

December 6, 2021

Terry Gayman P.Eng.
General Manager/ City Engineer Engineering and Transportation Services
City of Guelph
1 Carden Street
Guelph, Ontario N1H 3A1
terry.gayman@guelph.ca

Delivered via email

RE: CHANGES NEEDED IN CITY POLICIES REGARDING THE TRAFFIC FUNCTION OF COLLECTOR ROADS

Greetings Terry:

In this letter I set out changes in various City of Guelph policy documents that are needed to bring City policies into compliance with the Canadian Guide to Traffic Calming.

TOPIC ONE: COMPLIANCE WITH THE CANADIAN GUIDE TO TRAFFIC CALMING

As a preface to a presentation of the changes that are needed, I present a summary of the contradictions that have existed and still exist within policy documents as regards the appropriate traffic function to be assigned to collector roads in residential areas.

The Southview (District 8) Secondary Plan was added to the City of Guelph Official Plan in 1975. The roadway system contained in the Southview Secondary Plan made a distinction between the functions of arterial roads and highways as one grouping and local and collector roads as a second grouping. The function of arterial roads and highways was to “facilitate the movement of through traffic while minimizing the environmental impact on residential neighbourhoods”. The function of local and collector roads was to provide convenient access to property to and from the arterial/highway network while “preventing through traffic in the neighbourhoods”.

The intention in the District 8 Plan to exclude through traffic from collector roads was contradicted by the Transportation Section of the Official Plan. The Transportation Sections of Guelph’s Official Plan in 1975, and continuing until at least 1994, explicitly assigned through traffic functions to collector roads as part of an arterial-collector grid system to assist in the dispersion of through traffic.

While the mention of a combined “arterial-collector road grid” has been removed in more recent Official Plans the definition of the function of collector roads retains the allowance for through-traffic function for collector roads.

1994 Official Plan

Collector roads are intended to move low to moderate volumes of traffic within specific areas of the City and collect local traffic for distribution to the arterial or Provincial Highway system.

2021 Official Plan

5.7.3.1 Collector Roads are intended to move low to moderate volumes of traffic within specific areas of the City and collect local traffic for distribution to the arterial or Provincial Highway system.

The Official Plan definition of the traffic function of collector roads has been interpreted by staff as providing a justification for through traffic being permitted and/or encouraged on residential collector roads. For example,

in the Staff Report on the Niska Road Improvements (Dec 3 2015) it is noted that “with respect to the function of Niska Road as a two-lane collector road:

- Current and future expected traffic volumes on Niska Road are well within the range for a two-lane collector road;
- Origen destination survey indicates that Niska Road is important to the city and area as it is to local residents;
- Most trips are for work from an external destination to locations in the City outside of the immediate neighbourhood.”

This interpretation of the function of a collector road in a residential area, based on the definition of collector-road function in the Official Plan, is directly opposite to the 1975 commitment of the City to protect residents from the detrimental effects of cut-through traffic using residential collector roads.

Moreover the 1975 City of Guelph decision to reclassify collector roads as being, together with local roads, for locally-generated traffic only was confirmed as best practice by the Canadian Guide to Neighbourhood Traffic Calming issued by the Transportation Association of Canada in 1998. This Guide, reissued in 2018 as the Canadian Guide to Traffic Calming has the following definition of the traffic function of local and collector roads in residential areas:

“A primary function of local streets is to provide access to adjacent properties. These streets are not intended for use as through routes or as corridors to move traffic within the overall road network. For collector streets, access to adjacent property is balanced by a need to collect and distribute traffic travelling into and out of an area or neighbourhood. As with local streets, collector streets are generally not intended to be through routes or to move significant amounts of traffic from one part of the road network to another.

The contrast between the City’s operational interpretation of collector road function and the CGTC is obvious. The City’s interpretation is the collector roads can and should move significant volumes of through traffic, the CGTC states collector roads should not move significant amounts of through traffic.

RECOMMENDATION 1: REVISE THE DEFINITION OF COLLECTOR ROAD FUNCTION IN THE TRANSPORTATION MASTER PLAN AND THE OFFICIAL PLAN TO CORRESPOND WITH THE CGTG

The TAC has two publications that discuss traffic functions of streets – the Geometric Design Guide for Canadian Roads and the Canadian Guide to Traffic Calming. Both publications agree that the two fundamental aspects of the traffic function of a street are (1) traffic service function and (2) land service//access.

I recommend the following definitions as an example of providing clear guidance on both traffic service and land service:

Suggested Definitions for Classification of Streets

Arterial Road A road primarily for movement of through traffic; access to property of lesser importance.

Collector Road A road for movement of local traffic and for access to property; movement of local traffic and access to property have equal importance; through traffic discouraged.

Expressway A divided arterial roadway for through traffic with full or partial control of access and with some interchanges.

Freeway A road limited to through traffic with access only through interchanges.

Local Road A road providing access to property for local traffic; through traffic discouraged.

TOPIC TWO: REVISE THE TRAFFIC CALMING POLICY TO RESTORE COMPLIANCE WITH THE CGTC

The Canadian Guide to Traffic Calming provides guidance on the two traffic safety concerns which give rise to the need for traffic calming. One is speeding, the other is high volumes associated with traffic short-cutting through residential neighbourhoods. The City of Guelph's Neighbourhood Traffic Management Policy as revised in 2006 took careful account of the CGTC and the NTMP established criteria for thresholds on both speeding and short-cutting traffic volumes which, if surpassed, triggered a Traffic Review. The criterion for short-cutting traffic on collector roads was >600 short-cutting vehicles per day on streets with >2000 vehicles/d traffic.

In July 2020 City Council replaced the NTMP with Traffic Calming Policy – Policy 016. The replacement policy TCP is not compliant with the CGTC because the TCP deals with only half of the traffic calming concerns – speeding – and does not contain a single mention of short-cutting traffic volumes, much less establish a criterion for triggering a Traffic Review based on excessive short-cutting traffic volumes. The TCP does reaffirm that the traffic function assigned to collector roads is to circulate local traffic.

RECOMMENDATION 2: RESTORE SHORT-CUTTING TRAFFIC VOLUMES AS A CONCERN WITHIN THE TCP; RE-ESTABLISH A CRITERION FOR TRIGGERING A TRAFFIC REVIEW TO DEAL WITH EXCESSIVE SHORT-CUTTING VOLUMES; RE-ESTABLISH A PROCEDURE FOR DETERMINING ACCEPTABLE VOLUMES OF SHORT-CUTTING TRAFFIC VOLUMES ON A SITE-SPECIFIC BASIS AS IN THE NTMP.

TOPIC THREE: DETERMINE ACCEPTABLE TRAFFIC VOLUMES ON SCIENCE-BASED SITE-SPECIFIC CRITERIA

The NTMP (2006) specified that if a traffic-volume problem from short-cutting traffic was identified it was the responsibility of City staff to determine from site-specific characteristics of the problem street what volume of traffic was acceptable and then to determine what methods of traffic calming were needed to reduce cut-through traffic volume to acceptable levels and thus return the problem street to its intended function.

However, when required to establish the acceptable volume of cut-through traffic for Niska Road and Whitelaw Road, both of which are two-lane residential collector roads with excessive cut-through traffic problems City staff did not establish the acceptable volume of cut-through traffic from an examination of the site-specific properties of the problem road such as pavement width, extent of sidewalks, sight-line distances and presence of steep slopes.

Instead of site-specific determination of the volume capacity Niska Road and Whitelaw Road City staff chose, in both cases, a volume of 8000 vehicles/d as the acceptable traffic volume, taking this value from the listing of typical observed maximum traffic volumes for all types of collector roads (i.e., both two lane and four lane roads) shown in Table 2.6.5 of the Geometric Design Guide.

As explained by Geoff Nixon P. Eng. Director of Technical programs of the Transportation Association of Canada this use of the observed maximum traffic listed in Table 2.6.5 is contrary to the intended use of Table 2.6.5. This Table, and the entire GDG, is intended only for the geometric design of roads and should not be used for traffic operations. The maximum traffic volumes in Table 2.6.5 may well include volumes which are unacceptably high. There is “no implied “acceptability” of the typical volumes shown, and these values do not represent the capacity either physical or desirable of any specific road. Determination of acceptable volumes should be determined by the engineering judgement of practitioners based on site-specific properties.

Further confirmation of the need to determine acceptable volumes on a site-specific basis is shown in the City of Toronto Traffic Calming Policy. In this policy collector road acceptable volumes are listed as being in the range of 2500 to 8000 depending on road characteristics.

RECOMMENDATION 3: THE TRAFFIC CALMING POLICY SHOULD BE AMENDED TO EXPLICITLY STATE THAT ACCEPTABLE TRAFFIC VOLUMES MUST BE ESTABLISHED BY THE ENGINEERING JUDGEMENT OF QUALIFIED PRACTITIONERS USING THE SITE-SPECIFIC CHARACTERISTICS OF THE PROBLEM STREET.

I thank you for your attention to these recommendations and look forward to what I hope will be a favourable response to this letter.

I request that this letter be considered as a submission to both the Official Plan Update now underway and to the Transportation Master Plan Update now underway.

Best Regards

A handwritten signature in black ink that reads "H R Whiteley". The signature is written in a cursive, slightly slanted style.

H.R. Whiteley P. Eng.



THE CITY OF
Guelph

OFFICIAL PLAN

ADOPTED BY CITY COUNCIL
NOVEMBER 1, 1994

PROVINCIAL APPROVAL
PENDING

1994

2. Arterials:

- (a) Arterials are intended to move moderate volumes of traffic over moderate distances within the City and to collect traffic and feed it to the expressway and Provincial highway system.
- (b) Arterials are medium speed design, having capacity for 2-6 lanes, usually undivided, with access restricted wherever possible to at-grade intersections with other arterial and collector roads.
- (c) Direct access from local roads and individual properties shall be limited, where possible, to avoid interference with the primary function of moving through traffic.
- (d) Parking shall be discouraged except in the main shopping streets of downtown.
- (e) The desirable *right-of-way* width shall range from 26 metres to 36 metres.
- (f) It is recognized that arterial roads of less than 26 metres presently exist and widenings to achieve the desirable minimum may not be practical.

3. Collectors:

- (a) Collector roads are intended to move low to moderate volumes of traffic within specific areas of the City and collect local traffic for distribution to the arterial or Provincial highway system.
- (b) Collectors are moderate speed design, having capacity for 2-4 lanes, usually undivided.
- (c) Direct access to private property may be permitted, but controlled to avoid traffic hazards.
- (d) Parking may be permitted.
- (e) The desirable *right-of-way* width shall range from 23 metres to 26 metres.
- (f) It is recognized that collector roads of less than 23 metres exist and widenings to achieve the desirable minimum may not be practical.

4. Local Roads:

- (a) All other roads, not designated on Schedule "7B", shall be considered a local road whose function is to provide for low volumes of traffic and access to abutting private property.
- (b) Local roads are low speed design, having capacity for two lanes of traffic, usually undivided, with through traffic discouraged.
- (c) Parking may be permitted.
- (d) The preferred *right-of-way* width for new local roads shall be 20 metres.

5.2.15 The City's functional hierarchy of roads is a component of and ties into the Provincial Highway grid. The Provincial Highway grid through Guelph is illustrated on the Existing Road Network, Schedule "7B".

1. All development/redevelopment proposals adjacent to the Hanlon Expressway are subject to the requirements and permits of the Ministry of Transportation.

Road Design

5.2.16 The functional road hierarchy, as outlined in Policy 5.2.14 and Schedule "7B" of this Plan, will serve as the basis for the planning of the City's roads system.

5.2.17 The City shall have regard for and, when necessary, will require measures to mitigate any negative impacts on Natural Heritage Features or Cultural Heritage Resources.

5.2.18 The City will promote the creation of an arterial ring-road system to take inter-urban traffic around the City. This ring-road system will consist of an inter-connected Elmira Road, Woodlawn Road, Watson Road and Stone Road.

5.2.19 The City will promote the creation of an arterial-collector grid system in the new growth areas of the Municipality to assist in the dispersion of traffic and to provide a reasonable walking distance to transit services on the main roads.

5.2.20 It is the policy of the City to maintain and protect the traffic capacity of collector and arterial roads.

1. A variety of design mechanisms and operational techniques will be used by the City to promote the efficient utilization of the City's road grid system; for example, requirement for shared driveways in commercial strips and synchronized traffic signals.

1.4.1 – LOCAL AND COLLECTOR STREETS

A primary function of local streets is to provide access to adjacent properties. These streets are not intended for use as through routes or as corridors to move traffic within the overall road network. For collector streets, access to adjacent properties is balanced by a need to collect and distribute traffic travelling into and out of an area or neighbourhood. As with local streets, collector streets are generally not intended to be through routes or to move significant amounts of traffic from one part of the road network to another.

On local and collector streets, traffic calming is intended to achieve one or more of the following objectives:

- **Reduce vehicular speeds.** Traffic calming measures are implemented to increase motorists' awareness of the street's function and thereby reduce vehicular speeds. Some features make it physically uncomfortable or difficult to travel along a street without reducing speed. Excessive speeds increase risk and create a safety concern, as motorists are less able to stop safely if confronted with situations, such as a child running into the street, a vehicle backing out of a driveway, or a cyclist swerving around an obstacle. Excessive vehicle speeds also increase the severity of a collision should one occur. Overall, speeding vehicles can detract from the livability of a neighbourhood.
- **Discourage shortcutting.** Traffic calming measures can be used to discourage non-local traffic from travelling through a neighbourhood, thereby reducing traffic volumes. "Traffic shortcutting occurs when drivers deviate from arterial roads and use local or collector streets as alternate routes to move between destinations. The driver has no origin or destination within a neighbourhood, but uses the route through the neighbourhood to get to his or her destination. Traffic shortcutting itself is not illegal, but some of the associated behaviors often accompanying traffic shortcutting are illegal. Drivers' primary intention in shortcutting is to save time. As such, speeding is not uncommon by drivers who shortcut through neighbourhoods. Additionally, drivers may fail to properly yield or stop at intersections in a further attempt to save time. As traffic shortcutting routes become known to drivers, the traffic volume along these routes can increase significantly."⁶ High traffic volumes increase the potential for conflicts within a neighbourhood. They can also cause delays for pedestrians and cyclists, and reduce the attractiveness of local and collector streets for walking and cycling. High traffic volumes also increase noise and vehicle emissions, which can detract from the livability of a neighbourhood. On collector streets, high traffic volumes can increase congestion and delays within a neighbourhood, such as when queues form at Stop signs, or motorists are unable to turn onto a street or out of their driveway because there are no gaps in traffic. Increased traffic volumes are often perceived by residents to travel at higher speeds on neighbourhood streets.
- **Minimize conflicts between street users.** Traffic calming measures are used to reduce conflicts between various street users, including motorists, cyclists, pedestrians and others. It is important to note that the separation of street users (such as the physical separation of cyclists from motorists) is not necessary to minimize conflicts. Reducing vehicle speeds and volumes, correcting geometric deficiencies and improving sight lines can all help to reduce conflicts without the need to separate street users.

⁶ City of Edmonton, Office of the City Auditor. "Traffic Shortcutting Audit, June 11, 2015", p. 1

RE: Possible need for clarification of function of collector roads in TAC Guides

Geoff Noxon <gnoxon@tac-atc.ca>

Fri 2/7/2020 6:31 PM

To: Hugh R Whiteley <hwhitele@uoguelph.ca>

Good afternoon, and thanks for your enquiry.

First, TAC is a non-regulatory and non-profit organization. Our publications (including those that you cite in your message) represent the outcome of collaborative processes involving TAC member organizations across Canada. Their suggestions and recommendations are considered to represent good practice. They may inform policy but are not meant to set policy, and are never intended to supersede local laws, design requirements, or the engineering judgement of practitioners.

The traffic volumes cited in Table 2.6.5 of the GDG are typical maximum volumes for each type of road. They do not represent the capacity (either physical or desirable) of those roads, and there is no implied "acceptability" of the typical volumes (either pro or con); they are observed conditions, not prescriptions.

For this reason, the GDG and CGTC are not contradictory on this matter. The GDG is a guide for the geometric design of roads, not for traffic operations; for this reason the issue of local vs. through traffic is irrelevant to Table 2.6.5. (I would note, however, that GDG Figure 2.6.1 does acknowledge the reality that most collector roads carry some proportion of through traffic, even if the very definition of "through traffic" may depend on one's frame of reference.)

Regards,

Geoff Noxon, M.Sc., P.Eng.

Director, Technical Programs

TRANSPORTATION ASSOCIATION OF CANADA (TAC)

401-1111 Prince of Wales Dr, Ottawa, ON K2C 3T2

gnoxon@tac-atc.ca 613-736-1350 x228**From:** Hugh R Whiteley [mailto:hwhitele@uoguelph.ca]**Sent:** February 6, 2020 5:38 PM**To:** Geoff Noxon <gnoxon@tac-atc.ca>**Subject:** Possible need for clarification of function of collector roads in TAC Guides

Greetings:

I attach a letter outlining a problem I have encountered in reconciling the Canadian Guide for Traffic Calming and the Geometric Design Guide for Canadian Roads.

I look forward to any clarification you can provide.

Hugh Whiteley P.Eng.

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bicycle lanes, sidewalk on the north side, traffic calming and an on street parking area west of Pioneer Drive on the north side of Niska Road;

- Replace the existing Bailey bridge with a new two-lane Pony Truss bridge;
- Reconstruct the intersection of Downey Road and Niska Road as a fully signalized intersection;
- Implement traffic calming measures on Niska Road from Downey Road to the west city limit.

The design concepts for the preferred solutions were presented to the public at a Public Information Centre (PIC) at the Kortright Presbyterian Church on September 10, 2015.

Phase 4: Environmental Study Report (ESR)

A draft Environmental Study Report has been prepared by the project team based on the preferred solutions and design concepts. It includes a description of impacts, mitigation measures and monitoring plans that are recommended. Mitigation plans will be addressed in detail during the detailed design phase of the project.

Construction activities will occur within existing road right-of-way and specified working easements. The Grand River Conservation Authority (GRCA), River Systems Advisory Committee (RSAC), Heritage Guelph Committee (HGC), Guelph Transit all impacted Utility companies and all requires City of Guelph Departments will be fully consulted during the detail design process. Regulated lands, associated with the Speed River and its floodplain, are present in the vicinity of the Niska Road Bridge. As such, GRCA approval will be required prior to any bridge works.

Construction Plans will include (but are not limited to) the following:

- Erosion and Sediment Control Plan;
- Emergency Response and Communications Plan;
- Tree Protection and Management Plan;
- Stormwater Management Plan;
- Traffic Management Plan;
- Guelph Transit Alternate Route Plan;
- City of Guelph Fire & Emergency Service Plan.

The Executive Summary for the ESR is provided in Attachment 3.

Evaluation Criteria

As noted in previous sections of this report, a number of key factors and criteria were considered throughout the EA study in determining the preliminary preferred design alternatives and finally the preferred alternatives. Attachment 7 provides a detailed evaluation matrix for the alternative solutions using key criteria. In addition, the following sections summarize some, but not all, of these factors.

Transportation Planning

Niska Road is a two-lane collector road as designated in the City's Official Plan. The road classification has been confirmed in the Transportation Master Plan (2005) and subsequent transportation modelling work to support the Development Charges Background Studies (2009, 2014) and Ministry of Transportation Environmental Assessment for the Hanlon Expressway (2008). Based on the Niska Road EA study

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findings, the following are facts with respect to the function of Niska Road as a two-lane collector road:

- Current and future expected traffic volumes on Niska Road are well within the range for a two-lane collector road;
- Origin destination survey indicates that Niska Road is important to the City and area as it is to local residents;
- Most trips are for work from an external destination to locations in the City outside of the immediate neighbourhood.

Niska Road and bridge are part of a stable road system servicing existing neighbourhoods with established travel patterns. The proposed replacement of the Niska Road bridge has been planned for a number of years and has been included in City budget forecast since 2004. The City is not encouraging any use of the road beyond that which is intended.

As the City grows, increases in traffic throughout the City can be expected over time. The traffic volume increase for Niska Road and bridge is similar to the expected traffic volume growth on the City's transportation network and is consistent with the City's Transportation Master Plan.

Modeling of expected increases in traffic volumes demonstrates that a two-lane collector road will continue to safely meet traffic needs. The purpose of a collector road is to move low to moderate volumes of traffic within specific areas of the city, and collect local traffic for distribution to the arterial or Provincial highway system.

Currently, the total average weekday volume on Niska Road is 4,652 vehicles per day with 2,405 vehicles per day eastbound and 2,247 vehicles per day westbound. Traffic modeling predicts that peak two-way traffic volumes will increase from approximately the current 510 vehicle per hour to 730 vehicles per hour in 2031.

Consequently, the transportation modelling work for this study has confirmed that there is no need to widen Niska Road beyond the current two-lane collector road as the capacity analysis for the road took into account future development and growth in the City including possible development in the Niska Road area. Since there is no need to widen the existing two-lane collector road, there is also no need to widen the bridge beyond the two lanes required to connect the existing two-lane City collector road and the existing two-lane Township road on either side of the existing one-lane bridge.

A number of related transportation planning concerns or issues have also arisen during the EA study including discussion of previous road projects in the area. It is noted that the need to replace the Niska Road bridge was planned before the completion of the Ministry of Transportation Environmental Assessment (MTO EA) for the Hanlon Expressway and before the removal of the Stone Road extension and College Avenue extension from the City's Official Plan. Additional detail related to these two transportation projects is provided in Attachment 6.

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Due to comments and inquiries from the CWG and local residents, staff undertook additional transportation modelling scenarios in drafting this report to provide Council with the following background information:

Traffic impacts if the Stone Road extension was implemented indicated the following:

- Decreases in traffic on Niska Road ranging from 10% to 30% for peak hour traffic based on current and future traffic volumes for a scenario with a two-lane Niska Road and bridge;
- Minimal changes in peak hour traffic volume at various locations (Downey, County Road 124, Hanlon Kortright) for a scenario with no Niska Road bridge.

Traffic impacts if Niska Road bridge was closed to vehicular traffic indicated the following:

- Minimal increases and decreases in traffic volume on Niska Road ranging from 0% to 10% changes in peak hour traffic volume at various locations (Downey, County Road 124, Hanlon Kortright);
- Increased travel time and inconvenience for community residents currently using Niska Road bridge;
- Increased congestion at signalized intersections on Hanlon Expressway can be anticipated until the highway is upgraded as recommended in MTO EA.

Structural assessment

The Ontario Structural Inspections Manual, Regulation 104/97 requires all municipal bridge structures to be inspected biannually. The most recent full bridge inspection report for the Niska Road Bridge was completed in 2013 and indicated the structure was in very poor condition. An interim structural inspection in 2015 led to emergency repairs in March and April of 2015. These repairs allowed for the continued short-term use of the bridge until the environmental assessment is completed and a permanent solution is put in place. The 2015 full bridge inspection report is currently underway and will be received by the City by the end of 2015.

The 2013 report completed for the bridge indicates that the majority of bridge elements have remaining service lives of one to five years. The most significant structural issue with the bridge is the span opening being shorter than the watercourse width and the resultant ongoing erosion and undermining of the retaining walls and abutments by the river.

It has been noted that replacement parts are available for the existing bridge and the City has in the past repaired the superstructure with structural components (transoms, sway bracing, bolts and wood decking) replaced in 2003. However, the major concern with the superstructure at this time is the ongoing corrosion and the need to replace the steel trusses and bearings. Replacement of these elements may require partial removal of the superstructure in order to access these elements. These ongoing repairs, replacement of elements and rehabilitation costs were factors in evaluating the alternatives for the bridge.

Key findings from structural inspections and reports include: