed 'Yes'	Eligible; proceed to Collision History
Collision History	1 (< threshold)	Proceed to 85th Percentile Speed
85th Percentile Speed	52 (> threshold; < critical)	Proceed to Scoring Process

Table 2: Scoring Williamson Drive between Thackery Drive and Salem Road

Characteristics	Value	Points
Road Type	Arterial	N/A
Posted Speed	40 km/h	N/A
Collision History	1 qualifying collision	0 points
85th Percentile Speed	52	1 x (52-40) = 12 points
High End Speeders	7.5%	1 x 7.5 = 7.5 points
Traffic Volumes	1934	1 x [(1,934 – 5,000) / 100] = 0 points
Pedestrian Generators	3	15 points
Pedestrian Facilities	Both Sides	0 points
Bicycle Facilities	Yes[1]	5 points
Residential Land Use	50%	1 x (50 / 20) = 2.5 points
Total	-	**42.0 points (General List)**

1 Classified "Yes" as Bicycle Facilities currently in design stage and due to be installed in 2015.

Table 3: Automated Spreadsheet Williamson Drive between Thackery Drive and Salem Road

Town of Ajax
Planning and Development Services
Traffic Calming Warrant Analysis Worksheet

Clear Spreadsheet

Location:	Wlliamson btwn Thackery & Salem
Date of Request:	
Requested By:	
Description of Complaint:	Previously not eligible
Analyst	RS
Date of Analysis:	2/23/2015

Preliminary Screening

Criteria	Value	Result
Posted Speed (km/h)	40	Continue with analysis
Road Type	Type 'C' Arterial	Continue with analysis
Grade (%)	2.0%	Continue with analysis
Block Length (m)	485	Continue with analysis
Collision History	1	Continue with analysis
Collision Pattern Identified?	No	Continue with analysis
Full Operational/Safety Review?	No	Continue with analysis
Is Traffic Calming the Best Strategy?	Yes	Continue with analysis
85th Percentile Speed (km/h)	52	Proceed to Scoring Evaluation
High End Speeders	7.5%	Proceed to Scoring Evaluation

Proceed to Scoring Evaluation

Scoring Evaluation

Criteria	Value	Points
Collision History	1	0.0
Traffic Speeds (km/h)	52	19.5
High End Speeds (%)	7.5%	
Traffic Volumes (veh/day)	1934	0.0
Pedestrian Generators	3	15.0
Pedestrian Facilities	Yes - Both Sides	0.0
Bicycle Facilities or Routes	Yes	5.0
Adjacent Land Uses (residential)	50%	2.5
Total		**42.0**

Add location to General List

2. Location #4: Elizabeth Street between Kearney Drive and Old Kingston Road

This road segment maintains an urban cross-section and provides connection between two of the Town's main east-west corridors (Rossland Road and Kingston Road/Highway 2). An access to the Duffins Trail exists at the intersection with Old Kingston Road.

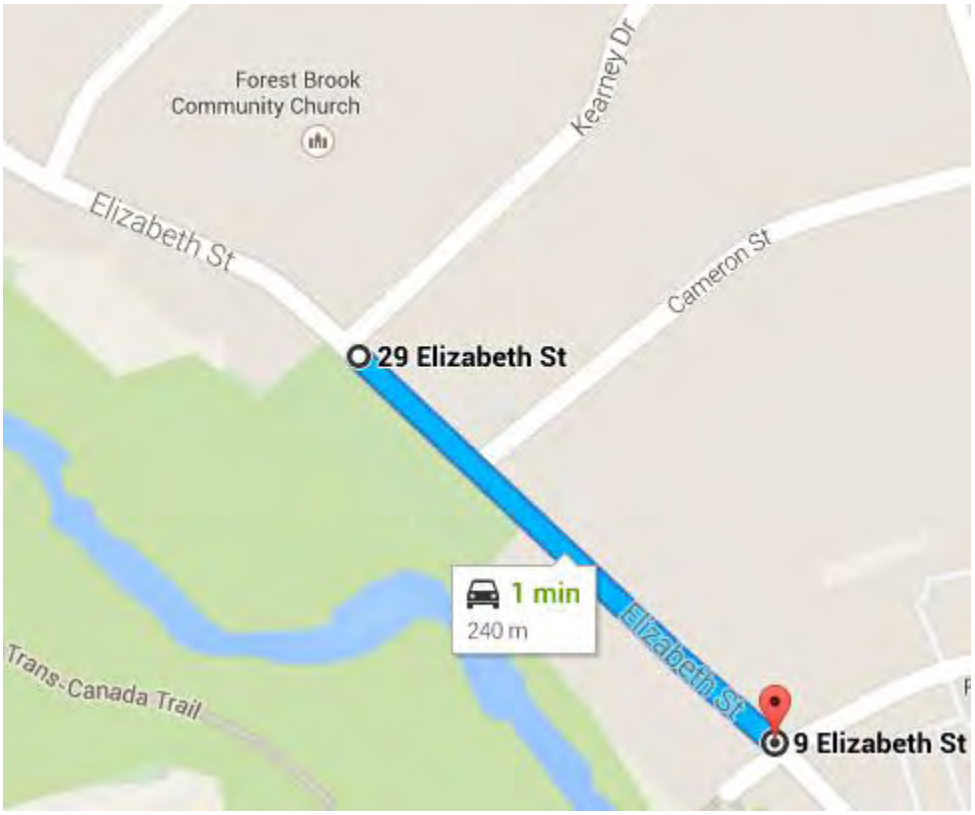

Figure 2: Elizabeth Street between Kearney Drive and Old Kingston Road

Table 4: Screening Elizabeth Street between Kearney Drive and Old Kingston Road

Characteristics	Value	Screening Outcome
Road Type	Arterial	N/A
Posted Speed	40 km/h	N/A
Grade	0% (< threshold)	Eligible; proceed to Block Length

Block Length	240	Eligible; proceed to 'Best Strategy'
Is Traffic Calming the best strategy?	Assumed 'Yes'	Eligible; proceed to Collision History
Collision History	0 (< threshold)	Proceed to 85th Percentile Speed
85th Percentile Speed	54 (> threshold; < critical)	Proceed to Scoring Process

Table 5: Scoring Elizabeth Street between Kearney Drive and Old Kingston Road

Characteristics	Value	Points
Road Type	Arterial	N/A
Posted Speed	40 km/h	N/A
Collision History	0 qualifying collisions	0 points
85th Percentile Speed	54	1 x (54-40) = 14
High End Speeders	10.1%	1 x 10.1 = 10.1
Traffic Volumes	7199	1 x [(7,199 – 5,000) / 100] = 22 = 20 points (maximum)
Pedestrian Generators	1	5 points
Pedestrian Facilities	One Side	5 points
Bicycle Facilities	Yes	5 points
Residential Land Use	75%	1 x (75 / 20) = 3.75 = 3.8 points
Total	-	**62.9 points (Priority List)**

Table 6: Automated Spreadsheet Elizabeth Street between Kearney Drive and Old Kingston Road

Town of Ajax
Planning and Development Services
Traffic Calming Warrant Analysis Worksheet

Clear Spreadsheet

Location:	Elizabeth between Kearney Road & Old Kingston Road
Date of Request:	
Requested By:	
Description of Complaint:	
Analyst	RS
Date of Analysis:	2/23/2015

Preliminary Screening		
Criteria	**Value**	**Result**
Posted Speed (km/h)	40	Continue with analysis
Road Type	Type 'C' Arterial	Continue with analysis
Grade (%)	0.0%	Continue with analysis
Block Length (m)	240	Continue with analysis
Collision History	0	Continue with analysis
Collision Pattern Identified?	No	Continue with analysis
Full Operational/Safety Review?	No	Continue with analysis
Is Traffic Calming the Best Strategy?	Yes	Continue with analysis
85th Percentile Speed (km/h)	54	Proceed to Scoring Evaluation
High End Speeders	10.1%	Proceed to Scoring Evaluation

Proceed to Scoring Evaluation

Scoring Evaluation		
Criteria	**Value**	**Points**
Collision History	0	0.0
Traffic Speeds (km/h)	54	24.1
High End Speeds (%)	10.1%	
Traffic Volumes (veh/day)	7199	20.0
Pedestrian Generators	1	5.0
Pedestrian Facilities	Yes - One Side	5.0
Bicycle Facilities or Routes	Yes	5.0
Adjacent Land Uses (residential)	75%	3.8
Total		**62.9**

Add location to Priority List

3. Findings

The assessment of the two Type 'C' arterial locations highlighted the following:

Eligibility (Threshold Score)

The Williamson Drive location achieved eligibility through the proposed warrant whereas it was denied under the previous system. Its score of 42.0 points is well above the minimum criteria of 30.0 points. The intent of conducting the traffic calming warrant update is to focus the Town's resources on highly problematic locations. Therefore, either the minimum score for eligibility may require an adjustment, or modifications to the allotment of points under the various categories is recommended.

The Elizabeth Street location retained its eligibility under the proposed warrant, and was additionally identified for placement on the "Priority List" with a score of 62.9 points. Achieving the eligible status is appropriate for this location as it ranked in the top 15 locations under the previous warrant.

Speed

The maximum allotment of points based on the combination of 85th percentile and high end speeders is 25. The Williamson Drive and Elizabeth Street locations received 19.5 and 24.1 points respectively. In both cases, this brings the location very close to eligibility under the proposed warrant. While speed should be retained as the most important factor when determining the need for traffic calming, it is possible that the current scoring system for speed is not stringent enough to avoid widespread eligibility.

Collisions

The number of qualifying collisions in both locations was below the minimum threshold. Although little insight can be garnered from such a small sample, it does confirm that locations with non-recurring collisions are not affecting the outcome of the warrant.

Volumes

Williamson Drive was not eligible under the previous warrant due to its relatively low volume (1,934 v.p.d.) for a road of its classification. While a location should not be precluded from eligibility due to limited volumes, caution should be exercised to prevent an influx of previously denied segments from attaining eligibility on this change alone.

Elizabeth Street received the maximum number of points (20) for its volumes. As typical volumes for Type 'C' arterial roads can range between 5,000 and 20,000 v.p.d., awarding full points for 7,199 v.p.d. does not appear to be stringent enough.

Critical Score

The correlation of speed with injury severity and fatality rates support the promotion of speed as the key factor in assessing eligibility. Locations that meet the minimum speed threshold, but not the critical threshold should use the supplementary characteristics (high end speeders, volume, pedestrian generators, etc.) to determine the eligibility under the "General List". Further consideration should be given as to whether locations should be considered for the "Priority List" without achieving the critical 85th percentile threshold.

Appendix F: List of Terms and Acronyms

List of Terms and Acronyms

The following is a list of acronyms and 'technical' or otherwise ambiguous terms used in this report, presented for the readers' convenience:

- **85th Percentile Speed** – The speed separating the fastest 15% of vehicles from the slowest 85%;
- **Bicycle Facilities** – Bicycle lanes, sharrows, or signed routes;
- **Block Length** – For the purposes of this warrant, block length means the distance between two stop-controlled intersections along the road for which the warrant analysis is being conducted;
- **Critical Speed** – Locations where the 85th percentile speed is equal to or greater than the Critical Speed are eligible for the Priority List. The Critical Speed is 15 km/h above the posted speed limit on Local roads, 20 km/h above the posted speed limit on Collector roads, and 25 km/h above the posted speed limit on Type 'C' Arterial roads;
- **General List** – List of locations, in chronological order, warranted for Traffic Calming, based on evaluation scores;
- **High End Speeders** – Vehicles recorded at speeds equal to or greater than 15 km/h above the posted speed limit;
- **Horizontal Deflection** – A type of traffic calming measure intended to reduce vehicle speeds and non-local traffic through horizontal modifications of the roadway;
- **Local, Collector, Type 'C' Arterial** – Three of the roadway classifications used by the Town of Ajax, in increasing order of volume and importance within the overall roadway network;
- **MVAR** – Motor Vehicle Accident Report ('police report');
- **Obstruction** – A type of traffic calming measure intended to reduce non-local traffic through the restriction of some or all movements of an intersection;
- **Operating Speeds** – See 85th Percentile Speed;
- **Pedestrian Facilities** – Sidewalks;
- **Pedestrian Generator** – Schools, parks, etc to be defined by the Town of Ajax;
- **Priority List** – List of locations, in chronological order, warranted for Traffic Calming, based on high operating speeds (Critical Speed);
- **Qualifying Collisions** – Collisions that can be potentially corrected by traffic calming, including collisions with vulnerable road users (pedestrians, bicycles) and collisions for which 'exceeding speed limit' or 'speed too fast for condition' is reported in the MVAR;
- **Relevant Pattern of Collisions –** a clear pattern of reoccurring collisions where speed is not a factor. These are not restricted to qualifying collisions as defined above, and may include, for example, intersection-related collisions, winter condition related collisions, etc.;
- **Threshold Score** – Minimum score in the evaluation process for a location to be eligible for traffic calming;

- **Threshold Speed** – The minimum Operating Speed for which a location is eligible for traffic calming measures. Locations where 85th percentile speed is less than 10 km/h above the posted speed limit are not eligible;
- **Traffic Calming** – The combination of mainly physical measures that reduce the negative effects of motor vehicle use (particularly high speeds), alter driver behavior and improve conditions for non-motorized street users;
- **Vertical Deflection** – A type of traffic calming measure intended to reduce vehicle speeds through vertical modifications of the roadway.