Stage 2 O-Train Trillium Line Project – Project Co. Decisions Points During Construction for Public Comment and Consultation

Submitted: February 1, 2019

Purpose of this table:

This table has been prepared to assist localities during the Canadian Transportation Agency's public comment period to understand the O-Train Trillium Line Project and areas where the Project Constructor, Project Co., has discretion in the final design of the railway lines and associated structure, and how Project Co.'s decisions could affect localities.

A. Key terms

Locality: A locality includes neighbourhoods, communities, townships, and municipalities and encompasses its residents, land owners, business owners, and Indigenous peoples.

Interests of the localities: Impacts on localities arising from the location of the railway line or activities related to its construction or operation.

Potential Locality Impact:

- Low likelihood of occurrence – no mitigation required as there are no localities in proximity to the source of impact.
- Moderate likelihood of occurrence – mitigation or best practices required to protect localities and their interest.

Please refer to the map below (*figure 1*) identifying the localities that are applicable to the City's application extents.

Stage 2 O-Train Trillium Line Project – Project Co. Decisions Points During Construction for Public Comment and Consultation

Submitted: February 1, 2019

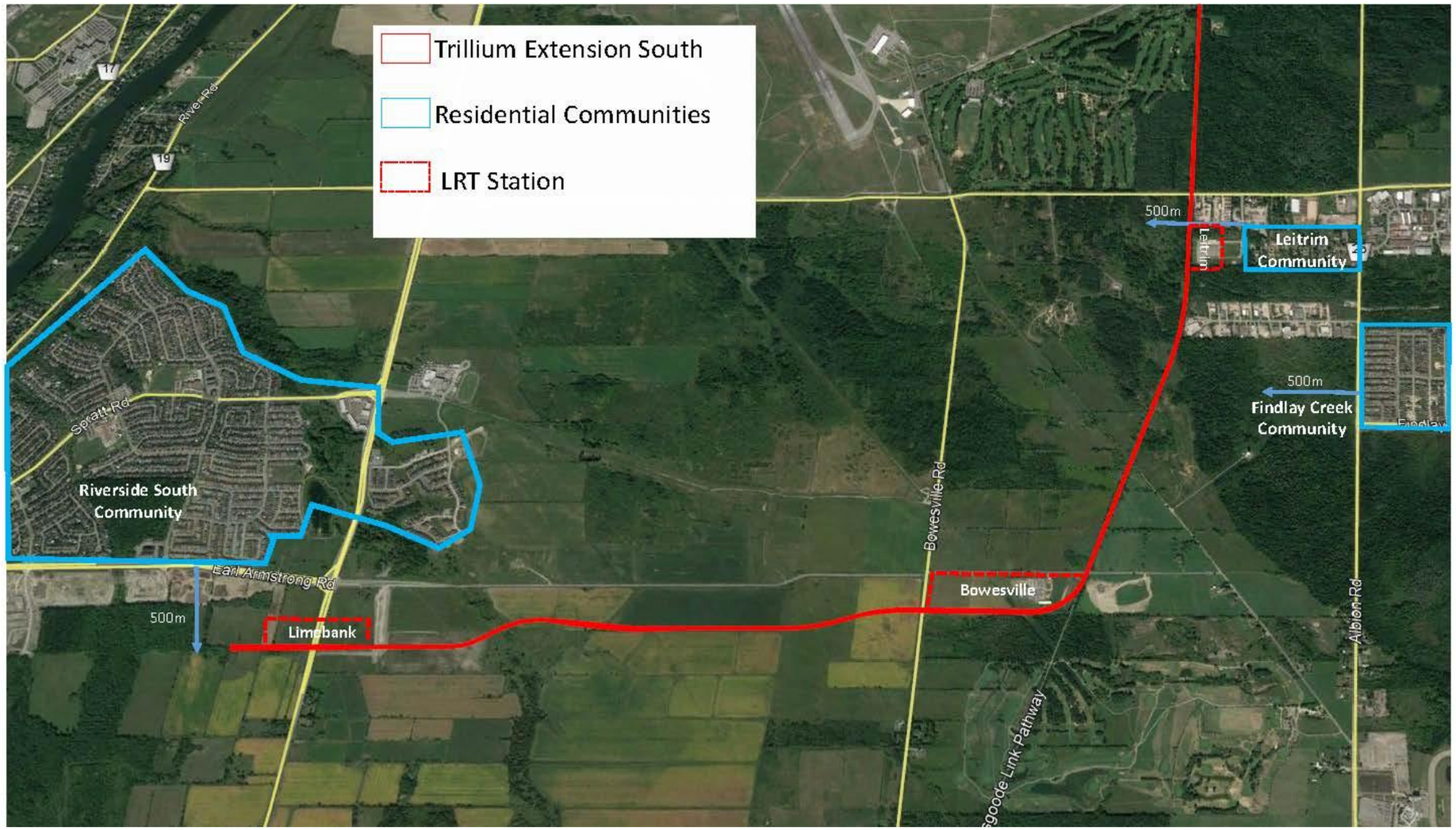


Figure 1 - Localities Applicable to City's Application Extents

B. Tables:

Table 1 - Mitigation Measures for items with Moderate Impact

Item	LOCALITY	IMPACT ITEM	POTENTIAL LOCALITY IMPACT	MITIGATION
1	***Limebank*** – The Riverside South Community is a planned community to be located at the terminus of the Trillium Line at the Limebank Station. The existing Riverside South community is located approximately 500m to the north east of the identified Limebank Station. The Community Design Plan for Riverside South is currently being updated by the City and the development need to consider the LRT and Limebank Station as an existing condition as it develops.	Limebank Road Bridge	Construction: *Traffic*: Impacts to this locality will be primarily access limitations due to construction across Limebank Road. *Noise/Vibration/Dust*: Localized, controlled and intermittent noise, vibration and dust impacts are anticipated as part of construction due to vehicle and equipment operations. Operations: *Traffic:* Localities may be impacted by increased vehicular traffic on Earl Armstrong Road resulting from operations. *Noise*: Localities may experience a marginal increase in operational noise levels at the assessed point of reception; however, the noise impacts are generally anticipated to be insignificant and imperceptible to most human receptors.	Construction: *Traffic:* Detours will be in place and monitored by the City to manage all traffic disruptions. Refer to Traffic Management Best Practices in Appendix A for mitigations during construction. *Noise/Vibration/Dust*: Refer to the best practices in Appendix A for mitigations of impacts resulting from general construction activities, including noise, vibration and dust. Operations: *Traffic* : The following mitigations will be utilized to manage the traffic on Earl Armstrong and Limebank Road resulting from the increase of traffic following operation: • "Normalizing" the offset intersection to a conventional 90 degree configuration; • Adding auxiliary turn lanes for the EBLT, WBRT, SBLT, SBRT, NBLT and NBRT traffic movements; and,

Item	LOCALITY	IMPACT ITEM	POTENTIAL LOCALITY IMPACT	MITIGATION
			Vibration: Vibration impacts are anticipated to be insignificant and imperceptible to most human receptors. *Air Quality*: The modelled cumulative results in the 2018 EA Addendum predicts slight exceedances less than 1% of the time resulting from operations. Impacts to localities will be insignificant.	• Providing a traffic control signal . Please note: Full widening of Earl Armstrong is not triggered by the construction/operation of the Park and Ride. Please see Appendix A for additional information about predicted traffic resulting from operation. *Noise*: No noise mitigation requirement will be needed due to the insignificant impacts. *Vibration*: No vibration mitigation requirement will be needed due to the insignificant impacts. *Air Quality:* The implementation of the Trillium Line rail extension is anticipated to provide an overall net benefit to the Air Quality of the City.
6, 7, 11, 13, 25, 28, 30, 31, 32, 33, 54,	***Leitrim Road –*** The site abuts an industrial area to the north and a small residential area to the east on Quinn Road. Abutting properties include one private residence, auto mechanics businesses and the Leitrim Park and Ride and the future development in Riverside South	Leitrim Road Bridge Leitrim Park and Ride Facility Leitrim Station	<u>Construction</u>: *Traffic*: Impacts to this locality will be primarily access limitations due to construction of the line across Leitrim Road. *Noise/Vibration/Dust*: Localized, controlled and intermittent noise, vibration and dust impacts are anticipated as part of construction due to vehicle and equipment operations.	<u>Construction</u>: *Traffic:* Detours will be in place and monitored by the City to manage all traffic disruptions. Refer to Traffic Management Best Practices in Appendix A for mitigations during construction. *Noise/Vibration/Dust*: Refer to the best practices in Appendix A for mitigations of impacts resulting from general construction activities, including noise, vibration and dust.

Item	LOCALITY	IMPACT ITEM	POTENTIAL LOCALITY IMPACT	MITIGATION
55, 57			*Site Offices:* Project Co. and the City will have site offices to support the construction work for the new Leitrim Station and associated structures/other works. Impacts will be insignificant. <u>Operation:</u> *Traffic:* Presently, there is no vehicular access to the Park and Ride from Quinn Road, although a bicycle connection exists. It is anticipated that this arrangement will continue as expansion of the Park and Ride occurs, and as such, the Park and Ride would not impact this residential area during operation (Leitrim Road Park and Ride Expansion Transportation Impact Study). *Noise*: Localities may experience a marginal increase in operational noise levels at the assessed point of reception; however, the noise impacts are generally anticipated to be insignificant and not imperceptible to most human receptors. *Vibration*: Vibration impacts are anticipated to be insignificant and imperceptible to most human receptors. *Air Quality*: The modelled cumulative results in the 2018 EA Addendum predicts slight exceedances less than 1% of the time resulting	*Site Offices*: Site offices will be within the identified laydown areas and impacts will be low in nature and limited to the identified laydown areas for the duration of construction. <u>Operation:</u> *Traffic:* No mitigation requirement will be needed due to the insignificant impacts. *Noise*: No noise mitigation requirement will be needed due to the insignificant impacts. *Vibration*: No vibration mitigation requirement will be needed due to the insignificant impacts. *Air Quality:* The implementation of the Trillium Line rail extension is anticipated to provide an overall net benefit to the Air Quality of the City.

Item	LOCALITY	IMPACT ITEM	POTENTIAL LOCALITY IMPACT	MITIGATION
			from operations. Impacts to localities will be insignificant.	
37, 50, 52, 54, 24, 35, 59, 60, 65 - 82	Abutting localities, general localities and travelling public	General construction, including: • Systems, new rail, road and pedestrian facilities and structures; • clearing and grubbing within the rail corridor and staging areas; • restoring/rehabilitation work; • off-site disposal; • installation of temporary fencing and visual signage, staging; and, • All construction methodologies.	These construction activities may result in noise, dust, vibration, and traffic impacts.	Refer to the best practices in Appendix A for mitigations resulting from general construction activities, including noise, vibration, dust and traffic disruptions.
41, 51, 53	Abutting localities, general localities and travelling public	Traffic Management, including Traffic Management Control Plans and Truck Route Plans, traffic devices, and truck routes within the City's Official Truck route requirements.	Traffic disruptions resulting from construction may can traffic impacts to localities. The movement of trucks to and from construction sites may result in noise, dust, vibration, and traffic impacts.	Traffic Management Control plans will be reviewed and accepted by the City in advance of any works taking place. Detours will be in place and monitored by the City to manage traffic and limit disruptions to localities and the public. Project Co must use the City of Ottawa Rural Truck Route when hauling materials two the Trillium Line Construction sites. For the areas

Item	LOCALITY	IMPACT ITEM	POTENTIAL LOCALITY IMPACT	MITIGATION
				applicable to the City's Application, please refer to the map in Appendix B, which shows the truck routes for the areas between Leitrim and Limebank stations and the Airport Link. The routes include Leitrim Road, Earl Armstrong Road, Limebank Road, Uplands Drive, Hunt Club Road, Bank Street and Albion Road. It is anticipated that the number of trucks will vary throughout the course of construction and will be dependent on the works underway. Furthermore, please refer to the best practices in Appendix A for mitigations resulting from traffic disruptions, including noise, vibration and dust.
44	Abutting localities, general localities and travelling public	Noise and Vibration Control Plan	Project Co's Noise and Vibration Control Plan will detail how the constructor will mitigate and monitor noise and vibration throughout the course of construction and operation. Project Co will use many of the mitigations identified in Appendix A to reduce impacts on localities during both phases of the project. As general construction activities may result in noise and vibration impacts, the construction works being monitored by this plan are deemed to have a moderate impact to localities.	The Noise and Vibration Control Plan will be reviewed and accepted by the City in advance of any works taking place. Refer to the best practices in Appendix A for mitigations resulting from general construction works and operations that may produce noise and vibration impacts.

Item	LOCALITY	IMPACT ITEM	POTENTIAL LOCALITY IMPACT	MITIGATION
			The 2016 Environmental Assessment (EA) and 2018 EA Addendum predicted that noise and vibration impacts resulting from operations will be minimal and not easily perceptible by human receptors.	
14, 49	Abutting localities, general localities and travelling public	Drainage and Storm Water Management System	The general construction and installation of drainage and storm water management facilities and controls, including temporary site drainage structures, may result in noise, dust, vibration, and traffic impacts on localities. The drainage and storm water management measures will be within the City infrastructure footprint. This includes storm water management ponds as well as conveyance (i.e., sewers and ditches).	Refer to the best practices ion Appendix A for mitigations for impacts resulting from general construction, and the installation of drainage and storm water structures.

Table 2 – Project Co Decisions with Low Impact

Item	PAGE[1]	PROJECT CO. DECISION POINT	CITY/ PROJECT CO. DECISION	POTENTIAL LOCALITY IMPACT
3	59	Bowesville Road Bridge	Bowesville Road Bridge **will be** constructed as rail over road structure.	Low – There are no residences adjacent to this structure.

[1] PDF page from City's *Section 98* Application

Stage 2 O-Train Trillium Line Project – Project Co. Decisions Points During Construction for Public Comment and Consultation

Submitted: February 1, 2019

Item	PAGE[1]	PROJECT CO. DECISION POINT	CITY/ PROJECT CO. DECISION	POTENTIAL LOCALITY IMPACT
4	59	Earl Armstrong Bridge	Earl Armstrong Bridge **will be** constructed as rail over road structure.	Low – There are no residences adjacent to this structure.
7	59	Rail Bridge over Lester Road		Low – There are no residences adjacent to this structure.
8	59	Elevated Guideway to OMCIA Terminal		Low – There are no residences adjacent to this structure.
9	59	Railway Bridge over Uplands Drive		Low – The only abutting property is the EY Centre - Institutional.
10	59	Railway Bridge over Airport Parkway		Low – There are no residences adjacent to this structure.
12	60	Bowesville Park and Ride Facility		Low – There are no residences adjacent to this structure.
15	68	Noise and vibration control		Refer to the Noise and Vibration Control Plan – item 44 below
16	68	Utility Infrastructure Relocation Plan	Utility relocations will be minor in nature and limited to the identified ROW	Low - There are no residences in the immediate proximity of the work
17	79	Railway operational activities that will be undertaken at the proposed facilities. Project Co., once chosen, will deliver detailed plans for: • a system capable of accommodating the City's Base Service Plan • a system to support the reliable operation of 12-minute headways • a system based on the nominal station-to-station travel times of a maximum permissible speed of 80 km/hr and civil speed restrictions imposed by	The Plan will maximize the efficiency of the system, while limiting impacts on adjacent localities.	Low impact to localities – operational in nature

Item	PAGE[1]	PROJECT CO. DECISION POINT	CITY/ PROJECT CO. DECISION	POTENTIAL LOCALITY IMPACT
		track/alignment curvature and platforms • Trains with a minimum capacity of 420 passengers will operate on 12-minute headways on the mainline between Bayview Station and Limebank Station • an integrated train control solution		
18	90	System Safety and Assurance Plan	Plan will and maximize system safety during all phases of the Project, including design, construction, testing, commissioning, trial running, in-service support, operations, warranty, retrofits and field modifications	Low impact to localities Operational in nature
19	91	Safety and security		Refer to System Safety and Assurance Plan – item 18 above
20	94	Vehicle Maintenance Plans	The Vehicle Maintenance Plan is an operational plan to ensure that each vehicle is maintained and inspected during the maintenance period.	Low impact to localities Operational in nature
21	94	Corrective Maintenance Plans	The Corrective Maintenance Plan is an operational plan to ensure that each vehicle receives corrective maintenance during the maintenance period.	Low impact to localities Operational in nature
22	94	Preventive Maintenance Plans	The Preventative Maintenance Plan is an operational plan to ensure that each vehicle receives corrective maintenance during the maintenance period.	Low impact to localities Operational in nature
23	94, 109	Site Security and Safety Plans	Plans are operational in nature to ensure access to the facilities is controlled and emergency measures for users are in place and operational	Low impact to localities Operational in nature

Stage 2 O-Train Trillium Line Project – Project Co. Decisions Points During Construction for Public Comment and Consultation

Submitted: February 1, 2019

Item	PAGE[1]	PROJECT CO. DECISION POINT	CITY/ PROJECT CO. DECISION	POTENTIAL LOCALITY IMPACT
26	107	Approximately 4km of guideway and track on the Airport Link to the OMCIA (Airport Link)		Low – There are no residences adjacent to this structure.
27	107	Passing sidings at Uplands Station (Airport Link)		Low – There are no residences adjacent to this structure.
29	107	Environmental awareness		Refer to the Environmental Protection Plan and Sustainability Plan – item 47 below
34	107	Temporary controls (which would include shoring, dewatering facilities, berms and site drainage)		Low - Temporary controls will be minor in nature, short term and limited to the identified ROW
36	108	Two Stations on the Airport Link: • Airport Station; and, • Uplands Station.		Low – There are no residences adjacent to this structure.
38	108	Signaling & Train Control System (S&TCS), which will provide continuous positive train protection and speed enforcement throughout the alignment.	New S&TCS will increase system overall safety	Low impact to localities Operational in nature
39	108	Construction Phasing Plans identifying the sequence of work, and Detailed Contract Schedules and Look-ahead Schedules	Plan to identify construction schedule	Low impact to localities Operational in nature
40	108	Site Specific Staging, Mobilization and Laydown Plans identifying laydown zones for bulk construction materials, track materials, ballast stockpiling zones, containment zones, field office and staging	Site Specific Staging, Mobilization and Laydown Plans to identify the operational layout of the staging and Mobilization areas	Low impact to localities Operational in nature

Item	PAGE[1]	PROJECT CO. DECISION POINT	CITY/ PROJECT CO. DECISION	POTENTIAL LOCALITY IMPACT
		locations, including parking areas as required.		
42	108	Temporary Works Plans identifying dewatering plans, temporary shoring and monitoring plans	Plans will ensure groundwater control for the Project will be performed in compliance with all current Environmental Laws	Low impact to localities Operational in nature
43	108	Construction Waste Management Plan, Contaminated Materials Plan, and Excavated and Imported Materials Management Plan (EIMMP)	Plans will ensure management of contaminated materials for the Project will be performed in compliance with all current Environmental Laws	Low impact to localities No known areas of contamination in the vicinity
45	108	Dust Control Plan identifying how Project Co. plans to limit the generation and dispersion of, and mitigate potential effects of, air-borne particulate matter associated with the works	The Dust Control Plan will include: a description of the activities and conditions associated with the Works with potential to result in generation of dust and control methods and management practices to prevent the release of air-borne particulate matter and other air-borne contaminants to offsite areas	Low impact to localities Operational in nature
46	109	Erosion and Sediment Control Plan to document the degree of erosion and sedimentation that would occur under normally anticipated weather conditions during the life of the project, and to develop and describe mitigation strategies to control foreseen areas determined to be predisposed to the problem	Plan, including the use of silt fencing and stabilization of disturbed areas, will be implemented by the Project Co throughout construction. Siltation and erosion control should be designed by a qualified individual and be specific for the location, expected contaminants and nature of the receiving surface water feature.	Low impact to localities Operational in nature
47	109	Environmental Protection Plan and Sustainability Plan to identify preventative measures to ensure that no contamination, waste or other substances, which may be detrimental to terrestrial/aquatic life or	Plan will incorporate, into the Project Design and Construction requirements, with specific regard for developing a Sustainability Plan based on the City's four dimensions of	Low impact to localities Operational in nature

Item	PAGE[1]	PROJECT CO. DECISION POINT	CITY/ PROJECT CO. DECISION	POTENTIAL LOCALITY IMPACT
		water quality, will enter a watercourse or natural terrestrial habitat as either a direct or indirect result of construction	sustainability including environmental, social, cultural and economic	
48	110	Detailed phasing plan during the pre-construction phase	Plan to identify construction schedule	Low impact to localities Operational in nature
56	112	Laydown areas near the erection/building limits of work. Further, the City expects equipment storage, laydown and stockpiling of construction materials, specifically track related material (rail, ties, securing hardware, sub ballast and ballast) along the secured/proposed rail corridor		Low – operation/use of laydown areas will be minor in nature and limited to the identified ROW
58	113	Establish Project Co.'s site offices within the same locations		Refer to item 57 above.
61	125	Excavated and Imported Materials Management Plan describing how specific materials will be handled, disposed of off-site and stocked pile on site for use		Refer to EIMMP – item 43 above
62	125	Temporary devices including silt curtains, screens and fencing, check dams and temporary drainage ditches, temporary detention basins, drainage berms, and dewatering basins and diversions		Refer to the Temporary Works Plan – item 42 above
63	126	Temporary Shoring and falsework, excavation shoring, slope and embankment protection, elevated structure falsework and rigging falsework		Refer to the Temporary Works Plan – item 42 above
64	126	Site Specific Work Plans		Refer to specific plans above

Appendix A – Best Practices

Dust Control Plan / Air Quality:

Construction

A Dust Control Plan will be implemented during construction to limit the generation and dispersion of, and mitigate potential effects of, air-borne particulate matter associated with the construction works. The Dust Control Plan will address air-borne particulate matter issues in the context of the potential environmental impacts, nuisance impacts and impacts on human health and safety of localities in accordance with *Ontario Regulation 419/05*.. This regulation prohibits, alteration, demolition, drilling, blasting, crushing or screening of anything so that a contaminant is carried beyond the limits of the property on which the construction, alteration, demolition, drilling, blasting, crushing or screening is being carried out; or sandblasting of anything so that a contaminant is emitted into the air, to an extent or degree greater than that which would result if every step necessary to control the emission of the contaminant were implemented.

Mitigation measures will include: The application of nonchloride dust suppressants; grading the site in phases; wind fences; erosion and sediment control; soil compaction; and reduction of activities during windy periods and control methods and management practices to prevent the release of air-borne particulate matter and other air-borne contaminants to offsite areas.

Where construction-related activities are likely to result in the generation of particulate matter, an air sampling and monitoring program will be used to: establish a baseline level of particulate matter in the air near the construction works, and determine the level of particulate matter in air during construction and demolition activities.

Operations

The Project Constructor, Project Co, will be required, during operation, to comply with all applicable laws, land use permits requirements, licenses, approvals and authorizations, and good industry practice for air quality management when designing, purchasing and operating equipment; implement measures for managing Project-related air emissions including fugitive dust and odor; and meet all other applicable regulatory requirements and standards regarding air emissions including fugitive dust and odor.

Erosion and Sediment Control: During construction, exposed soils can create erosion, dust and sediment that can run off from construction sites due to accelerated erosion and be detrimental to aquatic habitat as well as generate dust. Erosion and sediment control will be required.

An Erosion and Sediment Control Plan will be used to document the degree of erosion and sedimentation that would occur under normally anticipated weather conditions during the life of the project, and to develop and describe mitigation strategies to control foreseen areas determined to be predisposed to the problem. The plan will be developed in a manner that allows for inclusion of site specific measures for each area of work within a regulated floodplain or within 30 m of the high water mark of a surface water feature, or

where there is a risk that erosion could result in downstream surface water impacts. A surface water monitoring program shall be implemented for all works which take place below the high-water mark and shall include, as a minimum, daily turbidity readings until such time as the qualified inspector determines that the risk of erosion and sedimentation is negligible. The results of the monitoring program shall be kept on site during the monitoring period and made available to a provincial environmental officer upon request. The plan shall be prepared and inspected by an appropriately qualified inspector of erosion and sediment controls.

Drainage and Stormwater Management: Facilities will be designed and operated in accordance with the Ontario Water Resources *Act* (OWRA), which provides for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long-term environmental, social and economic well-being and the Environmental Protection *Act*, which provides for the protection and conservation of the natural environment.

The Drainage and Storm Water Management for Limebank Station shall meet "Enhanced" Standards (80% TSS Removal) and the specific quantity and erosion control SWM criteria for Mosquito Creek that are required as part of the Master Drainage Plan update for Riverside South. The City of Ottawa is currently updating the Master Drainage Plan and Master Servicing Study for the Riverside South community, which also discharges to Mosquito Creek. The effectiveness of the proposed mitigation measures will be monitored/verified in accordance with any permit/approval requirements.

Excavated and Imported Materials Management Plan: During construction, there will be management of excavated and imported materials. An excavated and Imported Materials Management Plan will describe the management of all excavated and imported materials generated as part of the construction works, i.e. soil, rock, solid waste, liquid waste, hazardous waste, and contamination. Management of excavated and imported materials includes, but is not limited to, excavation, handling, transportation, testing, on-site re-use, off-site re-use, disposal, and/or ultimate disposition. The Excavated and Imported Materials Management Plan shall be written by a Qualified Person within the meaning of Section 5 of O.Reg. 153/04. The Excavated and Imported Materials Management Plan shall be written with due consideration for "Management of Excess Soil – A Guide for Best Management Practices" (MOECC, January 2014).

Ground Bourne Noise and Vibration Control:

The City of Ottawa's Environmental Noise Control Guidelines (ENCG) stipulate that daytime Leq levels of 55 dBA or lower are acceptable noise-sensitive uses such as outdoor living areas, schools, hospitals and parks at outdoor point of reception. LEQ levels exceeding 60dBA generally require mitigation.

Construction

During construction, works and vehicles may result in localized noise and vibration impacts to localities. A Noise and Vibration Control Plan will be developed by Project Co. to identify and document the processes, required analyses and surveys, and any other supporting effort necessary to ensure that the construction is carried out in compliance with the Applicable Noise and Vibration Requirements and include:

- identify major noise and vibration producing construction activities and identify a plan to minimize, monitor and mitigate noise and vibration levels to the extent reasonably possible;
- identify possible mitigation measures to be applied when and where calculated ground- borne or air-borne noise or vibration levels exceed the Noise and Vibration Performance Limits; and
- procedures for conducting compliance verification measurements, measurement processes, measurement equipment and analysis methods, during the Construction Period.

The following references and guidelines will be complied with in carrying out the project:

- City of Ottawa Noise Control Guidelines, January 2016;
- City of Ottawa Noise By-law No. 2004-253;
- City of Ottawa Specification S.P. No: F-1201 'Use of Explosives';
- MOE, Model Municipal Noise Control By-law, August 1978, including any updated Noise Pollution Control publications issued by the MOE;
- MOE Publication NPC-300, August 2013;
- NFPA-130 Standard for Fixed Guideway Transit and Passenger Rail Systems 2014;
- FHWA Highway Construction Noise Handbook 2006;
- US FTA Transit Noise and Vibration Impact Assessment Manual (2006); and
- Ministry of Transportation Ontario Environmental Guide for Noise 2006.

The following noise and vibration performance limits will apply to the construction of the Trillium Line:

Air-borne Noise Performance Limits during Construction:

Source	Receiver	Descriptor	Limit Requiring Mitigation
Construction equipment	Source-based limits - as described in the relevant publication set out in the "Limit Requiring Mitigation" column	As described in the relevant publication set out in the "Limit Requiring Mitigation" column	For a particular item of equipment, the most stringent sound level contained in: a) MOE NPC 115; b) NPC 118; c) Commonwealth of Massachusetts Big Dig, Section 721.560 Table 2; and d) FHWA Highway Construction Noise Handbook 2006. Only broadband backup alarms are permitted.
Construction	Nearest Sensitive Receiver	$L_{eq,8h}$	80 dBA during daytime/evening (any 8 hour period between 07:00-23:00) and 70 dBA during night-time (23:00-07:00)

Ground-borne Noise and Vibration Performance Limits during Construction:

Source	Receiver	Descriptor	Limit Requiring Mitigation
Construction Equipment	Ground outside any building or adjacent to any structure	Peak Particle Velocity	Refer to construction vibration damage criteria in the *Federal Transit Administration's Transit Noise and Vibration Impact Assessment, Report FTA VA 90 1003 06, Federal Transit Administration, U.S. Department of Transportation, 2006*, as amended.

Operation

The 2016 EA and 2018 EA Addendum studied the anticipated noise and vibration impacts resulting from the operation of the Trillium Line. Within the study area, areas with elevated noise levels (daytime LEQ of greater than 60 dBA) include areas within approximately 60 metres of arterial roadways and approximately 100 metres of Highway 417.

Due to Airport operations, the portion of the study area bounded approximately by Lester Road in the north and del Zotto Avenue in the south also has elevated existing noise levels.

The remaining locations investigated as part of the EA were projected to have future noise levels less than or equal to 60 dBA. The increase in noise due to Trillium Line operations is projected to be at a level not considered noticeable by the majority of human observers. Future noise levels in the remaining locations are projected not to exceed 60 dBA, with an increase in noise levels due to the railway expansion of less than 5dB. These levels fall below the threshold at which the City of Ottawa's Environmental Noise Control Guidelines (ENCG) required mitigation, as described above.

Future vibration levels are not expected to increase in amplitude and were not measured to be above the threshold of human perception.

The following noise and vibration performance limits will apply to the operation of the Trillium Line:

Ground-borne Noise and Vibration Performance Limits during Operation:

Source	Receiver	Descriptor	Limit Requiring Mitigation
Revenue Vehicle passby vibration	Inside highly sensitive buildings (e.g. concert halls, television studios, recording studios, vibration-sensitive research and manufacturing facilities, hospitals with vibration- sensitive equipment, some university research facilities)	Vertical vibration velocity passby rms	Not to exceed 65 VdB re: 1 microinch/sec (0.045 mm/sec)
	Inside residences and buildings where people normally sleep (e.g. residential buildings, hotels, hospitals); or theatres and auditoriums	Vertical vibration velocity passby rms	Not to exceed 72 VdB re: 1 microinch/sec (0.1 mm/sec)

	Inside sensitive institutional buildings and office buildings (e.g. schools, churches and quiet/commercial offices)	Vertical vibration velocity passby rms	Not to exceed 75 VdB re: 1 microinch/sec (0.14 mm/sec rms)

Air-borne Noise Performance Limits during Operation:

Source	Receiver	Descriptor	Limit Requiring Mitigation
Combined Revenue Vehicle Operations and road traffic noise	Residential outdoor living areas (as defined in City of Ottawa Environmental	$L_{eq,16h}$	Refer to City of Ottawa Environmental Noise Guidelines
LRT Station or Bus Facility Paging System	Nearest Sensitive Receiver exterior		Paging shall be lower than the ambient sound level
Stationary noise sources including ventilation shafts, substations and bus transfer stations.	Sensitive Receiver exterior (as defined in MOECC publication NPC-300)	$L_{eq,1h}$	Refer to NPC-300
Emergency operations noise	Inside Station	$L_{eq,5min}$	80 dBA
	In Tunnel	SIL (500-4000Hz)	78 dB

Noise By-Law Requirements: Further to the information above, as per the City of Ottawa By-Law 2017-225, general construction will be limited to the time periods 0700h to 2200h (7 am to 10 pm) Monday through Saturday and 0900h to 2200h on Sundays. If construction activities are required outside of these hours, exemptions will be sought in advance by the contractor, directly from the City. Exemptions will be sought in advance by the contractor, directly from the City. Exemptions are dealt with on a case by case basis. The Chief of By-law Services may grant an exemption to subsection 13(1) for construction equipment subject to the following conditions :

- the use of construction equipment shall not create noise likely to cause a nuisance or disturb the inhabitants or exceed 85 dBA when measured at the point of reception
- the use of the construction equipment shall not continue for more than eight (8) hours on any one day
- the duration of the exemption requested shall not exceed eleven (11) calendar days
- the affected Ward Councillor or Ward Councillors are in agreement with granting the exemption

Impacted residents can file a complaint with the City by contacting By-Law services through the 3-1-1 call center. A noise exemption granted is subject to review and termination jointly by the Manager of By-law & Regulatory Services and the General Manager, Planning, Infrastructure and Economic Development based on complaints received, and on a review of compliance by the contractor with the project requirements, the terms of the contract, or the Noise By-law, and any other relevant consideration relating to the public health and safety and to the public interest.

Traffic Management:

Construction

Activities related to construction may result in impacts to the travelling public in the vicinity of construction sites or on roadways impacted by construction. The following mitigations will be used to ensure that impacts to transit and traffic are limited, including:

- Construction will be scheduled so that the duration and extent of the proposed work and traffic control measures minimize the impact to all modes of transportation and adjacent land owners, and shall not prohibit any part of the traveling public unless receiving the required authorization;
- The contractor will undertake a traffic management study, if road capacity and LOS is reduced, to determine the impact of the construction on other routes and to determine appropriate mitigation measures;
- The traffic management strategy shall address the impact on residential streets of any diverted traffic through appropriate temporary and permanent traffic calming measures in accordance with City of Ottawa Area Traffic Management Principles and Guidelines, and in consultation with the City along any detoured bus route;
- The contractor will temporarily cease any relevant construction activities that are affecting traffic and make all the necessary travel lanes available to traffic as quickly as possible, if the City determines that vehicular queues related to closure, full closures, detour routes, Lane Shifts and/or diversions are excessive;

- Construction vehicles/equipment shall only use accesses to/from construction zones in the same direction of traffic thereby diverging/merging with the flow of traffic, in order to avoid crossing opposing traffic;
- The contractor will be responsible for identifying to the City in advance all Roadways being utilized for haul routes and for ensuring haul routes are kept clean and free of construction dust and debris;
- Access to residential properties will remain open to local traffic at all times;
- Temporary signage to direct clients to stores and parking during interruptions;
- Access to commercial buildings will be maintained through detours as required;
- Accesses will be fenced except at authorized crossings and within an urban street right of way. Unauthorized access will be controlled as part of normal traffic operation on City of Ottawa streets including any new bylaws that may be required;
- Traffic signals and turning lanes will be provided to ensure turning vehicles can maneuver through the intersection safely; and,
- The City of Ottawa will monitor traffic and parking activities to identify any conflicts with the transit operations, parking restrictions and turning lane lengths will be adjusted to minimize interruption to transit movement, and ensure the safety of the public.

Operations

The 2016 EA and 2018 EA Addendum studied the anticipated traffic increases on Bowesville Road and Earl Armstrong Road. The 2023 volumes suggests moderate growth on Bowesville Road and Earl Armstrong Road. The main contributors to the increase include ongoing expansion of the Riverside South community and continued growth in the southern parts of the City (e.g. Greely and Manotick).

The 2023 peak hour/peak direction link volumes on area roads is:

Bowesville Road:

- North of Earl Armstrong - approximately 610 northbound vehicles in the morning peak hour
- South of Earl Armstrong - approximately 200 northbound vehicles in the morning peak hour

Earl Armstrong Road

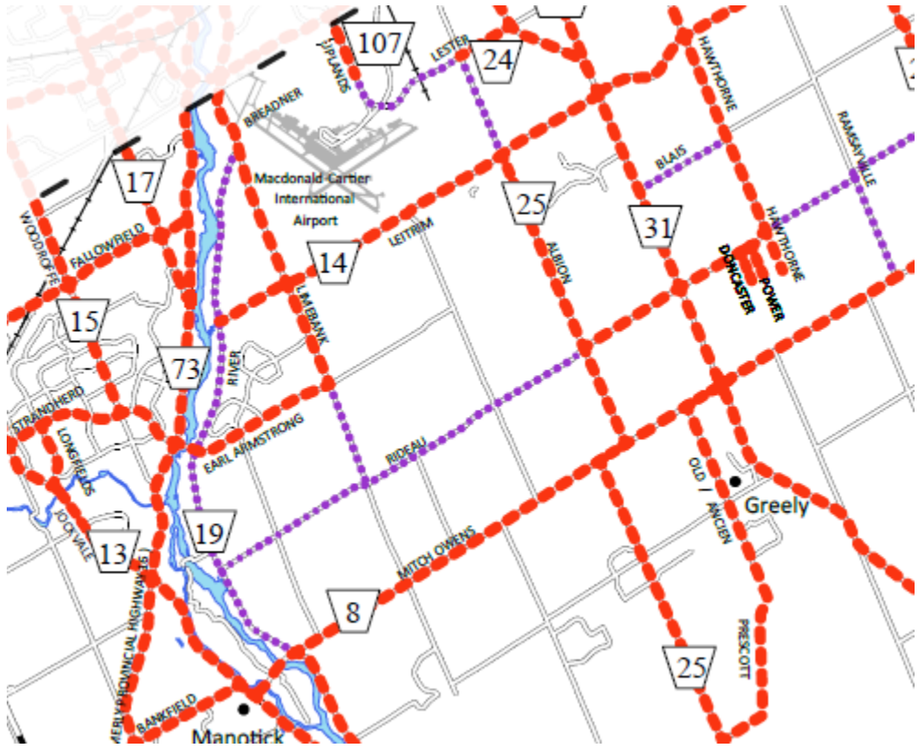
- West of Bowesville Road: approximately 525 eastbound vehicles in the morning peak hour
- East of Bowesville Road: approximately 140 westbound vehicles in the afternoon peak hour

The 2023 peak hour/peak direction volumes listed above are well below the accepted capacity of a 2-lane, rural roadway which is estimated at 800 to 900 vph. As a result, the projected traffic levels on Earl Armstrong Road east of Bowesville Road will continue to be negligible in this horizon.

The City has initiated an EA study that will examine the need for improvements to Leitrim Road from River Road to Bank Street. Although the expansion of Leitrim Road is not included in the City's Affordable Road Network, the City has indicated that recent/planned development in the southeast part of the City has increased more rapidly than previously anticipated and this widening/improvement project may be advanced.

Appendix B – Truck Haul Routes

City of Ottawa Rural Truck Routes



Source: https://documents.ottawa.ca/sites/default/files/rural_Truck_Routes_2017_feb_en.pdf