

## **7.0 CONCEPTUAL NOISE CONTROL (JANUARY 2011 UPDATE)**

On review of the December 2010 report, as contained in the preceding chapters, the MOE requested that conceptual noise control be investigated as part of the EPR, and not at the detailed design stage as is stated in Chapter 5 of this report. To this end, the feasibility of noise control measures was investigated in January 2011.

Chapter 5 makes reference to four receptors, R2, R3, R9 and R10, as being receptors where the future noise levels are predicted to exceed 65 dBA. According to the MTO Environmental Guide for Noise, the feasibility of noise control measures should be investigated when an increase in sound levels is predicted to be equal or greater than 5 dB, or when any increase in sound levels is present and the resulting predicted project sound levels, are greater than 65 dBA. However, of the four receptors identified in Chapter 5, R10 was later determined to be outside of the project study area. Therefore, feasibility noise control measures were investigated at R2, R3 and R9 and the results are summarized below. The updated STAMSON results with noise barriers are contained in Appendix G and the updated results for R2, R3 and R9 with barriers are included in Appendix H.

### **R2**

The December 2010 results indicate that Highway 7 is the dominant noise source at this location. This is not surprising given the proximity of Highway 7 to the receptors and the higher traffic volume relative to the next closest road, being the 407 Transitway. As such, the noise contribution from Highway 7 was predicted to be approximately 66.3 dBA, followed by Highway 407 and the 407 Transitway at 61.6 dBA and 60.9 dBA, respectively. This totals to 68.5 dBA, as shown on Table 5.1.

By adding a 5m high noise barrier adjacent to the 407 Transitway, and accounting for its effect on Highway 407 as best as possible given the limitations discussed above, the overall sound level with no barrier of 68.5 dBA is reduced to 66.9 dBA, or -1.6 dBA. As the barrier is located beyond Highway 7 from the perspective of the receptor, Highway 7 remains as the dominant source at this location.

At this feasibility assessment stage, it appears that a noise barrier along the 407 Transitway would not achieve a 5 dB reduction in noise at R5.

### **R3**

Highway 407 is much closer to R3 than it is to R2, but Highway 7 still remains the closest noise source. At this location, Highway 407 takes over as the dominant noise source, followed closely by Highway 7. Locating a 5 m high noise barrier on the north side of the 407 Transitway would

not effectively reduce the impact of Highway 7 noise at R3, as the 407 Transitway is still beyond Highway 7 from the perspective of the receptor, and Highway 7 simply becomes the dominant noise source. With no noise barrier in place on the 407 Transitway, the SENES December results reported in Chapter 5 indicated that the sound level at R3 was approximately 70.7 dBA.

By adding a barrier adjacent to the 407 Transitway on the north side, the overall sound level with no barrier of 70.7 dBA (see Table 5.1) is reduced to 70.3 dBA, or -0.4 dBA. .

At this feasibility assessment stage, it appears that a noise barrier along the 407 Transitway would not achieve a 5 dB reduction in noise at R3.

### **R9**

The December noise modelling results indicate that the effect of the 407 Transitway relative to Highway 407 is quite low at this location, due to the proximity of the receptor to Highway 407 and the fact that the receptors are not directly exposed to the 407 Transitway as it is above grade. It is therefore not anticipated that a barrier will have a significant effect, as the 407 Transitway noise is predicated to be more than 10 dBA lower than the contribution from Highway 407.

With no noise barrier in place on the 407 Transitway, the December report indicated that the sound level at R9 was approximately 66.1 dBA, as reported in Table 5.1. By adding a 5 m high barrier adjacent to the 407 Transitway on the north side, the overall sound level with no barrier of 66.1 dBA is predicted to reduce to 65.7 dBA, or -0.4 dBA. As the 407 Transitway is above grade at this location, the 5 m barrier is not shielding Highway 407 at the receptor and it remains the most dominant source of noise.

At this feasibility assessment stage, it appears that a noise barrier along the 407 Transitway would not achieve a 5 dB reduction in noise at R9.

It should be noted, that the alignment of the 407 Transitway relative to Highway 407 and Highway 7 is quite complex at these receptors. Introducing a noise barrier at these locations also adds to the complexity of the modelling. Alternative traffic models may be better equipped for handling the limitations that are inherent in STAMSON in such complex cases. It is recommended that these models should also be considered for assessing the barrier effect at the detailed design stage of the project.

## 8.0 CONCLUSIONS

The following key conclusions are drawn from the preceding information:

- Highway 407 and Highway 7 are the existing dominant noise sources at receptor locations along the proposed 407 Transitway.
- The 407 Transitway is predicted to cause minimal increases above future no-build sound levels (< 5 dB increase) at all receptor locations. Highway 407 and Highway 7 are predicted to continue to dominate the future sound environment at these receptors.
- There are three receptors, namely R2, R3 and R9, where the future no-build sound levels are predicted to exceed 65 dBA. The predicted incremental noise from the proposed 407 Transitway at each of these receptors is less than 1 dB. In accordance with the MTO Environmental Guide for Noise, the feasibility of noise control measures was investigated at each of these three receptors. As this feasibility assessment stage, it appears that a 5 m high noise barrier along the 407 Transitway would not achieve a 5 dB reduction in noise at any of these three receptors.
- As the actual construction date of the project is likely to be in the distant future, the MTO will revisit the noise predictions at certain receptors closer to the time of construction and provide noise mitigation if it is required in the future. The MTO will ensure that the project complies with the appropriate noise policy of the day.
- There are three intermodal bus facilities within the 407 Transitway corridor at Jane Street, Yonge Street and Kennedy Road that are potential sources of stationary noise. It is important to note, however, that these intermodal bus facilities are not being proposed as part of the current undertaking; they are being proposed by the TTC in the case of Jane and Yonge Stations, and York Region's Viva Program in the case of Kennedy Station. In any case, previous noise studies completed for these bus facilities indicate that they are unlikely to cause a noise impact at any of the receptor locations.
- Construction should be limited to the time and place restrictions outlined in the various applicable municipal noise by-laws, or an exemption must be sought prior to commencement of construction. Furthermore, all construction equipment should be properly maintained to limit noise emissions and comply with the noise limits outlined in NPC-115 and NPC-118 guidelines.