
Logy Bay-Middle Cove-Outer Cove Traffic Calming Policy

Prepared For:
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1.0 Introduction

Residential roadways are meant to be shared in relative safety and harmony by various users including pedestrians, cyclists and motorists. In neighbourhoods with this dynamic, roadways feel safe and are a pleasant to walk, cycle and drive on. These are the types of roadways and neighbourhoods that the Town of Logy Bay-Middle Cove-Outer Cove strives to create for its residents.

For a myriad of reasons, many roadways in different neighbourhoods experience problems, both real and perceived, related to traffic volumes, traffic speeds, roadway geometry and traffic operations. As a result of these issues, residential roadways can be perceived as not being pleasant or safe for children, pedestrians, cyclists or motorists alike. Where such situations exist, residents and other members of the community, demand that the governing authority, such as the community's Council and/or Staff, take action to resolve the traffic and/or safety issues.

Traffic and safety problems on residential roadways are typically addressed through traffic calming. The Institute of Transportation Engineers (ITE) defines traffic calming as "the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users".

Municipalities often recognize the benefits in addressing traffic and safety issues in a consistent and transparent manner. Many communities, for example, will employ warrant systems for traffic signals and for the installation of pedestrian crossings. The warrant systems are established to ensure these controls are only put in place when needed in a safe and consistent manner. Dealing with traffic and safety issues in residential neighbourhoods is no different. As a result, many organizations throughout Canada and North America are putting "Traffic Calming" policies in place to deal with neighbourhood traffic and safety concerns in a consistent and appropriate manner.

Key resources used in developing the policy include the Transportation Association of Canada's (TAC) *Canadian Guide to Neighbourhood Traffic Calming*, the City of St. John's *Development of Traffic Calming Policy & Warrant*, the Nation Association of City Transportation Officials' (NACTO) *Urban Street Design Guide*, and the ITE traffic calming website (<http://www.ite.org/traffic/>).

2.0 Traffic Calming Toolbox

The following sections provide a description of different traffic calming measures that are commonly applied. It should be noted that these sections discuss some of the most common measures and do not include an exhaustive list of all traffic calming measures available.

These measures can be implemented alone or in combination with each other to create a traffic calming plan. Individual measures have different applications from controlling speed and/or reducing volumes to providing protection for pedestrians and cyclists. The measures are separated into four categories: vertical deflections, horizontal deflections, obstructions and signage.

A summary table of the traffic calming measures with the approximate cost, location and spacing of the devices can be found in Appendix A.

2.1 Vertical Deflections

Vertical deflections are primarily intended to reduce vehicle speeds by creating unpleasant sensations when traversing the traffic calming measure. Reducing speeds using vertical deflections can also have potential secondary effects such as reducing traffic volumes, reducing conflicts and enhancing the environment for non-motorists.

Speed Humps: A speed hump is a raised rounded pavement section which deflects both wheels of a vehicle forcing motorists to slow down to drive over the speed hump. Speed humps are often placed in series and should not be used on collector roadways, transit or emergency response routes.

Approximate Cost: \$2,000 per speed hump

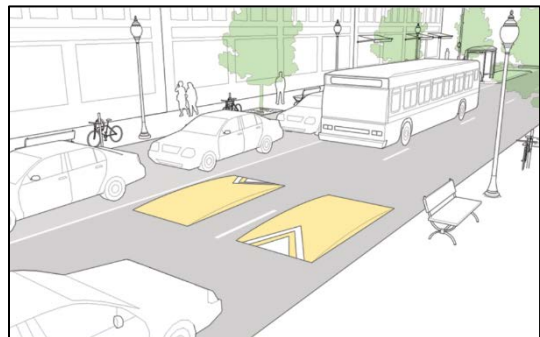


Speed Tables: A speed table is a raised pavement section which deflects both wheels of a vehicle forcing motorists to slow down to drive over the speed hump. Speed tables are longer than speed humps and have a flat top. Speed tables can be used on collector roadways, transit or emergency response routes. Speed tables can be designed as raised crosswalks and are often combined with curb extensions.

Approximate Cost: \$750/linear meter

Speed Cushions: Speed cushions are speed humps or tables that include longitudinal gaps to allow wide wheel base vehicles to avoid the raised sections. Speed cushion allow larger vehicles (buses and emergency vehicles) pass over the cushions without having to reduce speeds while reducing passenger vehicle speeds. Speed cushions are typically used on emergency response routes and are often placed in series.

Approximate Cost: \$1700/cushion for portable cushions



Raised Crosswalk: A raised crosswalk is a marked pedestrian crosswalk at an intersection or midblock crossing constructed at a higher elevation than the roadway. Raised crosswalks typically consist of crosswalks installed on speed humps or tables. Raised crosswalks increase pedestrian visibility and reduce vehicle speeds.

Approximate Cost: \$5,000 to \$20,000

Transverse Rumble Strips: Rumble strips are patterns of raised buttons, bars or grooves in the pavement closely spaced at regular intervals on the roadway. As a vehicle travel over rumble strips, both noise and vibration are created. Rumble strips are used to alert motorists to unusual conditions and encourage drivers to reduce speeds.



Approximate Cost: \$500 to \$2,000 per lane



Textured Crosswalks: A textured crosswalk is a crosswalk incorporating a textured and/or patterned surface that contrast with the roadway. Textured crosswalks accentuate the crossing location for pedestrians.

Approximate Cost: \$100/m²

2.2 Horizontal Deflections

Horizontal deflections are primarily intended reduce traffic volumes by discouraging short-cutting or through traffic. Potential secondary effects of horizontal measures include reducing vehicle speeds, reducing conflicts and enhancing the environment for non-motorists.

Chicanes: Chicanes are a series of curb extensions on alternating sides of the roadway. Chicanes narrow the roadway cross section, requiring vehicles to reduce speed to negotiate from one side of the roadway to the other as they travel through the chicanes.



Approximate Cost: \$5,000 to \$15,000 per chicane



Curb Extensions: Curb extensions are a horizontal extension of the curb into the roadway. Curb extensions narrow the roadway cross section, creating safer and shorter crossing distances for pedestrians, while improving pedestrian visibility. Curb extensions can also reduce speeds by narrowing the roadway.

Approximate Cost: \$10,000 to \$20,000

On-Street Parking: Parallel on-street parking reduces the roadway width available for vehicle travel. Vehicles will typically reduce spaces to narrower travel lanes.

Approximate Cost: \$200 to \$500



Traffic Calming Circles: A traffic calming circle is a raised island located in the centre of the intersection. Traffic calming circles require motorists to travel through the intersection in a counter-clockwise direction around the island. Traffic calming circles allow traffic to flow freely through an indirect path at an intersection, forcing motorists to slow down and yield before entering the intersection. It should be noted that a traffic calming circle is not a roundabout, a roundabout is larger and has raised median islands on all approaches.

Approximate Cost: \$15,000 to \$17,000

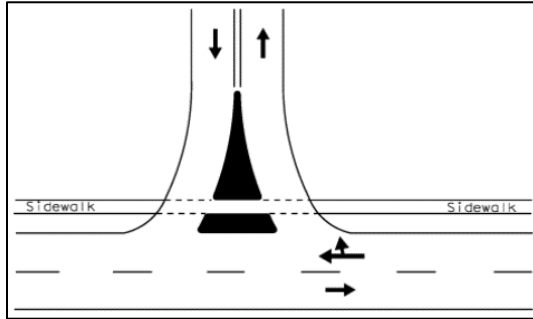
2.3 Obstructions

Obstructions are primarily intended reduce traffic volumes by discouraging short-cutting or through traffic. Obstructions are measures that are typically used an intersections or mid-block locations which obstruct specific vehicle movements. Potential secondary effects of obstructions include reducing conflicts and enhancing the environment for non-motorists.

Directional or Full Roadway Closures: A roadway closures consist of placing a physical device in the roadway to prohibit one direction of travel (directional closure) or prohibit access entirely (full closure). Closures can be used to prevent through traffic on a roadway. Typically, bicyclists and pedestrians are still permitted to enter at these enclosures.

Approximate Cost: \$3,000 to \$35,000





Right-in/Right-out Island: Right-in/right-out islands are raised triangular islands at an intersection approach that prevent left-turning movements in and out of the approach. Right-in/right-out islands can be used to prevent through traffic on a roadway.

Approximate Cost: \$7,000 to \$15,000

2.4 Signage

The primary function of regulatory signs is to regulate traffic movements; however, several regulatory signs are often used as traffic calming measures. It should be noted that using regulatory signs for traffic calming can be ineffective and create compliance problems without proper police enforcement. Non-regulatory signs, such as warning signs, can be used to supplement other traffic calming measures.

Maximum Speed Sign: The Maximum Speed sign indicates the maximum legal vehicle speed permitted on the roadway. Other signage including the School Area sign or Playground sign can accompany the Maximum Speed sign. The Maximum Speed sign which is typically placed on the right-side of the roadway.

Approximate Cost: \$500 per sign (includes installation)



Radar Speed Display Signs: Radar speed display signs are used to inform motorists of their current speed and encourage them to reduce their speed to the posted speed limit. Radar speed display signs are typically installed alongside a Maximum Speed sign.

Approximate Cost: \$7,000 per unit



Through Traffic Prohibited Sign: The Through Traffic Prohibited sign is used to prohibit traffic that is short-cutting through on a roadway. These signs are sometimes accompanied by an additional tab sign indicating days and hours that the prohibition is in effect.

Approximate Cost: \$500 per sign (includes installation)

Speed Bumps Ahead Sign: The Speed Bumps Ahead sign is used to alert motorists of the presence of speed bumps, humps, cushions or tables. The sign aims to inform to motorists that they should to reduce their speed. The signs could potentially deter motorist from using this route as a short-cutting roadway. The sign is typically placed on the right side of the road in advance of the speed hump, cushion or table.

Approximate Cost: \$500 per sign (includes installation)



Traffic-Calmed Neighbourhood Sign: The traffic-calmed neighbourhood sign is used to advise motorists that traffic calming measures are in place throughout a neighbourhood. The sign is used to increase motorists' awareness of traffic calming measures.

Approximate Cost: \$500 per sign (includes installation)

3.0 Traffic Calming Methodology

A methodology to manage residents' requests for traffic calming in a transparent and consistent manner was developed. Available literature, guidelines and best practices were reviewed to guide the development of this methodology.

The following methodology is suggested to manage traffic calming requests throughout the Town of LBMCO. The process includes the following ten steps, details for the individual steps are discussed in the following sections.

- Step 1 – Initial request for traffic calming
- Step 2 – Initial screening process
- Step 3 – Prioritizing requests
- Step 4 – Council approval and funding allocation
- Step 5 – Initial resident support
- Step 6 – Traffic calming plan
- Step 7 – Final resident support
- Step 8 – Final Council approval
- Step 9 – Design, tender and construction
- Step 10 – Follow up

3.1 Step 1 – Initial Request for Traffic Calming

The traffic calming process is most often initiated by a resident or group of residents representing a neighbourhood. The concerns raised by residents are most often related to the operating speeds and/or the traffic volumes on a particular roadway.

In order to begin the traffic calming process, the resident(s) concern must be submitted using a standard application form and sent to the appropriate Town staff. A standard form to request traffic calming on roadway, the "Traffic Calming Request Form", was developed for the Town of LBMCO and can be found in Appendix B. The form should be made available on the Town's webpage, or in hard copy at the appropriate Town facility. The form requires the following information:

- Applicant's name and contact information
- Date of application
- Area that relates to the nature of the concern
- Traffic concern
- Specific location of concern
- Further details about traffic concerns
- Suggested traffic calming solutions
- Willingness to parting in a focus group

3.2 Step 2 – Initial Screening Process

As traffic calming requests are received by the Town, the individual requests will be reviewed through an initial screening process to identify if the roadway under consideration qualifies for traffic calming. The initial screening process considers the classification of the roadway, grade, collision history, average daily traffic volumes and operating speeds. The specific considerations for each category are described below:

- **Roadway Classification:** Traffic calming measures are appropriate for use on roadways classified as local and collector roadways. Traffic calming measures should not be implemented on roadways classified as arterials or freeways. Under the Town's roadway classification, all roadways are classified as local or collector roadways.
- **Grade:** Traffic calming measures should not be considered if the grade of the roadway under consideration exceeds 8 percent. Implementing traffic calming measures on roadways with steep grades can result in safety issues, particularly under inclement weather conditions. The eight percent threshold is consistent with many other jurisdictions.
- **Collision History:** The collision history of the roadway within the past three years is reviewed and collisions involving vulnerable road users, such as cyclists and pedestrians, which could potentially have been avoided with the implementation of traffic calming measures are identified.

The collision history can justify advancing the roadway through the initial screening process regardless of the volume and speed criteria. The thresholds are a minimum of three collisions over a 3-year timeframe for a local roadway, and six collisions over a 3-year timeframe for a collector roadway.

- **Traffic Volumes:** A minimum average daily traffic volume (ADT) threshold must be met in order for a roadway to qualify for traffic calming. Typical thresholds used in other jurisdictions range from 500 and 900 vehicles per day on local roadways and 1,500 to 3,000 vehicles per day on collector roadways.

Based on traffic volume data collected throughout the Town in 2017, the minimum volume thresholds should be set at 400 vehicles per day on local roadways and 3,000 vehicles per day on collector roadways. A threshold of 400 vehicles per day on local roadways was selected based on traffic volumes observed on local roadways and the lower residential density in the Town.

These thresholds should be reviewed periodically based on updated traffic data and adjusted to ensure they are adequate for traffic volumes observed in the Town.

- **Speed:** Traffic calming should be considered on roadways where the 85th percentile speed exceeds the speed limit. The 85th percentile speed is the speed that 85 percent of vehicles do not exceed, meaning that 15 percent of vehicles will travel faster than the 85th percentile speed and 85 percent of vehicles will travel at or below the 85th percentile speed.

The typical posted speed limit for local roadways throughout Canada is 50 km/h. The TAC *Canadian Guidelines for Establishing Posted Speed Limits* states that the lowest recommended posted speed limit is 40 km/h. While some of the local roadways in the Town have a posted speed limit of 30 km/h, for traffic calming evaluation purposes the 85th percentile speed on these roadways should be compared to a speed limit of 40 or 50 km/h rather than the actual posted speed. For example, a reduced speed limit of 40 km/h could be applied to substandard roads.

Collector roadways are typically posted to higher speed limits and travelled speeds are generally expected to be slightly higher than they would be on local roadways. As a result, the 85th percentile speed threshold for traffic calming is typically higher on collector roadways.

Based on traffic speed data collected throughout the Town in 2017, the minimum 85th percentile speed thresholds should be set at 5 km/h over the posted speed limit (or appropriate minimum speed limit) on local roadways and 10 km/h over the posted speed limit on collector roadways.

Traffic calming requests for local and collector roadways must meet both the traffic volume and speed criteria summarized in Table 1. In the event that a request meets or exceeds the collision threshold criteria, the request shall be considered as having met the minimum initial screening criteria and override the volume and speed criteria. The initial screening process is summarized in Figure 1, which illustrates a flow chart that can be used for screening of traffic calming requests.

Table 1: Initial screening criteria for traffic calming requests

Criteria	Thresholds			Notes
	Local Roadways	Collector Roadways	Arterial Roadways	
Grade	< 8%			Traffic Calming is not permitted on roadways with grades exceeding 8%.
Collision History	3	6	n/a	Collision History involving Vulnerable Road Users should be greater than or equal to the values shown over a 3 year period.
Volume	400 vpd	3,000 vpd	n/a	Average Daily Volume should exceed minimum threshold volumes noted.
Speed	5 km/hr over posted speed	10 km/hr over posted speed	n/a	85th percentile speeds should exceed values for each classification of roadway.

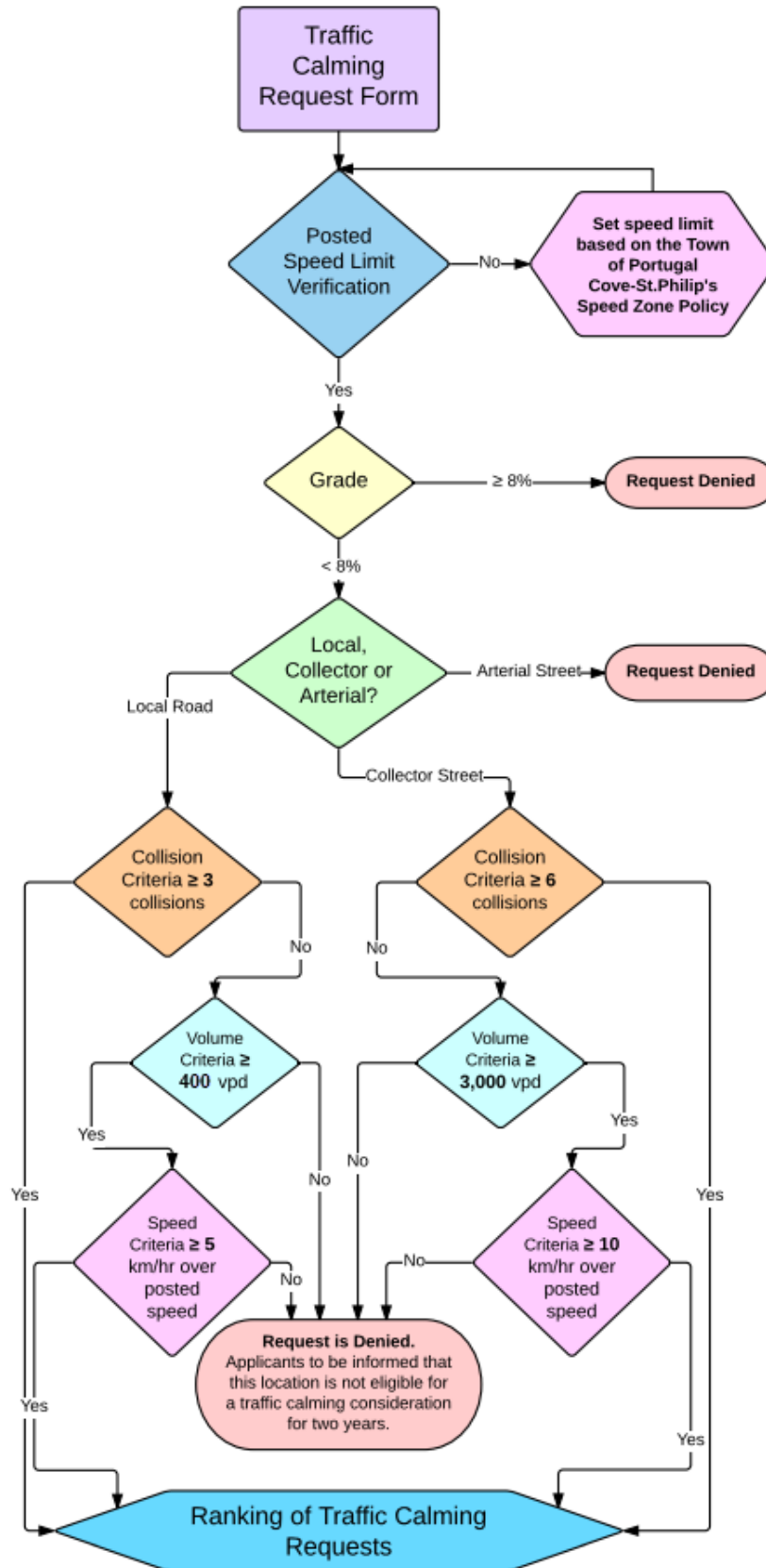


Figure 1: Flow chart of the initial screening process for traffic calming requests

3.2.1 Data Collection and Calculations of Non-local Traffic

Collision data, average daily traffic and 85th percentile speed data is required for an accurate assessment of the roadway involved in the traffic calming request.

Collision data for all roadways within the municipal boundary of the Town of LBMCOG can be obtained by request from the Royal Newfoundland Constabulary.

Average daily traffic volumes are collected over a 24-hour period using traffic counters. The 85th percentile speed can be collected separately or in combination with the traffic volumes. There are many different types of portable, non-intrusive devices available on the market that can record traffic volume and speed data. Two examples include:

- **Jamar Radar Recorder:** The radar system can record speed, volumes, gaps and classification of vehicles on a roadway. This device includes a data box that records traffic with a time stamp, resulting in better data collection. The device must be installed on a pole near a straight road and not near any intersection or access point.
- **Miovision Scout Video Collection Unit:** The Scout Video Collection Unit is a portable video data collection device that is built for reliable and unattended field operation for days at a time. The unit records video of an intersection or roadway, which is then uploaded to Miovision's website for processing. The user can then choose the desired output results, such as turning movement counts, ADT's, or pedestrian counts.

3.3 Step 3 – Prioritizing Requests

The Town of LBMCOG, like all municipalities throughout the Northeast Avalon, has limited financial resources available to provide services to residents that live in the community. Traffic calming will be one of many programs that Council will have to carefully consider in allocating Capital funding.

The funding amounts for traffic calming are likely to be limited; therefore, requests that pass the initial screening process must be ranked to ensure the more serious cases receive funding priority. The following criteria are considered in ranking the requests:

- Collision history
- Traffic volumes
- Speed
- Presence of pedestrian generators
- Pedestrian facilities
- Non-local traffic
- Primary emergency route

Points are assigned for each category based on the criteria noted in Table 2 for local roadways and Table 3 for collector roadways. The weighting of the points assigned to each category are different for local and collector roadways to reflect the intended functionality of the roadway. Points assigned to the criteria that are considered to be more critical to each classification of roadway, such that more severe concerns receive higher rankings. For example, the presence of pedestrian facilities while important for both local and collector roadways, would be more concerning for collector roadways where traffic volumes and speeds are likely to be higher and therefore the risk to pedestrian safety would be greater.

Table 2: Ranking criteria and point allocation for traffic calming requests on local roadways

Criteria	Method of Allocation of Points	Maximum Points
Collision History	2 points for every collision in the previous three years in the study area involving a vulnerable road user	10
Traffic Volumes (ADT)	1 point for every 50 vehicles above the 600 min to a max of 20 points	20
85th Percentile Speed	2 points for every km/hr the 85th percentile speed exceeds the posted speed limit plus 5km/hr to a max of 30 points	30
Presence of Pedestrian Generators	5 points allocated to the presence of a pedestrian generator to a maximum of 15 points	15
Pedestrian Facilities	15 points allocated to streets with no pedestrian facilities present	15
Non-Local Traffic	5 points allocated for every 10% above 30% non-local traffic present to a maximum of 15 points (max points reached at 50% non-local traffic)	10
Primary Emergency Route	-5 points if the roadway under consideration is a primary emergency response route	0
		100

Table 3: Ranking criteria and point allocation for traffic calming requests on collector roadways

Criteria	Method of Allocation of Points	Maximum Points
Collision History	2 points for every collision in the previous three years in the study area involving a vulnerable road user	10
Traffic Volumes (ADT)	1 point for every 100 vehicles above the 3,000 vpd limit to a max of 20 points	20
85th Percentile Speed	2 points for every km/hr the 85th percentile speed exceeds the posted speed limit plus 10km/hr threshold to a max of 20 points	20
Presence of Pedestrian Generators	5 points allocated to the presence of a pedestrian generator to a maximum of 15 points	15
Pedestrian Facilities	25 points allocated to streets with no pedestrian facilities present on either side of the roadway; 15 points if a pedestrian facility is present on one side of the street	25
Non-Local Traffic	2 points allocated for every 10% above 30% non-local traffic present to a maximum of 10 points (max at 80% non Local Traffic)	10
Primary Emergency Route	-10 points if the roadway under consideration is a primary emergency response route	0
		100

3.3.1 Calculations for Non-local Traffic

An estimate of non-local traffic is required in the ranking process. Non-local traffic can be determined using a number of different methods. For the purposes of this traffic calming policy, the two following methods are acceptable. They include:

Method 1 - Applying the following formulas:

Local Roadways:

$$\text{Non-local Traffic Percentage} = (1 - (400/\text{ADT})) * 100$$

Collector Roadways

$$\text{Non-local Traffic Percentage} = (1 - (3000/\text{ADT})) * 100$$

Method 2 - Applying the following formula:

$$\text{Non-local Traffic Percentage} = ((\text{ADT} - (10 \times \text{number of households on the roadway}))/\text{ADT}) * 100$$

The first method implies that all traffic above the threshold volumes noted in the initiation screening criteria would be considered non-local. The second method assumes all local residential households generate on the average of 10 two-way trips per day and any traffic above and beyond that figure could be considered non-local traffic. Both methods are intended to provide approximate percentages of on non-local traffic.

3.4 Step 4 – Council Approval and Funding Allocation

As traffic calming requests are received and evaluated, they should be recorded in an overall database. Records of the screening process and point allocation for the ranking should be recorded and dated for each individual request. As requests are ranked they should be included in an overall priority list for traffic calming. Roadways should be removed from the list as they are addressed by staff with the Capital funding made available by Council.

This list will provide Council and staff with an up-to-date priority listing of roadways that require attention to guide approval and funding allocation. In order for a traffic calming request to proceed to Step 5, it must obtain Council approval and be allocated funding.

This list could also be made available through the Town's website for the information of residents. By making the listing publicly available, residents are more likely to understand that the Town has many areas with concerns and that the more serious requests are prioritized to receive the attention and funding from Council.

3.5 Step 5 – Initial Resident Support

In order for any traffic calming project to be successful, the community must support the process and be committed to the solutions that are implemented to resolve the traffic and safety problems experienced. History has shown that where this support is not in place, the traffic calming measures often have to be removed because of opposition from residents.

The Town needs to ensure that the initial resident support for traffic calming is sufficient enough to avoid any possibility of having to revisit a roadway to remove measures that have been implemented. The initial level of resident support should be a minimum of **60%**.

When a roadway receives a capital funding commitment from Council under Step 4, Town staff should advise the surrounding neighbourhood residents that would primarily be affected by the new traffic calming measure. This can be done through a survey requesting their feedback and position as to whether or not they would support traffic calming measures on their roadway. This would also be an opportunity to solicit the names of residents who would like to participate in a focus group session that will assist in formulating the traffic calming solution for the roadway.

For traffic calming requests that do not receive the required threshold level of support of 60%, the request should be rejected and the process terminated. Any subsequent requests for the roadway should not be considered again under the policy for a minimum of two years.

3.6 Step 6 – Traffic Calming Plan

The development of the traffic calming plan will be a combined effort consisting of input from the Town staff and/or their consultant with feedback and suggestions from affected residents. It should be noted that if the roadway under consideration is a collector roadway, the traffic calming design solution must consider the function of these roadways within the Town's road network.

At this stage in the traffic calming process, the Town should facilitate a focus group discussion on the traffic calming plan development. The Town should select from the residents who indicated that they were willing to participate in a focus group to assist in the traffic calming plan development under Step 5.

Town staff should prepare initial concepts of various options to kick start and facilitate the group discussion. It would also be appropriate for the Town to present to the focus group, touching on traffic calming and the toolbox of traffic calming measures that are available to deal with specific problems.

At the conclusion of the focus group meeting, staff should have enough information to prepare conceptual drawings and cost estimate for the traffic calming plan proposed for the roadway. Depending on the estimated costs, the plan may have to be altered or scaled back to meet funding targets.

3.7 Step 7 – Final Resident Support

Once the traffic calming plan has been completed under Step 6, the Town should finalize the concept plans with descriptions of the traffic calming measures and the cost estimates associated with each concept.

The finalized concept plan and descriptions should be communicated to the group of affected residents identified under Step 5. The concept package can be sent via e-mail or mail and placed on the Town's website, asking for feedback about the proposed traffic calming plan. The Town should request for the feedback and other comments to be returned within two to three weeks for a final assessment.

The neighbourhood support should be greater than **60%**, similar to Step 5. If the 60% support is not met, the request is rejected and the roadway should not be considered for traffic calming measures under the policy for a minimum of two years.

3.8 Step 8 – Final Council Approval

If the 60% resident support threshold has been met for the proposed traffic calming plan, Town staff should revise the cost estimates and prepare a report to recommend to Council for final approval.

3.9 Step 9 – Design, Tender and Construction

If Council approves the proposed traffic calming plan, the Town staff and/or consultant will proceed to develop a preliminary design, detailed design, call for tender and construction of the traffic calming device(s).

3.10 Step 10 – Follow-Up

After the traffic calming plan has been implemented, Town staff should document any comments or concerns about the new traffic calming measures from residents.

Six months after installation, the initial traffic calming request should be reviewed to verify that the new traffic calming plan has addressed the issues brought forward in the request. If the issues have not been resolved, other traffic calming measures may be required to work in conjunction with the previously installed measures. Any changes to previous traffic calming plans should be documented in the master database to improve future traffic calming plans.

4.0 Other Considerations

4.1 Emergency Vehicle Routes

Emergency vehicle routes must be considered when designing traffic calming plans on roadways. Certain traffic calming measures, such as roadway closures, should not be implemented on emergency vehicles routes. Traffic calming measures with no impact and minor impacts to emergency vehicles are summarized below.

No impact to emergency vehicles:

- Rumble Strips
- Speed Cushions
- Textured Crosswalks
- Signage

Minor impact to emergency vehicles:

- Raised Crosswalks
- Speed Humps
- Speed Tables
- Chicanes
- Curb Extensions
- On-Street Parking
- Traffic Circles
- Right-In/Right-Out

4.2 Design of New Subdivisions with Traffic Calming Measures

There are new subdivisions and extensions of existing subdivision throughout the Town that are under the planning and construction stages. Traffic calming measures should be incorporated into the design of new subdivisions to encourage traffic-calmed neighborhoods. Certain traffic calming measures require specific right-of-way, such as traffic circles, these traffic calming measures can easily be incorporated into new developments at the early design stages.

Other traffic calming measures, such as raised crosswalks and chicanes, require considerations for storm water management since these traffic calming measures can extend across the width of a roadway or abut to the curb. These measures can prevent surface water run-off from getting to the catch basins and can result in flooding uphill of the traffic calming measure. When these types of traffic calming measures are



incorporated into the design of the subdivisions, these problems can be averted by including the traffic calming measures in the storm water management design.

Introducing traffic calming measures into the design stage of new developments will improve the aesthetics of the subdivision, reduce speeds and through traffic volumes and provide, a safer and friendlier environment for pedestrians and bicyclists.

