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Mr. Jason Garland
VP Development
Streetcar
43 Davies Avenue
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Re: Air Quality Effects
Riverside Square Development
RWDI Reference No. 1600855

Dear Jason,

RWDI is an Ontario-based international consulting firm with expertise in understanding how the atmospheric environment interacts with the human environment. Our air quality teams have been undertaking studies of all aspects of air quality for over 30 years, including a long history of studies related to vehicle emissions and the transportation sector.

Streetcar Developments approached RWDI to assist them by providing opinions regarding potential air quality effects of the proposed Riverside Square Development, and to provide general recommendations on possible measures that could be effectively implemented within the automotive components of the development to manage their potential impact on air quality.

1. Overview of Riverside Square Development

The Riverside Square Development is a proposed mixed-use development, with residential, retail and automobile dealership uses. The proposal also includes a public park and publicly accessible laneways. The buildings of the development will range in heights from 4 to 20 storeys. The lower westerly portions of the two buildings fronting onto the East Don Roadway, will be occupied by automobile dealerships with an integrated service centre located below grade. This development will replace existing uses at the site, which include an existing Toyota dealership.

Surrounding lands to the north, east and south of the site generally consist of low-rise, mixed uses. The Don Valley and the Don Valley Parkway lie immediately to the west of the site.

2. South Riverdale Air Quality Study

In 2005, the City of Toronto undertook an air quality modelling study of the South Riverdale-Leslieville-Beaches area of Toronto. Thirty key air contaminants were included in the study. It concluded that concentrations of most contaminants meet provincial air quality standards and that a focus on transportation-related emissions will be the key to reducing air pollution in the area.

The model results indicated that the influence of transportation emissions in the South Riverdale area was strongly dependent on geographic proximity to the Don Valley Parkway (DVP). The report indicated that two types of contaminants were predicted to exceed desirable levels in proximity to the Parkway: nitrogen dioxide (NO2) and benzene.

3. Recent Trends

3.1 Federal Regulations for On-Road Vehicles

Canada's On-Road Vehicle and Engine Emission Regulations came into effect in 2004, replacing earlier regulations. At that time, the regulation was projected to achieve a 73% reduction in average NOX emissions, 64% reduction in emissions of particulate matter (PM) and 14% reduction in emissions of hydrocarbons (including benzene) from road vehicles by the year 2020 (Government of Canada, 2003).

More recently, the Federal government set its sights on greenhouse gas emissions from vehicles, introducing the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations in 2010, and the Heavy-Duty Vehicle and Engine Greenhouse Gas Emission Regulations in 2012. The 2010 regulations targets an average fuel consumption rate of 6.7 L/100 km by the 2016 model, which is about a 22% reduction from the 2011 on-road average fuel consumption in Canada. The regulation for heavy duty vehicles targets 10-20% reductions in fuel consumption by the 2018 model year, depending on the vehicle category (U.S. EPA, 2011). Not only will these regulations reduce GHG emissions, but they will also affect toxic air pollutants in the vehicle exhausts, since the emissions of these pollutants are related to fuel consumption.

3.2 Air Quality Trends in Downtown Toronto

Table 1 provides data for two key air contaminants (nitrogen dioxide and fine particulate matter) from the Ontario Ministry of Environment and Climate Change's downtown monitoring station at Bay Street and Wellesley St. in Toronto. The data are for an 8-year period after the South Riverdale study and after the implementation of the Federal On-Road Vehicle and Engine Emission Regulations. The effect of the Province's and the Federal Government's efforts to reduce air pollution is evident. By 2012, the levels of nitrogen dioxide and fine particulate matter were far below what they were in 2005 and also far below the desired reference levels. Similar trends have been seen throughout southern Ontario.

	Nitrogen Dioxide		Fine Particulate Matter		
	Maximum 24-hr Level (ppb)	Annual Average (ppb)	Maximum 24-hr Level ($\mu g/m^3$)	No. of Times Above 24-hr Reference Level	Annual Average ($\mu g/m^3$)
Reference Level	100	20	30	n/a	10
2005	60	20.6	43	14	8.5
2006	45	19.1	42	5	9.1
2007	46	18.2	41	6	7.3
2008	43	17.0	35	1	6.6
2009	40	16.5	35	1	5.6
2010	41	16.1	29	0	6.0
2011	36	14.9	21	0	6.2
2012	36	13.4	26	0	6.4

4. Traffic Comparison

In September of 2014, the City of Toronto's Transportation Services Traffic Safety Unit published recent traffic counts on major roadways throughout the City of Toronto. The afternoon peak-hour traffic count on the Don Valley Parkway, near Queen Street East, is approximately 4600 vehicles, based on a count done in 2012.

Lea Consulting Ltd. conducted a Transportation Impact Study for the proposed Riverside Square Development, which looked at existing and future traffic volumes on the streets around the proposed Riverside Square Development (July, 2015). The report indicated that the existing afternoon peak-hour traffic volume on weekdays is just under 1000 vehicles on Queen Street East and less than 700 vehicles on Broadview Avenue. The report went on to predict that the future total afternoon peak hour traffic will increase to under 1200 vehicles on Queen Street East and just under 800 vehicles on Broadview Avenue. This includes anticipated traffic associated with the automobile dealerships.

The predicted increase in local traffic movements due to the proposed development represents a minimal increase over the existing traffic movements on Queen Street East, Broadview Avenue and the Don Valley Parkway in the vicinity of the proposed development.

5. Automobile Dealership Service Bays

In addition to traffic in and out of the automobile dealerships, these facilities will have below-grade underground service bays where maintenance and repairs are done on automobiles. Some of the repair activities will involve operating the vehicles, which creates additional emissions. However, the vehicles that are brought in for servicing represent only a small portion of the site-generated traffic, and only a portion of those vehicles are operated for short periods during servicing. Therefore, the additional emissions associated with servicing of vehicles will be very small in relation to the emissions from traffic on the surrounding streets, including Queen Street East, Broadview Avenue and the Don Valley Parkway.

It is possible to implement exhaust fume collection systems that capture the vehicle exhaust fumes and direct them outdoors via exhaust ducts and exhaust vents. RWDI understands that the automobile dealerships will be concentrated near the west end of the proposed development, adjacent to the East Don Roadway and the Don Valley Parkway. Exhaust vents for the service bays should be located at this side of the development, where they will generally be well separated from sensitive uses in the surrounding area, farther away from those uses than the greater emissions that will occur on the streets in the area. In addition, it is possible to equip the exhaust systems with filtration (e.g., activated carbon filters) to reduce the air pollutants being discharged.

6. Conclusions

- As indicated in the South Riverdale-Leslieville-Beaches Area Air Quality Study in 2005, transportation-related emissions are a significant contributor to air contaminants in areas that are close to the Don Valley Parkway. Since the time of that study, however, air contaminant levels have declined significantly, and are expected to continue to decline, due to the effects of Federal regulations dealing with on-road vehicle emissions as well as other Federal and Provincial air quality initiatives.

- The proposed development is expected to add only a minimal amount of new traffic relative to the existing traffic on the Don Valley Parkway, Queen Street East and Broadview Avenue, and therefore, will not significantly reverse the downward trend in air contaminant levels in the area.

- Emissions from vehicle operations in the underground service bays of the proposed development are expected to be very small in relation to emissions from traffic on the public roads around the site. In any case, the exhaust systems for the service bays can be designed so that exhaust fumes are discharged away from sensitive uses in the surrounding area and also can be equipped with activated carbon or other filtration systems to reduce the emitted air contaminants.

We appreciate the concern with respect to air quality issues and trust that the above information is useful. RWDI is available as needed to assist Streetcar in exploring measures to reduce site emissions where feasible.

Yours Very Truly,

ROWAN WILLIAMS DAVIES & IRWIN Inc.

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Principal

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