



Report to: Development Services Committee

Report Date: December 11, 2012

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<b>SUBJECT:</b>	UPDATE - Train Anti-Whistling at Rail Crossings/Uxbridge Subdivision Rail
<b>PREPARED BY:</b>	Rachel Prudhomme, Manager, Special Projects, ext. 2849 Alan Brown, Director, Engineering ext. 7507

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### **1. RECOMMENDATIONS:**

**THAT** the report dated December 11, 2012, entitled "UPDATE - Train Anti-Whistling at Rail Crossings/Uxbridge Subdivision Rail" be received;

**AND THAT** Metrolinx be requested to include anti-whistling and/or other noise mitigation measures at level road crossings as part of their pending Environmental Assessment study to be undertaken on the Stouffville line for future infrastructure improvements;

**AND THAT** anti-whistling be included in the I-METRO-E concept to electrify the Stouffville line;

**AND THAT** Metrolinx and York Region be advised accordingly.

### **2. PURPOSE:**

The purpose of this report is to provide Council with an update on train anti-whistling at level road crossings on the Uxbridge Subdivision rail line in Markham and, taking into consideration phasing, funding strategies and new alternative technology options, seek Council's approval to include anti-whistling in the I-METRO-E concept for electrification of the Stouffville line and to request that Metrolinx include anti-whistling in their upcoming Environmental Assessment (EA) study for the Stouffville line.

### **3. BACKGROUND:**

The Uxbridge Line runs generally in a north-east direction and is owned by Metrolinx (GO Transit) and operated by CN on their behalf. The most southerly rail crossing is located on Steeles Avenue and the most northerly rail crossing is located on 19<sup>th</sup> Avenue as noted in Attachment "A". In total, there are 18 level rail crossings, of which seven are under the jurisdiction of York Region (six of which are within the urban area), one is under the jurisdiction of the City of Toronto (Steeles Avenue), one is a private crossing (Hydro One) and the remaining nine crossings are under Markham's jurisdiction. Most of the rail crossings are fitted with safety features to properly provide advanced warning and

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restrict road users (vehicles) from entering the rail crossing while in operation. Some of the key safety features include bells, gates, and flashing lights. Other safety features include traffic signs, pavement markings and fences.

In June 2008, Council requested that staff pursue anti-whistling for the level rail crossings through the urban area of the City. In October 2008 the City commissioned a Whistle Cessation Feasibility Study outlining the additional safety features that would be required for anti-whistling legislation and the mitigation measures recommended at the level rail crossings. The principle findings of this report prepared by Aecom were presented to the Development Services Committee on March 3, 2009 and can generally be summarized as follows:

1) General mitigation measures required:

- i) Signs and pavement installations / relocations required
- ii) Sightlines to be corrected

2) Specific mitigation measures required:

- i) Eureka Street - sightline issues to be addressed by relocation a driveway and garage that are obstructing the line of sight
- ii) Bur Oak Avenue - existing approaches need to be regarded to a maximum 2 percent grade

In addition to the above, the following mitigation measures were identified by AECOM:

A) City of Markham Crossings

The following crossing locations require the installation of pedestrian gates along both sides of the roadway (4 separate crossing quadrants in total, that is, sidewalks on both sides of the street which require protection from both directions) as well as general brush clearing and installation or relocation of warning signs and/or pavement markings:

- Castlemore Avenue
- Bur Oak Avenue
- Snider Road
- Main Street Unionville
- Main Street Markham (1 of 4 quadrants already protected)
- Eureka Street (1 of 4 quadrants already protected)
- Denison Street (1 of 4 quadrants already protected)

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**B) Region of York Crossings**

The following crossing locations require the installation of pedestrian gates along both sides of the roadway (4 separate crossing quadrants in total) as well as general brush clearing and installation or relocation of warning signs and/or pavement markings:

- Major Mackenzie Drive
- McCowan Road
- Highway 7
- Kennedy Road South
- 16<sup>th</sup> Avenue (2 of 4 quadrants already protected)

**C) City of Toronto Crossing**

The crossing at Steeles Avenue is in the Toronto jurisdiction. Future plans involve a grade separation, but discussions will need to be held with the City of Toronto regarding anti-whistling at this crossing prior to the construction of a grade separation.

On December 6, 2011, staff provided a status update to Council on train anti-whistling at the level road crossings along the Uxbridge Subdivision Rail Line, requesting that Council provide direction as to further implementation of the anti-whistling program and future funding commitment for the \$3.96 million. Council directed staff to report back with phasing and funding strategies and information on new alternative technology options.

**4. OPTIONS/ DISCUSSION:****4.1 FUNDING STRATEGIES:**

The total cost of the anti-whistling program, including the capital improvement works defined in Section 3 above, is estimated at \$3.96 million. York Region has pledged (although not yet budgeted) to refund up to \$1.7 million for crossings located on Regional roads, but only following rail authority approval and actual implementation of the anti-whistling order.

There are no sources of outside funding available for this work except for York Region's pledge to supply a refund for work on its own crossings to a maximum of \$1.7 million if and when Markham is successful in obtaining an anti-whistle order. In terms of internal funding, there is \$366,000 in Engineering's Capital Accounts earmarked for Anti-Whistling. The shortfall of approximately \$1.9 million remains unfunded and would have to come either through the City's tax base or by alternative funding such as grants or by setting up a local community improvement project to be funded by those benefiting from the anti-whistling order.

Staff is investigating a local improvement initiative for funding anti-whistling that is being implemented in the U.S. (the City of Vancouver, Washington, USA). This American city did not have adequate funding to implement anti-whistling. They established a citizens' committee that developed a Local Improvement District (LID) financing method to distribute cost directly to those who would benefit from anti-whistling. Out of the 450 properties affected by the LID financing proposal, an overwhelming majority confirmed via a survey that they would support this financing approach. The City is to hold public hearings by early 2013 on this matter.

Several municipalities that had originally considered implementing train anti-whistling orders have deferred their programs due to reasons such as high costs, increased risks, logistics, municipal liability and also due to the fact that, even if an anti-whistling order has been enacted, train engineers are at complete liberty to choose to blow the train's whistle if they feel it will enhance safety at any particular crossing. Examples of such municipalities include Aurora, East Gwillimbury and the Township of Leeds and Thousand Islands. The Town of Witchurch-Stouffville had implemented anti-whistling on half of its crossings, opting to suspend implementation on the rest of the crossings due to the requirements being imposed by the rail company. It should be noted that partial anti-whistling orders are no longer being considered by the rail authority. Anti-whistling is now an all-or-nothing effort, covering all level road crossings within the municipal boundary or none at all.

#### 4.2 PHASING:

Recognizing that the overall cost estimate to implement this work based is well in excess of the current funding available for this project, staff explored the possibility of phasing in the anti-whistling program with our consultant (Aecom). Our consultant in discussion with the transit authorities was able to confirm that although the capital work (i.e. Mitigation List) could be implemented over several years the elimination of the train whistle through Markham would have to wait until ALL the crossing upgrades were completed and inspected by Metrolinx and Transport Canada.

Although the capital works can be phased in, Markham still has to wait until ALL of the crossing upgrades have been completed and inspected by Metrolinx and Transport Canada before any anti-whistling can be considered. Even when all of the capital upgrades have been constructed, it is not guaranteed that the anti-whistling order will be granted. Metrolinx and Transport Canada reserve the right to refuse granting the anti-whistle order if they deem it necessary for safety.

#### 4.3 NEW ALTERNATIVE TECHNOLOGY OPTIONS:

Staff has conducted research to discover whether established new technologies could be applied to replace train horns. There is limited new technology available in North

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America or abroad to replace train horns. Some countries have considered technologies such as rail car reflectorization, pulsating crossing lights, strobe lights, angled ditch lights, LED signal lights, wayside horns and two-stage horns. But there is no new technology that has completely replaced train whistles.

Of the technologies identified above, only two-stage horns (i.e. a slightly lower level horn for normal whistling and a higher level horn for emergency situations only) are being considered to balance the noise concerns of residents with the alerting benefits of a high-sound-level in emergency situations. These modern two-stage horns meet Transport Canada's regulations for sound levels and are more acceptable for residents. Most new trains are being equipped with the two-stage horns and older locomotives are being retrofitted with the newer horns when they are scheduled to be refurbished. As a result, GO has installed two-stage horns on all of their trains on the Stouffville line.

One alternative to anti-whistling is the wayside horn, which is a horn warning system that is statically installed directly at the level crossing to warn of an oncoming train (i.e. the horn is not on the train, it is located at the crossing). Pilot projects have been conducted in the U.S. and in Quebec to test wayside horns. In conclusion, Transport Canada has advised that, based on their pilot project, noise levels in the broader communities are reduced but at each level crossing, the noise decibel has increased and abutting residents have complained about such.

Broad-band horns have also been recently tested on trains. These horns concentrate sound by tunneling it in one direction while minimizing the radiation of sound around the trackside. However, research has shown that the sound characteristic of broad-band horns is not sufficiently audible in varying terrain and meteorological conditions and that it is not certain that broad band horns can be developed to provide a warning equivalent to that generated by conventional horns. Furthermore, there was no strong evidence that a broad-band horn is more directional than conventional horns when mounted on a train.

Several other new alternative technology options were examined (e.g.: three-quadrant gates with non-complying medians, geometric improvements, programmed enforcement, photo enforcement, increased education). None of these have been approved by Metrolinx or by Transport Canada as safe substitutes for conventional train horns. Supplemental safety measures such as four-quadrant gates, medians or channelization devices, one-way streets with gates and permanent road closures can be used to increase safety over and above sounding train horns but again, these options cannot presently replace the sounding of horns.

#### 4.4 ANTI-WHISTLING IN MARKHAM:

Regardless of the new technologies that can be implemented, there are still many challenges surrounding the implementation of anti-whistling. Some are:

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- Markham's rail crossings are currently safe, but will need to be upgraded for anti-whistling
  - Upgrades require a capital investment of nearly \$3.96 million (2008 dollars) for the capital improvement works
  - York Region may refund up to a maximum of \$1.7 million for crossings located on Regional roads, but only upon completion of all works, upon rail authority approval and after implementation of the anti-whistling order
  - York Region will not accept any liability for its crossings in Markham if anti-whistling is implemented; the City must accept all liability
  - Even if all of the capital improvements are completed, the rail authority indicates that it or Transport Canada may still decide not to grant the anti-whistling order. There is no guarantee.
  - Anti-whistling orders are not final. Regardless of the implementation of anti-whistling, the train operator still has the ultimate sole discretion to disregard the order and blow the whistle anyway
  - Several municipalities have abandoned their efforts to implement anti-whistling due to high costs, safety risks, logistics, municipal liability and due to the fact that the operator may still decide to blow the whistle even if anti-whistling has been implemented

## **5. RECOMMENDATION:**

It will be some time before any new technologies can be implemented to replace the train horn. Also, funding of the upgrades to crossings required for anti-whistling is not readily available. Other strategies may have to be considered, as recommended below.

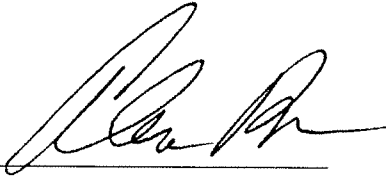
Metrolinx will be undertaking an Environmental Assessment study in 2013/2014/2015 on the Stouffville line for future infrastructure improvements. The Stouffville line, including Markham's rail crossings, will likely have to be upgraded by the rail authority to accommodate the anticipated increase in service. This presents an opportunity to request that Metrolinx deal with the noise issue at crossings. Requesting that Metrolinx include anti-whistling in its EA study may engage the rail authority into cost-sharing and championing the anti-whistling efforts on Markham's behalf with Transport Canada and other authorities. Staff recommends that we approach Metrolinx under their EA study to consider anti-whistling in its development of a plan for rail service improvements through Markham.

Earlier this year, the I-METRO-E Concept to electrify the Stouffville line and replace the heavy diesel trains with electric trains was tabled in Markham. Council endorsed the establishment of a working group composed of representatives from Metrolinx, the City of Toronto, York Region and the City of Markham to review the Concept and report back to a steering committee to be co-chaired by Markham and Toronto Councils. It is recommended that anti-whistling should be incorporated into the I-METRO-E concept through the working group and steering committee for further investigation and to provide more support for the initiative.

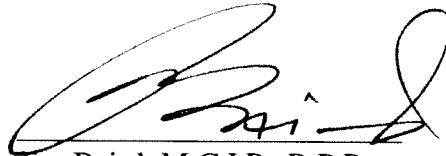
**6. DEPARTMENTS CONSULTED AND AFFECTED:**

The Legal Department has reviewed this report.

**RECOMMENDED BY:**

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Alan Brown, C.E.T.  
Director of Engineering

A handwritten signature in black ink, appearing to read 'Jim Baird', written over a horizontal line.

Jim Baird, M.C.I.P., R.P.P.  
Commissioner, Development Services

**ATTACHMENTS:**

**Attachment "A"** - Map of Uxbridge Train Line

# MAP

## Uxbridge Train Line

### Train Lines and At-Grade Crossings

Subject Area

