



STAFF REPORT ACTION REQUIRED

Review of Metrolinx Noise and Vibration Assessments

Date:	August 4, 2010
To:	Board of Health
From:	Medical Officer of Health
Wards:	Wards 2, 11, 12, 14, 17, 18 and 19
Reference Number:	

SUMMARY

This report provides comments on Metrolinx' noise and vibration assessments for the Georgetown Rail Expansion and Air-Rail Link.

A review of the consultants' report identified several limitations in the noise and vibration assessments. In particular, noise impacts at City parks in the vicinity of the Georgetown Corridor were not evaluated and could be significant. Furthermore, the noise and vibration impacts associated with Tier 4 compliant trains, the new MP40 model locomotives and the new Air-Rail Link trains are not known, measured or considered in the analysis.

Assumptions were used in the noise and vibration assessments to fill data gaps with respect to the noise and vibration characteristics of certain current and future trains. These assumptions introduce potentially large uncertainties that are not addressed in the assessments.

The assessments were completed based on projected train volumes that are much higher than Metrolinx now predicts. This overestimation of train volumes could over-predict impacts; however, the potentially large uncertainties in other areas of the assessments may underestimate impacts. Given the data gaps, it is not possible to assess the accuracy of the current noise and vibration assessments.

RECOMMENDATIONS

The Medical Officer of Health recommends that:

1. the Board of Health request that, during the detailed design phase of the Georgetown South Service Expansion and Union-Pearson Rail Link project, Metrolinx update the noise and vibration assessments to reflect current information on train volumes, locomotive technologies, and the noise and vibration characteristics of those technologies.

Financial Impact

There are no financial impacts from the adoption of this report.

DECISION HISTORY

In its meeting on May 21, 2010, the Parks and Environment Committee requested that the Medical Officer of Health and the Director of the Toronto Environment Office review the Metrolinx noise and vibration study to ensure the acoustical accuracy of the study in relation to the new MP40 diesel trains or any other proposed diesel trains, and to report back on any data that may be missing. This report was prepared for the August 2010 Parks and Environment Committee, the last committee meeting of the term. Due to the cancellation of that meeting, the committee Chair requested that the Medical Officer of Health report to the August 20 meeting of the Board of Health (see Attachment #1).

ISSUE BACKGROUND

Georgetown Expansion and Air-Rail Link

Metrolinx is planning a number of improvements to the Georgetown South rail corridor to permit the gradual expansion of train service on the corridor. These improvements have been assessed and approved under the provincial Transit Project Assessment Process. The two main elements of the project are:

- A Georgetown Expansion, which will enhance tracks to accommodate increased rail traffic from the GO Barrie, Bolton, Georgetown and Milton lines; and,
- A separate, private spur line from the Georgetown South corridor to the airport, which will be used to provide the Air-Rail Link service between Pearson Airport and Union Station.

Expanded service on the Georgetown South corridor is expected to begin in 2015. Metrolinx has indicated that the GO service expansion will be gradual, with up to 20 additional GO trains per day in 2015, increasing to 40 per day in 2020. In addition, the

Air-Rail Link service is expected to begin in 2015 at the full service level of 140 trains/day.

Metrolinx predicts that in 2015, total train traffic in the Georgetown South Corridor, including the Georgetown Expansion, Air-Rail Link and existing train traffic will increase from approximately 50 to 200 trains per day.

It is recognized that changes in the number of trains, track alignments, locomotive technology and speed will change the character and volume of noise and vibration associated with the Georgetown South Corridor.

Noise, Vibration and Health

Members of the local community have expressed concern about the potential health impacts of increased noise and vibration in the neighbourhoods adjacent to the Georgetown South corridor.

The scientific literature indicates that excessive exposure to noise has both direct (physiological) and indirect (stress-related) effects on human health. Community exposure to noise can impact cardiovascular health, mood, sleep, performance, reading and memory acquisition.

Community exposure to vibration exposure may have stress-related indirect effects, but these are not well documented in the literature.

The Noise and Vibration Assessments

J.E. Coulter Associates Ltd. completed the noise and vibration assessments for Metrolinx' Georgetown Expansion and Air-Rail Link in 2009 (<http://metrolinx-consult.limehouse.com/file/870840>).

The noise assessment predicts the noise impacts of the project, in terms of the predicted increase in sound levels. The report includes maps showing the areas along the length of the corridor where substantial and very substantial noise impacts are predicted to occur. It also estimates the number of sensitive receptors that would fall into each noise impact category.

The vibration assessment predicts the increase in vibration levels associated with the project without mitigation. The report includes maps showing the areas along the length of the corridor where noticeable and serious vibration impacts are predicted to occur. For the most part, these are within 30 m of the corridor.

COMMENTS

Toronto Public Health and the Toronto Environment Office reviewed the noise and vibration assessments, and identified several limitations which are discussed below.

City Parks Not Evaluated as Sensitive Receptors

City parks were not evaluated as sensitive receptors in either the noise or vibration assessments. Interpolation from the results for nearby sensitive receptors suggests that noise impacts could be of concern in a number of parks located within 120 m of the Georgetown South Corridor. The types of noise mitigation measures planned for residential areas could also be effective for parks.

The literature states that ground-borne vibration is generally not felt outdoors. Consequently, vibration impacts from the project should not affect outdoor activities in City parks.

Assessments Assumed Higher Train Volume than Currently Projected

The projected increase in train volumes is the primary contributor to the sound level increases predicted by the assessment, and an important factor in the vibration impact of the project.

The assessments assumed that GO would run a total of 295 trains per day on the corridor based on medium-term train volume projections from Metrolinx. However, Metrolinx has since indicated that actual train volumes will be lower, and now projects no more than 55 GO trains per day on the corridor in 2015, and a very gradual increase in GO train volumes over several years.

Sound and Vibration Characteristics of Some Trains Not Known

The noise and vibration assessments assume that the characteristics of future GO trains on the Georgetown South corridor would be the same as those of typical GO trains pulled by the older EMD F59PH model locomotives. The Air-Rail Link trains were assumed to have a fraction of the noise and vibration characteristics of the typical GO trains.

The assumptions cover three important data gaps:

- GO's fleet includes EMD F59PH locomotives, and the newer MP40 model locomotives, both of which may be used on the Georgetown corridor. The noise and vibration characteristics of the MP40 locomotives have not been measured and incorporated into the assessments.
- The Minister of the Environment requires that the GO Georgetown trains meet the US Environmental Protection Agency's new Tier 4 emissions standards for diesel

locomotives. These Tier 4 locomotives do not yet exist, and their noise and vibration characteristics are not known.

- The Minister of the Environment requires that the Air-Rail Link trains also meet Tier 4 emissions standards. Furthermore, the service operator for the Air-Rail Link, SNC-Lavalin, has not finalized their train selection for this service. The noise and vibration characteristics of the Air-Rail Link trains are not known.

It is not clear if the assumed noise and vibration characteristics for the MP40 model locomotives, the Tier 4 locomotives and the Air-Rail Link trains would tend to over- or under-predict impacts.

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SIGNATURE

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ATTACHMENTS:

Attachment #1 – Letter from Councillor Paula Fletcher, dated August 4, 2010