Air and Noise Study

Environmental Assessment Derry Road and Argentia Road Intersection

Project 11-4295

City of Mississauga, Region of Peel

October 17, 2014

Introduction

This report was prepared to document the Air and Noise Assessment of the proposed intersection improvement at the Derry Road and Argentia Road Intersection.

The Regional Municipality of Peel (the Region) is conducting a Schedule 'B' Municipal Class Environmental Assessment (EA) for the intersection of Derry Road and Argentia Road in the City of Mississauga, Region of Peel. For the purposes of this study, Derry Road is considered to run east-west and Argentia Road is considered to run north-south. The Study Area is shown in **Figure 1**.

Figure 1: Study Area Key Map

According to the Official Plan this area is zoned as a commercial business and industrial area and the land use is reflective of this designation. The following properties are located within the vicinity of the intersection:

- A Four Points Sheraton hotel and a Bank of Montreal (BMO) office building are on the southeast corner of the intersection.
- At the southwest corner of the intersection, First Gulf is constructing a new office building with an approximate Gross Floor Area (GFA) of 11,430 square metres.

- A Holiday Inn Express is located in the northeast corner of the intersection
- A low-rise office building named the “Pentagon Building” is located in the northwest corner of the intersection
- The Meadowvale GO Train station and parking lot is also located further to the southwest of the intersection. There is an access to one of the parking lots for this station on Argentia Road, south of the study intersection.

Description of the Proposed Roadway Improvements

The project team evaluated a number of intersection improvement alternatives and, based on an analysis using a series of environmental, social, engineering and other technical factors, a preferred alternative was selected. The selected alternative includes the following main components, which are also illustrated in **Figure 2** and **Figure 3**:

- Addition of one northbound through lane on Argentia Road.
- Addition of one southbound through lane on Argentia Road.
- Addition of a westbound dual left-turn lane on Derry Road.
- Accommodation of multi-use trail along the south side of the intersection.
- Improvements to the existing sidewalk network.

Figure 2: Derry and Argentia – Recommended Configuration

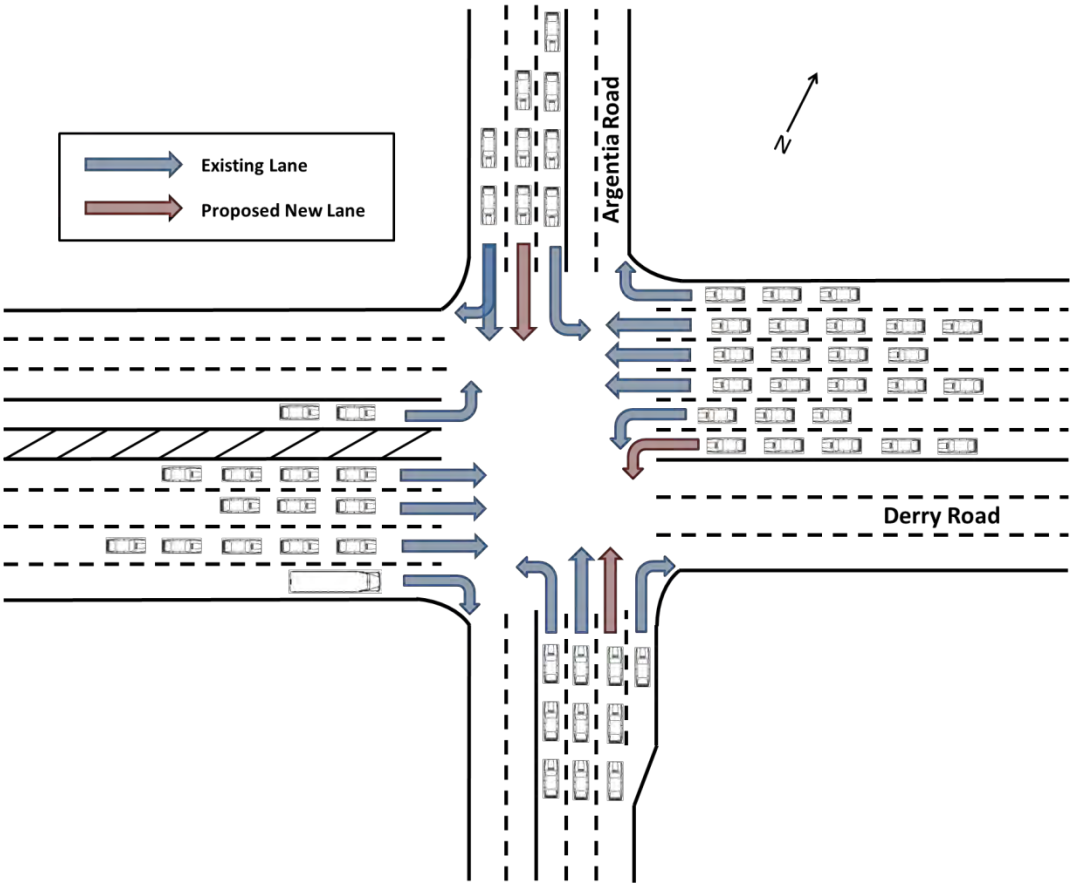
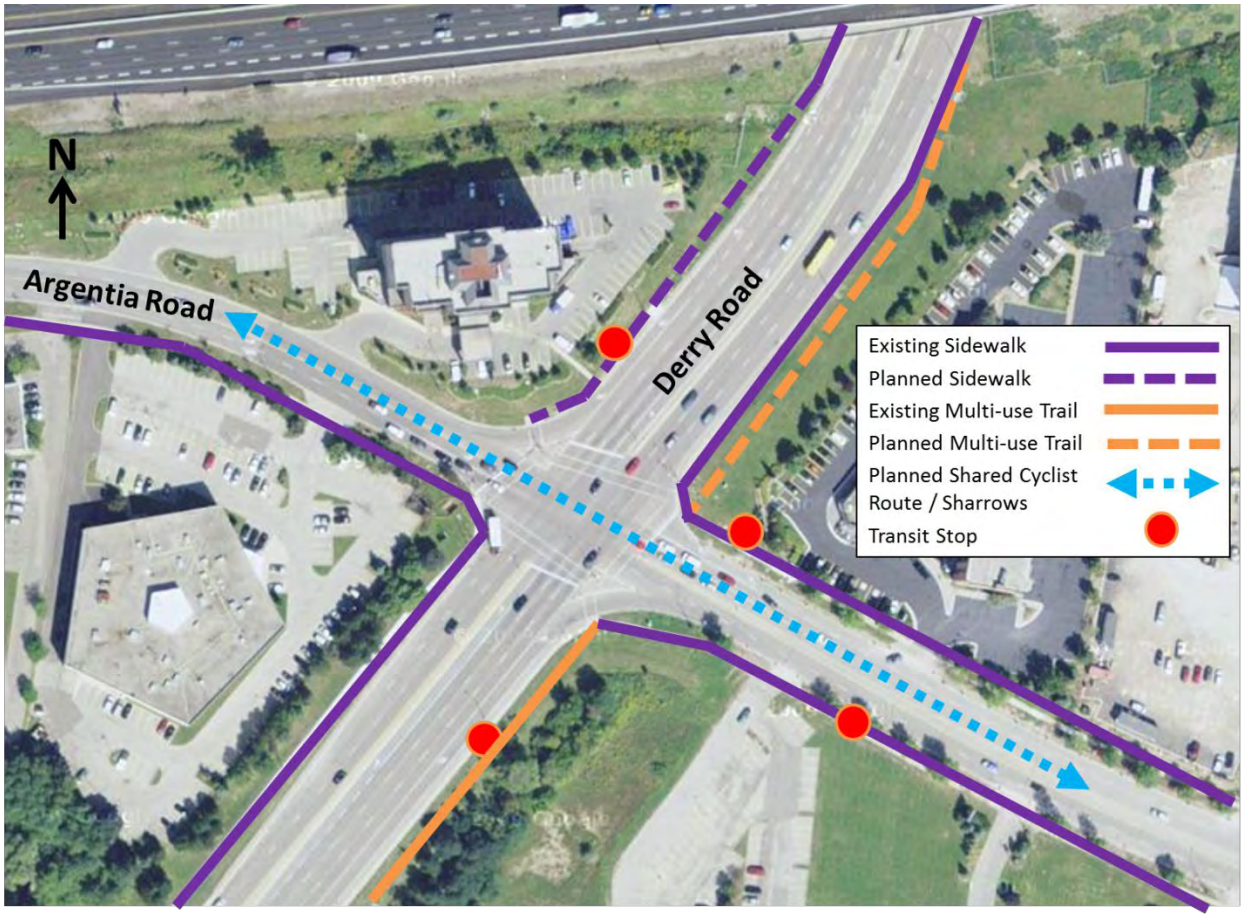


Figure 3: Recommended Active Transportation Facilities at Intersection of Derry Road and Argentia Road



Air Quality Assessment

Peel Region has provided data on planned growth in the study area to 2031, and increases in both population and employment are expected within the wider study area. The intersection is located within Traffic Superzone 24 (Meadowvale), and is adjacent to Superzone 23 (Streetsville). Population and employment in Meadowvale are projected to increase by 6% and 20%, respectively, between 2011 and 2031. In Streetsville, population and employment are projected to increase by 8% and 41%, respectively.

As a result of this growth, traffic volumes are expected to increase on Derry Road and Argentia Road. For the purposes of this EA, Peel Region directed the team to use a 1% compound per annum growth rate for traffic volumes. The proposed improvements to the intersection of Derry Road and Argentia Road is not expected to result in additional vehicle volumes, since the proposed improvements do not result in an increase to the **throughput capacity** of Derry Road or Argentia Road upstream or downstream of the intersection:

- **Derry Road**: Derry Road will have three through lanes to the east and west of the intersection, as per existing conditions
- **Argentia Road:** Argentia Road will have two through lanes to the north and south of the intersection, as per existing conditions

To assess the extent of the impacts, emissions results were taken from the Synchro model for the horizon year of 2031, comparing the "Do Nothing" scenario to the "Recommended Design" scenario:

- In the "Do Nothing" scenario, forecasted 2031 volumes are applied onto the existing network; and
- In the "Recommended Design" scenario, the same forecasted 2031 volumes are applied onto the recommended network

The results are summarized in **Table 1**, and the Synchro output is provided in **Appendix A**.

Table 1: Air Quality Assessment Results

	"Do Nothing" 2031	"Recommended Design" 2031
AM Peak		
Volume of vehicles (vph)	6,235	6,235
Fuel Consumed (l)	738	628
CO Emissions (kg)	13.73	11.69
NOx Emissions (kg)	2.65	2.26
VOC Emissions (kg)	3.17	2.70
PM Peak		
Volume of vehicles (vph)	6,946	6,946
Fuel Consumed (l)	830	687
CO Emissions (kg)	15.45	12.78
NOx Emissions (kg)	2.98	2.47
VOC Emissions (kg)	3.56	2.95

Based on the results provided in **Table 1**, emissions and fuel consumption are expected to **decrease** in the "Recommended Design" scenario. The primary benefit of the intersection improvements is the reduction in queuing, congestion and idling vehicles at the intersection. The proposed improvements to the intersection of Derry Road and Argentia Road result in a reduction of emissions by reducing congestion and vehicles idling in traffic.

The extension of the multi-use trail and improvements to the sidewalk network will help improve active transportation facilities in the study area, and encourage walking and cycling which are "emission-free" activities. This effect is not captured in the modelling output presented above.

Noise Quality Assessment

The proposed improvement to the intersection of Derry Road and Argentia Road may result in a minor increase in noise to properties to the north side of the intersection, as a result of the fact that some traffic lanes are now slightly closer to the properties. However, none of the properties in the vicinity of the intersection can be classified as sensitive receptors (i.e. schools, places of worship, daycares, residential properties, etc.).

Based on these findings, specific mitigation techniques to reduce noise levels are not recommended as part of the intersection improvements proposed in this study.

Appendix A

Synchro Emissions Output

3: Derry Road & Argentia Road

Direction	All
Volume (vph)	6235
Fuel Consumed (l)	738
Fuel Economy (km/l)	3.2
CO Emissions (kg)	13.73
NOx Emissions (kg)	2.65
VOC Emissions (kg)	3.17

3: Derry Road & Argentia Road

Direction	All
Volume (vph)	6946
Fuel Consumed (l)	830
Fuel Economy (km/l)	3.1
CO Emissions (kg)	15.45
NOx Emissions (kg)	2.98
VOC Emissions (kg)	3.56

3: Derry Road & Argentia Road

Direction	All
Volume (vph)	6235
Fuel Consumed (l)	628
Fuel Economy (km/l)	3.8
CO Emissions (kg)	11.69
NOx Emissions (kg)	2.26
VOC Emissions (kg)	2.70

3: Derry Road & Argentia Road

Direction	All
Volume (vph)	6946
Fuel Consumed (l)	687
Fuel Economy (km/l)	3.7
CO Emissions (kg)	12.78
NOx Emissions (kg)	2.47
VOC Emissions (kg)	2.95