Document 1

Prepared for: City of Ottawa

ST. LAURENT TRANSIT IMPROVEMENTS PLANNING AND ENVIRONMENTAL ASSESSMENT STUDY

DRAFT ENVIRONMENTAL STUDY REPORT

File No. 3414036 | April 2016

WSP | MMM GROUP

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1.0 INTRODUCTION

1.1 STUDY LOCATION AND PURPOSE

In 2014, the City of Ottawa initiated this planning and environmental assessment (EA) study to develop a recommended plan to improve transit reliability and cycling safety along St. Laurent Boulevard between the Innes Road / Industrial Avenue and Smyth Road / Lancaster Road intersection, and to improve traffic operations and safety at the Innes Road / Industrial Avenue intersection. The study area is shown in Figure 1-1.

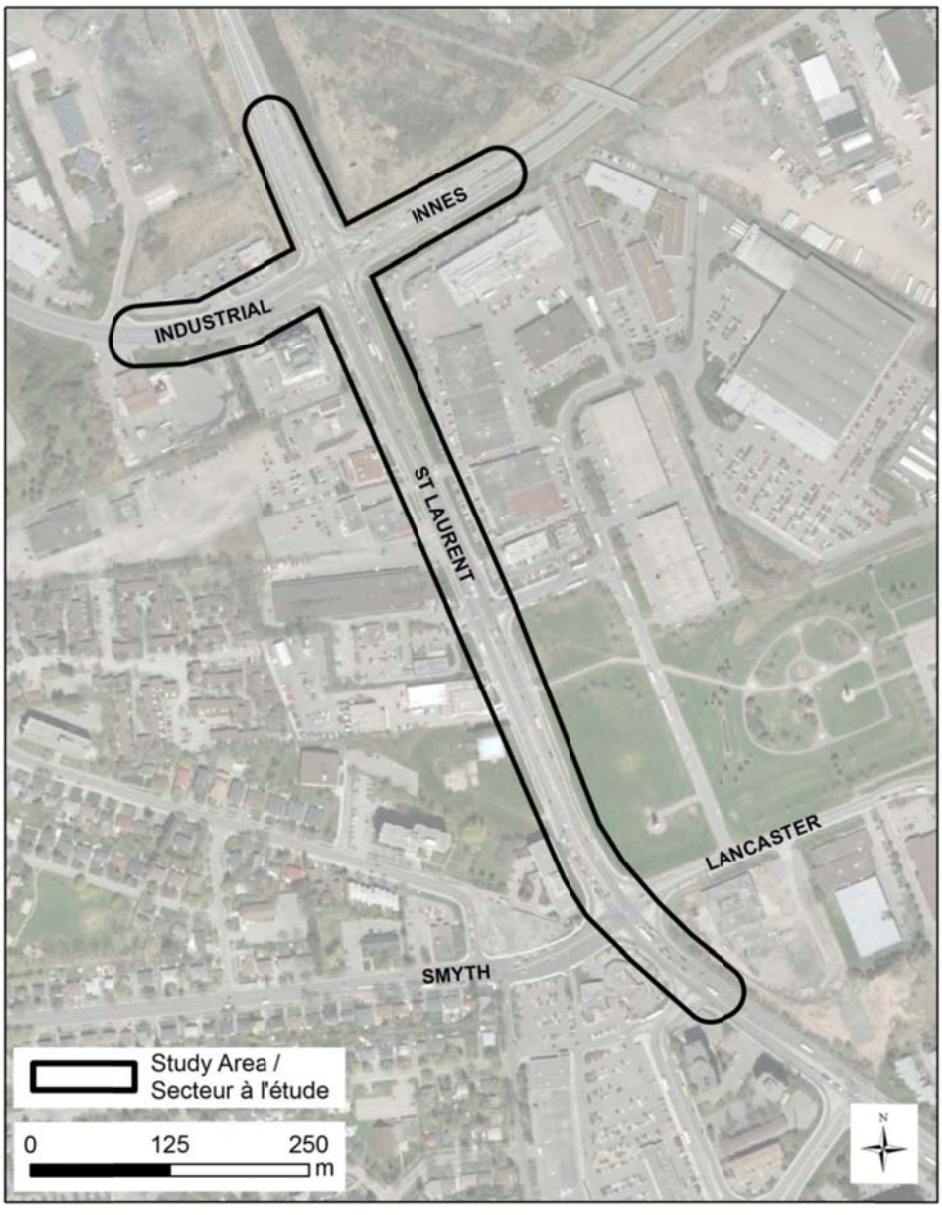

Figure 1-1: Study Area

This study examined the need for transit and intersection improvements along St. Laurent Boulevard between Innes Road / Industrial Avenue and Elmvale Terminal. This Environmental Study Report (ESR) documents the Recommended Plan and the process used to develop it, including the evaluation of planning and design alternatives carried out in consultation with local residents, community associations, City staff, and members of the public.

The Recommended Plan sets out a functional design for a new cross-section of St. Laurent Boulevard including transit-only lanes, a functional design for an improved Innes Road / Industrial Avenue / St. Laurent Boulevard intersection, a strategy for mitigating impacts associated with the construction and operation of these facilities, and commitments to future studies and approvals to be completed during later design and implementation stages of this project.

1.2 THE CLASS EA PROCESS AND STUDY APPROACH

This study was conducted under Schedule “C” of the Municipal Class Environmental Assessment (October 2000, as amended in 2007) (Class EA), which is approved under the Ontario Environmental Assessment Act (OEAA). The Class EA provides a consistent, streamlined but flexible process for the planning of municipal infrastructure in a way that protects all aspects of the natural, cultural and socio-economic environment.

The Class EA process for Schedule “C” projects is illustrated in Figure 1-2 and includes five phases:

- Phase 1: Define the Problem / Opportunity
- Phase 2: Identify and Evaluate Alternative Planning Solutions
- Phase 3: Identify and Evaluate Alternative Design Concepts
- Phase 4: Identify the Recommended Plan and Prepare the ESR
- Phase 5: Project Implementation

The work completed to date, including the filing of this ESR for a 30-day public review period, satisfies Phases 1 through 4 of the Class EA process. In addition, during Phase 5 (Implementation), the following permits and approvals may be required.

- Permit to take Water (Ontario Ministry of the Environment and Climate Change [MOECC]);
- Noise By-law Exemption (City of Ottawa).

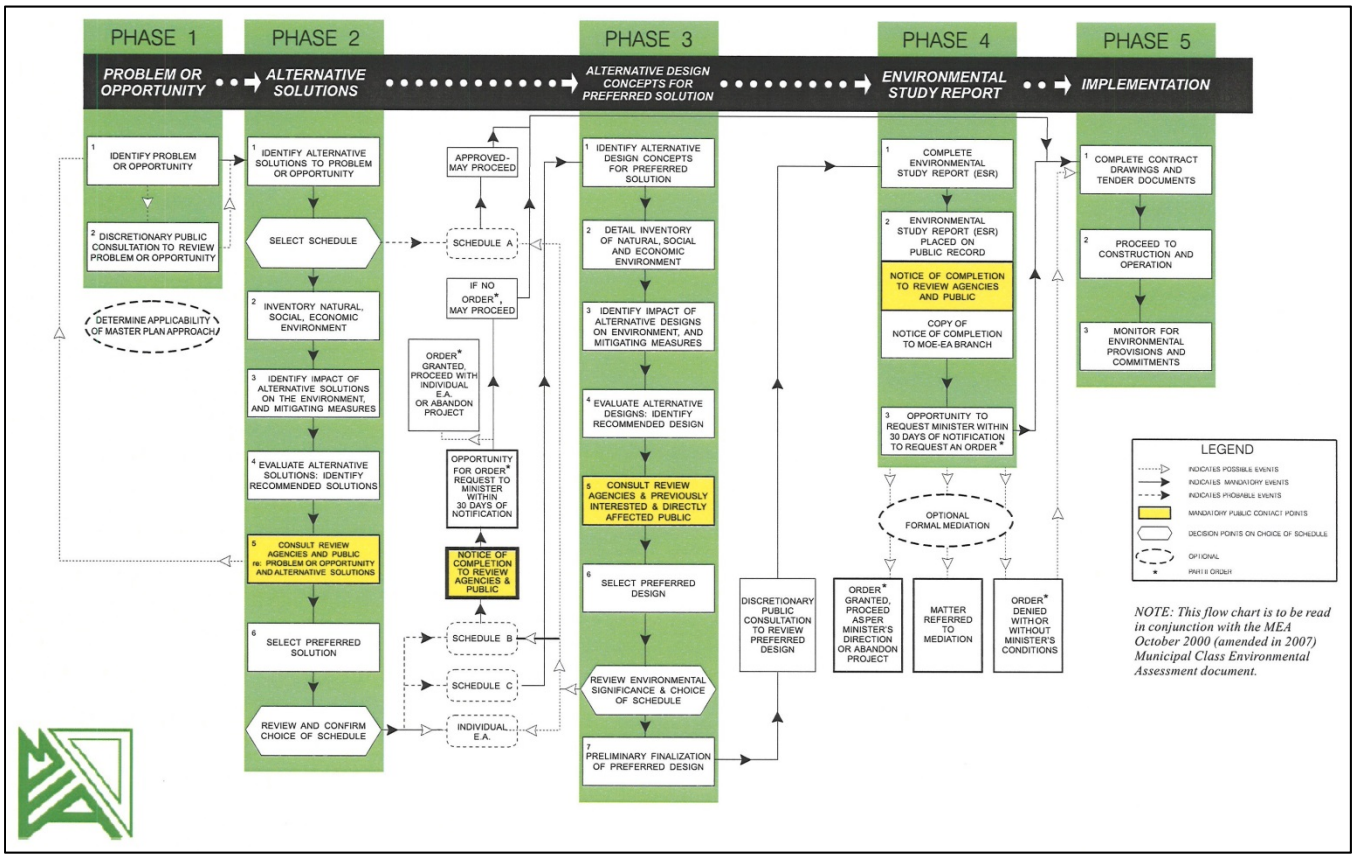

Figure 1-2: Municipal Class EA Planning and Design Process

In accordance with the Class EA process described above, this study followed a three-step process incorporating opportunities for public input (Figure 1-3). If no irreconcilable objections are raised during the 30-day public review period, the City may proceed with the preliminary and detailed design and construction of the Recommended Plan described in this ESR and illustrated in **Appendix A**.

1.3 CONSULTATION

Recognizing that consultation is a crucial aspect of the planning process, the study team engaged in early and ongoing communication with potentially interested and affected stakeholders. These included local landowners and community associations, City of Ottawa and utility staff, and the general public. The consultation undertaken as part of this study is described in detail in Chapter 2.

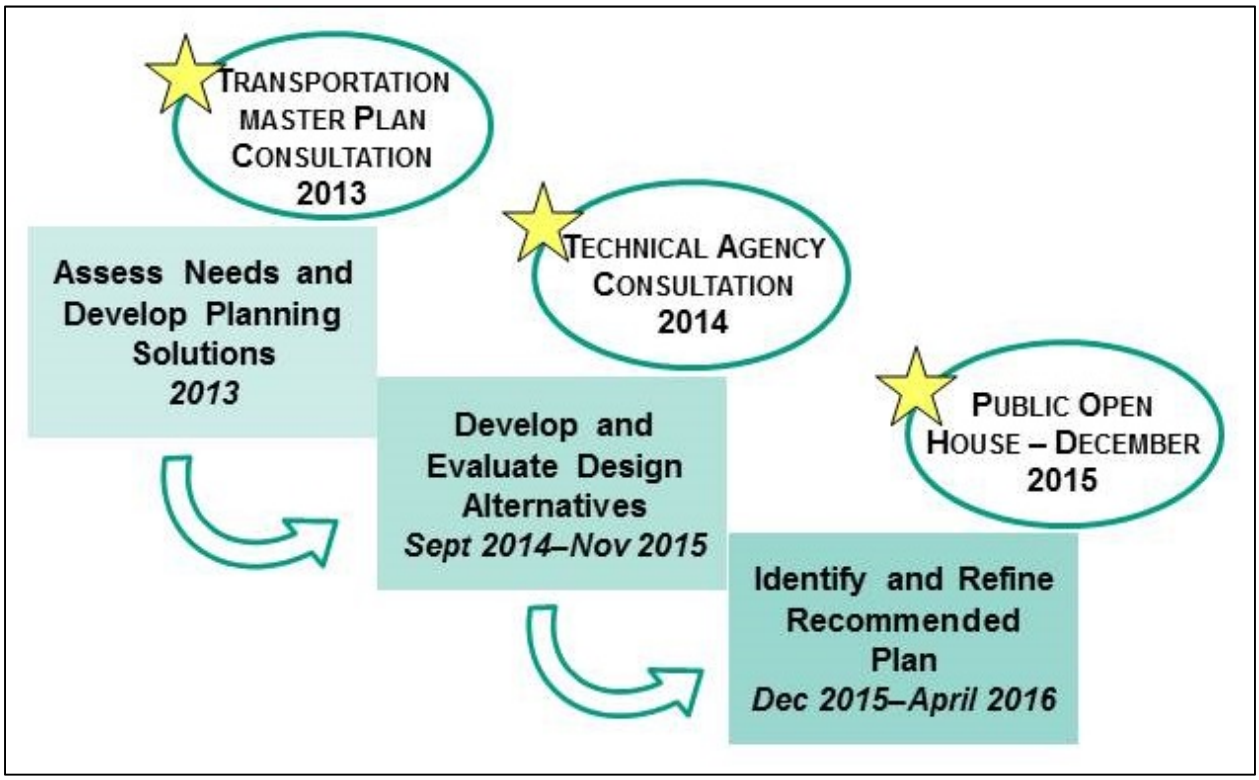

Figure 1-3: Study Process

2.0 CONSULTATION

Consultation is a central component of the planning process and is intended to facilitate an ongoing, two-way exchange of information between the study team and interested stakeholders; meet statutory consultation requirements; and fulfil the study objectives. Based on the issues and concerns identified at each stage of the project, the project team developed and evaluated alternative solutions that ultimately resulted in the Recommended Plan described in this report.

The following consultation activities were undertaken as part of this project:

- Formal public notification;
- A project website;
- Consultation with City of Ottawa and utility technical staff;
- A Public Open House (POH);
- Meetings with councillor's office and community stakeholders;
- Consultation with Aboriginal communities; and
- Report to the City of Ottawa's Transportation Committee.

This chapter describes the key aspects and outcomes of each activity. A record of consultation activities, including public notices, display materials, and comments received, is provided in **Appendix B.**

2.1 STUDY WEB SITE

A study web site was established and maintained on the City of Ottawa web site at the following address: http://ottawa.ca/en/st-laurent-blvd-industrial-smyth. The website contained background and contact information and POH display boards, in an accessible format.

2.2 NOTIFICATION

Formal public notices were distributed during this study to advertise the following milestones:

- Study Commencement and Public Open House;
- Study Completion and filing of the ESR for a 30-day public review period.

Each notice appeared in two consecutive weeks in Le Droit and the local EMC community newspapers. The notices were also distributed by mail to residents near the study area, emailed to technical agencies and Aboriginal communities who may have an interest in the project and published to the study website.

The notices were also emailed to the study mailing list, which was developed early on and maintained throughout the course of the study to communicate with interested stakeholders. This list was updated following the Public Open House to include all attendees who provided an email address when signing in. Additional stakeholders were added as requested over the course of the study.

2.3 TECHNICAL AGENCY CONSULTATION

Ongoing consultation with City of Ottawa and utility technical staff took place during the planning and design process. Specific City departments consulted included Specific City departments consulted included Transit Services, Public Works, and Planning and Growth Management. Utilities consulted included Hydro Ottawa, Rogers, and Bell. Consultation activities included circulating the design for comment in affected City departments and utilities in December 2014, and undertaking one-on-one correspondence and meetings as required to address any issues raised.

2.4 PUBLIC OPEN HOUSE

A Public Open House (POH) was held for this project on December 2, 2015. It was scheduled to provide interested members of the public with an opportunity to review and comment on the study process, the evaluation of options, and the study recommendations. The POH took place in the evening at Dempsey Community Centre, which was selected for its proximity to the study area. It included a brief introduction by the ward councillor; a formal presentation of the study process, preliminary Recommended Plan, and anticipated environmental impacts and mitigation; and display panels containing similar material. Attendees at the POH were asked to sign in and were encouraged to ask questions of the study team and submit comments to the City Project Manager. Fourteen (14) members of the public signed in at the POH.

2.5 INDIVIDUAL STAKEHOLDER MEETINGS

Additional meetings with individual stakeholders or stakeholder groups regarding particular project issues were available upon request during the study. These meetings included a briefing meeting with the ward councillor and staff on October 27, 2015, as well as discussions and a meeting with the owners of the St. Hubert restaurant on St. Laurent Boulevard to address concerns regarding access.

2.6 CONSULTATION WITH ABORIGINAL COMMUNITIES

Two aboriginal communities with a potential interest in the study were contacted via email to notify them of study commencement and subsequent project milestones:

- The Algonquins of Pikwàkanagàn (via the Algonquins of Ontario Consultation Office); and

- The Ottawa Region Métis Council (with a copy to the Métis Nation of Ontario).

As of the filing of this ESR, no responses had been received.

2.7 TRANSPORTATION COMMITTEE AND COUNCIL

A Staff Report was prepared and submitted to the City of Ottawa's Transportation Committee. At its April 6, 2016 [TBC] meeting, the committee recommended that Council approve the finalization of this ESR and post the Notice of Study Completion. The project and associated motions were approved by Council on April 13, 2016 [TBC]. The Council proceedings are included in **Appendix B. [this section to be finalized following Committee and Council approval, prior to ESR publication]**

2.8 RESPONSES TO IDENTIFIED CONCERNS

Over the course of the study, a total of 38 written and verbal comments and requests for information were received from members of the public. These are summarized in **Appendix B**. The public and participating agencies have generally supported transportation infrastructure improvements in this location. During the study, however, several concerns were identified that required specific planning and design responses. These are summarized in Table 2-1 below.

Table 2-1: Planning and Design Responses to Study Comments

Comment	How it was Addressed
The two traffic lanes and the bus lane will create a bottleneck on St. Laurent Boulevard northbound from the Innes Road / Industrial Avenue intersection.	It was noted that an extension of the bus lanes north of Innes Road / Industrial Avenue, while desirable, is not feasible at this time due to the width of the existing overpass. The bus lane has been designed to extend for a short distance north of the intersection to provide an appropriate distance for buses to merge with general traffic. The length of this lane will be reviewed and confirmed in detailed design.
The northbound right turn lane onto Innes should be as long as possible, to improve traffic flow.	This comment was noted. The exact length of the right turn lane will be confirmed in detailed design, and will balance traffic flow with roadway geometry requirements, available property, and other design considerations.
The road surface should not be milled until the asphalt for resurfacing is ready, so that it is not left milled for a long period of time.	Comment noted. The project contract will specify a maximum number of days that the road can remain milled.

Comment	How it was Addressed
It is unsafe for vehicles to turn across the bus lanes and cycle tracks into or out of driveways. The bus lane might discourage people from turning and affect traffic to the adjacent businesses.	It was confirmed that other vehicles are allowed into bus lanes up to 46 metres in advance of making a right turn, or as otherwise indicated by signs or pavement markings, as per Section 61(3) of the City of Ottawa Traffic and Parking Bylaw 2003-530, as amended by Bylaw 2011-388. It was noted that, in combination with signage and education, this approach works well in other areas of the city where bus lanes are used (Woodroffe Ave., Rideau St., Montreal Rd., etc.), and there is no reason to expect a different outcome here. The effect of the bus lanes on left-hand turns is not expected to be significantly different from that of an additional traffic lane. To address this comment, the diagonal lines within the bus lanes at each driveway north of Bourassa Street, which may be confusing, will be revisited in detailed design to ensure simplicity and clarity for all users.
Current signal timings do not allow pedestrians sufficient time to cross, or sufficient time for more than 1 or 2 cars to make a turn. The larger intersections will make it difficult to make turns according to the Highway Traffic Act, which prohibit crossing a crosswalk with a vehicle until all pedestrians are completely out of the crosswalk.	It was confirmed that the signal timing will be reviewed and optimized prior to implementation. Signal timing can be easily adjusted following implementation if issues are observed.
Traffic lights should be considered at the Petro-Canada station / St-Hubert and the strip mall entrance opposite.	It may not be possible to implement traffic signals if they do not meet the City's minimum required distance from adjacent traffic signals. This possibility will be explored with City staff in detailed design.

Comment	How it was Addressed
A mid-block crossing between Bourassa Street and Smyth, with adjacent bus stops in both directions, would improve transit access to the renovated Museum of Science and Technology and Dempsey C.C.	It may not be possible to implement traffic signals if they do not meet the City's minimum required distance from adjacent traffic signals. This possibility will be explored with City staff in detailed design.
The segment of Russell Road between Industrial and Smyth has been subject to significant noise and traffic impacts due to LRT and watermain construction. To reduce disruption to residents, this segment should be restricted to local traffic only during this additional construction project.	This comment was noted and will be considered in the development of the traffic management plan.
Power outages associated with the relocation of the hydro poles may affect the surrounding community.	This comment was noted. Hydro Ottawa has indicated that disruptions associated with the relocation are expected to be minor, but details regarding the extent and duration of any anticipated interruptions will be confirmed in detailed design and communicated to the public as required.

3.0 IDENTIFIED PROBLEMS AND OPPORTUNITIES

This chapter documents the need and justification for the proposed transit improvements along St. Laurent Boulevard, and for improvements to the Innes Road / Industrial Avenue / St. Laurent Boulevard intersection. To confirm and define this need, the project team reviewed relevant policy documents and growth projections.

3.1 CONTEXT AND POLICY FRAMEWORK

3.1.1 OFFICIAL PLAN

Ottawa's population and employment are expected to increase by up to 30% between 2006 and 2031. Much of this growth is expected to take place outside the Greenbelt. Section 2.1 of Ottawa's Official Plan (OP) (2008) sets out four strategic directions for meeting the challenges posed by this growth. These are listed below with the transit-related objectives that have been identified to respond to these directions.

Managing growth

- Growth in the urban area will be directed where it can be accommodated in compact, mixed-use development and served with quality transit, walking and cycling facilities.

Providing infrastructure

- A transportation system that emphasizes transit, walking and cycling will be built.

Maintaining environmental integrity

- Air quality will be supported by a transportation system that emphasizes transit, walking and cycling, and by policies that protect forests, wetlands and other natural environment areas.

Creating liveable communities

- Attention to design will help create attractive communities where buildings, open space and transportation work well together.

The objective of this EA was to develop a recommended plan for the St. Laurent Transit Improvements project that is consistent with these important policy directions.

Section 3.6.3 of the OP designates the segment of St. Laurent Boulevard within the study area as an Arterial Mainstreet (Figure 3-1). This designation recognizes the street as a multi-modal transportation corridor and provides policy direction to support its evolution, over time, into a more pedestrian-oriented and transit-friendly street with more compact development.

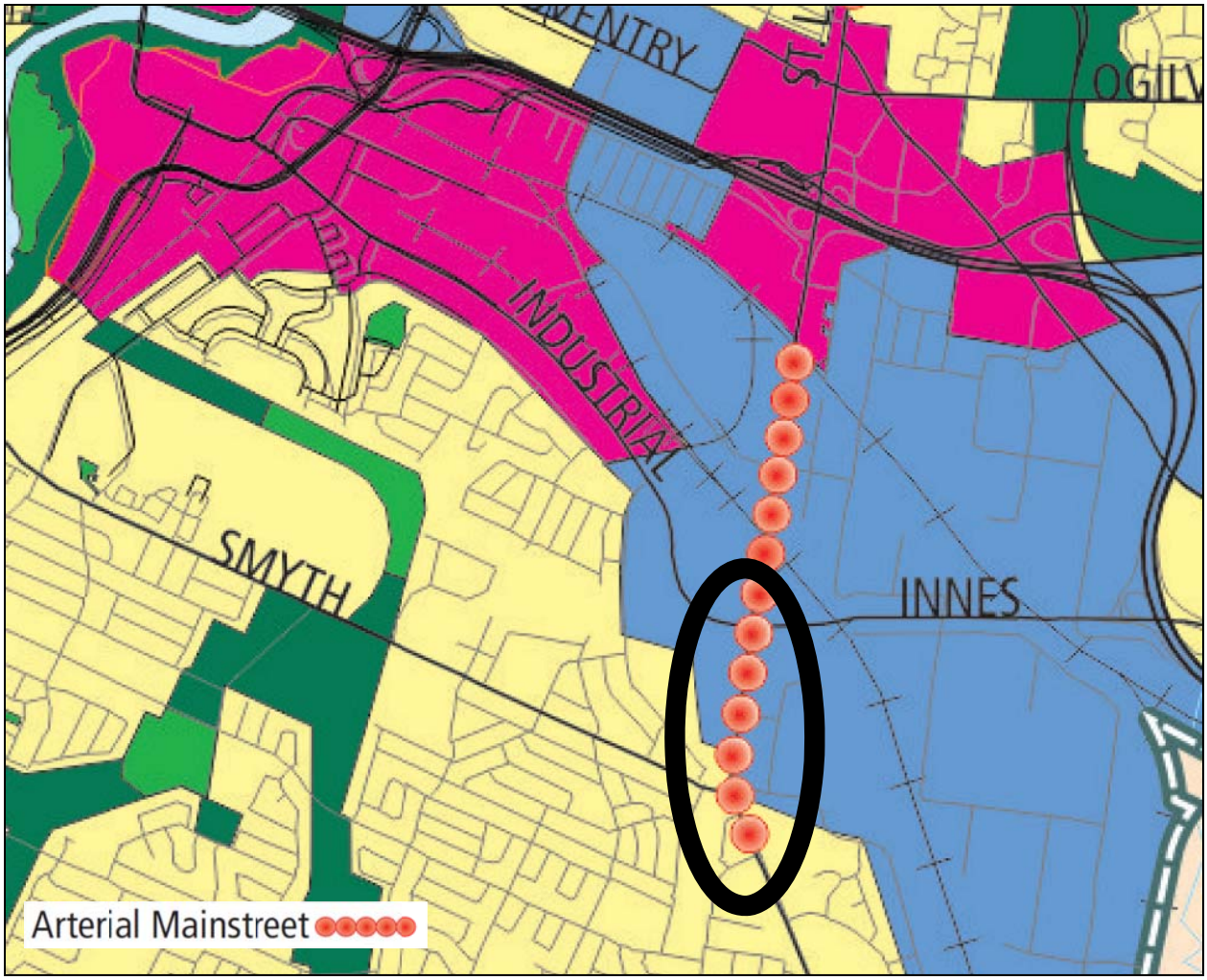

Figure 3-1: Arterial Mainstreet designation of the study area in Ottawa's Official Plan (2008)

3.1.2 TRANSPORTATION MASTER PLAN

The Transportation Master Plan (TMP), a supporting document to the OP, sets out the City's approach to meeting the demand for transportation facilities. The TMP's overall transportation vision is that, "in 2031, Ottawa's transportation system will enhance our quality of life by supporting social, environmental and economic sustainability in an accountable and responsive manner" (TMP 2013, Section 1.4).

To minimize overall travel delay and infrastructure costs, the TMP establishes a target peak-hour transit modal share of 26% by 2031, as well as guidelines, programs and investments designed to make transit use more competitive with automobile use. It aims to provide an acceptable level of service for each travel mode and identifies the measures to be used to determine this level of service, with the goal of maximizing the transportation system's person-capacity. The TMP also sets a target increase in the

peak-hour cycling modal share from 1.7% in 2001 to 5% by 2031 and an increase in the pedestrian modal share from 9.6% in 2001 to 10% in 2031.

The TMP includes recommendations to support the development of Complete Streets, which incorporate the physical elements allowing a street to offer safety, comfort and mobility for all users, regardless of their age, ability, or mode of transportation.

The Ottawa Cycling Plan (2013) (OCP) supports the overall TMP vision and the specific target cycling modal share. Its particular vision includes developing a city-wide, connected network of cycling facilities used by all types and ages of cyclists, maximizing the synergy of transit and cycling, and selecting cycling facilities to complement local land uses. Specific strategies for achieving these goals include incorporating multi-use pathways in the development of new rapid transit corridors.

The OCP designates St. Laurent Boulevard as a spine route (Figure 3-2), providing access along a major corridor. Dedicated cycling facilities are preferred along spine routes.

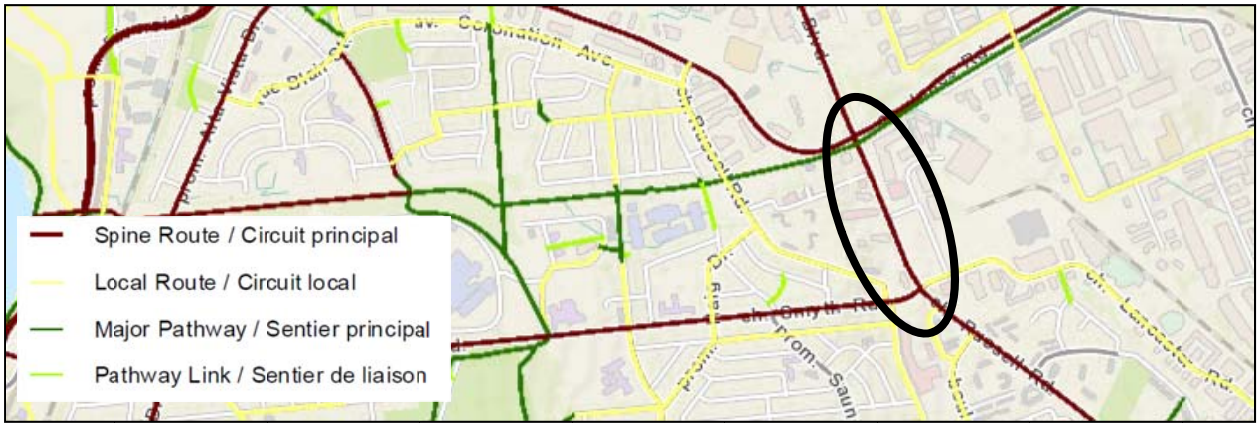

Figure 3-2: Spine Route designation of the study area in the Ottawa Cycling Plan

The Ottawa Pedestrian Plan (2013) also supports the TMP vision. It is intended to promote walking as a viable alternative to automobile use, thereby reducing congestion and greenhouse gas emissions; increasing the transit modal share; promoting healthy lifestyles; and integrating new growth with established communities. It outlines design strategies to improve the quality of the public realm and create comfortable, people-oriented places to walk. It also identifies opportunities for new facilities that enhance the overall connectivity of the City's pedestrian network.

Where possible, the City combines road, transit, cycling and pedestrian improvements in a single construction project. This approach minimizes costs for the City and disruption for residents.

The objective of this EA study is to support the overall TMP vision by developing a recommended plan for transit improvements along St. Laurent Boulevard and improvements to the Innes Road / Industrial Avenue / St. Laurent Boulevard intersection that incorporate appropriate transportation facilities for all travel modes.

3.2 TRAFFIC OPERATIONS

The intersection of St. Laurent Boulevard / Innes Road / Industrial Avenue was identified as a high collision location in 2004, and a Safety Improvement Program (SIP) study was completed for this location in 2007. The SIP study made several recommendations to address the collision patterns at the intersection, including:

- Widen the southbound and westbound approaches to provide double left-turn lanes and remove the split phasing.
- Add high friction asphalt in the northbound and southbound directions.

Since 2007, the collision pattern has continued and as SIP routinely coordinates with construction projects, this is an ideal time to make improvements at the St. Laurent Boulevard / Innes Road / Industrial Avenue intersection.

Under the City's Network Modification Program (NMP), a need for capacity improvements had previously been identified at this intersection, which currently operates at Level of Service (LOS) F in the morning and afternoon peak hours. NMP strives to maximize the efficient operation of the transportation network through geometric modification at congested intersections.

3.3 PROBLEM / OPPORTUNITY STATEMENT

The Class EA requires proponents to explore and document the problems and opportunities that contribute to the need for a project. Based on the review of previous studies and relevant policies in the study area, the following problems and opportunities have been identified:

- The Innes Road / Industrial Avenue / St. Laurent Boulevard intersection has been identified as a high collision location;
- St. Laurent Boulevard is subject to regular traffic congestion, especially at the Innes Road / Industrial Avenue and Smyth Road / Lancaster Road intersections;
- The opening of the Confederation Line in 2018 will contribute to an increase in transit demand along this corridor to St. Laurent Station;
- Projected growth in the City of Ottawa will contribute to an overall increase in travel demand; and

- Addressing these issues may present an opportunity to combine road, transit, cycling and pedestrian improvements in a single construction project, minimizing costs for the City and disruption for residents.

4.0 EXISTING ENVIRONMENTAL CONDITIONS

4.1 SOCIAL ENVIRONMENT

4.1.1 LAND USE

The segment of St. Laurent Boulevard that falls within the study area is primarily commercial and light industrial, consisting of large-scale retail, communications, office and restaurant uses in low-rise buildings with ample surface parking. Mid-rise buildings containing office and medical uses are located at the southwest corner of Industrial Avenue and St. Laurent Boulevard and the northwest corner of Smyth Road and St. Laurent Boulevard.

The study area is also adjacent to significant open or undeveloped areas. The large parcel at the northeast corner of Innes Road and St. Laurent Boulevard is vacant open space. The City's Alda Burt Park is located on the west side of St. Laurent south of Bourassa Street, while open space associated with the Canada Science and Technology Museum fills the block of St. Laurent Boulevard between Bourassa Street and Lancaster Road.

Elmvale Shopping Centre, a partially enclosed shopping mall with a large surface parking lot, is located at the southwest end of the study area. Several low-rise residential apartment complexes and high-rise apartment towers are also adjacent to St. Laurent Boulevard in this area.

The areas west and south of the immediate study area are primarily low-rise residential, with some high-rise apartment complexes. The areas to the north and east consist mainly of low-rise industrial and commercial uses.

Land use designations in the study area are shown in Figure 4-1.

4.1.2 UTILITIES

A high-voltage overhead hydro line runs along the east side of St. Laurent Boulevard within the study area. Underground maintenance holes associated with this line are located underneath the Innes Road / Industrial Avenue / St. Laurent Boulevard intersection. A municipal watermain also runs east-west through this intersection.

Additional underground utilities within the right-of-way in the study area include Rogers and Bell cables and maintenance vaults, Enbridge gas lines, stormwater and sanitary sewers, and traffic signal interconnections and fibre optic cables.

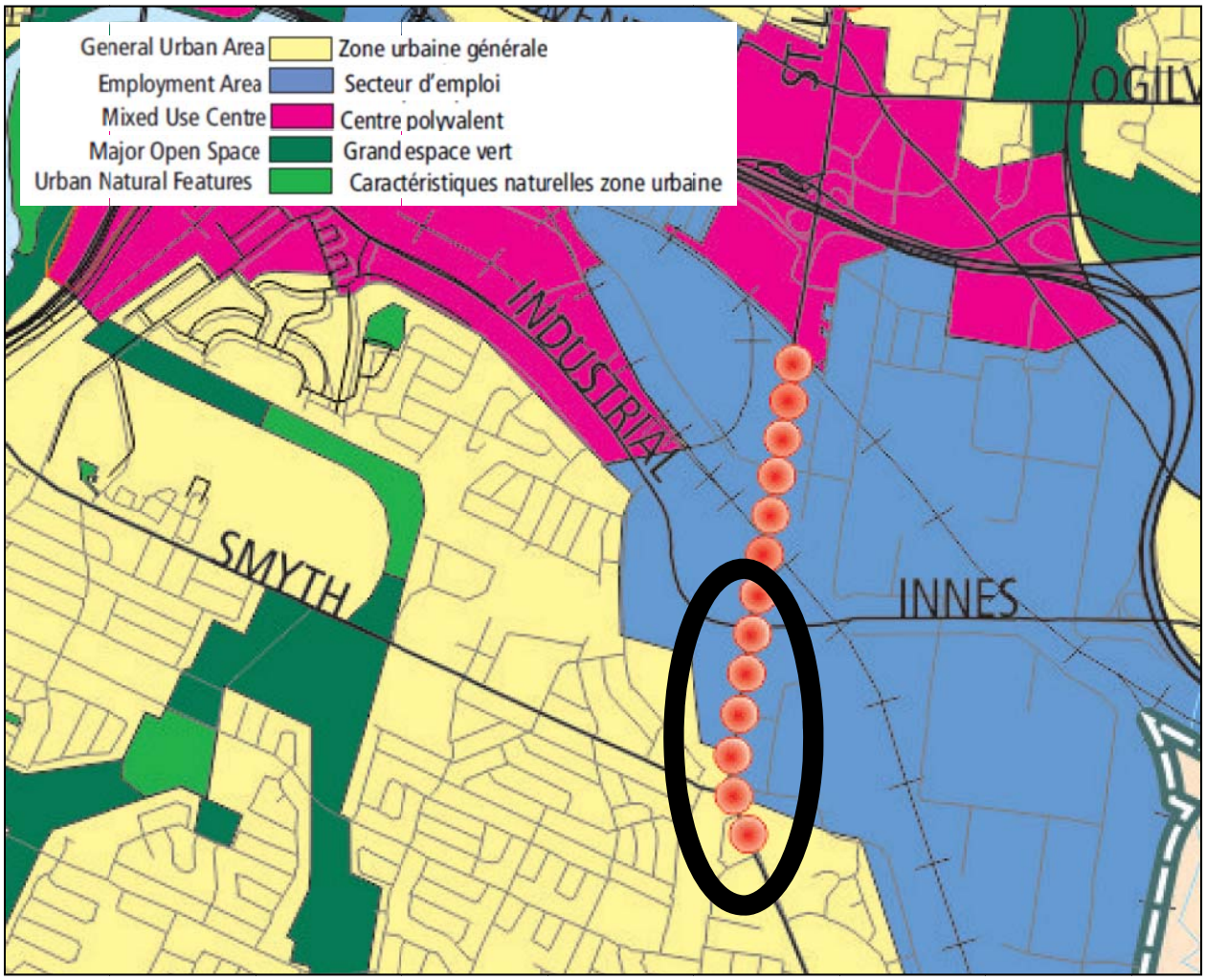

Figure 4-1: Land Use Designations in Study Area

4.1.3 TRANSPORTATION NETWORK

4.1.3.1 Road Network

Existing arterials in the study area include St. Laurent Boulevard (north of Smyth) and Russell Road (south of Smyth) running north-south, and Innes Road, Industrial Avenue, and Smyth Road running east-west. Existing collectors include Russell Road (north of Smyth) and St. Laurent Boulevard (south of Smyth) running north-south, and Lancaster Road running east-west.

St. Laurent Boulevard is a four-lane road within the study area and includes numerous turning lanes and commercial entrance bays on both sides.

Traffic counts provided by the City of Ottawa indicate that approximately 1,375 vehicles typically travel northbound from the Smyth Road / Lancaster Road / St. Laurent Boulevard intersection in the morning peak hour (1,800 in the afternoon peak hour). At

the Innes Road / Industrial Avenue / St. Laurent Boulevard intersection, approximately 1,550 vehicles typically travel southbound in the morning peak hour, and approximately 1,730 in the afternoon peak hour.

City traffic counts also indicate that the Smyth Road / Lancaster Road / St. Laurent Boulevard and Innes Road / Industrial Avenue / St. Laurent Boulevard intersections operate with level of service (LOS) F in the morning and afternoon peak hours, while the Bourassa Street / St. Laurent Boulevard intersection operates at LOS F in the afternoon peak hour. At LOS F, these intersections are considered to be failing.

A more detailed review of existing traffic conditions in the study area is provided in **Appendix C**.

4.1.3.2 Transit Network

Elmvale Terminal, a terminus/transfer point served by six OC Transpo routes, is located at the southwest end of the study area. Route 114 travels along St. Laurent Boulevard in mixed traffic between this station and St-Laurent Transitway Station to the north. Route 114 operates on 5-10 minute headways during weekday peak periods, 15-minute headways on weekdays off-peak and on Saturdays, and 30-minute headways on Sundays. As part of the service adjustments to accommodate the closure of the Transitway, Route 106 was revised to temporarily travel along St. Laurent Boulevard between Elmvale Terminal and St. Laurent Station until the opening of the Confederation Line in spring 2018. Route 106 operates 20 hours a day to serve the Ottawa Hospital General Campus, with headways ranging from 15-20 minutes during the day to 30-60 minutes in the early morning and late evening.

Route 86 serves Elmvale Terminal before continuing north or south along Russell Road, with headways as short as 10 minutes at weekday peak periods and up to 30 minutes at other times. Routes 112, 148 and 149 serve residential areas to the southeast and terminate at this station, with headways of 15-20 minutes at weekday peak periods and 30 to 60 minutes at other times.

Route 121 travels along Innes Road and Industrial Avenue between Hurdman and Blair stations, with headways of 15 minutes at weekday peak periods and 30 minutes at other times.

Transit service in the study area is illustrated in Figure 4-2.

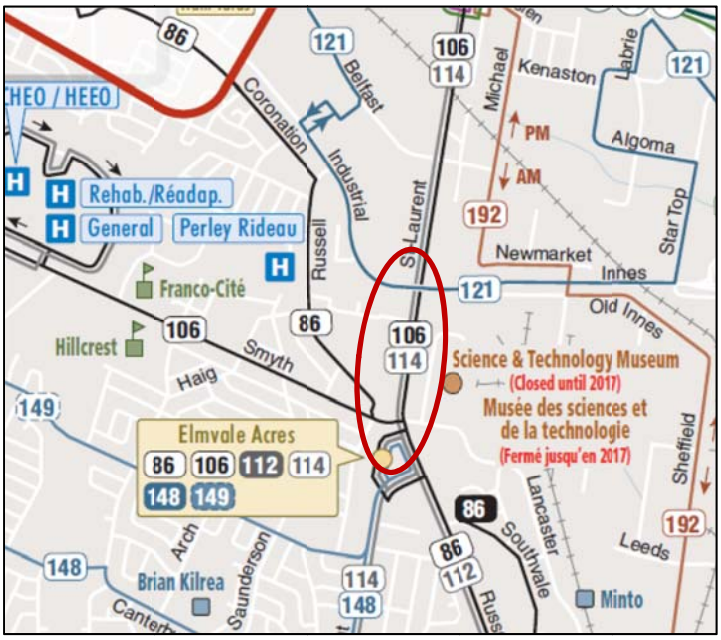

Figure 4-2: Existing Transit Service in Study Area (Image: OC Transpo)

4.1.3.3 Active Transportation Network

St. Laurent Boulevard (north of Smyth), Innes Road, Industrial Avenue, Smyth Road and Russell Road (south of Smyth) are designated as on-road "spine" cycling routes in the Ottawa Cycling Plan (2013). These routes are designed for direct, longer distance travel, and will be interconnected with the City's and NCC's off-road pathway network. Lancaster Road, St. Laurent Boulevard (south of Smyth) and Russell Road (north of Smyth) are "local" cycling routes, which are designed to provide links to local destinations and to the larger spine system. In addition, an off-road pathway runs east from St. Laurent Boulevard along the south side of Innes Road. The Cycling Plan identifies a future extension of this pathway to the west to provide a connection to nearby residential neighbourhoods and other pathway segments.

Pedestrian facilities within the study area include sidewalks along both sides of all arterials, as well as along the south side of Lancaster Road and the north side of the entrance to Elmvale Terminal. The sidewalk along the east side of St. Laurent Boulevard between Belfast and Tremblay roads, north of the study area, substandard and has been identified for reconstruction.

4.1.4 AIR QUALITY

The main source of harmful airborne pollutants in the study area is road vehicle traffic. Stationary pollution sources, including commercial or institutional emergency diesel generators and steam boilers, are also found in the study area but are subject to Environmental Compliance Approval by the Ontario Ministry of the Environment and

Climate Change (MOECC) to ensure they meet the Ambient Air Quality Criteira (AAQC) and other applicable air quality guidelines.

An analysis of baseline air quality was not undertaken as part of this study, as the proposed project is not anticipated to increase road vehicle traffic in the study area, and may reduce emissions by reducing vehicle idling and congestion.

4.1.5 NOISE AND VIBRATION

Vehicle traffic is the main source of noise and ground-borne vibration within the study area, although stationary noise sources such as emergency generators at commercial facilities and heavy equipment at quarries may also produce noise impacts.

An analysis of baseline noise levels was not undertaken as part of this study, as the proposed project is not anticipated to increase vehicle traffic volumes in the study area.

4.2 NATURAL ENVIRONMENT

A desktop review of existing natural environment conditions was undertaken as part of this project. Key findings are presented in the sections that follow. Due to the intensive disturbance and lack of natural features within the study area, field investigations were not undertaken as part of this study.

4.2.1 TERRESTRIAL ECOSYSTEMS

The environment within the study area is urbanized and heavily disturbed, with open space generally consisting of mowed and maintained parkland. No Areas of Natural and Scientific Interest (ANSIs), other designated natural areas, or woodlands are found within or near the study area.

The topography in the area is largely flat, although a slight escarpment runs through the Smyth Road / St. Laurent Boulevard intersection, such that the southern end of the study area is approximately 6 metres higher than the northern portion.

4.2.1.1 Significant Species

The Natural Heritage Information Centre (NHIC) has records of 1 Species at Risk (SAR) (Pale-bellied Frost Lichen) and 17 provincially rare species occurring in the study area. These are listed in Table 4-1. The record for Pale-bellied Frost Lichen dates from 1900, well before the urbanization of the study area. Due to the extensive change in the landscape since then, this species is no longer considered present. Similarly, the records for the majority of provincially rare species pre-date the development of the study area. These species are unlikely to be present, particularly within the area to be disturbed by project construction.

Table 4-1: Species at Risk and Provincially Rare Species Recorded Within 1 km of the Study Area (NHIC, 2016)

Common Name	Scientific Name	Designation	SRank	Date of Record
A lichen	*Steinia geophana*	Provincially Rare	S1	2000?
A lichen	*Vezdaea leprosa*	Provincially Rare	S1?	2000?
American Waterwort	*Elatine americana*	Provincially Rare	S3	1891
Arrowhead Spiketail	*Cordulegaster obliqua*	Provincially Rare	S2	1923
Cattail Sedge	*Carex typhina*	Provincially Rare	S2	1953
Forcipate Emerald	*Somatochlora forcipata*	Provincially Rare	S3	Not given
Greene's Rush	*Juncus greenei*	Provincially Rare	S3	1970
Green-striped Darner	*Aeshna verticalis*	Provincially Rare	S3	1922
Horned Clubtail	*Arigomphus cornutus*	Provincially Rare	S3	1923
Large Purple Fringed-orchid	*Platanthera grandiflora*	Provincially Rare	S1	1984
Limestone Oak Fern	*Gymnocarpium robertianum*	Provincially Rare	S2	1941
Lurking Leskea	*Plagiothecium latebricola*	Provincially Rare	S2	1969
Northern Long Sedge	*Carex folliculata*	Provincially Rare	S3	1953
Pale-bellied Frost Lichen	*Physconia subpallida*	Endangered	S2	1900
Pitch Pine	*Pinus rigida*	Provincially Rare	S2?	1969
Southern Twayblade	*Neottia bifolia*	Provincially Rare	S1	1902
Twin-stemmed Bladderwort	*Utricularia geminiscapa*	Provincially Rare	S3?	1978
Woodland Pinedrops	*Pterospora andromedea*	Provincially Rare	S2	1982

4.2.2 FISHERIES AND AQUATIC HABITAT

No watercourses or municipal drains are located within the study area.

4.2.3 GEOTECHNICAL

A geotechnical investigation for the study area was completed for this project and is included in **Appendix D**. It included a review of surficial geology maps indicating that bedrock in the study area is shale bedrock of the Carlsbad formation. The review found that the overburden within the study area consists mainly of deposits of silty clay, with a thickness of 3 to 5 metres between Innes Road and Bourassa Street, and 5 to 10 metres between Bourassa Street and Smyth Road.

Boreholes were also advanced as part of the investigation. It was found that fill material associated with previous construction activities is also present above the native deposits, to a depth of 1.6 to 2.4 metres, in all borehole locations. This consisted of a variety of materials, including a sand-gravel mixture that often contained silt and fragments of concrete and wood; silty clay containing variable amounts of sand, gravel and organic material; and sandy silt containing variable amounts of gravel and fragments of concrete and wood.

4.2.4 GROUNDWATER

The geotechnical investigation completed for this study (**Appendix D**) found that groundwater depth in the study area ranged from 2 to 2.8 metres below ground surface. It is noted that these fluctuate seasonally and may be higher during wet periods of the year or following heavy precipitation.

A review of MOE water well records (MMM Group, 2016) found several wells within the study area. Most were found to be sealed test or monitoring wells. Records for two domestic-use wells, along Innes Road east of St. Laurent Boulevard and on St. Laurent Boulevard immediately south of the entrance to Elmvale Terminal, date from 1953 and 1958 respectively and are presumed to be abandoned.

The study area is not within a Wellhead Protection Area or an Intake Protection Zone.

4.3 CULTURAL ENVIRONMENT

4.3.1 ARCHAEOLOGICAL RESOURCES

The Ministry of Tourism, Culture and Sport's (MTCS's) *Criteria for Evaluating Archaeological Potential* checklist was completed as part of this study to determine the potential for archaeological resources within the study area. The completed checklist and related correspondence is included in **Appendix E**. The checklist indicated that, due to recent, extensive and intensive disturbance of the study area, it is not considered to present archaeological potential and an archaeological assessment is not required.

4.3.2 BUILT HERITAGE RESOURCES

The MTCS's *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* checklist was completed as part of this study to determine the potential for areas of cultural heritage value within the study area. The completed checklist is included in **Appendix E**. The checklist indicated that there is low potential for built heritage or cultural heritage landscapes within the study area, and so a Cultural Heritage Evaluation Report (CHER) and Heritage Impact Assessment (HIA) are not required.

5.0 EVALUATION OF ALTERNATIVES

In accordance with the MCEA process for Group C undertakings, the development of the Recommended Plan proceeded in two stages:

1. Identify and evaluate alternative planning solutions with the goal of identifying the solution(s) that best addresses the identified problems and opportunities; and
2. Develop and evaluate design alternatives for the recommended planning solution(s).

This section describes the activities undertaken and the decisions made at each stage.

5.1 ALTERNATIVE PLANNING SOLUTIONS ('ALTERNATIVES TO')

The MCEA process recognizes that there may be many different ways to solve a problem and requires that proponents explore all reasonable solutions. Alternative planning solutions are functionally different ways of addressing the problem or opportunity.

The alternative planning solutions considered for this EA study were developed and evaluated as part of the City of Ottawa's 2013 TMP update. The goal of the TMP update was to develop a transportation network concept for the year 2031 that meets the needs of residents and businesses in the most cost-effective way possible.

It explored the following alternative planning solutions, which respond to the problems and opportunities discussed in Chapter 3:

- Do nothing and maintain the existing conditions;
- Increase infrastructure capacity to accommodate growth at existing mode shares; and
- Design new infrastructure and redesign existing infrastructure to enhance walking, cycling and transit mode shares.

To evaluate these possibilities, TMP analyzed projected peak-period transportation demand for the year 2031. This analysis indicated that measures to enhance non-automobile mode shares would most effectively meet overall transportation needs, reduce long-term operating costs, and support the City's growth management targets. On the basis of this analysis, the City developed a 2031 Network Concept that includes the infrastructure to achieve the TMP's targets for travel behaviour and level of service for roads and transit.

Within the study area, the recommended planning solution identified in the Network Concept is to designate the segment of St. Laurent Boulevard within the study area as a

Transit Priority Corridor, part of a longer corridor linking Bayshore and St. Laurent Stations along Baseline Road, Heron Road, Walkley Road and St. Laurent Boulevard. Following an analysis of traffic and transit trip volumes within the corridor, an at-grade bus rapid transit (BRT) facility was identified as the transit priority infrastructure that would most effectively minimize transit trip delay and operating costs and foster increased ridership within the study area.

To improve the level of service for general traffic at the congested Innes Road / Industrial Avenue / St. Laurent Boulevard intersection, capacity improvements were subsequently recommended under the NMP. These were identified for implementation at the same time as the transit improvements to minimize construction costs and impacts.

5.2 ALTERNATIVE DESIGNS ('ALTERNATIVE METHODS')

Three main alternatives were considered for the recommended transit improvements along St. Laurent Boulevard within the study area.

Alternative 1 – Transit Lanes Only: This alternative would include an exclusive bus transit lane in each direction, with no other modifications to the road cross-section between Innes Road / Industrial Avenue and Smyth (Figure 5-1).

Alternative 2 – Transit Lanes with On-Road Cycling Lanes: This alternative would include an exclusive bus transit lane in each direction and an exclusive on-road painted cycling lane in each direction between the bus lane and the sidewalk (Figure 5-2).

Alternative 3 – Transit Lanes with Raised Cycle Tracks: This alternative would include an exclusive bus transit lane in each direction, with a raised cycle track in each direction between the bus lane and the sidewalk (Figure 5-3).

All three alternatives included complementary modifications to the Innes Road / Industrial Avenue / St. Laurent Boulevard intersection to improve its safety and capacity, including changes to the number and length of turning lanes, the shape of traffic islands and channels, and the treatment of pedestrian and cycling facilities.

The three alternative designs were evaluated according to the following considerations:

- Capacity to provide appropriate levels of service for pedestrians, cyclists, transit and general traffic;
- Safety of pedestrian, cyclist, transit, truck and general traffic movements;
- Physical space available within City-owned right-of-way; and
- Requirement for utility relocations.

Figure 5-1: Alternative 1 - Transit lane only

Figure 5-2: Alternative 2 - Transit lane with on-road bike lane

Figure 5-3: Alternative 3 - Transit lane (not shown) and raised cycle track

The evaluation of design alternatives is presented in Table 5-1. Based on the evaluation, Alternative 3 was identified as the preferred alternative. It improves the travel time and reliability of transit with no impact on existing general traffic operations, while improving cycling safety and minimizing property requirements and utility relocations.

In keeping with the City's practice of grouping infrastructure projects to minimize cost and construction impacts, the implementation of capacity improvements at the Innes Road / Industrial Avenue / St. Laurent Boulevard intersection was also included in the current study.

Table 5-1: Evaluation of Design Alternatives

	Alternative 1 – Transit Lanes Only	**Alternative 2 – Transit Lanes and On-Road Cycling Lanes**	**Alternative 3 – Transit Lanes and Raised Cycle Tracks**
Capacity	✓ GOOD Improves transit travel time and reliability with no impact to general traffic operations		
Safety	× POOR Does not provide appropriate cycling facilities for the type of roadway	✓ GOOD Incorporates cycling facilities that are appropriate for the type of roadway Improves pedestrian comfort and perceived safety by locating pedestrian facilities further from roadway traffic	
Space	✓ GOOD Design can be accommodated within the City-owned right-of-way, with few or no additional property requirements		
Utilities	✓ GOOD Does not require relocation of hydro poles along east side of St. Laurent Boulevard	× POOR Requires costly relocation of hydro poles along east side of St. Laurent Boulevard	✓ GOOD Does not require relocation of hydro poles along east side of St. Laurent Boulevard
OVERALL	NOT RECOMMENDED	NOT RECOMMENDED	**RECOMMENDED**

6.0 RECOMMENDED PLAN

The Recommended Plan consists of the following elements, which are described in more detail below:

- The construction of an exclusive bus lane and raised cycle track in each direction along St. Laurent Boulevard between Innes Road / Industrial Avenue and Smyth Road;
- Intersection modifications at the Innes Road / Industrial Avenue / St. Laurent Boulevard intersection;
- Minor geometric modifications at the St. Laurent Boulevard / Bourassa Street and St. Laurent Boulevard / Smyth Road intersections;
- Replacement of traffic signal plant at Innes Road / Industrial Avenue, Bourassa Street, and Smyth Road intersections;
- Installation of new street lighting throughout the study area;
- Resurfacing of St. Laurent Boulevard from Innes Road / Industrial Avenue to south of Smyth Road; and
- Minor modifications to the entrance to Elmvale Terminal, south of Smyth Road, to improve traffic operations at the intersection.

Construction of a minimum 1.8-metre sidewalk on the east side of St. Laurent Boulevard between Belfast and Tremblay roads, excluding the existing rail overpass, is anticipated to take place at the same time as the improvements within the study area.

The Recommended Plan integrates walking, cycling, transit and automobile facilities in its design. More specifically, it improves traffic and transit operations by providing an additional exclusive bus lane that removes transit operations from mixed traffic; improves cycling safety by providing a dedicated facility along an arterial roadway; and complements the evolving commercial, industrial and mainstreet uses along this segment of St. Laurent Boulevard. An overview of the Recommended Plan is shown in Figure 6-1 and Figure 6-2.

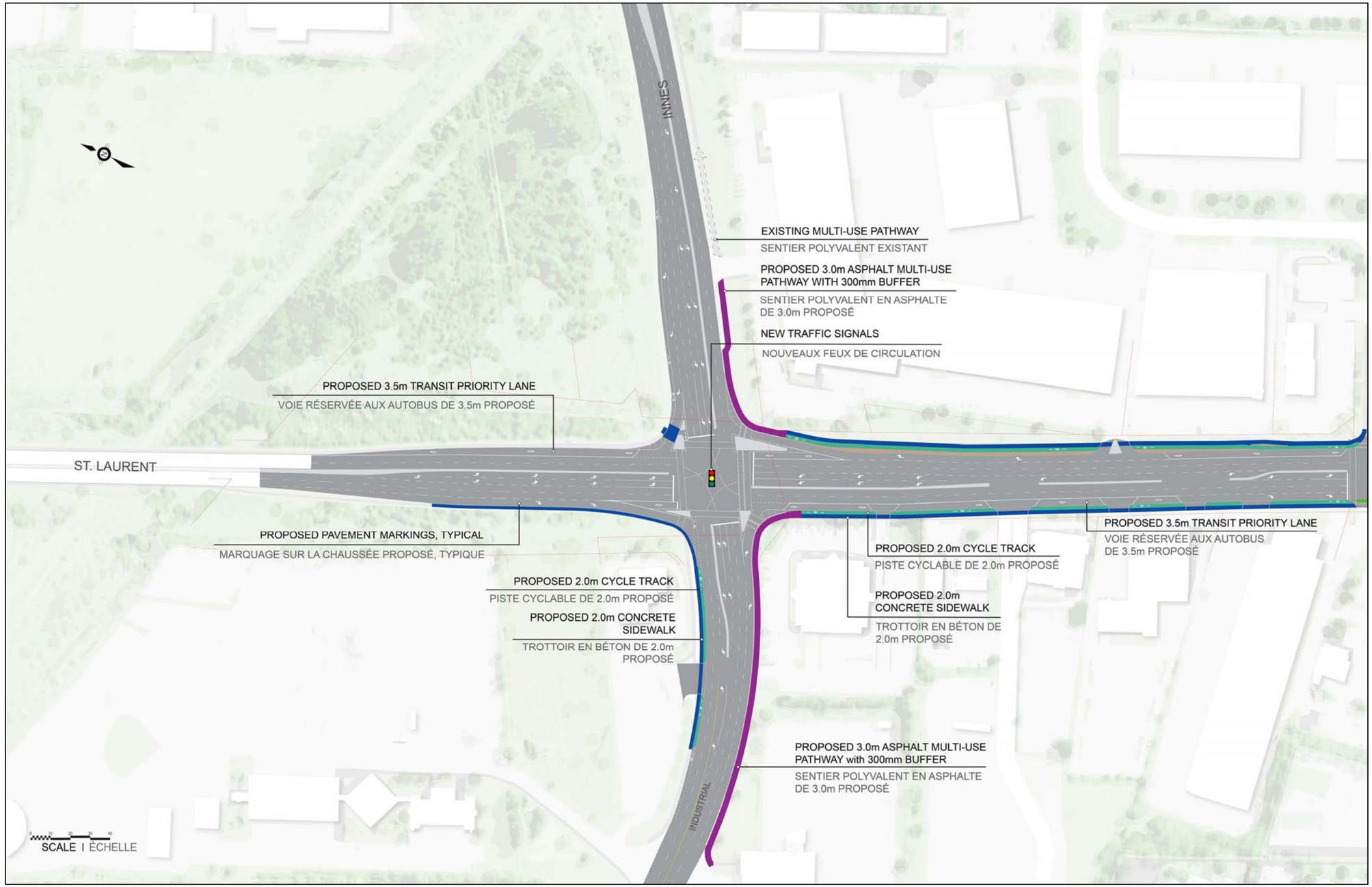

Figure 6-1: Overview of Recommended Plan, North of Innes Road / Industrial Avenue to Bourassa Street

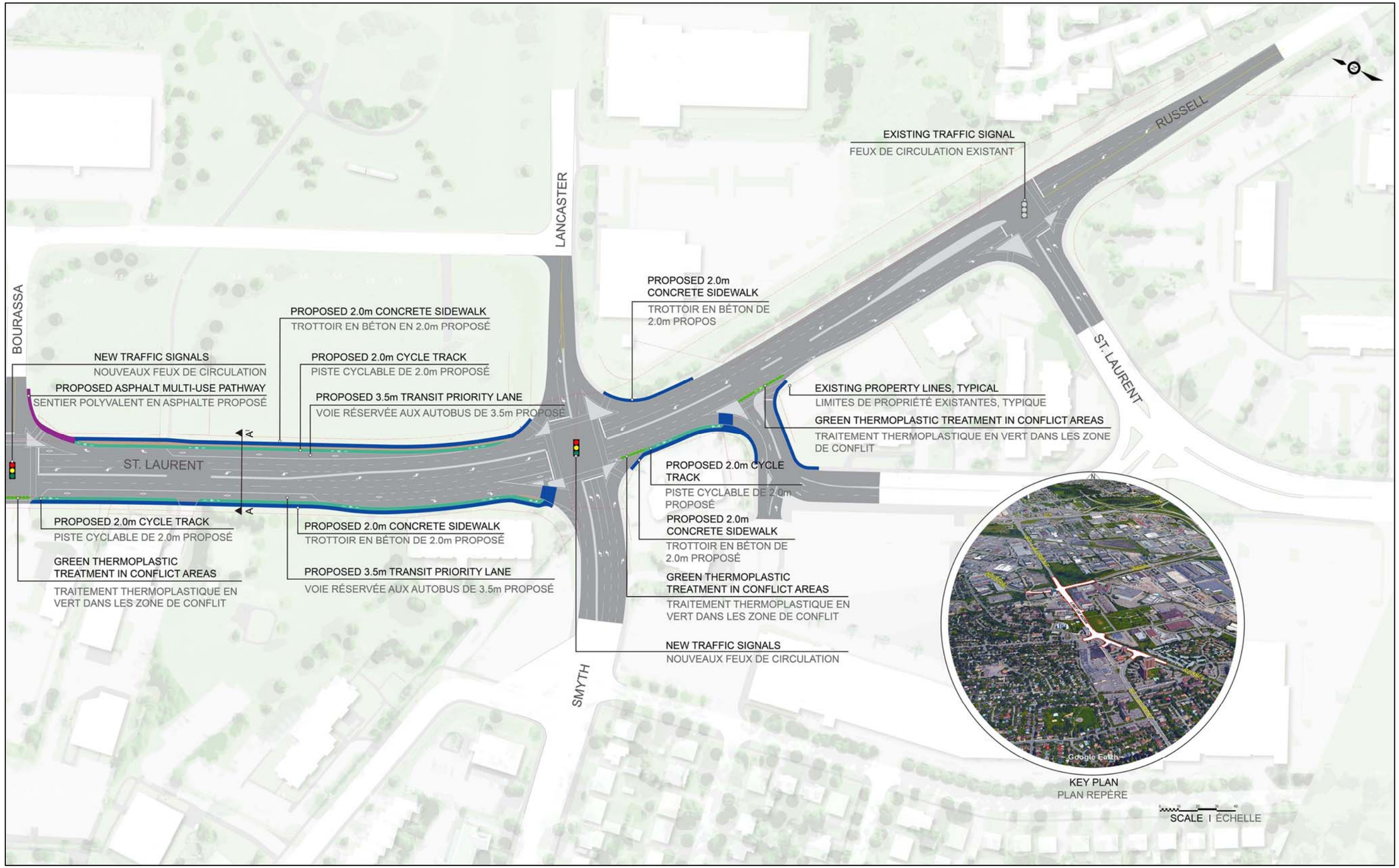

Figure 6-2: Overview of Recommended Plan, Bourassa Street to South of Smyth Road

The Innes Road / Industrial Avenue / St. Laurent Boulevard intersection (Figure 6-3) will be widened to accommodate an additional left turn lane on each approach and improve the capacity of the intersection. Each lane has been designed to accommodate truck movements. The southbound transit-only lane on St. Laurent Boulevard will begin adjacent to the westbound channelized right turn lane, immediately north of the intersection. The northbound transit-only lane will extend through the intersection and merge with general traffic approximately 100 metres to the north.

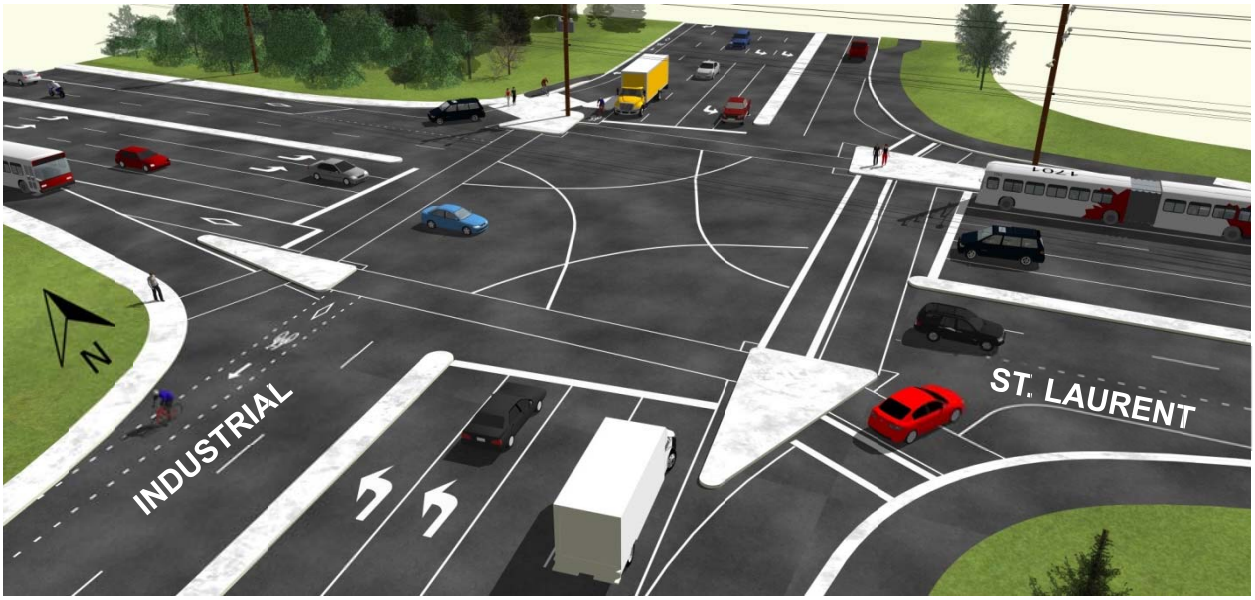

Figure 6-3: Proposed configuration at Innes Road / Industrial Avenue / St. Laurent Boulevard intersection (traffic signals and lighting not shown for clarity)

Traffic islands will be modified from existing and will be designed to comply with Accessibility for Ontarians with Disabilities Act (AODA) guidelines. On the south side of the intersection, minor traffic island modification and painted cross-rides parallel to the pedestrian crosswalk will accommodate a multi-use pathway crossing of St. Laurent Boulevard between the existing pathway along Innes Road and a future pathway extending west along Industrial Avenue. At the eastbound approach, a smart channels and protected bike box (Figure 6-4) will be added to improve the visibility and safety of cyclists proceeding westbound from Innes Road across the channelized right turn lane. Similar cycling treatments will be considered at other intersection approaches during detailed design.

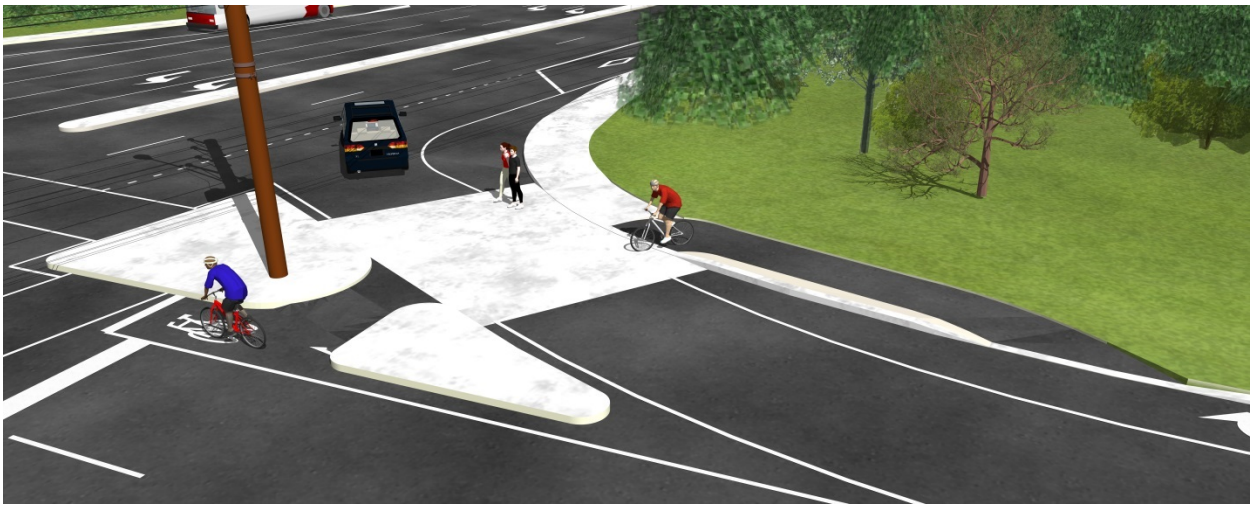

Figure 6-4: Typical proposed smart channel and protected bike box, westbound intersection approach from Innes Road

Between the Innes Road / Industrial Avenue intersection and Smyth Road, existing wide curb lanes and turning lanes will be removed to accommodate an exclusive 3.5-metre bus lane as the rightmost lane in each direction. These lanes will be identified by pavement markings and signage. Next to the bus lanes, a 2.0-metre raised cycle track will be constructed in each direction, and the existing sidewalks will be reconstructed to a width of 2.0 metres. A 1.5-metre concrete median and two 3.5-metre travel lanes in each direction will be maintained along this segment (Figure 6-5).

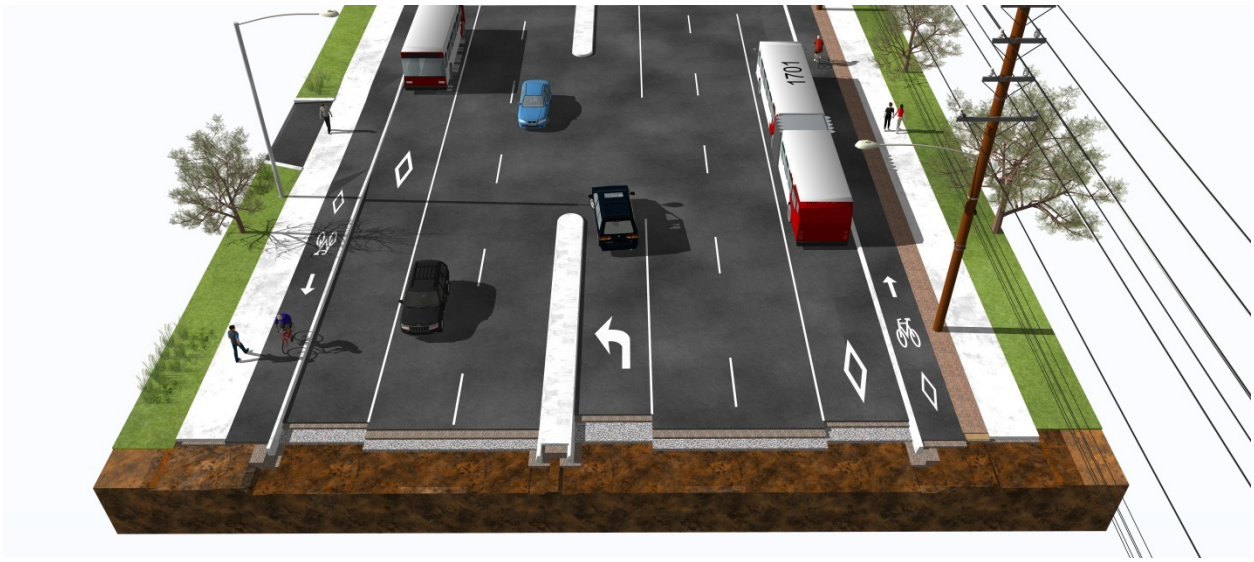

Figure 6-5: Typical cross-section, Innes Road / Industrial Avenue to Smyth

Between the Innes Road / Industrial Avenue intersection and Bourassa Street, the cycle tracks will be buffered from the roadway by the existing hydro poles (Figure 6-6).

Between Bourassa Street and Smyth Road, the existing hydro poles will be located between the cycle track and the sidewalk. At intersections and major business entrances, painted cross-rides will be provided to improve the visibility of the cycle track and its users.

Figure 6-6: Typical configuration, Innes Road / Industrial Avenue to Bourassa Street

Street lighting and traffic signals at the Innes Road / Industrial Avenue, Bourassa Street and Smyth intersections will be fully replaced and updated.

At the entrance to Elmvale Terminal, the existing island will be modified to improve the visibility and function of the existing left-turn lane for general traffic.

Detailed plan / profile drawings of the Recommended Plan are included in **Appendix A**.

6.1 ESTIMATED COST

The total estimated cost of the Recommended Plan is approximately $9 M (2016 dollars). This estimate was developed in accordance with the City's Project Delivery Review process for implementing capital projects, and is subdivided as follows:

- Construction .....$5.7 M
- Engineering, Property, Utilities and Soft Costs .....$1.8 M
- Project Contingency .....$1.5 M

Total: $9.0 M

6.2 IMPACTS AND MITIGATION

Table 6-1 summarizes the potential environmental impacts anticipated as a result of the project and the measures that will be taken to mitigate these impacts. During and after construction, the City will also monitor and verify the effectiveness of all mitigation measures, undertaking additional mitigation as required.

Technical studies and documentation used to determine impacts and mitigation are included in **Appendices C through E.**

Table 6-1: Anticipated Environmental Impacts and Proposed Mitigation Measures

Factor	Impact	Mitigation
Socio-Economic Environment		
Land use and property requirements	The Recommended Plan requires approximately 100 m^2 of private property outside of existing right-of-way, at the southeast corner of Innes Road and St. Laurent Boulevard, up to 3.5 metres past the current property line.	The City should work with the landowner to obtain the required land in accordance with the Planning Act, Official Plan and applicable City policies.
	Some grading and temporary disturbance may impact adjacent properties.	All disturbed property and landscaping should be reinstated after construction is complete.
Utilities	Three (3) Hydro Ottawa maintenance holes underneath the Innes Road / Industrial Avenue / St. Laurent Boulevard intersection conflict with the proposed project.	The three maintenance holes will be relocated as part of the project works.
	Four (4) Rogers Cable maintenance holes / vaults located adjacent to St. Laurent Boulevard within the study area and in conflict with the proposed cycle track and sidewalk.	The maintenance vaults will be relocated towards the outside away from the sidewalk but within the right-of-way.

Factor	Impact	Mitigation
	Potential conflicts with Enbridge and Bell services are also anticipated.	These services will be identified and relocated as required.
Air quality	Future concentrations of airborne pollutants within the study area are expected to fall below MOE's Ambient Air Quality Criteria limits.	No mitigation required.
Noise	Construction activities will result in elevated noise levels. As most construction will take place at night, a Noise By-law exemption will likely be required.	The Contractor should maintain equipment in good operating condition to prevent unnecessary noise and restrict idling of equipment to the minimum necessary to perform the work
	Future operational noise levels associated with the project are not expected to exceed the mitigation thresholds identified in the City's Environmental Noise Control Guidelines.	No mitigation required.
Ground vibration	Future ground vibration levels within the study area are expected to remain below levels at which they may cause annoyance or structural impacts.	No mitigation required.

Factor	Impact	Mitigation
Traffic	Construction activities are anticipated to require limited daytime closures of turn lanes outside peak periods, as well as lane reductions at night.	A traffic management plan should be developed following detail design and implemented during construction to minimize disruptions to the public.
Transit	During construction, OC Transpo bus stops may be temporarily relocated and shelters temporarily removed. Overall transit service disruptions are likely to be minor.	No mitigation required.
Natural Environment		
Terrestrial Ecosystems	Vegetation and landscaping within the right-of-way may require removal to accommodate construction.	Vegetation that does not require removal should be protected from construction activities. Consideration should be given to reinstating any removed trees and shrubs in-kind (1:1 ratio). Exposed soils should be revegetated using a native seed mix appropriate for the site conditions. Environmental inspections should be conducted during construction to ensure that protection measures are implemented, maintained and repaired and that remedial measures are initiated where warranted.

Factor	Impact	Mitigation
	Stockpiled materials, dust, spills and construction waste have the potential to contaminate the surrounding environment if not managed properly.	Construction waste should be removed off-site and managed by the Contractor in accordance with provincial standards. The Contractor should implement procedures to control emissions of dust and other debris. The Contractor should develop a spill response plan and ensure an emergency spill kit is available at the site at all times.
	Migratory birds or other wildlife may be disturbed during construction.	Wildlife incidentally encountered during construction should not knowingly be harmed and should be allowed to move away from the construction area on its own. In the event that wildlife encountered during construction does not move from the construction zone, the Contract Administrator (CA) should be notified. Vegetation clearing or grubbing should occur outside the migratory bird breeding season (April 15 to August 15) to avoid destruction of nests and disturbance of their nesting. If vegetation clearing or grubbing does not occur outside the breeding season, this activity should be preceded by a bird nest survey conducted by a qualified biologist before work begins. If an active nest is identified within or adjacent to the construction site, the Contractor should take appropriate measures to avoid disturbance to the nest and the CA should contact a Kemptville District MNR biologist to discuss mitigation options.

Factor	Impact	Mitigation
	Species at Risk may be disturbed during construction. It is noted that, as the records of rare plants and a SAR (Pale-bellied Frost Lichen) within the study area generally pre-date the development of the area, these species are unlikely to be present.	No species-specific mitigation required. If construction activities are such that continuing construction in that area would result in a contravention of the Endangered Species Act, all activities should stop and the CA should contact the Kemptville District MNR SAR biologist to discuss mitigation options. SAR or potential SAR should not be handled prior to consulting with the MNR SAR biologist, unless the handler has SAR training.
Cultural Environment		
Built heritage	The Recommended Plan is anticipated to have no impacts on recognized or potential cultural heritage resources or landscapes.	No mitigation required.
Archaeological resources	The Recommended Plan is not anticipated to disturb any recognized archaeological resources or areas of archaeological potential.	If archaeological resources are encountered during project work, the Ministry of Tourism, Culture & Sport (MTCS) should be notified and activities impacting archaeological resources should immediately cease until a determination of their nature and significance is carried out. As per the Cemeteries Act, R.S.O. 1990 c. C.4 and the Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 (when proclaimed in force), if human remains are discovered during project work, the Ministry of Tourism, Culture and Sport, the Ottawa Police Service, and the Registrar of Cemeteries at the Ministry of Consumer Services should be notified immediately.

7.0 FUTURE COMMITMENTS

Based on the scope of work and anticipated impacts, the provincial and municipal permits and approvals are expected to be required prior to implementing the Recommended Plan. All mitigation measures outlined in this report, as well as conditions of any permits and approvals, will be monitored during construction.

The timing of project construction is subject to City priorities and funding availability.

7.1 MUNICIPAL

- **City of Ottawa** – Noise By-law exemption, if construction work is required outside of the permissible time periods listed in the City's Noise Control By-law.
- **Utilities** – Approval for utility relocations as required

7.2 PROVINCIAL

- **Ministry of the Environment** – Permit to Take Water as per the Ontario Water Resources Act, if more than 50,000 litres of water must be pumped from project excavations;