STEVENSON ROAD NORTH ENVIRONMENTAL ASSESSMENT
ENVIRONMENTAL STUDY REPORT

Schedule "C" Municipal Class Environmental Assessment
City of Oshawa
April 2025

FIRM PROJECT NO.: 072533

Prepared for:
City of Oshawa

Oshawa
Prepare To Be Amazed

GANNETT FLEMING

Revisions

Revision	Date	Description
Draft	January 10, 2025	Stevenson Rd North ESR Draft
Draft Final	March 3, 2025	Stevenson Rd North ESR Draft Final
Revised Draft Final	March 18, 2025	Stevenson Rd North ESR Revised Draft Final
Final	April 4, 2025	Stevenson Rd North ESR Final

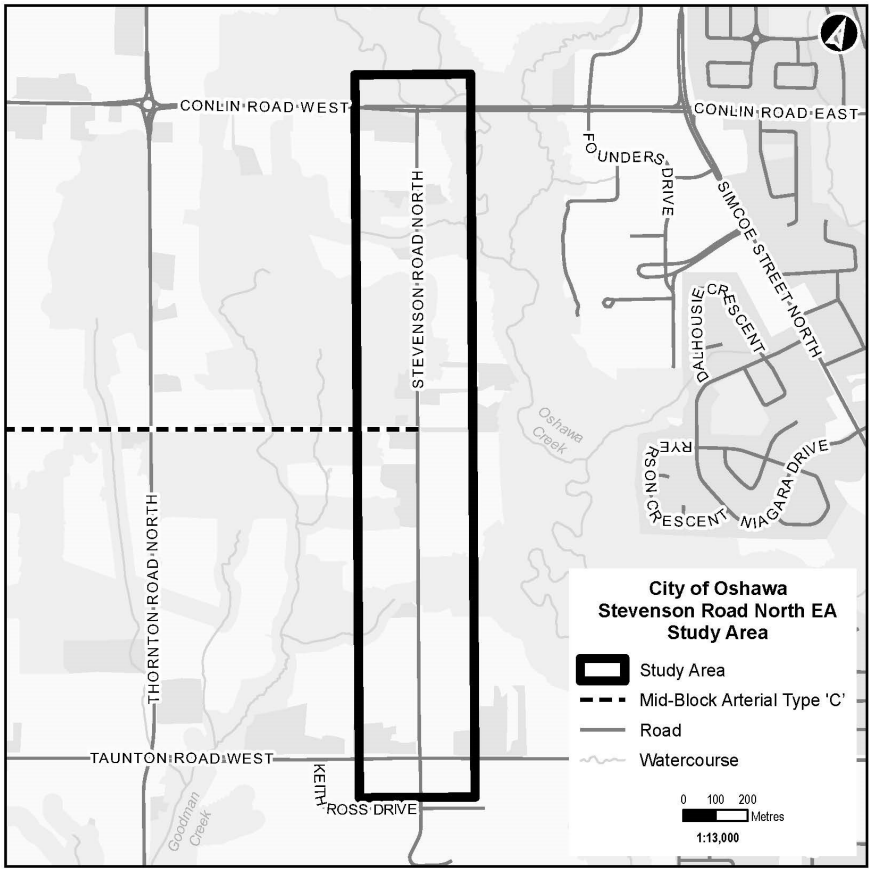
EXECUTIVE SUMMARY

PURPOSE OF THE UNDERTAKING

The City of Oshawa has completed a Schedule 'C' Municipal Class Environmental Assessment (MCEA) Study to determine appropriate upgrades to the Stevenson Road North corridor from Taunton Road West to Conlin Road West to address the identified infrastructure deficiencies, anticipated changes in traffic demand, future needs and projected land use. Based on the assessment of existing conditions, and the environmental impacts and mitigations; an infrastructure and transportation strategy was considered that addresses aging infrastructure, needs for new infrastructure, traffic capacity, pedestrian and bicycle connectivity and road safety, and will significantly improve the overall function of Stevenson Road North.

PROJECT STUDY AREA

The Stevenson Road North Study Area is bounded by Conlin Road West to the north and Taunton Road West to the south and is shown in the figure below. The Study Area is approximately 2 kilometres (km) in length and is located within the Northwood Business Park area.



Stevenson Road North EA Study Area

EXISTING CONDITIONS

As part of this Study, a review of existing conditions data was collected and summarized through a combination of reviewing background information/reports undertaking field investigations, as well as identifying environmental constraints and sensitivities. Investigations have been completed for the following technical specialties:

- Land Use & Socio-Economic Assessment
- Natural Environment Assessment
- Cultural Heritage Assessment
- Archaeological Assessment
- Transportation & Infrastructure Assessment
- Noise Assessment
- Air Quality Assessment
- Soil Contamination
- Geotechnical Investigations
- Utilities

PROBLEM/OPPORTUNITY STATEMENT

Classified by the City of Oshawa's Official Plan as a Type 'C' Arterial, Stevenson Road North is currently a two-lane, rural north-south road, with no paved shoulders or sidewalks, and has existing roadside safety concerns related to road geometry and sightlines. There are no existing municipal services along the Stevenson Road North within the Study Area, and stormwater is managed by existing roadside drainage ditches.

There is an opportunity to significantly improve the overall function of Stevenson Road North by upgrading the roadway infrastructure and municipal services that contribute to the development of adjacent lands and advance economic and job creation opportunities for the City of Oshawa. Improvements to Stevenson Road North are also focused on measures that will improve road safety and support active modes of transportation such as walking and cycling.

TRANSPORTATION REQUIREMENTS

Future transportation conditions were analyzed as part of the Study to assess the transportation needs of the Study Area, taking into account planned developments, anticipated changes in land use, and projected increases in traffic demand. The analysis focused on two future horizon years, 2033 and 2051, and incorporated consultations with the City of Oshawa, the Town of Whitby, and the Region of Durham. The 2033 horizon year was selected based on the 2033 Region-Wide Development Charge Background Study's population and employment forecasts, which formed key inputs for the analysis. Furthermore, the 2051 horizon year was selected to undertake sensitivity analyses to assess the potential closure of the Oshawa Executive Airport in 2041 and the redevelopment of the airport lands with Stevenson Road North extending south from Taunton Road West to Rossland Road West.

For the future 2033 horizon year, the analysis identified that a two-lane configuration for Stevenson Road North between Taunton Road West and Conlin Road West would sufficiently addresses the transportation needs while the Oshawa Executive Airport is operational.

For the future 2051 horizon year, when the Oshawa Executive Airport ceases operations, several assumptions and estimations were made for the redevelopment of the airport lands. It was identified that a four-lane configuration may be warranted for 2051 and beyond, necessitating a Right-of-Way (ROW) widening. Due to the uncertainty surrounding the timing of the closure of the Oshawa Executive Airport, and because assumptions and estimations were made in the transportation needs analysis, along with the limited details available at the time of the Study regarding the redevelopment of the airport's lands, as well as the four-lane configuration not being warranted until 2051 and beyond, this Study focused on the 2033 horizon year and a two-lane configuration for Stevenson Road North.

ALTERNATIVE SOLUTIONS

All viable solutions or planning alternatives that address the Study objectives and identified opportunities (i.e., the problem/opportunity statement) are identified and outlined within this report. This includes the "Do Nothing" alternative, which reflects the status quo, where no changes are made, and traffic conditions proceed as projected. The Alternative Solutions developed in the Study were evaluated against several criteria including their impacts on the natural environment, socio-economic environment, cultural environment, transportation, and cost.

As part of this Study, three (3) Alternative Solutions were developed and assessed based on how effectively they addressed the Problem / Opportunity Statement.

Alternative 1: Do Nothing
This alternative includes the continued use of Stevenson Road North in its existing conditions with no additional infrastructure modifications and/or improvements outside of regular operations and maintenance. This alternative is also set as the 'Base Case' for the evaluation of other alternatives.

Alternative 2: Minor Operational Improvements
This alternative addresses the identified roadway and roadside deficiencies without a full road reconstruction, such as pavement rehabilitation and roadway profile corrections. This alternative also includes improvements to roadside safety, such as paved shoulders and improved clear zones from utility poles.

Alternative 3: Reconstruct and Widen Right-of-Way (ROW)
This alternative encompasses a full road reconstruction, widened ROW, and overall urbanization of the Study Area corridor. An urban revisioning of the corridor would include improved pedestrian areas, added municipal servicing, active transportation infrastructure, and include roadway profile corrections and improved clear zones from utility poles from Alternative 2.

Based on the evaluation of the Alternative Solutions, Alternative 3: Reconstruct and widen Stevenson Road North was selected as the preferred solution as it best addresses the problems and opportunities identified by widening the road right-of-way to improve the condition of the road, enhancing road safety, and providing appropriate space for all modes of transportation, including cars, transit, pedestrians, and cyclists along the Study corridor.

Following consultation with stakeholders, the public, and relevant agencies, the recommended solution for the Study involves a two-phase approach. Phase 1 involves addressing the needs for the interim condition while the Oshawa Executive Airport is still in operation by reconstructing Stevenson Road North to an urbanized two-lane configuration within the existing City ROW of approximately 20.1 meters. Phase 2 involves addressing the needs of the ultimate condition where the Oshawa Executive Airport ceases operation, as well as the possible need for a four-lane configuration and a 30.0-meter ROW (as per the City of Oshawa's standard OS-208A). As this improvement need is not required until 2051 or later, the Study focused on the interim condition by preserving the existing ROW, minimizing additional property acquisition, and reducing impacts on residents. However, in order to accommodate future transportation needs, it is recommended that a four-lane configuration and a 30.0-meter ROW be protected for Stevenson Road North. Any property requirements for widening to a 30.0-meter ROW should be addressed through future development approvals as the Study Area redevelops. The ultimate condition for a four-lane, 30.0-meter ROW configuration was not explored further as part of this Environmental Assessment.

ALTERNATIVE DESIGNS FOR PREFERRED SOLUTION

Following the selection of a recommended Alternative Solution, Design Concepts were developed to examine how the recommended Alternative Solution will be implemented. Three (3) Design Concepts were developed, each featuring a two-lane roadway, full pavement reconstruction, and the addition of municipal services beneath the roadway. The placement of utilities, street lighting, and tree planting will vary in each concept depending on space availability within the right-of-way (ROW), with efforts to minimize the removal and relocation of existing infrastructure.

Design Concept 1: Two-Lane Rural
Design Concept 1 involves a two-lane road with added safety buffers, along with paved shoulders to accommodate pedestrians and cyclists. It includes a complete road reconstruction and repaving, along with deepened drainage ditches for improved water management. Additionally, the design incorporates connections for sanitary sewer and water main systems.

Design Concept 2: Two-Lane Urban (East Multi-Use Path)
Design Concept 2 features a two-lane road with curbs and boulevards, along with a Multi-Use Path (MUP) on the east side for pedestrians and cyclists. It includes a full road reconstruction and repaving, as well as the installation of storm sewers and catch basins for improved drainage. Additionally, the project incorporates connections for sanitary sewer and water main systems.

Design Concept 3: Two-Lane Semi-Urban (West Rural, East Urban)
Design Concept 3 includes a two-lane road with a safety buffer on the west side and a curb and boulevard on the east side. The west side features a paved shoulder, while the east side has a Multi-Use Path (MUP) for pedestrians and cyclists. It involves a complete road reconstruction and repaving, with storm sewers and catch basins on the east side and a deepened drainage ditch on the west side. Additionally, the design incorporates sanitary sewer and water main connections.

Based on the evaluation of the alternative Design Concepts, and the stakeholders, public and agencies input, Design Concept 2: Two-Lane Urban (East MUP) was selected as the recommended Design Concept as it best addresses the Problem/Opportunity Statement with minimized impacts to properties, areas of archaeological potential, areas of cultural heritage significance, and the natural environment.

In comparison to the other two Design Concepts, Design Concept 2 has more opportunities to reduce relocations of existing streetlighting and utility poles, provide areas for Low Impact Development (LIDs), and provide a dedicated active transportation facility.

IMPACTS, MITIGATION MEASURES AND MONITORING

The implementation of the preferred Design Concept may affect the existing environment, with impacts typically occurring during construction or as a result of the design itself. The following table provides a summary of the potential impacts of the proposed works and the mitigation measures designed to reduce or minimize these effects.

Stevenson Road North Potential Impacts, Mitigation and Monitoring

Potential Impacts	Mitigation and Monitoring Measures
Aquatic Habitat and Communities	
▪ Temporary disruption or permanent loss of site-specific habitat; ▪ Temporary changes to water quality; and, ▪ Changes in water temperature	▪ Delineate work areas with construction fencing to minimize the area of disturbance; ▪ Appropriate sediment control structures will be installed prior to and maintained during construction to prevent entry of sediments into the watercourse; ▪ If dewatering measures are to be employed, effluent will be treated prior to discharge to receiving watercourse; ▪ Good housekeeping practices related to materials storage/stockpiling, equipment fueling/ maintenance, etc. Will be implemented during construction; and, ▪ If necessary, disturbed riparian areas will be vegetated and/or covered with an erosion control blanket as quickly as possible to stabilize the banks and minimize the potential for erosion and sedimentation.
Vegetation and Vegetation Communities	
▪ Vegetation clearing to accommodate the proposed improvements to Stevenson Road North	▪ Implementation of Forest Edge Management within Study Area.
Wildlife and Wildlife Habitat	
▪ Impact on wildlife and/or wildlife habitat using the area. ▪ Displacement of SAR habitat is not anticipated.	▪ Disturbance, clearing, or disruption of vegetation where birds may be nesting to be completed outside the window of April 1 to August 31 to avoid the breeding bird season. ▪ Vegetation removals to occur outside of the breeding bird window to minimize disturbance to birds and other wildlife species utilizing habitats within the Study Area. ▪ Construction duration and disturbance in the vicinity of natural habitats within the Study Area should be minimized to the extent possible. ▪ Edge management should be implemented along all natural area edges created by the project to ensure encroachment is minimized.
Land Use and Socio-Economic Environment	
▪ Property requirements ▪ Driveway and access restrictions	▪ No permanent property acquisition is anticipated with the proposed preliminary design. ▪ Review temporary property easements during construction for grading impacts and additional studies and assessments within private properties. ▪ Develop traffic management plans to mitigate disruptions and investigate how traffic, pedestrian access, and private property accesses will be maintained during construction.

Potential Impacts	Mitigation and Monitoring Measures
Cultural Heritage	
▪ Minor property encroachment which may result in minor vegetation removals. ▪ Indirect adverse impacts from construction-related vibration	▪ Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to identified built heritage resources and cultural heritage landscapes. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified B.H.R.s and C.H.L.s, etc. ▪ Ground disturbance including grading, excavation, and vegetation removal should be limited to the extent required to complete the proposed works. ▪ Where removal of mature vegetation is required, post-construction rehabilitation with sympathetic replanting should be considered to mitigate impacts. ▪ Consultation with a qualified arborist and Indigenous communities should be completed to determine the most appropriate species; ▪ Undertake a baseline vibration assessment during detailed design to determine potential vibration impacts.
Archaeology	
▪ Potential for the disturbance of unassessed or documented archaeological resources. ▪ Potential for the recovery of archaeological resources during construction	▪ All work shall be performed in accordance with the recommendations from the Stage 1 AA report and any subsequent AAs as well as applicable guidelines and regulations. ▪ Should the proposed work extend beyond the current Study Area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands. ▪ For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional AA will be conducted by a professionally licensed archaeologist prior to disturbance. ▪ In the event that archaeological resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MCM. A professionally licensed archaeologist will be consulted to complete the assessment. If resources are confirmed to possess cultural heritage value/interest then they will be reported to the MCM, and further AA of the resources may be required. If it is determined that there is a potential for Indigenous artifacts, Metrolinx should be contacted and Applicable Law will be followed.

Potential Impacts	Mitigation and Monitoring Measures
	▪ If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MCM will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act. If the human remains are determined to be of Indigenous origin, Metrolinx should be contacted and all Applicable Law must be adhered to. ▪ All AA findings will be shared with Indigenous Nations that were engaged in the Stage 1 AA.
Geotechnical	
▪ Pavement investigation and recommendation ▪ Construction requirements	▪ Existing and proposed pavement structure to be confirmed during detailed design. ▪ Additional soil and groundwater sampling and chemical analysis should be undertaken during detailed design to gain a better understanding of soil disposal and groundwater dewatering requirements.
Contamination	
▪ Property acquisition within APECs of high to moderate potential for contamination ▪ Generation and management of excess soil	▪ Complete property specific Phase 1 Environmental Site Assessment (ESA) (and Phase 2 if necessary) in general accordance with O. Reg, 153/04. ▪ Prepare an Assessment of Past Uses, Sampling and Analysis Plan (if required) and Soil Characterization Report (if required), where excavation is proposed, in accordance with O. Reg. 406/19: On-Site and Excess Soil Management.

CONSULTATION

Consultation with the stakeholders, public, and agencies having interest in the project is an integral component of the planning process. Technical agencies, stakeholders and Indigenous Communities were identified at the onset of the Study and invited to provide input and/or express concerns relevant to the Study. Key points of contact throughout the project included the following:

Notice of Study Commencement: Announced the start of the project on April 13, 2023, via newspaper ads, emails to stakeholders and Indigenous Communities, and postings on the City's website and social media. It invited feedback on existing conditions and concerns within the Study Area.

Public Information Centre (PIC) #1: Held on June 22, 2023, at Embassy Church, Oshawa. Notifications were sent via email, newspaper ads, the City website, and social media. The event provided project background, identified issues, and gathered community feedback.

Public Information Centre (PIC) #2: Held on June 18, 2024, at Embassy Church, Oshawa. Similar notifications were sent to stakeholders and residents, with the event summarizing information from PIC #1, presenting alternative Design Concepts, and gathering additional feedback.

PRELIMINARY COST ESTIMATE

A preliminary cost estimation for the proposed urbanization, roadway upgrades, and new municipal utilities for Stevenson Road North was prepared based on the preliminary design and is estimated at approximately $45.0 million, inclusive of taxes and contingency.

NEXT STEPS

After the finalization of the Environmental Study Report, the detailed design for this project is expected to begin in 2025, followed by construction.

Based on consultations with stakeholders, agencies, public and Indigenous Communities, future work and commitments include carrying out an Arborist Study, along with Subsurface Utility Engineering (SUE) following ASCE Standard 38-02. A Fluvial Geomorphology assessment will also be required for the culvert replacement. Additionally, there will be ongoing coordination with adjacent projects to ensure seamless integration of designs and effective construction planning.

The project will also require various permits and monitoring throughout detailed design and construction. A Fisheries Act review by the Department of Fisheries and Oceans (DFO) will be needed due to potential culvert changes. Under the Species at Risk Act, no impacts on listed species are expected, though further consultation may be necessary if new species are found. The Endangered Species Act does not affect the project, but additional studies on bats may be required. A permit from CLOCA will be needed for Ontario Regulation 41/24. The Ontario Heritage Act may require consultation and fieldwork if archaeological discoveries are made. Lastly, under the Funeral, Burial and Cremation Services Act, any burial sites found must be reported to the appropriate authorities immediately.

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APPENDICES

1.0 INTRODUCTION

The City of Oshawa has completed a Municipal Class Environmental Assessment Study (EA) Study to determine appropriate upgrades to the Stevenson Road North corridor, designated as Type 'C' arterial road, from Taunton Road West to Conlin Road West. Currently, Stevenson Road North is a two-lane rural north-south road, with no paved shoulders or sidewalks. There is an opportunity to significantly improve the overall function of Stevenson Road North by upgrading the roadway infrastructure and municipal services to contribute to the development of adjacent lands and advance economic and job creation opportunities for the City.

The Study will consider a transportation strategy that will adequately address pedestrian and bicycle connectivity, road safety and traffic capacity, and is being completed in accordance with the Municipal Class Environmental Assessment (2023, updated February 2024) as a Schedule 'C' project.

The project also conducted a separate review for the need for a proposed east-west midblock Type 'C' arterial road (between the Whitby-Oshawa border to Stevenson Road North) or the justification for its removal from the City of Oshawa Official Plan, which will subsequently impact the Region of Durham and Town of Whitby Official Plans. The recommendation determined that the east-west midblock be removed from the City of Oshawa Official Plan due to the following rationale:

Transportation and Traffic: the east-west midblock Type 'C' arterial road modelled in the 2033 and 2051 horizon years contributed to negligible differences in travel times on Taunton Road and Conlin Road, with only travel time savings of 30-40 seconds as primarily an alternative route option.

Natural Environment: the east-west midblock Type 'C' arterial road would not maintain but rather reduce and/or eliminate the diversity, connectivity, and functions of the existing natural features within any horizontal alignment of the midblock arterial. Of note is a Provincially Significant Wetland that houses a Great Blue Heron nesting colony – which would be adversely impacted by the construction of the midblock arterial.

Land Use and Socio-Economic: the east-west midblock Type 'C' Arterial Road is not aligned with the objectives of the Greenbelt Plan or the Official Plan, which may require complex watershed planning, and reduces the developable land available for developers desiring deeper, continuous lots as per existing private property delineations. It is recommended that the City of Oshawa remove the proposed East-West Midblock Type 'C' Arterial Road and instead explore options to provide an active transportation connection between Stevenson Road North and Thornton Road.

As such, the east-west midblock is decoupled from the Stevenson Road North EA and will not be further discussed within the Study. The full review of the east-west midblock can be found as the Midblock Arterial Needs and Justification Assessment Report, appended to the Future Transportation Conditions Report provided in **Appendix A.**

1.1 PROJECT PURPOSE

Stevenson Road North is a north-south two-lane rural corridor with one lane in each direction, without paved shoulders or sidewalks. The Study corridor intersects with Conlin Road West to the north (minor stop controlled) and Taunton Road West to the south (signalized).

This Class EA will assess future needs and justifications based on planned land use, anticipate changes in traffic demand, and potential environmental impacts of geometric improvements, if required. Some of the known

developments that may affect the Stevenson Road North and Conlin Road West intersection are documented in the Thornton Road EA, including Ontario Tech University (OTU) Campus/Durham College, Minto and RioCan Development blocks, and Windfields West Development area.
This Environmental Study Report (ESR) documents the baseline conditions, impact assessment, evaluation processes, decision-making, mitigation efforts and consultation undertaken throughout the Study process.

1.2 STUDY AREA

Located within the City of Oshawa, Stevenson Road North is bounded by Conlin Road West to the north and Taunton Road West to the south. The Study Area shown in **Figure 1** is located within the Northwood Business Park area and is approximately 2 kilometre (km) in length and approximately 150 metres (m) north and south of the intersection limits.

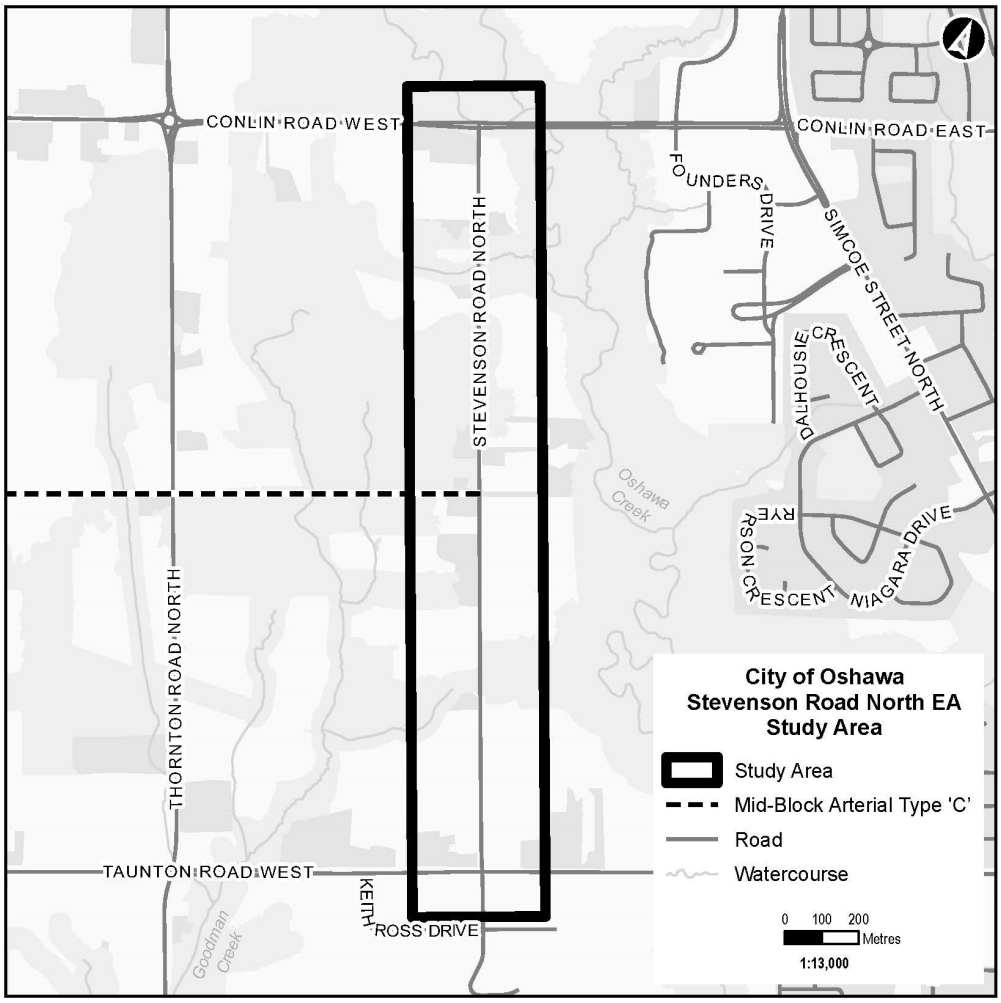


Figure 1: Stevenson Road North EA Study Area

1.3 MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT PROCESS

The Municipal Class Environmental Assessment (EA) Process is an approved decision-making framework in accordance with the Ontario *Environmental Assessment Act (EAA)* which sets out a standardized planning process for various projects.

Since the initiation of the Study, the Ontario Ministry of the Environment, Conservation and Parks (MECP) implemented amendments to the Municipal Class Environmental Assessment (MCEA) in February 2024, to align with the *Environmental Assessment Act (EAA)*. These amendments aim to streamline the environmental assessment process for municipal infrastructure projects, providing greater clarity and efficiency while maintaining environmental protection standards.

This Study is being completed in accordance with the *Municipal Class Environmental Assessment (2023)* as a Schedule 'C' project. Schedule "C" projects involve the completion of Phases 1 to 4 of the EA process. Phase 5 of the EA process - Implementation will be completed during the detailed design and construction administration (under a separate assignment). According to MCEA guideline (2023) being followed, municipal road projects under the Class EA follow a set of Schedules which are intended to assist proponents in understanding the status of projects. The types of projects and activities are classified under Schedules A, A+, B and C based on the magnitude of the anticipated environmental impacts. A brief description of the Schedules is provided below.

Schedule A – Pre-Approved Activities: Schedule A activities are pre-approved. The proponent may proceed without following the procedures set out in the Class EA. Schedule A activities include minor projects with minimal environmental impacts. These projects are typically exempt from detailed environmental assessments. No public consultation or formal assessment process is needed.

Schedule A+ – Pre -Approved Activities: Schedule A+ activities are pre-approved; however, the public must be advised prior to project implementation. These projects are low in environmental impact but require a streamlined process with notification to the public and an opportunity for feedback. Activities include small construction projects with minor upgrades or changes to existing infrastructure like road widening or new signage.

Schedule B – Activities Subject to the Screening Process: Schedule B activities having completed Phases 1 and 2 of the planning process, are Approved Subject to Screening. If the screening process through Phases 1 and 2 results in other requirements of this Class EA being applicable, then those requirements must be fulfilled. Schedule B projects have the potential to have moderate environmental impacts. A more detailed environmental review is required, including public consultation and the assessment of environmental effects.

Schedule C – Activities Subject to the Full Planning Process of the Class EA: Schedule C activities must follow the planning procedure outlined in the Class EA and must complete Phases 1 through 5, outlined in **Figure 2**. Schedule C projects are major project which have the potential for significant environmental impacts and require a full Environmental Assessment (EA) under the *EAA*. The process involves thorough evaluation and public consultation.

Environmental Assessments include a comprehensive planning approach to identify, predict and evaluate the potential environmental effects of a project. The consideration of Alternative Solutions and impacts are evaluated on a set of criteria which include environmental, social, technical and cost.

Public consultation and engagement are key features of environmental assessment and planning projects as input received from the public, various stakeholders, technical agencies, and government authorities contribute to meaningful dialogue and encourage the exchange of ideas. The main goal is to foster a transparent and collaborative consultation process and garner agreement-in-principle, which will aid in minimizing potential project costs and schedule delays and facilitate project approvals in a timely manner.

Key elements and timelines of the Class EA process are illustrated in **Figure 2** and are described below.

Phase 1 (Problem or Opportunity): Identify the problem (deficiency) or opportunity.

Phase 2 (Alternative Solutions): Identify Alternative Solutions to address the problem or opportunity by taking into consideration the existing environment and establish the preferred solution taking into account public and review agency input.

Phase 3 (Alternative Design Concepts for Preferred Solution): Examine alternative methods of implementing the preferred solution, based upon the existing environment, public and review agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects.

Phase 4 (Environmental Study Report): Document, in an Environmental Study Report a summary of the rationale, and the planning, design and consultation process of the project as established through the above phases and make such documentation available for scrutiny by review agencies and the public.

Phase 5 (Implementation): Complete contract drawings and documents and proceed to construction and operation; monitor construction for adherence to environmental provisions and commitments. Where special conditions dictate, also monitor the operation of the completed facilities.

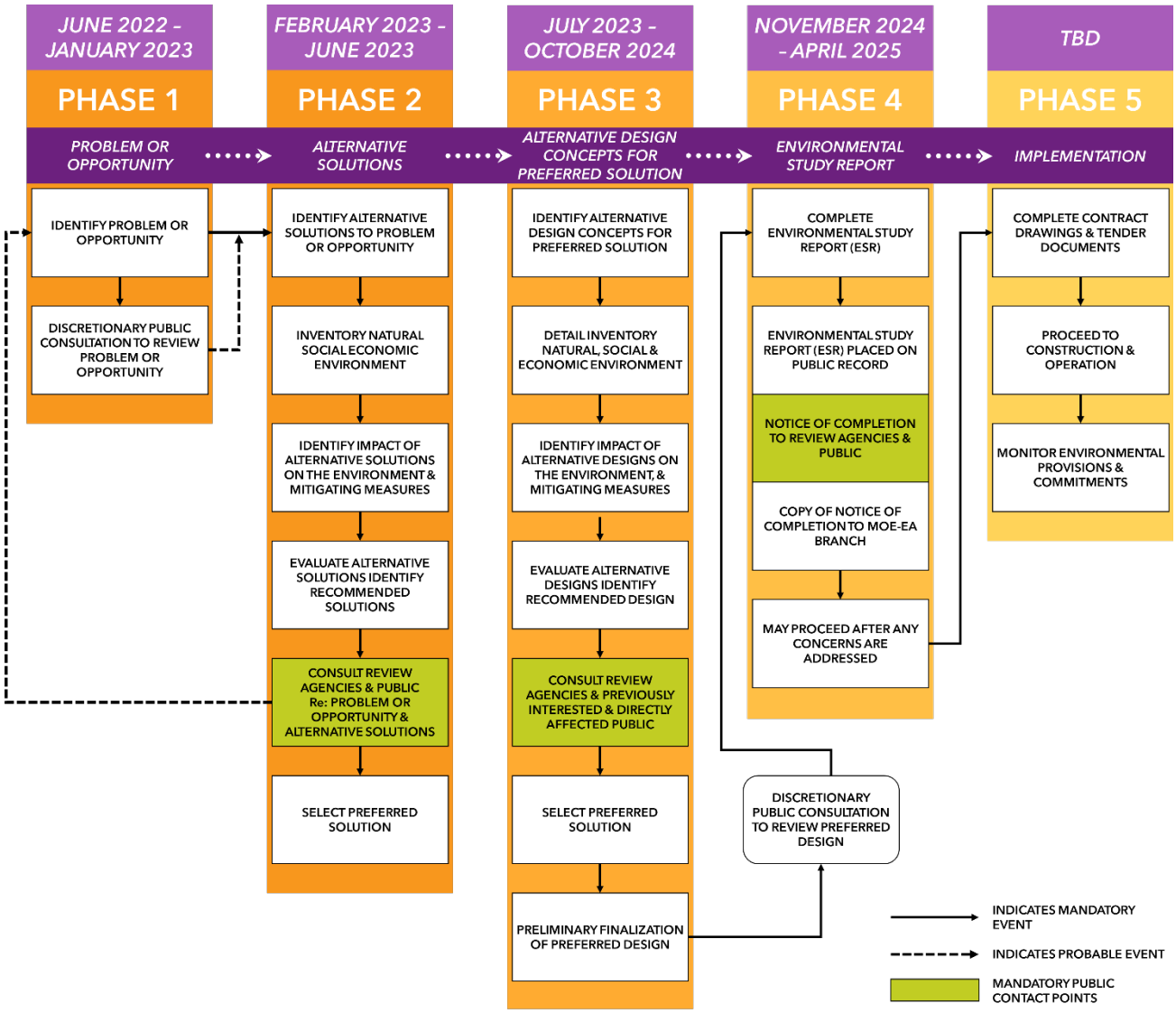


Figure 2: Municipal Class Environmental Assessment Planning Process

1.4 THE IMPACT ASSESSMENT ACT

The *Impact Assessment Act (2019)* replaces the previous *Canadian Environmental Assessment Act, 2012 ("CEAA 2012")* and outlines a process to assess the impacts of major projects and projects carried out on federal lands or outside of Canada. Under the IAA, the Canadian Environmental Assessment Agency is continued as the Impact Assessment Agency (IAA) of Canada and is responsible for conducting impact assessments under the *Impact Assessment Act*.

Designated Projects subject to the Act are described in the Physical Activities Regulations (Project List) and include major projects within the following sectors; renewable energy, oil and gas, linear and transportation related, marine and freshwater, mining, nuclear, hazardous waste, federal lands and protected areas.

The Stevenson Road North Road EA does not constitute a "Designated Project" and therefore does not require federal environmental assessment under the IAA.

1.5 ENVIRONMENTAL STUDY REPORT

This Environmental Study Report (ESR) has been prepared to document the Class EA process per the requirements of a 'Schedule C' project. It provides problem & opportunity to be addressed, the existing conditions of the Study Area, development of Alternative Solutions, evaluation of alternative Design Concepts for the preferred solution, potential impacts of the Design Concepts, mitigation measures, monitoring, future work requirements and commitments.

This ESR is being made available for public review beginning on April 30, 2025, and for a period of 30 calendar days and ending on May 30, 2025. A Notice of Completion identifying the start date of the public review period has been issued on the City's website at Oshawa.ca/StevensonEA, on social media platforms, at Oshawa City Hall, and sent to local residents, stakeholders, technical agencies, Indigenous Communities and others interested in the project per the project mailing list included within **Appendix P**.

During the review period, copies of the ESR are available for review at the following locations:

Project website link: Oshawa.ca/StevensonEA
Service Oshawa at Oshawa City Hall – 50 Centre Street South, Oshawa, ON L1H 3Z7

1.6 SECTION 16 ORDER REQUESTS

Section 16 Order Requests, previously known as Part II Order Requests, are requests that can be made by members of the public, technical agencies, stakeholders to elevate a project's status to a higher level of review per Section 16 of the Ontario Environmental Assessment Act (EAA).

Reasons for issuing such a request include:

- Outstanding concerns that a project going through a Class EA process may have a potential adverse impact on constitutionally protected Aboriginal and treaty rights.
- Belief that an Order may prevent, mitigate or remedy this impact.

The proponent of the project must then submit an application for approval of the project before proceeding as well as meeting further conditions than those laid out in the Class EA. These additional conditions could include conditions for further Study, monitoring or consultation.

A Section 16 Order Request should not be made to delay or stop the planning and implementation of a project, and concerns should be attempted to be resolved directly with the project proponent through the Class EA process.

If an Order is made, the project proponent cannot proceed with the project until a decision is made on the request by the minister and the project may only proceed if the conditions in the Order are followed.

Requests should be sent to the Minister of Environment, Conservation and Parks and the Director of Environmental Assessment Branch. You can submit your request by mail, email, fax or hand deliver it to:

Minister
Ministry of the Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
Minister.mecp@ontario.ca

Director
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto ON M4V 1P5
EABDirector@ontario.ca

Any request made, should also be submitted to the project contacts at the time of submitting an Order request to the Ministry. For additional information on Section 16 Order Requests, please visit the website at the following address: https://www.ontario.ca/page/class-environmental-assessments-section-16-order

1.7 PROJECT TEAM

The core project team members include City of Oshawa Engineering and Planning Services and Gannett Fleming Canada ULC staff.

The sub-consultant team includes the following:

- ASI (Archaeological and Cultural Heritage Assessments)
- Englobe Corp (Geotechnical Investigations)
- LGL Limited (Natural Environment)
- TraffMobility Engineering Inc. (Traffic / Transportation)
- U Tech Engineers Inc. (Streetlighting)
- SLR Consulting Canada Limited (Air Quality Assessment)
- J.E. Coulter Associates Limited (Noise Impact Assessment)
- Callon Dietz Incorporated (Topographic Survey / SUE)

2.0 PROJECT NEED AND JUSTIFICATION

The following section provides a glimpse into how the Stevenson Road North EA fits into the broader planning context from a provincial, regional, and municipal perspective. It also describes the existing infrastructure deficiencies, transportation requirements, and problem/opportunity statement.

2.1 PLANNING CONTEXT

Environmental assessments support better decision making by considering how a project's design could be optimized to minimize or avoid negative impacts to the environment. The project is examined at different scales and through the lens of established provincial, municipal and regional planning contexts and frameworks, which were considered for the improvements of Stevenson Road North.

2.1.1 Provincial Planning Policies

Provincial planning policies were reviewed to identify their relevance to the Stevenson Road North EA. Provincial Plans are summarized in **Table 1**.

Table 1: Summary of Provincial Policy Plans

Provincial Planning Document	Description
Provincial Policy Statement (2024)	The Provincial Policy Statement (PPS) provides overall policy direction on land use planning and development matters of provincial interest. The PPS contributes to the appropriate development of lands while protecting resources of provincial interest, public health and safety, and the natural and built environment. Policy themes include transportation systems which are safe, efficient, facilitate the movement of people and goods and address projected needs. Applicable policies outlined in of PPS that apply to the improvements to Stevenson Road North include: 1. Building Homes, Sustaining Strong and Competitive Communities 2. Infrastructure and Facilities 3. Wise Use and Management of Resources 4. Protecting Public Health and Safety The PPS was issued under Section 3 of the *Planning Act* and came into effect October 20, 2024. It replaces the PPS that came into effect on May 1, 2020.
Provincial Policy Statement (2020)	The Provincial Policy Statement (PPS) is issued under Section 3 of the *Planning Act* and provides overall policy direction on land use planning and development matters of provincial interest. The PPS contributes to the appropriate development of lands while protecting resources of provincial interest, public health and safety, and the natural and built environment. Policy themes include transportation systems which are safe, efficient, facilitate the movement of people and goods and address projected needs. Applicable policies outlined in Part V of PPS that apply to the improvements to Stevenson Road North include: 1. Building Strong Healthy Communities 2. Wise Use and Management of Resources 3. Protecting Public Health and Safety
A Place to Grow: Growth Plan for the	The Greater Golden Horseshoe (GGH) was established in 2006 under the *Places to Grow Act* and was updated in 2020. It is one of the fastest-growing regions in North

Provincial Planning Document	Description
Greater Golden Horseshoe (2020)	America due to its economic opportunities and high quality of life and is the economic engine of Ontario. The GGH is made up of many significant ecological and hydrologic natural environments including the Oak Ridges Moraine, the Niagara Escarpment and the Greenbelt. A Place to Grow identifies a long-term plan for growth and development which builds upon the PPS 2020 and establishes the land use planning framework to support the achievement of complete communities, a thriving economy, a clean and healthy environment and social equity. The Plan outlines the planning strategy for Urban Growth Centres, where downtown Oshawa is identified as an Urban Growth Centre to achieve a minimum density target of 200 residents and jobs combined per hectare by 2031 or earlier.
Connecting the GGH: A Transportation Plan for the Greater Golden Horseshoe (2022)	The GGH Transportation Master Plan was developed by the MTO to set out a long-term vision to 2051 which will address a variety of transportation issues including gridlock, improved transit connectivity, movement of goods, safe and inclusive transportation systems, electric and automated vehicle technologies and connecting communities beyond the GGH. The GGH Transportation Plan will align with, and build upon, other provincial initiatives including the PPS, the Growth Plan, and the Greenbelt Plan. The 2051 network includes a new concept for an east-west higher order transit connection across the top of Toronto that would connect existing and planned GO Rail, LRTs, and subways between Burlington and Oshawa.
Greenbelt Plan (2017)	The Greenbelt Plan was established in 2005 under the *Greenbelt Act*, and most recently updated in 2017. The Greenbelt Plan area is comprised of several plan areas including the Niagara Escarpment Plan area, Oak Ridges Moraine Conservation Plan area, Parkway Belt West Plan area, and the Greenbelt Plan 'Protected Countryside' and 'Urban River Valley'. Together with these plans, the Greenbelt Plan builds upon the PPS (2020) to provide a land use planning framework for the environmental and agricultural systems within the GGH. Its purpose is to identify where urbanization should and should not occur in order to provide permanent protection for agricultural lands and important ecological features. It also provides policies on the circumstances under which infrastructure can be expanded or built within the Greenbelt. The Study Area crosses the Greenbelt Plan 'Urban River Valley' designation at the intersection of Stevenson Road North and Conlin Road West.

2.1.2 Regional Planning Policies

Regional planning policies were reviewed to identify their relevance to the Stevenson Road North EA. Provincial Plans are summarized in **Table 2**.

Table 2: Summary of Regional Policy Plans

Regional Planning Document	Description
Durham Region Official Plan (2023)	In 2019, Durham Region launched a Municipal Comprehensive Review of the Official Plan, called Envision Durham. Envision Durham, the new Durham Regional Official Plan (ROP) was adopted by Durham Region Council on May 17th, 2023, and provides guidance for growth and development in The Regional Municipality of Durham, with population and employment forecasts to the year 2051. The review focused on the following topics: • How and where cities and towns may grow. • How to use and protect land and resources. • What housing types and job opportunities are needed for residents. • How people and goods will move across the region and beyond. The Study Area is located within the 'Employment Areas' designation, and within the Northwood Business Park boundary. Policy 8C.2.9 within the Durham ROP states that *"In the development of Employment Areas, provisions shall be made for transit and active transportation, and the development of transit-supportive, compact built form."* The Durham Region OP designates Stevenson Road as a Type 'C' Arterial road. Type 'C' Arterial roads as defined in the ROP carry the movement of lower volumes of traffic, have an operating speed of 50km/h, and a ROW width of 26-30m. Envision Durham ROP was approved by the province in part, with modifications, on September 3, 2024, and remaining parts (pertaining to Northeast Pickering) were subsequently approved on December 13, 2024. Further, as of January 1, 2025, Bill 23 (More Homes Built Faster Act) took effect for the Region of Durham, thereby removing planning approval responsibilities from it as an upper-tier municipality. As such, the Regional Official Plan becomes the official plan for the City of Oshawa in addition to its own Official Plan, until the City completes its own Official Plan Review to conform to the Envision Durham ROP as well as the new Provincial Planning Statement (2024).
Durham Transportation Master Plan (2017)	The Durham Transportation Plan (TMP) outlines the policies, programs and infrastructure modifications required to manage transportation demands to 2031 and beyond, while supporting development designated in the ROP. The Durham TMP proposed changes to the ROP, Schedule 'C' (Road Network) recommends the deletion of future Type B arterial realignment to Thornton Road and adding an existing Type C arterial designation to apply to the existing Stevenson Road. This recommendation is aligned with Oshawa OPA 159 (Northwood Employment Area) and is required without the planned realignment of Stevenson Road to connect to Thornton Road through the Oshawa Executive Airport.

Regional Planning Document	Description
Durham Regional Cycling Plan (2021)	The Durham Region Cycling Plan guides the planning, design, and implementation for connected, safe, and accessible cycling network accommodating people of all ages and abilities. The Regional Cycling Plan Vision identifies the following goals: • Support strategic directions at the regional level • Integrate new cycling trends and lessons learned • Establish support for coordination between upper and lower tier • Align with accepted design guidelines and standards • Establish public buy-in to determine local priorities and needs The transportation strategy being considered for this Study will adequately address pedestrian and cycling connectivity among other factors such as road safety and traffic capacity.

2.1.3 Municipal Planning Policies

Municipal planning policies were reviewed to identify their relevance to the Stevenson Road North EA. Provincial Plans are summarized in **Table 3**.

Table 3: Summary of Municipal Policy Plans

Municipal Planning Document	Description
City of Oshawa Official Plan (2022)	The City of Oshawa Official Plan (OP) was approved by City Council on June 17, 1985, and adopted by Durham Regional Council on November 20, 1985. It was most recently updated in 2022 and sets out to establish a set of policies and guidelines for the development and re-development of the City of Oshawa. Within the City of Oshawa OP, Stevenson Road is designated as a future Type 'C' Arterial, to carry lower traffic volumes with a typical ROW width of 26 to 30 m. Currently, Stevenson Road North, from Taunton Road West to Conlin Road West, is a two-lane rural north-south road with an existing R.O.W. width of 20.1 m (66 ft.) and a posted speed limit of 50 km/hr.
City of Oshawa Integrated Transportation Master Plan (2015)	The 2015 Council approved City of Oshawa Integrated Transportation Master Plan (ITMP) guides the transportation-related decision making within the City of Oshawa and is based on achieving a balanced, sustainable, and multi-modal transportation system. The ITMP recommends that road and active transportation improvements are coordinated in such a way that active transportation facilities can be constructed in conjunction with road work improvements. Stevenson Road North corridor from Taunton Road West to Conlin Road West is identified as needing to be upgraded from a rural road to an urban road by 2024 and presents an opportunity to integrate a complete streets approach into its design.

Municipal Planning Document	Description
City of Oshawa Active Transportation Master Plan (2015)	The 2015 City of Oshawa Active Transportation Master Plan (ATMP) guides the planning for the improvement and expansion of Oshawa's active transportation network. The main goals of the plan are to: 1. Meet community needs for active transportation facilities; 2. Provide convenient access to and connectivity within the active transportation network; 3. Develop an active transportation system that offers a high degree of comfort and safety; 4. Adopt a phased approach to implementation; 5. Promote active transportation; and 6. Integrate on- and off-road active transportation facilities. The 2015 Plan is currently being reviewed and updated by the City, and relevant initiatives identified in the update will be coordinated as part of this Study.
Northwood Business Park (NBP)	The Study Area is located within the Northwood Business Park's policy boundary (Taunton Rd. W. to the south, the Oshawa-Whitby boundary to the west, Highway 407 East to the north and the Oshawa Creek to the east). Identified in the Official Plan as one of two Business Parks in the City of Oshawa; the other being Colonel Sam Business Park, NBP's area is comprised of approximately 202 hectares (501 acres) of industrially designated land and 136 hectares (336 acres) of land designated Open Space and Recreation. The Oshawa Industrial Land Inventory Monitoring Report (2014) identified that most of the properties in the NBP are currently being used for residential and/or agricultural uses as an interim use or are vacant. Since 2014, the City of Oshawa has taken initiatives to promote and make improvements to the NBP to facilitate development including: NBP Master Stormwater Management Plan (2016), Improvements to Conlin Road West (2016), and Municipal Class EA for road improvements to Thornton Road North (2016).

2.2 EXISTING INFRASTRUCTURE DEFICIENCIES

Several site visits to Stevenson Road North within the Study Area were conducted to visually assess existing conditions and to identify any infrastructure deficiencies with the vehicular operations and with roadway and roadside safety. Site visits were conducted between 2021 and 2024.

The existing roadway pavement was observed to be in poor condition, with several cracks and uneven surfaces along the Study Area. A site visit conducted after rainfall observed several areas of ponding and shallow potholes. Existing roadway shoulders were unpaved in some areas, and largely not delineated with separation from the roadway with pavement markings and were not uniform in width along the Study Area. Existing utility poles on both west and east sides of the road were observed to be very close to the roadway, with WA-33 'Object Marker' signs placed, warning drivers of hazardous roadside utility pole locations. Approaching the watercourse crossing at the north end of the Study Area, a roadway sightline issue with the existing vertical road geometry was observed, where drivers may not be able to perceive opposing vehicles sufficiently especially in low-visibility weather conditions.

2.3 TRANSPORTATION REQUIREMENTS

A Future Transportation Conditions Report was prepared to assess the future transportation needs of the Stevenson Road North Study Area corridor based on planned developments and anticipated changes in land use and traffic demand. Transportation needs for two future horizon years; 2033 and 2051, were assessed through consultation with the City of Oshawa, Town of Whitby, and Region of Durham. The 2033 horizon year was selected based on the 2033 Region-Wide Development Charge Background Study's population and employment forecasts, which formed key inputs for the 2033 horizon year analysis. Additionally, the 2051 horizon year was selected to assess the potential closure of the Oshawa Executive Airport in 2041 and the redevelopment of the airport's lands with Stevenson Road extending south from Taunton Road West to Rossland Road in a four-lane configuration.

For the future 2033 horizon year, the analysis of projected growths and forecasted traffic volumes identified that a two-lane configuration for Stevenson Road North between Taunton Road West and Conlin Road West sufficiently addresses transportation needs for 2033.

For the future 2051 horizon year, several assumptions and estimations were made on the redevelopment of the airport's lands to determine the transportation needs for 2051. It was identified that a four-lane configuration may be warranted for 2051 and beyond, requiring a Right-of-Way (ROW) widening. Since assumptions and estimations were made in the transportation needs analysis due to limited details (at the time of the Study) on the redevelopment of the airport's lands, as well as four-lane configuration not warranted until 2051 and beyond, the Study focused on the future 2033 horizon year and a two-lane configuration.
See **Section 5.0**– Alternative Design Concepts for the Preferred Solution, for additional details.

The complete Future Transportation Conditions Report is provided in **Appendix A**.

2.4 PROBLEM/OPPORTUNITY STATEMENT

Stevenson Road North is currently a two-lane, rural north-south road, with no paved shoulders or sidewalks, and has existing roadside safety concerns related to road geometry and sightlines. There are no existing municipal services, and stormwater is managed by existing roadside drainage ditches.

There is an opportunity to significantly improve the overall function of Stevenson Road North by upgrading the roadway infrastructure and municipal services that contribute to the development of adjacent lands and advance economic and job creation opportunities for the City of Oshawa. Improvements to Stevenson Road North will focus on measures that will improve road safety and support active modes of transportation such as walking and cycling.

3.0 EXISTING CONDITIONS

The following sections summarize the findings of supporting studies undertaken to identify the existing conditions within the Study Area. These studies include natural environment, land use and socio-economic environment, cultural environment (including archaeological and cultural heritage assessments), geotechnical investigation, transportation, air quality, noise, soil contamination, utilities, pavement structure, and property requirements for Stevenson Road North.

3.1 LAND USE & SOCIO-ECONOMIC ENVIRONMENT

The City of Oshawa is Durham Region's largest urban municipality and is an eastern gateway to the Greater Toronto Area (GTA). Oshawa's population in 2021 was 175,383 –a 10% increase since 2016 – and is expected to reach ~197,000 by 2031. The average age of the population is 40. Within the Study Area, the population density is less than 350 people per square km, partially due to the land uses within the area, further described within Existing Land Use section below.

The Study corridor is located within the Northwood Business Park's (NPB) policy boundary, which is comprised of approximately 202 hectares of developable employment land and is further described in **Section 3.1.2**. Recent infrastructure improvements within the NPB are anticipated to increase future development within the area.

The Oshawa Executive Airport is located south of the Study Area. Per Oshawa's Official Plan, the airport shall remain operational until at least 2033. Currently, there is no policy direction on the future land use for the airport land after planned closure; however, City land use estimates by treating the airport land as a greenfield development are 5,157 people and 1,289 jobs.

3.1.1 Existing Land Use

The Study corridor is located within the Northwood Business Park and the existing land uses that have access along Stevenson Road North are a mix of agricultural, residential, industrial, commercial and vacant properties. The Oshawa Executive Airport is located south of the Study Area. Land use designations and land use types within the Study Area are shown in **Figure 3** and are described in **Table 4** below.

Table 4: Land Use Designations

Land Use Designation	Description
Residential	Characterized by low-density residential buildings consisting of single detached homes.
Commercial	Lands used for commercial activities, such as buying, selling or trading goods or services.
Park, Open Space & Recreation	Public or private lands containing recreational or cultural facilities. Uses may include parks, sports fields, golf courses, cemeteries, open space corridors, and other recreational spaces.
Farm / Agricultural	Lands used for the production of growing and harvesting crops or raising livestock.
Institution, Community & Government	Lands used by schools, hospitals, government offices or places of worship.
Industrial	Lands used for manufacturing, production, fabrication or assembly processes.

Land Use Designation	Description
Utility, Transportation & Communication	Lands / corridors used for the movement of people and goods, water supply, electric power, gas, communications, and sanitary.
Vacant	Undeveloped land that is not currently in use.

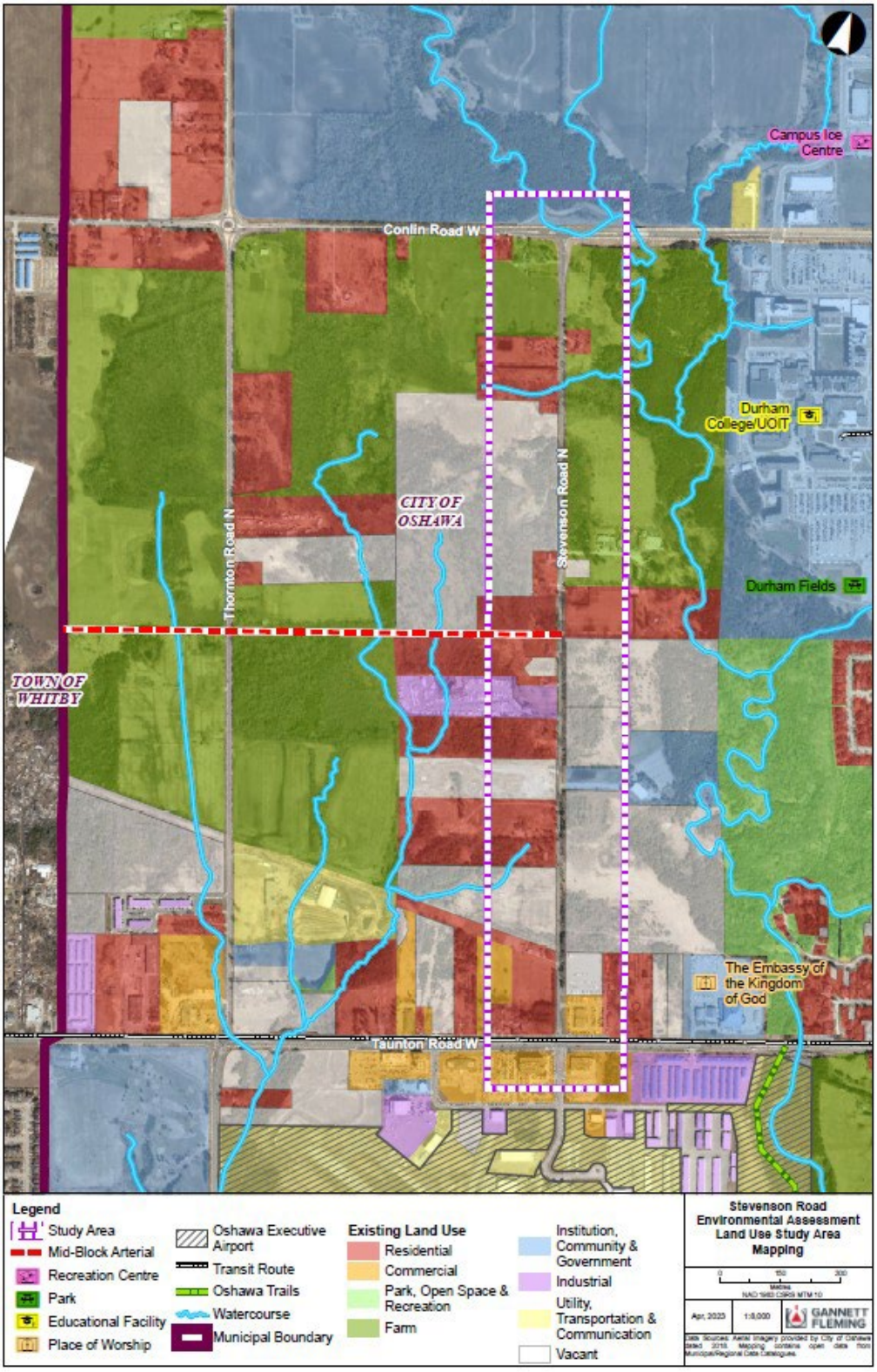


Figure 3 : Existing Land Use Along Stevenson Road North

Recreational Amenities

There is one (1) trail and four (4) parks located in the vicinity of Stevenson Road North. The following table includes recreational amenities that are located within 1 km of Stevenson Road North.

Table 5: Recreational Amenities Within 1 km of Stevenson Road North

Type	Name	Address	Description	Approximate Distance from Stevenson Road North
Trail	Oshawa Creek Trail	N/A	The Oshawa Creek Trail is situated in between the Oshawa Executive Airport and Oshawa Creek. The trail starts from Taunton Road West and runs approximately 1.4 km south to Glencairn Street.	~ 500 m
Park	Durham Fields	50 Founders Drive	Durham Fields is a joint facility with Durham College.	~ 600 m
Park	Russett Park	1290 Somerville Street	Russett Park provides active and passive recreational activities including playgrounds and sports fields and gazebos.	~ 1 km
Park	Niagara Park	360 Niagara Drive	Niagara Park provides recreational opportunities for people of all ages to enjoy. The park includes a playground, a basketball court, and a sports field.	~ 1 km
Park	Conlin Woods Park	1975 Walreg Drive	Conlin Woods Park is a neighbourhood park located between Walreg Drive and Samac Trail featuring a tennis facility.	~ 1 km

Sensitive Facilities

There are no hospitals, child-care centres or emergency medical services located within the vicinity of Stevenson Road North. The following table includes sensitive facilities located within 1 km of Stevenson Road North.

Table 6: Sensitive Facilities Within 1 km of Stevenson Road North

Type	Name	Address	Approximate Distance from Stevenson Road North
School	Durham College	2000 Simcoe Street North	~ 800 m
School	Ontario Tech University	2000 Simcoe Street North	~ 800 m
Place of Worship	Embassy Church	416 Taunton Road West	~ 400 m
Place of Worship	Ummah Foundation of Durham	1423 Thornton Road North	~ 700 m

Type	Name	Address	Approximate Distance from Stevenson Road North
Place of Worship	Guru Nanak Sewa Community Centre	1410 Stevenson Road North	Within Study Area
Animal Hospital	VCA Canada Oshawa Animal Hospital	670 Taunton Road West	~ 370 m
Immunization Clinic	Provax Travel and Immunization Clinic	604 Taunton Road West	~ 165 m
Dental Centre	The Airport Dental Centre	1290 Keith Ross Court	~ 350 m
Community Centre	The General W. Sikorski Banquet Hall & Oshawa Senior Community Centre	1551 Stevenson Road North	Within Study Area
Community Centre	Guru Nanak Seva Community Centre (permanently closed)	1410 Stevenson Road North	Within Study Area
Commercial Business	Linfraron Storage for RVs, Trailers, and Boats	1642 Stevenson Road North	Within Study Area
Commercial Business	Durham Kia	550 Taunton Road West	Within Study Area

3.1.2 Planned Land Use

Northwood Business Park

The Northwood Business Park (NBP) is bounded by Taunton Road West to the south, the Oshawa-Whitby boundary to the west, Highway 407 East to the north and the Oshawa Creek to the east (**Figure 4**). The area of Northwood Business Park is comprised of approximately 202 hectares (501 acres) of developable industrially designated land and 136 hectares (336 acres) of land designated Open Space and Recreation. Recent and planned infrastructure improvements associated with the surrounding road network and utilities are anticipated to increase the interest for future development within the NBP policy boundary.

A summary of developments within the NBP that have been recently completed, approved or are under City review is provided in the **Table 7** and the location of the developments are shown in **Figure 5**.

Figure 4: Northwood Business Park Boundary and Project Study Area

Table 7: Summary of Developments Within the Northwood Business Park

Address	Type of Development	Description	Status of Development
1565 Thornton Road North	Industrial	Panattoni Development Company: 499,665 Sq. Ft. Class 'A' industrial building. The building features 40' clear ceilings, ample shipping with 104 truck level and 8 drive-in doors, plus 104 trailer parking spots.	Under construction
1600 Thornton Road North	Industrial	A new Environmental Compliance Approval for stormwater management works serving Broccolini Thornton GP Inc., located at 1600 Thornton Road North in the City of Oshawa, Ontario. Development includes a new 377,321 sq. ft. industrial building.	Under construction
1707 Thornton Road North	Mixed-use	Industrial and Offices.	Completed
1423 Thornton Road North	Institutional	Ummah Foundation of Durham. Mosque to replace existing mosque portables.	Proposed (site plan application)

Address	Type of Development	Description	Status of Development
2400 Thornton Road North	Transportation	DRT is planning for the design and build of a new flagship facility at 2400 Thornton Road North in Oshawa. This facility will support a full fleet of zero emissions vehicles, while aiming for high energy standards that will allow it to be a net-zero energy building. The facility will store and maintain up to 200 buses and is expected to be completed and commissioned in 2026.	Proposed (pre-consultation)
1645 Stevenson Road North	Industrial	209,303 sq. ft. industrial building.	Proposed (pre-consultation)
1707 Stevenson Road North	Industrial	Industrial building.	Proposed (pre-consultation)
600 Conlin Road West	Industrial	164,000 sq. ft. industrial building.	Under construction
650 Taunton Road West	Industrial	Address: 620-650 Taunton Rd W, Oshawa, Ontario, L1H 7K4. Vaultra Storage Taunton: a proposed 4 building self-storage and industrial condominium development by Fieldgate Commercial and Bosco Properties on the north side of Taunton Road West, west of Stevenson Road North and east of Goodman Creek in Oshawa's Northglen — Northwood area.	Proposed (site plan application)
NE corner of Thornton and Britannia	Institutional	City's Northwood Community Centre.	Proposed (site plan application)
1410 Stevenson Road North	Institutional	Guru Nanak Sewa Community Centre - Gurudwara Sahib. Cultural/religious center to replace existing cultural/religious center in a house.	Proposed (site plan application)
481 Taunton Road West (not in NBP)	Mixed-use	Offices, restaurants, second and third floor exclusive full floor tenant suites with floor to ceiling windows providing ample natural light. Tru by Hilton, 97-unit hotel under construction on site.	Under construction
2072 Thornton Road North	Industrial	New offices and storage yard for Oshawa Power.	Proposed (pre-consultation)

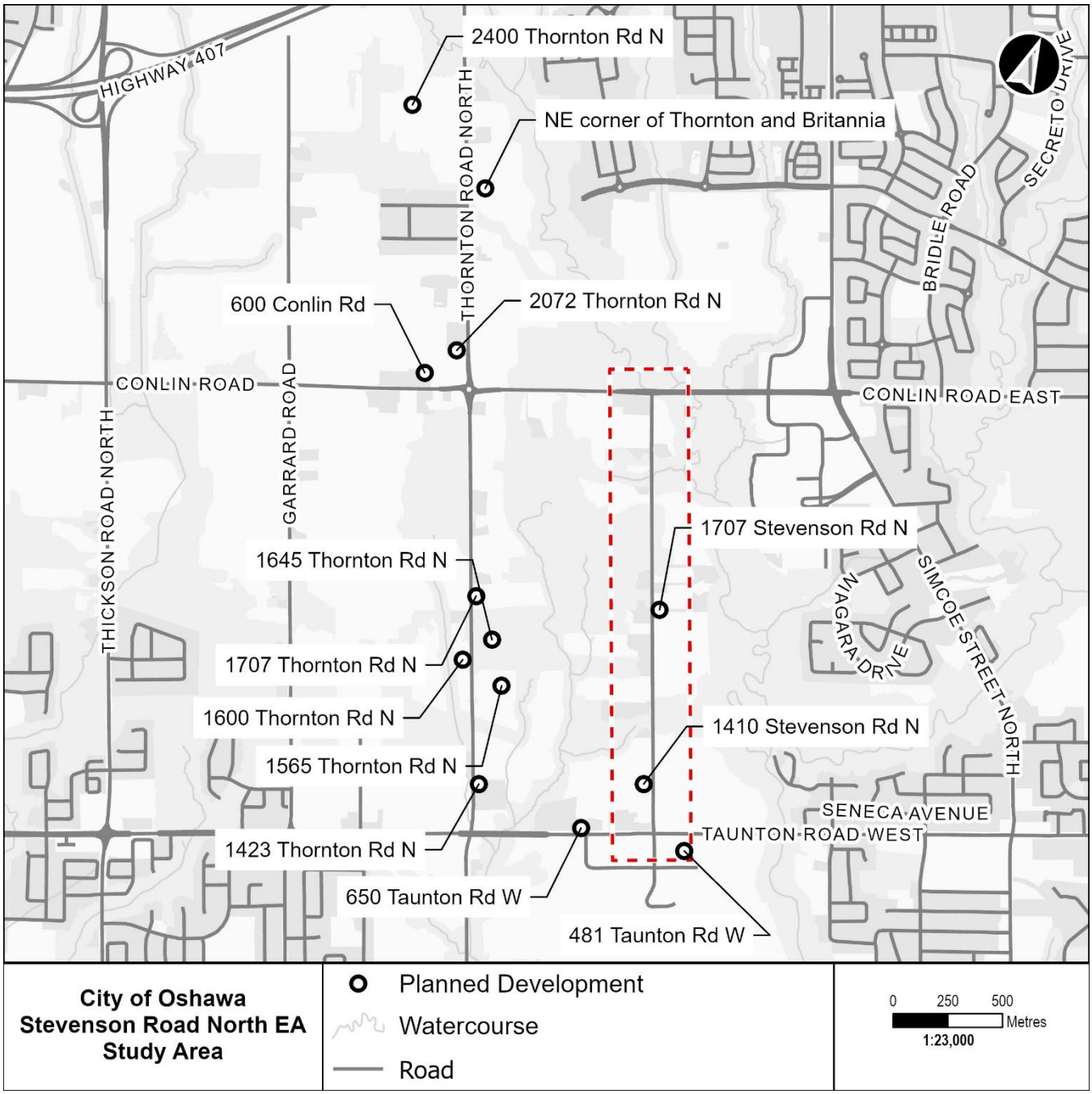


Figure 5: Developments Within the Northwood Business Park

3.2 NATURAL ENVIRONMENT

A natural environment assessment was completed to document the existing natural heritage conditions within the Study Area based on a secondary source review as well as field investigations completed during the 2022 and 2023 field seasons. The site visits were conducted to survey the existing conditions pertaining to fish and fish habitat, general wildlife, breeding birds, breeding amphibians, and vegetation communities within the Study Area and to document constraints to the proposed road improvements. The following sections outline the existing environmental conditions within the Study Area and identify natural heritage areas and/or features of environmental sensitivity and/or significance.

The complete Natural Heritage Impact Assessment and Mitigation Report is provided in **Appendix B.**

3.2.1 Aquatic Ecosystems Existing Conditions

Field investigations were undertaken on July 11, 2022, along Stevenson Road North. The watercourses were investigated mainly from within the right-of-way (ROW) as they traversed through private property.

3.2.1.1 Watercourses

There are two (2) watercourses that spans across the Study Area. Fish sampling was not conducted at either watercourse as they are indirect fish habitats due to lack of water flows and defined channel.

3.2.1.2 Aquatic Species at Risk (SAR)

The project limits have been screened for potential aquatic SAR, based on MNRF's Natural Heritage Information Centre (NHIC) records and DFO aquatic species at risk mapping data, there are no aquatic SAR within the Study Area.

3.2.2 Terrestrial Existing Conditions

The Study Area primarily consists of a mixture of cultural vegetation communities and vegetation communities that have been disturbed as a result of land uses. Evidence of disturbance indicates a high proportion of non-native plant species are well adapted to areas with regular anthropogenic disturbances. Land uses also vary from rural residential to mature forest to provincially significant wetland. A mixed forest community was identified on the west side of Stevenson Road and generally provided moderate quality habitat. In addition, narrow deciduous swamp communities were identified adjacent to the watercourse within the Study Area, and natural vegetation cover is prevalent adjacent to the Stevenson Road North right-of-way providing fairly contiguous habitats for wildlife despite the presence of relatively large, developed properties with manicured yards and some agriculture.

Field investigations were conducted in July 2022, to gather primary source information and confirm existing information on Species at Risk, vegetation communities (including designated natural areas), and evidence of wildlife. During field investigations wildlife observations and notes were recorded.

3.2.2.1 Flora

Eighty-four (84) plant species have been recorded within the Study Area. Two (2) plant species were only identified by genus. Forty-one (41) plant species identified are native to Ontario and another forty-one (41) plant species are non-native to Ontario.

3.2.2.2 Fauna

Based on field observations, forty-six (46) species of wildlife [thee (3) amphibian, one (1) reptile, thirty-six (36) birds, and six (6) mammals] could be verified in the Study Area. The majority of these recordings came from identification (through calls and sightings) of bird species with more modest numbers of other fauna identified.

3.2.2.3 Terrestrial Species at Risk (SAR)

No plant species that are regulated under the *Ontario Endangered Species Act* or the *Canada Species at Risk Act* (SARA) were found during the investigation within the Study Area. A review of the NHIC indicates there is one (1) record of Red Mulberry (*Morus rubra*) within the Study Area. Red mulberry is Endangered under the ESA; however, Red Mulberry were not identified during the field investigation.

No wildlife SAR under the Endangered Species Act or the SARA were identified during field investigations. A review of the NHIC database was undertaken to determine if SAR have been previously recorded in the general Study Area. Several species at risk records were found on the database (see **Table 8**).

Table 8: Previously Recorded SAR Data

SAR	Status	Details	Observed
Eastern Wood Pewee *(Contopus virens)*	Special Concern	The Eastern Wood Pewee is listed on the Species at Risk in Ontario (SARO) List as 'Special Concern'; however, this species is not regulated and consequently does not receive habitat protection under the ESA. Eastern Wood Pewee is a forest species, typically associated with forest openings, clearing or edges.	Two (2) Eastern Wood Pewee were identified in wooded habitats along Stevenson Road North during the breeding bird surveys.
Wood Thrush *(Hylocichla mustelina)*	Special Concern (Provincial), Threatened (Federal)	Wood Thrush prefers mature deciduous and mixed woodlands.	No Wood Thrush were observed during breeding bird surveys.
Barn Swallow *(Hirundo rustica)*	Special Concern	Barn Swallows use open habitats including grasslands, fields, right-of-ways, shorelines and wetlands for foraging. They nest almost exclusively on human-made structures.	No barn swallows or nests were observed within the project limits.
Eastern Meadowlark *(Sturnella magna)*	Threatened	A grassland bird.	No Eastern Meadowlark or grassland habitats were observed within the project limits.
Bobolink *(Dolichonyx oryzivorus)*	Threatened	A grassland bird.	No Bobolink or grassland habitats were observed within the project limits.

SAR	Status	Details	Observed
Midland Painted Turtle *(Chrysemys picta marginata)*	Special Concern (COSEWIC)	This species is not listed as a species at risk under the Ontario's Endangered Species Act or Canada's SARA. However, it is considered Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).	A single road killed individual was observed in the northern part of the Stevenson Road North corridor. It was likely a female searching for a place to nest, but this cannot be confirmed.
Snapping Turtle *(Chelydra serpentina)*	Special Concern	The Snapping Turtle is an aquatic species that needs water to carry out its life history processes.	It was not observed within the Study Area during field investigations and there is not habitat within or adjacent to the Stevenson Road North right-of-way.
Little Brown Myotis *(Myotis lucifugus)*	Endangered	Little Brown Myotis' was once a very common bat species in Ontario but has been impacted by a novel fungal disease. It is frequently found roosting in the attics of human-made buildings, including those which are currently occupied. Any of the houses in the area could be suitable, although they will likely not be directly impacted by the project. This species will also roost in cavities in mature trees.	There are mature trees with cavities and snags associated with the natural areas adjacent to the right-of-way of Stevenson Road North that could potentially provide habitat for this species.
Tri-colored Bat (Perimyotis subflavus)	Endangered	Tri-colored Bat uses leaf clumps, squirrel nests or other similar structures in trees.	There are mature trees with cavities and snags associated with the natural areas adjacent to the right-of-way of Stevenson Road North that could potentially provide habitat for this species.
Northern Myotis (Myotis septentrionalis	Endangered	This species roosts in tree cavities and exfoliating bark of trees, typically within closed forest.	There are mature trees with cavities and snags associated with the natural areas adjacent to the right-of-way of Stevenson Road North that could potentially provide habitat for this species.

3.2.3 Designated Natural Areas

There are no Areas of Natural and Scientific Interest (ANSI) within and up to 120 m beyond the Study Area.

One (1) Provincially Significant Wetland (PSW) has been identified near the Study Area. A portion of the Whitby-Oshawa Iroquois Beach PSW is adjacent to the Stevenson Road North ROW. The wetland located adjacent to the Stevenson Road ROW is part of a larger PSW that extends beyond the Study Area.

A portion of the lands adjacent to the Stevenson Roads North ROW is part of the City of Oshawa Natural heritage System and Natural heritage/Hydrologic Features Outside of the Natural Heritage System identified in the City of Oshawa Official Plan (1985).

The Greenbelt Plan area includes several plan areas such as the Niagara Escarpment Plan area, Oak Ridges Moraine Conservation Plan area, Parkway Belt West Plan area, and the Greenbelt Plan 'Protected Countryside' and 'Urban River Valley'. The Study Area crosses the Greenbelt Plan 'Urban River Valley' at the intersection of Stevenson Road North and Conlin Road West.

3.3 CULTURAL HERITAGE

A Cultural Heritage Assessment was conducted to identify potential built heritage resources (B.H.R.s) and cultural heritage landscapes (C.H.L.s) within a fifty (50) m buffer of the project footprint. The Cultural Heritage Assessment identifies existing conditions, provides preliminary impact assessment and proposes mitigation measures. Background research and existing heritage inventories were reviewed and the City of Oshawa, the MCM, and the Ontario Heritage Trust were contacted to gather information on known and potential built heritage and cultural heritage resources. A field review was undertaken in November 2022 to document the existing conditions of the Study Area from existing right-of-way (ROW).

Six (6) properties of potential cultural heritage value or interest were identified within the Study Area **Figure 6** and are summarized in **Table 9** below. These include five (5) properties identified on mapOshawa as Heritage – 70 plus years (B.H.R. 1, B.H.R. 2, C.H.L. 1, C.H.L. 2, and C.H.L. 4) and one (1) property was identified during background research and field review (C.H.L. 3). The identified B.H.R.s and C.H.L.s are historically and contextually associated with land use patterns in the City of Oshawa.

The complete Cultural Heritage Existing Conditions and Preliminary Impact Assessment Report is provided in **Appendix C.**

Figure 6: Built Heritage Resources (B.H.R.s) and Cultural Heritage Landscapes (C.H.L.s) within Study Area

Table 9: Inventory of Potential Built Heritage Resources and Cultural Heritage Landscapes within the Study Area

Feature I.D.	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential C.H.V.I.	Photographs/ Digital Image
B.H.R. 1	Residence	580 Taunton Road West	Potential B.H.R. — Identified on mapOshawa as Heritage —70 plus years	The residence is located on the north side of Taunton Road West to the west of Stevenson Road North. The potential heritage attributes include the single-storey bungalow with a hipped roof. The house has an L-shaped footprint and a porch along the western portion of the front façade (southern elevation). The Study Area is overlaid on the 1930 topographic map of Oshawa. Refer to **Appendix C** for additional details.	 Plate 13: View to 580 Taunton Road West (A.S.I., 2022)
B.H.R. 2	Residence	1520 Stevenson Road North	Potential B.H.R. — Identified on mapOshawa as Heritage —70 plus years	The residence is located on the west side of Stevenson Road North and is well set back from the road right-of-way. The potential heritage attributes include the two-storey residence. The house features a rectangular footprint with a rear addition. The residence was obscured from the right-of-way by vegetation. The Study Area is overlaid on the 1930 topographic map of Oshawa. Refer to **Appendix C** for additional details.	 Plate 14: View to 1520 Stevenson Road North (A.S.I., 2022).

Feature I.D.	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential C.H.V.I.	Photographs/ Digital Image
C.H.L. 1	Rural Residential	1680 Stevenson Road North	Potential C.H.L. — Identified on mapOshawa as Heritage — 70 plus years	The property is located on the west side of Stevenson Road North, roughly equidistant between Taunton Road West and Conlin Road West. The potential heritage attributes include the one-and-a-half storey residence with dormer windows along the north and south elevation. The house features a square footprint with a northern single-storey addition. The property features a long driveway, garage, and large, wooded areas. The Study Area is overlaid on the 1954 aerial photograph of Southern Ontario. Refer to **Appendix C** for additional details.	 Plate 15: View to 1680 Stevenson Road North (A.S.I., 2022).
C.H.L. 2	Rural Residential	1725 Stevenson Road North	Potential C.H.L.— Identified on mapOshawa as Heritage —70 plus years	The property is located on the east side of Stevenson Road North to the south of Conlin Road West. The potential heritage attributes include the one-and-a-half storey residence with an L-shaped footprint. The property also features a second residence that dates to the late-twentieth century, long driveway to the residences, and large outbuildings. The Study Area is overlaid on the 1954 aerial photograph of Southern Ontario. Refer to **Appendix C** for additional details.	 Plate 16: View to 1725 Stevenson Road North (A.S.I., 2022).

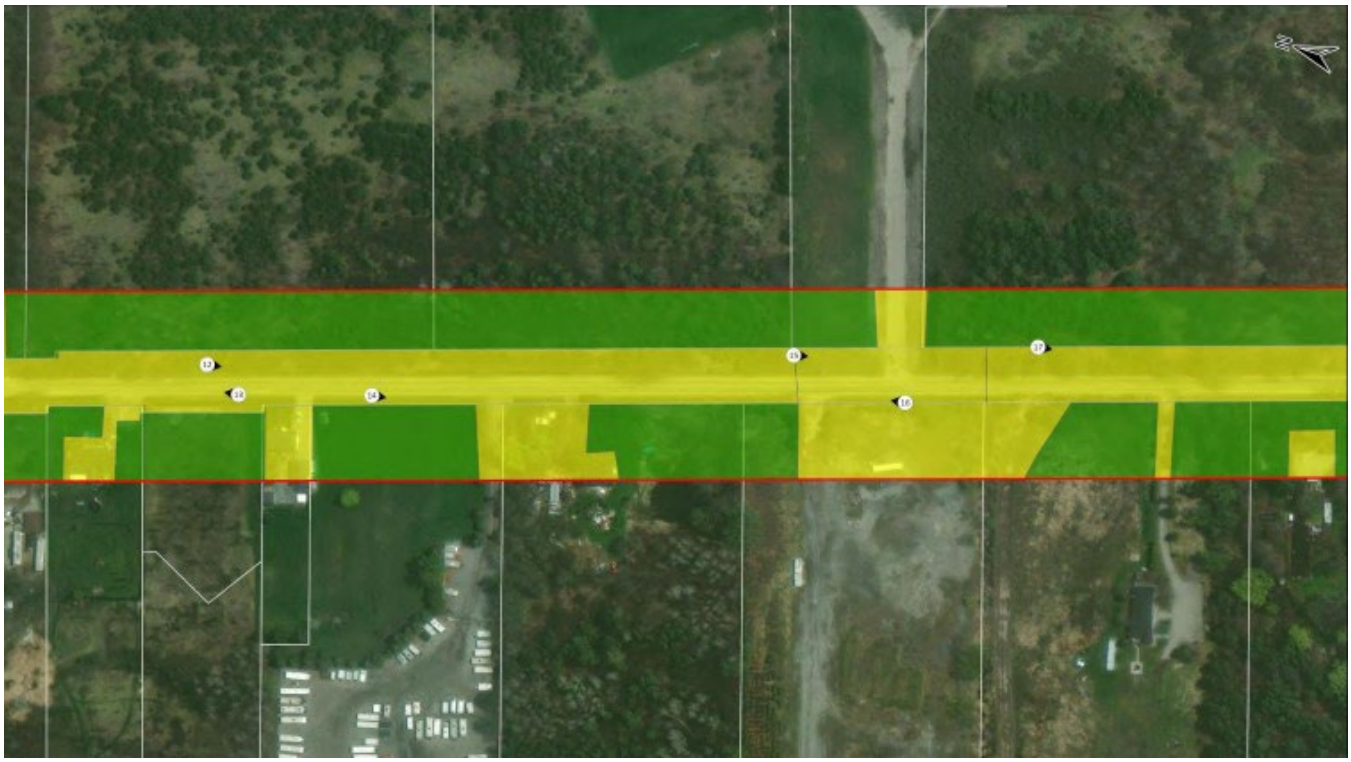
Feature I.D.	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential C.H.V.I.	Photographs/ Digital Image
C.H.L. 3	Farmscape	2000 Stevenson Road North	Potential C.H.L. — Identified during background research and field review	The farmscape is located at the southwest corner of the intersection of Stevenson Road North and Conlin Road West. The potential heritage attributes include the one-and-a-half storey residence with a rectangular footprint, gable roof, and single- storey addition. The property features a driveway, outbuildings, agricultural fields, and mature trees. The property also features a late-twentieth century residence at 309 Conlin Road West. The Study Area is overlaid on the 1930 topographic map of Oshawa. Refer to **Appendix C** for additional details.	 Plate 17: View to 2000 Stevenson Road North (A.S.I., 2022).
C.H.L. 4	University Campus	50 Conlin Road West	Potential C.H.L. — Identified on mapOshawa as Heritage —70 plus years	The property is located on the north side of Conlin Road West. The property is currently part of the Durham College campus with campus buildings, recreational facilities, and parking lots all in the eastern portion of the property. The property also features agricultural fields and wooded areas following the East Oshawa Creek in the western portion. The Study Area is overlaid on the 1976 topographic map of Oshawa. Refer to **Appendix C** for additional details.	 Plate 18: View to 50 Conlin Road West (A.S.I., 2022).

3.4 ARCHAEOLOGY

A Stage 1 Archeological Assessment was conducted in October 2022 to evaluate current conditions and archaeological potential of the Study Area. A portion of the Study Area has been previously assessed for archaeological potential and will not require further archaeological assessment. Additionally, Ontario Archaeological Sites Database records indicated that four (4) previously registered archaeological sites are located within one (1) km of the Study Area.

Investigations determined that parts of the Study Area exhibit archaeological potential and will require a Stage 2 Archaeological Assessment prior to any construction activities or other proposed impacts, as shown in **Figure 7**. In accordance with the *Standards and Guidelines for Consultant Archaeologists* (S & G), pedestrian survey is required in actively or recently cultivated fields, and a test pit survey is required on terrain where ploughing is not viable. Test pit and pedestrian survey will occur at five (5) m intervals, where appropriate. It was determined that the Stage 2 archaeological assessment will be completed during the detail design phase.

The complete Stage 1 Archaeological Assessment is provided in **Appendix D**.



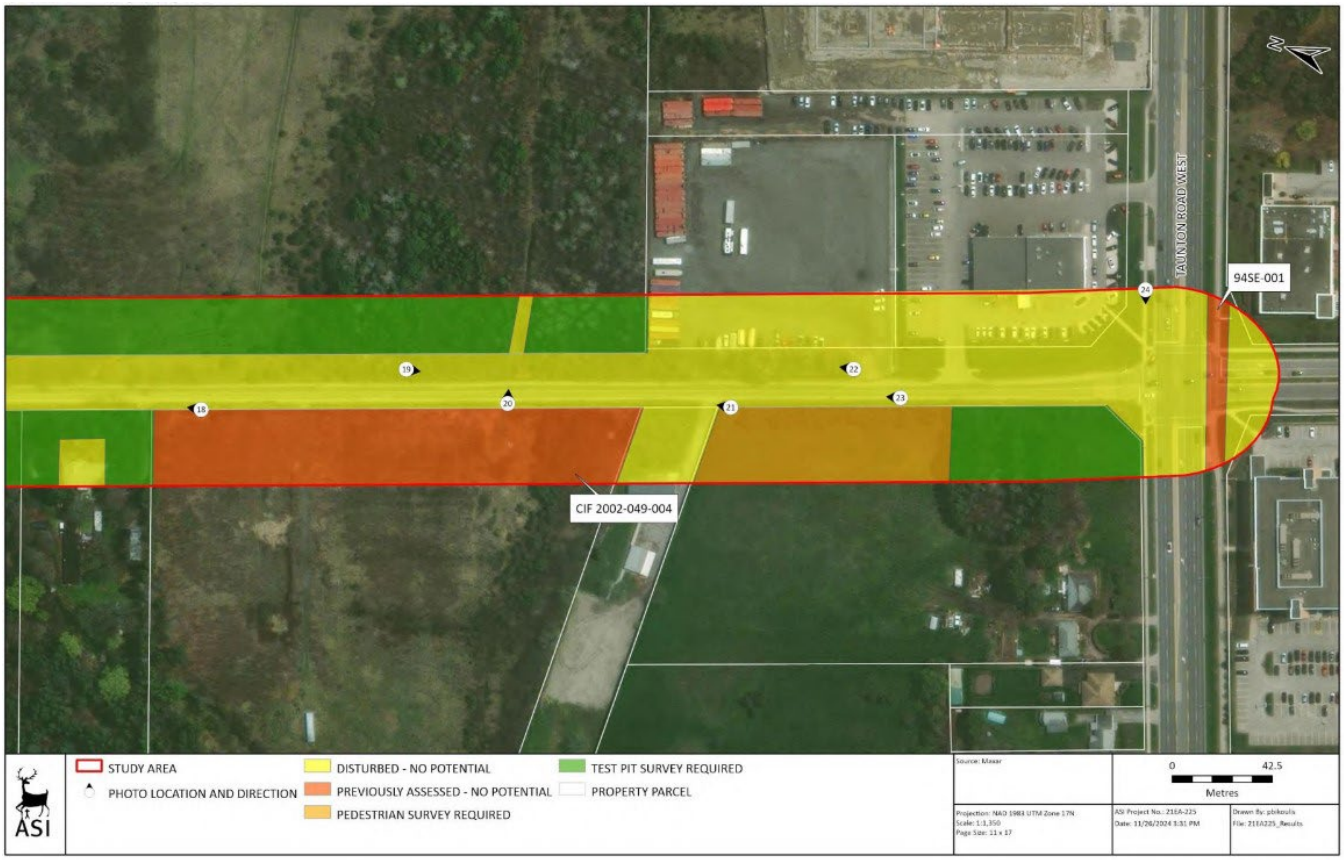


Figure 7: Stage 1 Archaeological Assessment

3.5 GEOTECHNICAL

A geotechnical investigation was conducted to determine the subsurface conditions of the Study Area at specified borehole locations, and to make recommendations for the design and construction of Stevenson Road North. Ground elevation of the site varies from 141.6 m to 150.4 m above Sea Level, from south to north. The dominant subgrade soils under the pavement structure within the project limits were observed to consist of fill (clayey silt, sandy silt, silty sand and gravelly sand) followed by native deposit of clayey silt/clayey silt and/or sandy silt/silty sand.

Twenty (20) boreholes were drilled to depths varying from 4.0 to 4.4 m below ground surface. The boreholes were completed between October 24, 2022, to October 26, 2022, using continuous flight solid stem auger drilling equipment. Ten (10) asphalt concrete cores were obtained to determine the asphalt concrete thicknesses. Subsoil samples were recovered from the boreholes at depth intervals of 0.76 m using a 50 mm O.D. split-barrel sampler driven into the subsoil in accordance with the Standard Penetration Test procedure (ASTM D1586). The recovered subsoil samples were visually examined in the field and then preserved and transported to laboratory for examination and testing. Groundwater observations were carried out in the open boreholes upon completion of the field work. The asphalt concrete was cored at ten (10) borehole locations to determine the asphalt concrete thicknesses and monitoring wells were installed in five (5) boreholes for long term groundwater monitoring.

The results of the Geotechnical Investigation Report determined that no groundwater problem was anticipated for the construction of the road. The complete Geotechnical Investigation Report and associated results are provided in **Appendix E**.

3.6 TRANSPORTATION

A site visit was conducted on October 12, 2022, from 10am to 12:30pm to assess road geometry, signage, delineation, pavement conditions, and illumination. Key site observations and potential mitigation measures are summarized below.

Pavement markings along the corridor were in poor condition, with cracks observed at multiple locations. These issues can be addressed through the City's regular road maintenance program, including crack sealing and resurfacing. The signage within the Study Area were generally found to be in good condition, appropriate and clearly visible to road users, with the following exceptions:

- A speed sign 180 meters north of Taunton Road for northbound traffic was partially obscured by vegetation according to Google Streetview (July 2022). No visibility issues were observed during the site visit, but vegetation control, such as trimming overgrown branches, could improve visibility, particularly in the summer.

- The visibility of the street name sign at the Stevenson and Conlin Road intersection may be insufficient due to the size of the intersection. Installing an Off-Road Low-Speed Roadway Identification sign on Conlin Road could help provide better guidance ahead of the intersection.

A high-level sightline review along Stevenson Road and its intersections with driveways found no impediments for road users. A crest vertical curve was observed 500 meters south of Conlin Road, but the sightlines at existing driveway accesses appeared adequate. Future driveway accesses along the corridor should be reviewed to ensure the required sight distances are met. For a design speed of 70 km/h, a minimum stopping sight distance of 105 meters should be provided on crest vertical curves, as per the TAC guidelines.

An existing conditions transportation assessment was carried out to assess traffic operations and safety of the Study corridor, and to identify any operational constraints and potential safety related concerns.

The transportation assessment was carried out with a transportation network bounded by Thickson Road to the west, Simcoe Street to the east, Conlin Road West to the north and Taunton Road West to the south. The analysis results indicate that all Study intersections are operating with acceptable levels of service during the weekday AM and weekday PM peak hours under existing conditions, with the exception of select left turns as shown in **Table 10**.

Table 10: Transportation Assessment Results

Intersection / Movement	AM Peak Hour				PM Peak Hour				Available Storage (m)
	LOS	Delay(s)	v/c	95th %tile Queue (m)	LOS	Delay(s)	v/c	95th %tile Queue (m)	
Simcoe Street North at Taunton Road West/Taunton Road East (Signalized)									
EBT	D	35	0.44	67	D	44	**0.96**	181	>300
WBL	C	23	0.55	33	E	62	**0.91**	69	180
WBT	**F**	88	**1.09**	193	C	34	0.72	110	>300
Thornton Road North at Taunton Road West (Signalized)									
NBL	C	32	0.51	29	**F**	101	**0.99**	69	110
Garrard Road at Taunton Road East (Signalized)									
NBL	D	51	0.78	54	**F**	81	0.89	**51**	30
Thickson Road at Taunton Road East (Signalized)									
EBL	D	54	0.88	61	E	72	**0.96**	74	135
EBT	C	31	0.69	92	D	41	**0.90**	167	>200
WBL	D	41	0.86	29	**F**	81	**0.99**	76	140
WBT	D	49	**0.99**	159	D	42	0.79	140	190
NBL	D	53	**0.09**	66	**F**	89	**1.02**	93	130
Stevenson Road North at Conlin Road (Unsignalized)									
NBL	C	1	0.04	<7	**F**	51	0.41	14	50
Garrard Road at Conlin Road (Unsignalized)									
EBLTR	**C**	15	0.58	-	**F**	80	**1.09**	-	>100

Note: LOS – level of service, v/c – volume to capacity ratio

A collision analysis was conducted for the Study corridor, along Stevenson Road North from Taunton Road West to Conlin Road West to identify any safety-related constraints and opportunities. The Study corridor experienced an average of 3.6 collisions per year. Within the five-year analysis period (2017-2022), a total of 19 collisions were recorded along Stevenson Road North and none resulted in fatalities. Rear-end (47% or 9 out of 19) and angle or turning collisions (37% or 7 out of 19) were the predominant impact types along Stevenson Road North.

Majority (18 out of 19) of the collisions occurred at the signalized intersection of Stevenson Road North and Taunton Road West. It was noted that two collisions at Stevenson Road North and Taunton Road West involved vulnerable road users, one of which was a collision between a motorized vehicle and a cyclist, and one which involved a motorized vehicle colliding with a pedestrian while making an eastbound left turn.

The existing multi-modal environment along the Study corridor was evaluated based on the Ontario Traffic Council's (OTC) Multi-modal Level of Service (MMLOS) guidelines and analysis tool (2022). The signalized intersection at Taunton Road meets the target level of service for all modes except for cycling given the absence of bike facilities. However, for the unsignalized intersection at Conlin Road, the pedestrian mode does not meet the Level of Service (LOS) target due to the long crossing distance (approx. 24.5m) and the discontinuity of sidewalk in the west and south approaches. A LOS score cannot be obtained for the cycling mode at this intersection since it failed one of the related active transportation design check questions (lack of intersection design feature to facilitate the crossing of cyclists such as bike boxes and queuing spaces). For the Stevenson Road North segment, both cars and trucks meet the requirements, but LOS scores cannot be obtained for the pedestrian and cycling modes due to the absence of active transportation facilities.

The complete Existing Conditions Transportation Assessment is provided in **Appendix F**.

3.7 AIR QUALITY

Local air quality impacts due to the proposed Stevenson Road North improvements were assessed as part of this Study. The assessment also included an overview of construction impacts and a screening level assessment of greenhouse gases (GHG). In order to meet these objectives, the following scenarios were considered:

- 2022 No Build (NB) – Assess the existing air quality conditions at representative receptors. Predicted contaminant concentrations from the existing traffic levels were combined with hourly measured ambient concentrations to determine combined impacts.

- 2033 Future Build (FB)– Assess the future air quality conditions with the proposed project in place. Predicted contaminant concentrations associated with traffic levels for the preferred alternatives were combined with hourly measured ambient concentrations to determine combined impacts.

Land uses which are defined as sensitive receptors for evaluating potential air quality effects include health care facilities, senior citizens' residences or long-term care facilities, childcare facilities, educational facilities, places of worship and residential dwellings. Seventeen (17) sensitive receptor locations were selected to be representative of potential impacts within the Study Area. They included existing residential houses and a social service center for children in close proximity to Stevenson Road North, and thus the most likely impacted by the roadway improvements. The representative receptors include locations both east, west, and south of Stevenson Road North.

The traffic data analyzed consisted of annual average daily traffic (AADT) values for Stevenson Road North and its major intersecting roads, comparing the 2022 No Build and 2033 Future Build scenarios. Additionally, the Study assessed the percentage of heavy-duty vehicles in the area between Taunton Road West and Conlin Road. The Future Build volumes include traffic projections for Stevenson Road North between these two roads.

Hourly meteorological data from 2018-2022 was collected from the Oshawa Executive Airport, and upper air data was obtained from Buffalo, New York, as recommended by the MECP for the Study Area. This data was processed using the U.S. EPA's PCRAMMET software to prepare it for the CAL3QHCR vehicle emission dispersion model. A wind frequency diagram (wind rose) determined that predominant winds come from the southwesterly to northly directions, with a notable easterly wind direction as well.

The complete Air Quality Assessment is provided in **Appendix G**.

3.8 NOISE

The noise assessment provided below reviewed the potential noise impacts caused by the reconstruction and urbanization of Stevenson Road North.

3.8.1 Environmental Noise Guidelines and Policies

The noise impacts of the proposed urbanization were evaluated based on the Ontario Ministry of Transportation's (MTO) Environmental Guide for Noise (2022) as the City of Oshawa does not have any applicable noise guidelines for roadway improvement projects. The MTO guide uses similar evaluation parameters to the 1986 MTO/MOE Joint Protocol "A Protocol for Dealing with Noise Concerns During the Preparation, Review and Evaluation of Provincial Highways Environmental Assessments". However, the MTO guide now specifically includes reference to road projects, not just highway projects.

The Regional Municipality of Durham's Report #2012-W-83 (June 2012) includes a policy and guidelines for the installation and maintenance of noise attenuation barriers associated with Regional road expansion projects, however, as Stevenson Road North (under the City of Oshawa's jurisdiction) is not a Regional road, the Region of Durham's policies are not applicable to the project and the assessment is based solely on the MTO noise guide.

3.8.2 Noise Sensitive Areas

For the proposed improvements to Stevenson Road North, there are Noise Sensitive Areas (NSA) located to the east and west of Stevenson Road North that were identified using current air photo/mapping/zoning. The sensitive receptors in the NSAs are low-rise residential receptors that front Stevenson Road North. The sound levels have been calculated at their Outdoor Living Areas (OLA). As the receptors front onto Stevenson Road North, the OLAs are partially shielded from the roadway by the residences themselves.

The MTO noise guide defines an OLA as an area at ground level, intended and designed for the enjoyment of the outdoor environment, and readily accessible from the building. This area is typically the backyard of a dwelling but may be located on any side depending on the receptor configuration. The location of the OLA is 3m from the dwelling façade at height of 1.5 m above the existing ground surface. **Table 11** below, summarizes the eight (8) closest noise sensitive receptors exposed to the project that are expected to experience the highest potential impacts from the project. All other nearby receptors will have similar or lower impacts due to their increased setback distance from the project and similar exposure to Stevenson Road North.

Table 11: Noise Sensitive Receptors

Receptor	Address
1	1510 Stevenson Road North
2	1590 Stevenson Road North
3	1642 Stevenson Road North
4	1715 Stevenson Road North
5	1750 Stevenson Road North
6	1866 Stevenson Road North
7	1925 Stevenson Road North
8	2000 Stevenson Road North

3.8.3 Traffic Volumes

Traffic data in the form of Average Annual Daily Traffic (AADT) for the existing conditions (2022) and future conditions (2033) has been assessed. Traffic volumes beyond 2033 were not provided but are not expected to significantly vary from the 2033 volumes until additional lanes are added. Truck percentages and day/night splits were also provided. Medium and heavy truck percentages have been obtained by diving the overall truck percentage equally. The volumes are summarized in the table below.

Table 12: Traffic Volumes

Road Segment	AADT		Truck (%)		Day/Night Split (%)	Posted Speed Limit (km/hr)
	Existing (2022)	Future (2033)	Medium	Heavy		
Stevenson Road: Conlin Road to Taunton Road	1,900	2,700	1	1	68/32	50
Conlin Road: Thornton Road to Stevenson Road	13,200	17,400	2	2	71/29	50
Conlin Road: Thornton Road to Stevenson Road	13,800	18,200	2	2	71/29	50
Taunton Road: Thornton Road to Stevenson Road	26,800	29,900	3	3	71/29	60
Taunton Road: Stevenson Road to Simcoe Road	28,300	31,600	2	2	71/29	60

The complete Noise Impact Assessment is provided in **Appendix H**.

3.9 SOIL CONTAMINATION

Soil contamination is a key consideration in the environmental assessment process, as it refers to the presence of hazardous substances or pollutants in the soil, often as a result of human activities such as industrial processes, waste disposal, agricultural practices, and urbanization. As such, the identification, evaluation, and management of soil contamination are key components of the Study. Current land uses within the Study Area include undeveloped, agricultural, residential, community, commercial, and industrial. A Trans-Northern Pipeline running in an east to west direction traverses the southern part of the Study Area. The pipeline is located approximately 220 m north of Taunton Road West. Oshawa Creek passes through the northeast portion of the Study Area and runs in a north-south direction east of the Study Area. Goodman Creek is located west of the Study Area.

3.9.1 Areas of Potential Environmental Concern (APEC)

A comprehensive records review of the Study Area and the neighbouring properties was completed to collect information on past activities that may have contributed to any site contamination. Existing reports, historical aerial photographs, Fire Insurance Plans (FIPs), and Ministry of the Environment, Conservation and Parks (MECP) data/site inventory were all reviewed to identify the Areas of Potential Environmental Concern (APEC) within and near the Study Area.

APECs with high potential for contamination: These areas correspond to locations where land uses consist of commercial operations that could impact soil and/or groundwater quality within the Study Area. Four (4) areas of high potential for contamination were identified in the Study Area.

APECs with moderate potential for contamination: The areas represent land uses that are commercial properties, suspected of using chemical compounds or performing activities that may impact soil and/or groundwater within the Study Area. Seven (7) areas of moderate potential for contamination were identified in the Study Area.

Table 13 and **Figure 8** below provide a summary of APECs with Potential for Contamination within the Study Area.

To undertake the roadway improvements, if property acquisitions are required within APECs of high to moderate potential for contamination, it is recommended that property specific Phase One ESAs (and if necessary, Phase Two ESAs) are completed in general accordance with O. Reg, 153/04 for environmental due diligence. The complete Contamination Overview Study is provided in **Appendix I**.

Table 13: Summary of APECs with Potential for Contamination within the Study Area

Land Use of PCA	Location of High APECs in the Study Area	Potential (Low/Moderate/ High)	Potentially Contaminating Activity (PCA)
Commercial (CI)	CI1 - 1725 Stevenson Road North	High	PCA 30 (i) – Importation of fill material of unknown quality PCA 52 (i) - Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems
Automotive Centres (AC)	AC1 - 550 Taunton Road West	High	PCA 28 (i) - Gasoline and associated products storage in fixed tanks

Land Use of PCA	Location of High APECs in the Study Area	Potential (Low/Moderate/ High)	Potentially Contaminating Activity (PCA)
			PCA 52 (vi) - Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems
Trans-Northern Pipeline (TNP)	TNP1 - Southern Portion of the Study Area	High	PCA C - Fuel distribution system
Municipal Airport (MA)	MA1 – 1319 and 1320 Airport Boulevard	High	PCA D (i) – Registerable wastes generation PCA #3 (i) – Airstrips and hangar operation PCA #27 (i) – Garages and maintenance and repair of railcars, marine vehicles and aviation vehicles PCA #28 (ii) – Gasoline and associated products storage in fixed tanks PCA B (ii) – Historical spill
Commercial (CL)	CI2 – 1560 Stevenson Road North	Moderate	PCA 30 (ii) – Importation of fill material of unknown quality
Storage Yards (SY)	SY1 - 1618 Stevenson Road North SY2 – 1520 Stevenson Road North SY3 – 1410 Stevenson Road North SY4 – 500 Taunton Road West	Moderate	PCA 52 (ii, iii, iv, v) - Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems PCB B (i) – Historical Spill
Airstrip Hanger Operation (AH)	AH1 – 1319 Airport Boulevard	Moderate	PCA D (ii) – Registerable wastes generation PCA #3 (ii) – Airstrips and hangar operation PCA #27 (ii) – Garages and maintenance and repair of railcars, marine vehicles and aviation vehicles
Airstrip Hanger Operation (AH)	AH2 – 1320 Airport Boulevard	Moderate	PCA D (iii) – Registerable wastes generation PCA #3 (iii) – Airstrips and hangar operation PCA #27 (iii) – Garages and maintenance and repair of railcars, marine vehicles and aviation vehicles

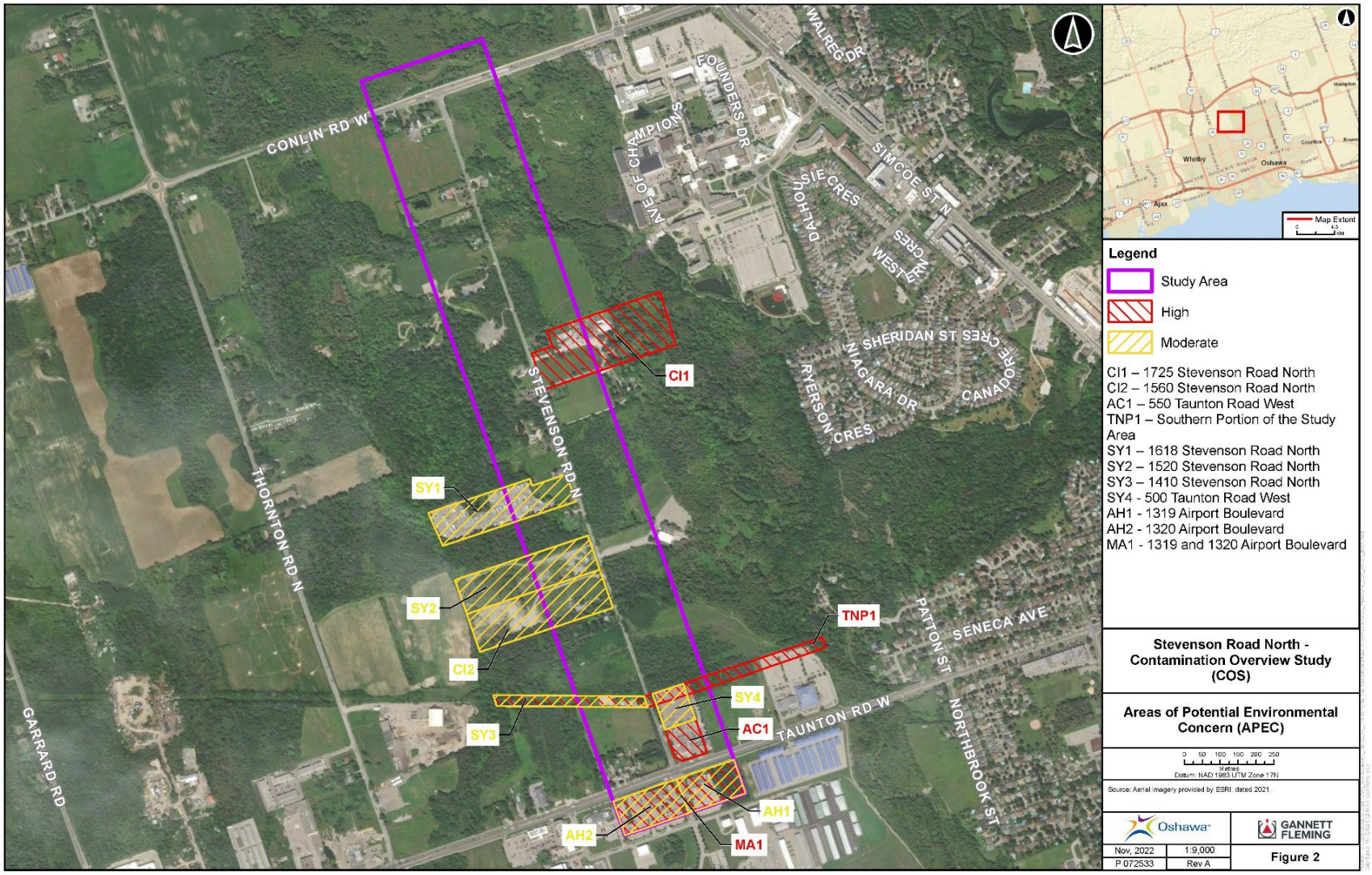


Figure 8: Areas of Potential Environmental Concern (APEC)

3.10 UTILITIES

Requests for utility locates were conducted via Ontario One Call and via a direct email to utility companies with anticipated assets in the Study Area. Records and markups of utility assets were received from utility companies (in CAD and/or PDF formats) and were reviewed and integrated with the topographic survey conducted for this project; as well as City of Oshawa records (CAD and PDF formats) and Region of Durham as-built drawings.

Below are utility companies that were contacted and had confirmed no assets within the Study Area:

- Telus Communications
- Enbridge Pipelines Inc.
- TC Energy (formerly TransCanada Pipelines)
- Acronym Solutions (formerly Hydro One Telecom Inc., a subsidiary of HONI)

Utility companies that were contacted and had confirmed assets within the Study Area are summarized in **Table 14** below. A complete Preliminary Utility Identification/Conflict Matrix is provided in **Appendix J**.

Table 14: Utility Companies with Existing Assets in the Study Area

Utility Company	Summary of Identified Existing Assets
Bell Canada	▪ Underground conduits along Taunton Road West, and along the east side of Stevenson Road North. ▪ Overhead cables and utility poles (shared and unshared) along both sides of Stevenson Road North and along Conlin Road West. ▪ Various pedestals and connections to private properties (both overhead and underground).
Rogers Communications	▪ Underground conduits to the 550 Taunton Road West property from Taunton Road West. ▪ Overhead cables, utility poles (shared), and pedestals along Taunton Road West.
Enbridge Gas Inc.	▪ 100mm gas main along the west side of Stevenson Road North, with various connections to private properties. ▪ Vital 300mm gas main along Conlin Road West. ▪ Gas mains (various sizes) along Taunton Road West and along the west side of Airport Boulevard.
Trans-Northern Pipelines Inc.	▪ 10” pipeline crossing Stevenson Road North; approximately 280m north of the Taunton Road West-Stevenson Road North intersection.
Oshawa Power and Utilities Corp.	▪ Overhead cables, utility poles (shared and unshared), anchor guywires, and streetlighting fixtures along the west side of Stevenson Road North. ▪ Various overhead cable and underground conduit connections to private properties. ▪ Various overhead cables, utility poles (shared), streetlighting poles and fixtures, and underground conduits along Taunton Road West and Conlin Road West.
Hydro One Networks Inc.	▪ High-voltage 44kV overhead cables crossing Stevenson Road North; approximately 230m south of the Conlin Road West-Stevenson Road North intersection.

Utility Company	Summary of Identified Existing Assets
Durham OneNet Inc.	▪ Traffic signals poles, communications cables, and other equipment (transfer of operations from the Region of Durham) at the Taunton Road West-Stevenson Road North intersection.

4.0 ALTERNATIVE SOLUTIONS

Following the assessment of existing conditions, identification of deficiencies and establishment of a problem/opportunity statement for the Study Area, alternatives were developed to examine the potential solutions to address the problem/opportunity statement and are described in the sections below.

4.1 DESCRIPTION OF ALTERNATIVE SOLUTIONS

The improvements to Stevenson Road North focus on measures that will improve road safety, enhance traffic capacity, and support active modes of transportation such as walking or cycling. As part of this Study, three (3) Alternative Solutions have been developed and evaluated against how well they address the Problem / Opportunity Statement:

Alternative 1: Do Nothing
This alternative includes the continued use of Stevenson Road North in its existing conditions with no additional infrastructure modifications and/or improvements outside of regular operations and maintenance. This alternative is also set as the 'Base Case' for the evaluation of other alternatives.

Alternative 2: Minor Operational Improvements
This alternative addresses the identified roadway and roadside deficiencies without a full road reconstruction, such as pavement rehabilitation and roadway profile corrections. This alternative also includes improvements to roadside safety, such as paved shoulders and improved clear zones from utility poles.

Alternative 3: Reconstruct and Widen Right-of-Way (ROW)
This alternative encompasses a full road reconstruction, widened ROW, and overall urbanization of the Study Area corridor. An urban revisioning of the Study Area corridor would include improved pedestrian areas, added municipal servicing, active transportation infrastructure, and include roadway profile corrections and improved clear zones from utility poles from Alternative 2.

4.2 EVALUATION OF ALTERNATIVE SOLUTIONS

The Alternative Solutions developed in the Study took multiple evaluation criteria into consideration, including natural environment, socio-economic environment, cultural environment, transportation, and cost.

The natural environment criteria focused on assessing the impacts of various activities on ecosystems and resources. This includes the disruption of terrestrial ecosystems, affecting wildlife, habitats, trees, and vegetation. It also covered impacts on fisheries and aquatic systems, such as fish populations and water quality. The evaluation considers the effects on surface and groundwater drainage, as well as the broader environmental implications for air quality and climate change.

The socio-economic environment criteria focused on evaluating the alignment with various planning and development initiatives. This included support for provincial, regional, and municipal land use planning, as well as local development objectives. It also examined the impact on private property owners, the contribution to the local economy, and the ability to provide necessary municipal services, such as sanitary, water, and storm infrastructure, to support future growth.

The cultural heritage evaluation criteria focused on assessing the efforts required to avoid potential impact to cultural environment.

The cost evaluation criteria assessed the financial aspects of infrastructure projects, including property acquisition costs, which involve capital expenses for acquiring land; construction costs, which cover the expenses of building infrastructure; and operation/maintenance costs, which relate to the ongoing expenses of operating and maintaining the infrastructure.

The transportation evaluation criteria focused on assessing improvements to travel times for vehicular traffic, enhancing safety for all road users, and ensuring effective traffic operations to meet future demands. It also evaluated the capacity to accommodate and support future public transit, as well as meeting the needs of non-motorist transportation modes like pedestrians and cyclists. Additionally, it considered the connectivity and ability to support various transportation modes.

A full evaluation of the Alternative Solutions is presented in **Table 15**, utilizing visual indicators. The filled circles of varying sizes represent the magnitude of 'beneficial impact' an alternative has in comparison to the other alternatives for each evaluation criteria. The smallest sized circle represents the least preferred option, while the largest sized circle represents the most preferred.

Table 15: Design Concept Evaluation Summary

Evaluation Criteria	Rationale / Explanation	Do Nothing (Alternative 1)	Minor Operational Improvements (Alternative 2)	Reconstruction and Widen ROW (Alternative 3)	Summary
NATURAL ENVIRONMENT					
Terrestrial Ecosystems	Impacts and disruption to wildlife species and habitats, trees, and vegetation				Alternative 1 has no change to existing conditions, while Alternative 2 and 3 impact areas containing terrestrial ecosystems. The proposed widening associated with Alternative 3 has relatively greater impacts to Terrestrial Ecosystems than Alterative 2.
Fisheries / Aquatic	Impacts to fish, fish habitat, and waterbodies Extent and quality/characteristics of aquatic area removed or impacted				Alternative 1 has no change to existing conditions, while Alternative 2 and 3 impact areas with potential indirect aquatic habitats. The proposed widening associated with Alternative 3 has relatively greater impacts than Alternative 2, requiring more construction activities beneath the high-water mark due to grading impacts.
Drainage (Surface & Groundwater)	Impacts to surface and groundwater drainage				Alternative 1 has no change to existing conditions, while Alternative 2 and 3 may require changes to existing drainage features and overland flows. The proposed widening associated with Alternative 3 has relatively greater impacts than Alternative 2, due to larger impervious and construction footprint.
Climate Change	Impacts to air quality and climate change				All three options have the same number of traffic lanes as existing condition. Alternative 3 include enhancements that will promote and encourage active transportation, building upon the new multi-use path systems on Thornton Road, Taunton Road West, and Conlin Road West.
Natural Environment Summary		**PREFERRED**			**From a natural environment perspective, Alternative 1 is preferred.**
SOCIO-ECONOMIC ENVIRONMENT					
Provincial Land Use Planning	Support of provincial planning and initiatives				Alternative 1 has no changes to existing conditions, while Alternative 2 provides minor retrofits within the existing ROW. Alternative 3 introduces infrastructure that supports and is in alignment with provincial plans and initiatives (ex. Connecting with the GHH: A Transportation Plan for the Greater Golden Horseshow (2022).
Regional / Municipal Policies and Land Use Planning	Support of regional / municipal planning initiatives				Alternative 1 has no changes to existing conditions, while Alternative 2 provides minor retrofits within the existing ROW. Alternative 3 introduces infrastructure that supports regional/municipal pans and initiatives (ex. Durham Regional Cycling Plan (2021).

Evaluation Criteria	Rationale / Explanation	Do Nothing (Alternative 1)	Minor Operational Improvements (Alternative 2)	Reconstruction and Widen ROW (Alternative 3)	Summary
Local Development Objectives	Support of local developments and initiatives				Alternative 1 has no changes to existing conditions, while Alternative 2 provides minor retrofits within the ROW. Alternative 3 introduces infrastructure that supports local development. The Study corridor is located within the Northwood Business Park's policy boundary.
Property Impacts	Impacts to private property owners				Alternative 1 does not impact property owners, while Alternatives 2 and 3 impact private properties. The proposed widening associated with Alternative 3 has relatively greater property impacts than Option 2.
Regional / Municipal Economy	Contribution to local economy				Alternative 1 does not provide additional contributions to the local economy. Alternative 2 provides marginal economic contribution, with minor retrofits within the existing ROW. Alternative 3 provides job opportunities related to building new infrastructure and promote growth of the surrounding area and existing businesses.
Municipal Services (Sanitary, Water, Storm)	Wet utility and service connection infrastructure to support future growth				Alternatives 1 and 2 have no changes to the existing conditions, while Alternative 3 includes upgrades to the roadway infrastructure and municipal services.
Socio-Economic Environment Summary				**PREFERRED**	**From a socio-economic perspective, Alternative 3 is preferred.**
CULTURAL ENVIRONMENT					
Cultural Environment	Effort required to avoid potential impact to cultural environment				Alternatives 1 and 2 remain within the existing ROW, requiring no additional efforts, while Alternative 3 will require additional effort to avoid impacts to cultural environment.
Cultural Environment Summary		**PREFERRED**			**From a cultural environment perspective, Alternatives 1 and 2 are equally preferred.**
COST					
Property Acquisition Costs	Capital costs associated with acquiring property for infrastructure				Alternatives 1 and 2 remain within the existing ROW, requiring no additional properties while Alternative 3 requires additional property for urbanization (i.e., roadway and municipal services upgrades).

Evaluation Criteria	Rationale / Explanation	Do Nothing (Alternative 1)	Minor Operational Improvements (Alternative 2)	Reconstruction and Widen ROW (Alternative 3)	Summary
COST					
Construction Costs	Capital costs associated with constructing infrastructure				Alternative 1 does not require construction costs for new infrastructure, while Alternative 2 and 3 require costs to construct new infrastructure. Alternative 3 has the largest footprint and therefore higher construction costs.
Operation / Maintenance Costs	Maintenance costs associated with operating and maintaining infrastructure				All alternatives will require varied maintenance costs, however, Alternative 2 and 3 will save maintenance costs by replacing aging infrastructure. Alternative 3 provides holistic upgrades to the corridor and in turn lowers the maintenance cost in the near future while providing value for future development.
Cost Summary		**PREFERRED**			**From a costing perspective, Alternative 1 is preferred.**
TRANSPORTATION					
Travel Time	Improvement to travel times for vehicular traffic				All alternatives maintain a two-lane road configuration and do not improve upon travel times in existing conditions.
Safety	Improvement to safety for all road users				Alternative 1 does not provide improvements to roadside safety, while Alternatives 2 and 3 would provide safety improvements to various road users. Alternative 2 presents more challenges concerning safety given it is constrained within the existing ROW. Alternative 3 with the widened ROW, will provide more opportunities for safety improvement, including physical buffer between cars and pedestrians.
Traffic Operations	Effective to meet future demands for vehicular traffic				Alternatives 1 and 2 do not provide space to support future road widening beyond two lanes, while Alternative 3 provides some space for future road widening.
Accommodation of Public Transit	Effective to accommodate and support future public transit				The sidewalks included in Alternative 3, as well as the greater boulevard space within the ROW, make this option more attractive for future public transit service compared to Alternatives 1 and 2.

Evaluation Criteria	Rationale / Explanation	Do Nothing (Alternative 1)	Minor Operational Improvements (Alternative 2)	Reconstruction and Widen ROW (Alternative 3)	Summary
TRANSPORTATION					
Active Transportation (Pedestrian / Cyclists)	Effective to meet future demands for non-motorist transportation modes Connectivity and/or ability to support other transportation modes	●	●	●	Alternatives 1 and 2 do not provide additional infrastructure to support active transportation, while Alternative 3 provides a widened ROW to accommodate pedestrians and cyclists.
Transportation Summary				**PREFERRED**	**From a transportation perspective, Alternative 3 is preferred.**

Following the evaluation of Alternative Solutions, the subsequent text provides a summary of Alternatives 1, 2 and 3, and their respective associated impacts and opportunities.

Alternative 1: Do Nothing
The 'Do Nothing' alternative will have no impacts to the existing natural and cultural environments and no additional capital costs (construction, property acquisition) due to no proposed infrastructure upgrades; however, this alternative does not provide any opportunities for socio-economic growth or future developments and does not improve the transportation conditions or safety for vehicular traffic, cyclists, or pedestrians.

Alternative 2: Minor Operational Improvements
The 'Minor Operational Improvements' alternative will provide some improvements to the transportation conditions and safety for vehicular traffic, cyclists, and pedestrians with some impact to the existing natural and cultural environments; however, like Alternative 1, does not provide any opportunities for socio-economic growth or future developments.

Alternative 3: Reconstruct and Widen Right-of-Way (ROW)
The 'Reconstruct and Widen ROW' alternative increased impacts to the existing natural and cultural environments and will require greater capital costs over the other two alternatives; however, this alternative meets planning objectives, provides opportunities for socio-economic growth and future developments, and improves the transportation conditions and safety for vehicular traffic, cyclists, and pedestrians.

4.3 SELECTION OF THE PREFERRED SOLUTION

Through the evaluation of Alternative Solutions, Alternative 3: Reconstruct and Widen ROW was recommended to be carried forward to address the identified deficiencies along Stevenson Road North and the overall problem/opportunity statement. A description of the assessments and conclusions is provided in **Table 16** below.

Table 16: Evaluation of Alternative Solutions

Alternative Solution	Assessment Summary	Conclusion
Alternative 1: Do Nothing	Alternative screened out as it does not address or enhance road safety, traffic, or provide for active transportation or connectivity in the Study Area. Provides no opportunity to upgrade municipal services to support further development of the Northwood Business Park.	This alternative is not recommended.
Alternative 2: Minor Operational Improvements	Similar to the above, this alternative does not provide additional enhancements or opportunities to support future growth and economic development. Although there would be improvements roadway safety – they would be limited.	This alternative is not recommended.
Alternative 3: Reconstruct and Widen ROW	**This alternative is preferred as it best addresses the problem/opportunity Statement, improves the road conditions for all users, as well as achieve land use planning objectives.**	**This alternative is recommended.**

Following consultation with stakeholders, the public, and relevant agencies, the recommended solution for the study involves a two-phase approach: Phase 1 – Interim condition and Phase 2 – Ultimate condition.

4.3.1 Phase 1 – Interim Condition

Phase 1 involves addressing the needs while the Oshawa Executive Airport is still in operation by reconstructing Stevenson Road North to an urbanized two-lane configuration within the existing City ROW of approximately 20.1 meters. This recommended solution for the Phase 1 – interim condition will be referred to as the recommended Alternative Solution herein.

4.3.2 Phase 2 – Ultimate Condition

Phase 2 involves addressing the needs of the ultimate condition where the Oshawa Executive Airport ceases operation and the possible need for a four-lane configuration and a 30.0-meter ROW (as per the City of Oshawa's standard OS-208A, which allocates 14.5m for a roadway allowance and 15.5m for boulevards, streetscaping, sidewalk, and multi-use path between the west and east sides of the roadway). As this improvement need is not required until 2051 or later. The Study focused on the Interim Condition by preserving the existing ROW, minimizing additional property acquisition, and reducing impacts on residents. However, in order to accommodate future transportation needs, it is recommended that a four-lane configuration and a 30.0-meter ROW be protected for Stevenson Road North. Any property requirements for widening to a 30.0-meter ROW should be addressed through future development approvals as the Study Area redevelops. The ultimate condition for a four-lane, 30.0-meter ROW configuration was not explored further as part of this Environmental Assessment.

A possible layout of the cross-section of this future ultimate 30.0m ROW with four lanes (intended for illustrative purposes only) is shown in **Figure 9**.

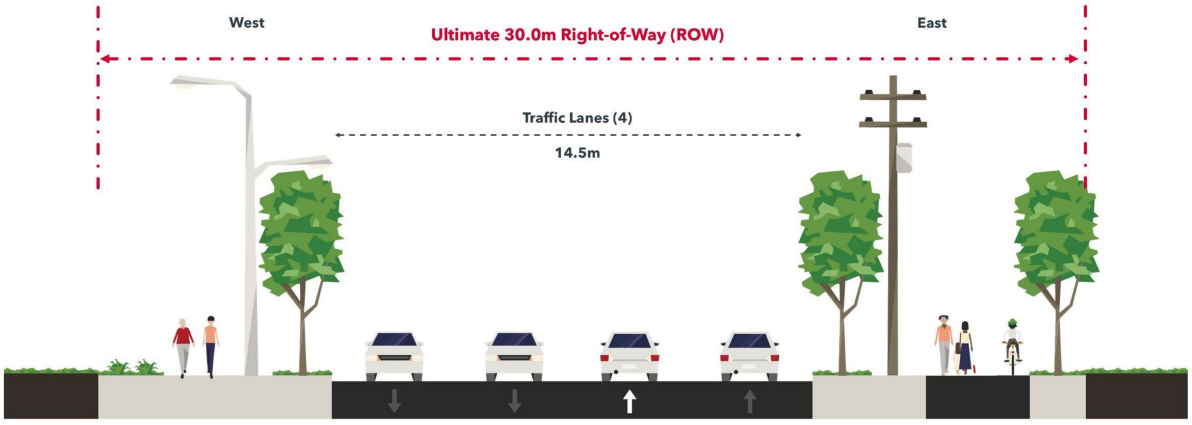


Figure 9: Example Cross-Section of a Four-Lane Road with a 30.0 Metre ROW

5.0 ALTERNATIVE DESIGN CONCEPTS FOR THE PREFERRED SOLUTION

Following the selection of a recommended Alternative Solution, Design Concepts were developed to examine how the recommended Alternative Solution will be implemented.

5.1 DESCRIPTION OF DESIGN CONCEPTS

Three (3) Design Concepts were developed, each including a two-lane roadway configuration, full roadway reconstruction of the pavement structure, and added municipal services (sanitary sewer, trunk storm sewer, and

water main connections) underneath the proposed pavement structure (up to 1.2m in total depth as per the City of Oshawa Design Criteria Manual and geotechnical report recommendations). In all Design Concepts, the locations of utilities, streetlighting, and tree planting will vary based on space availability within the right-of-way (ROW) with efforts to minimize removals and relocations of existing infrastructure.

The proposed horizontal alignment is consistent across all Design Concepts, largely maintaining existing conditions except near the Taunton Road West-Stevenson Road North intersection. A realignment compliant with the Transportation Association of Canada Geometric Design Guide (TAC GDG) is proposed to improve intersection geometry, ensure a smooth transition between Airport Boulevard and Stevenson Road North, and accommodate dedicated left and right turn lanes on both the north and south legs.

The proposed vertical profile is consistent across all Design Concepts, complying with TAC GDG and City of Oshawa design standards to ensure sufficient sightline and drainage.

Design Concept 1: Two-Lane Rural

As shown in **Figure 10**, the proposed cross-section in Design Concept 1 consists of a two-lane rural roadway configuration with paved shoulders within the existing 20m-23m varied width ROW. The proposed pavement width between edges of travelled vehicular lanes is 8.5m-10m (based on City of Oshawa standard OS-203), with 0.5m buffers and 1.5m paved shoulders (based on Ontario Traffic Manual Book 18). As the City does not have a standard for rural arterial road cross-section, the proposed drainage ditches and rounding of paved shoulders were based on Region of Durham standards S-300.020 and S-300.060.

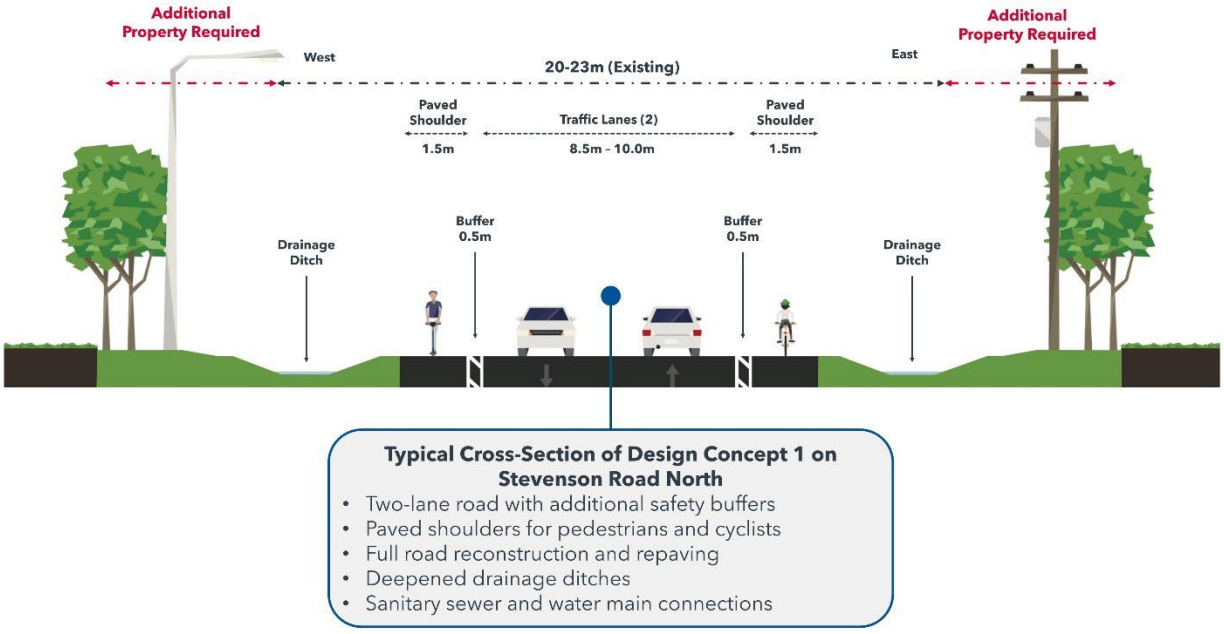


Figure 10: Design Concept 1

Design Concept 2: Two-Lane Urban (East MUP)

As shown in **Figure 11**, the proposed cross-section in Design Concept 2 consists of a two-lane urban roadway configuration with a multi-use path on the east within the existing 20m-23m varied width ROW. The proposed pavement width between face of curb to face of curb is 8.5m-10m (based on City of Oshawa standard OS-203), and the proposed width of the multi-use path is 3.0m (based on City of Oshawa standard OS-306). The proposed curbs and grading behind the multi-use path are based on City of Oshawa standards OS-601 and OS-223;

respectively. The boulevard space between the back of curb and edge of multi-use path varies based on space availability within the ROW as well as provisions for low impact developments (LIDs).

A Design Concept with the proposed multi-use path on the west side was ruled out and not considered further for evaluation. Due to the existing ROW having varied asymmetrical widths on each side of the roadway centerline, the west side of the Study Area corridor had less available width to accommodate a multi-use path in comparison to the east side.

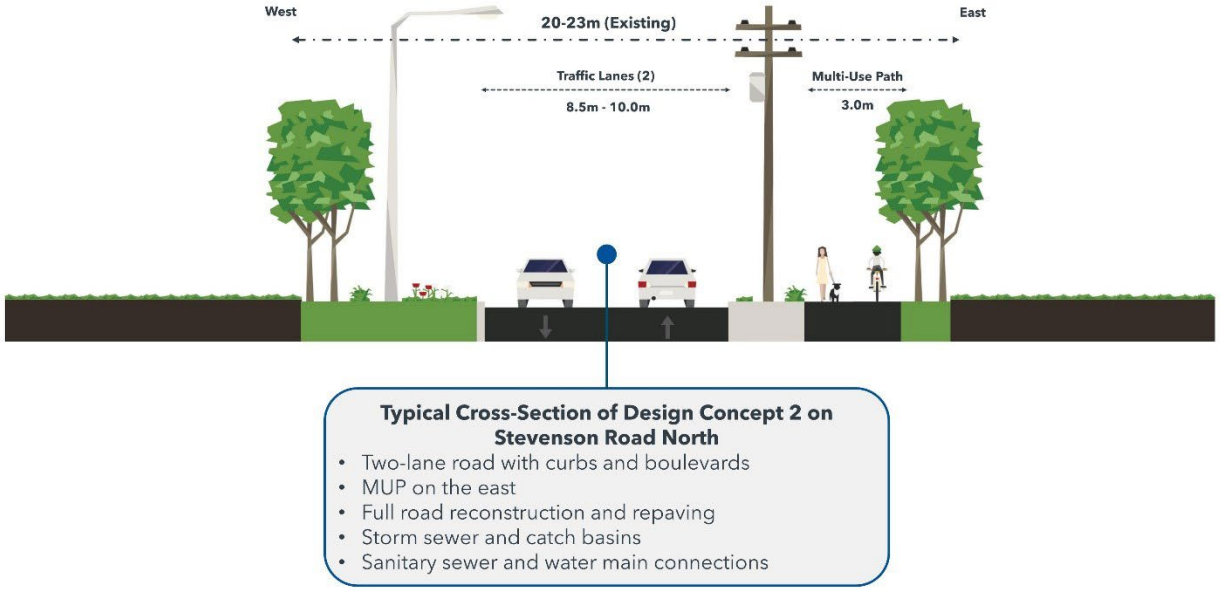


Figure 11: Design Concept 2

Design Concept 3: Two-Lane Semi-Urban (West Rural, East Urban)
As shown in **Figure 12**, the proposed cross-section in Design Concept 3 consists of a two-lane urban roadway configuration with a multi-use path on the east, and a paved shoulder on the west within the existing 20m-23m varied width ROW. Design Concept 3 is a combined concept from the other two Design Concepts, with the west side (from the roadway centerline) being similar to Design Concept 1, and the east side being similar to Design Concept 2 with the multi-use path proposed on the urbanized east side.

A Design Concept with the rural and urban sides swapped (west urban, east rural) was ruled out and not considered further for evaluation. Similar to the ruled-out Design Concept 2 with a multi-use path on the west side, due to the existing ROW having varied asymmetrical widths on each side of the roadway centerline, the west side of the Study Area corridor had less available width to accommodate a multi-use path in comparison to the east side. Extensive property impacts from the drainage ditch on the rural half of the cross-section were also identified as comparable on either side of the cross-section between Design Concept variations.

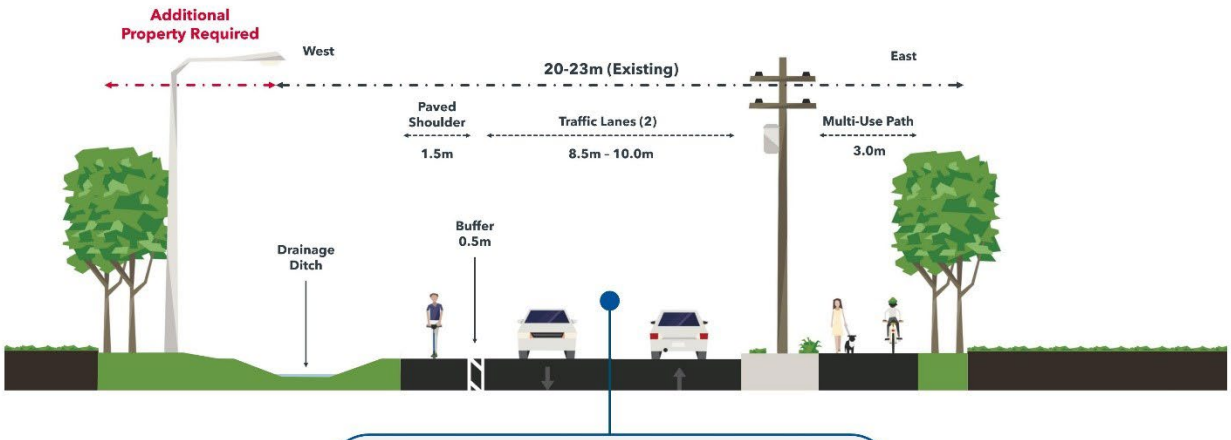


Figure 12: Design Concept 3

5.2 EVALUATION OF DESIGN CONCEPTS

To evaluate the design options and determine a recommended design option, several evaluation criteria were considered and utilized to compare the design options. The evaluation criteria include property impacts, impacts to existing streetlighting and utility poles, impacts to drainage/incorporation of low-impact development (LID), required rework for the potential 2051 four-lane configuration and ROW widening, connectivity of active transportation, and impacts to archaeology, cultural heritage, and the natural environment. The evaluation of the design options is presented in **Table 17**.

Table 17: Design Concept Evaluation

Evaluation Criteria	Description	Design Concept 1: Two-Lane Rural	Design Concept 2: Two-Lane Urban	Design Concept 3: Two-Lane Semi-Urban
Property Impacts	The resulting overall footprint encroaching into private properties of each design option.	Significant property impacts due to pavement depth requirements.	Minimizes property impacts due to eliminating the need for rural ditching.	Significant property impacts on the west side due to pavement depth requirements.

Evaluation Criteria	Description	Design Concept 1: Two-Lane Rural	Design Concept 2: Two-Lane Urban	Design Concept 3: Two-Lane Semi-Urban
Impacts to Street Lighting and Utility Poles	The number of relocations required of street lighting and utility poles due to the roadside reconfiguration for each Design Concept.	Majority of streetlighting and utility poles require relocation to meet roadside safety clearances.	Only some streetlighting and utility poles require location to accommodate MUP and upgraded pavement limits.	Majority of west side street lighting and utility poles require relocation to meet roadside safety clearances.
Impacts to Drainage / Incorporation of Low-Impact Development (LID)	The footprints of concepts require modification of roadside ditches and accommodations of water drainage from Goodman Creek. LID refers to practices that mimic natural processes to filter, store, and evaporate stormwater.	Existing drainage ditching needs to be deepened; incorporation of LID measures will require further widening.	LID measures can be accommodated on the east side as clear stone LID (stormwater storage).	Existing drainage ditching on the west needs to be deepened; LID measures can be accommodated on the east side, such as clear stone LID (stormwater storage).
Required Re-work (Throw-Aways) for 2051 Four-Lane Configuration	Throw-away costs refer to infrastructure built for the two-lane configuration that will be eventually removed/replaced when widening to four lanes in 2051-beyond, for the long-term future.	Future throw-aways: driveway culverts will be replaced by future storm sewer.	Future throw-aways: MUP, and storm catch basins require relocations/replacement for future widening.	Future throw-aways: west side driveway culverts will be replaced by storm sewer. East side MUP and storm catch basins require relocations/replacement for future widening.
Connectivity of Active Transportation	The accessibility and seamlessness of the concept's active transportation facilities to connect to adjacent roads and routes.	One-way bike lanes are within paved shoulders on each side, with simple connections at intersections.	MUP provides a one-side, two-way off-road cycling route and requires more-complex intersection upgrades at Taunton Road West.	MUP provides a one-side, two-way off-road cycling route and requires more-complex intersection upgrades at Taunton Road West.
Impacts to Archaeology and Cultural Heritage	The resulting potential of the concept footprint to trigger archaeology and cultural heritage impacts in undisturbed areas.	Significant impacts to areas with archaeological potential and cultural heritage significance as footprint goes beyond the existing ROW.	Minimal impacts to areas with archaeological potential and cultural heritage significance as footprint is mainly contained within the existing ROW.	Some impacts to areas with archaeological potential and cultural heritage significance as footprint goes beyond the existing City on the west.

Evaluation Criteria	Description	Design Concept 1: Two-Lane Rural	Design Concept 2: Two-Lane Urban	Design Concept 3: Two-Lane Semi-Urban
Impacts to Natural Environment	The resulting overall footprint encroaching onto sensitive areas with natural features and wildlife.	Significant impacts to the natural environment as footprint goes beyond the existing ROW.	Minimal impacts to the natural environment as footprint is mainly contained within the existing ROW.	Some impacts to the natural environment as footprint goes beyond the existing ROW on the west.

Design Concept 1: Two-Lane Rural
Design Concept 1 will have a significant footprint/limit of disturbance due to the design of the rural drainage ditches in relation to the deep proposed pavement structure (up to 1.2m in total depth as per the City of Oshawa Design Criteria Manual and geotechnical report recommendations). Although the connectivity of unidirectional cycling facilities (paved shoulders) provides simple connections at the Study Area intersections, the proposed footprint/limit of disturbance is not contained within the existing ROW and requires significant property impacts, relocation of the majority of streetlighting and utility poles, minimal opportunity to incorporate LID areas (without further widening), and significant impacts to areas of archaeological potential, areas of cultural heritage significance, and the natural environment.

Design Concept 2: Two-Lane Urban (East MUP)
Design Concept 2 is mainly contained within the existing ROW limits, minimizing impacts to properties, areas of archaeological potential, areas of cultural heritage significance, and the natural environment. The cycling route continuity of the proposed multi-use path in Design Concept 2 adds complexity to the Study Area intersections. Although there are various re-works needed for the potential future four-lane configuration in 2051 (including relocation of the proposed multi-use path and catch basins), there are various opportunities to minimize the relocations of existing streetlighting and utility poles.

Design Concept 3: Two-Lane Semi-Urban (West Rural, East Urban)
The 'Reconstruct and Widen ROW' alternative increased impacts to the existing natural and cultural environments and will require greater capital costs over the other two alternatives; however, this alternative meets planning objectives, provides opportunities for socio-economic growth and future developments, and improves the transportation conditions and safety for vehicular traffic, cyclists, and pedestrians.

Design Concept 3 is a combination of Design Concept 1 on the west side of the roadway centerline, and Design Concept 2 on the east side of the roadway centerline. The west side of Design Concept 3 is similar in Design Concept 1 with a significant footprint/limit of disturbance and number of impacts, and the east side of Design Concept 3 similar to Design Concept 2 in being contained within the existing ROW with some future relocations required for the potential future four-lane configuration in 2051.

5.3 SELECTION OF THE PREFERRED DESIGN CONCEPT

Design Concept 2: Two-Lane Urban (East MUP) was recommended as it best addresses the Problem/Opportunity Statement with minimized impacts to properties, areas of archaeological potential, areas of cultural heritage significance, and the natural environment. In comparison to the other two Design Concepts, Design Concept 2 has

more opportunities to reduce relocations of existing streetlighting and utility poles, provide areas for LIDs, and provide a dedicated active transportation facility. **Figure 13** below provides a visual summary of the evaluation.

Evaluation Criteria	Design Concepts		
	Concept 1: Two-Lane Rural	Concept 2: Two-Lane Urban	Concept 3: Two-Lane Semi-Urban
Property Impacts	○	●	◒
Impacts to Street Lighting and Utility Poles	○	●	◒
Impacts to Drainage / Incorporation of Low-Impact Development (LID)	○	●	◒
Required Re-work (Throw-Aways) for 2051 Four-Lane Configuration	●	○	◒
Connectivity of Active Transportation	●	◒	◒
Impacts to Archaeology and Cultural Heritage	○	●	◒
Impacts to Natural Environment	○	●	◒
Evaluation Results	○	●	◒

Design Concept 2: Two-Lane Urban (East MUP) is recommended as it best addresses the Problem/ Opportunity Statement, with the least impacts to private properties and existing conditions (natural, archaeology, cultural heritage) in comparison to other design concepts.

● Preferred
◒ Partially Preferred
○ Least Preferred

Figure 13: Summary of Evaluation of Design Concepts

6.0 DETAILS OF THE RECOMMENDED PLAN

Based on the evaluation of the alternative designs, public and agency input, Design Concept 2: Two-Lane Urban (East MUP) was selected as the recommended design option. The following section outlines the key elements of the preferred design.

6.1 ROADWAY DESIGN CRITERIA

The proposed preliminary roadway and intersection designs comply with the latest design criteria, standards, and manuals from the City of Oshawa, Region of Durham, and TAC GDG, where applicable. See **Table 18** for established design criteria.

Table 18: Roadway Design Criteria

Design Criteria	Reference/Source	Proposed Conditions
Road Classification (City)	City of Oshawa Official Plan, Schedule 'B' Road Network (Aug. 2019)	Type 'C' Arterial Road
Road Classification (TAC GDG)	TAC GDG Table 2.6.2	UAU50
Posted Speed	Existing Conditions	50 km/hr
Design Speed	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.3	70 km/hr
Annual Average Daily Traffic (AADT) (2033 horizon)	Traffic Studies	6,870 veh
Min. Curve Radius	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.3	260m
Intersection Angle	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.3	80-90º
Min. Tangent Length Through Intersection	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.3	120m
Min. Longitudinal Grade	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.3	0.5%
Max. Longitudinal Grade	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.3	5.0%
Min. Stopping Sight Distance	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.3	110m
Min. 'K' Value – Sag Curves	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.3	K = 10
Min. 'K' Value – Crest Curves	TAC GDG Table 3.3.2	K = 17
Curb Return Radii	N/A*	As per swept path analysis*
Design Vehicle	N/A*	HSU & WB-20*
Width of Curb Lanes*	City of Oshawa Standard OS-203 (Jan. 2021)	4.25m* (to face of curb)
Width of Turning Lanes	Region of Durham Standard	3.5m

Design Criteria	Reference/Source	Proposed Conditions
	S-300.040 (Apr. 2021) Region of Durham Standard S-300.050 (May 2018)	
Min. Left Turn Storage and Deceleration Length	Region of Durham Standard S-300.040 (Apr. 2021)	77.0m
Left Turn Approach and Departure Taper Ratio	Region of Durham Standard S-300.040 (Apr. 2021)	35:1
Min. Right Turn Storage and Deceleration Length	Region of Durham Standard S-300.050 (May 2018)	50.0m
Right Turn Approach Taper Length	Region of Durham Standard S-300.050 (May 2018)	75.0m
Width of Multi-Use Path	City of Oshawa Standard OS-306 (Apr. 2024)	3.0m
Crossfall of Multi-Use Path	City of Oshawa Standard OS-306 (Apr. 2024)	2% (min) - 4% (max)
Max. Longitudinal Grade of Multi-Use Path	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.10.3	5.0%
Min. Lateral Clearance from Edge of Multi-Use Path	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.10.2	0.5m
Width of Sidewalk	City of Oshawa Design Criteria Manual (Jun. 2024), Section 3.9	1.8m

**See Section 6.3 – Intersection Configuration, for additional details.*

Steel beam guiderails (OPSD 912.185, Type M20) are proposed on both sides of the roadway north of the 1866 Stevenson Road North property at the existing crossing watercourse, where the grade differential between the boulevard and the water crossing is greater than 1.2m. Detailed assessment on the need for slope protection barriers and the grading behind the back of the proposed multi-use path as per City Standard OS-223 is to be further reviewed during detailed design.

6.2 ROADWAY HORIZONTAL AND VERTICAL GEOMETRY

The proposed horizontal alignment has generally been designed to match the existing road centerline (mainly a series of tangents), with additional considerations to minimize grading impacts to private properties and not exceed a maximum point of tangent intersection (PI) bearing angle delta of 0.5° (as per the TAC GDG). At the Taunton Road West-Stevenson Road North intersection, a realignment with a tangent through the intersection is proposed to bring the intersection geometry up to standard as per **Table 19**.

The proposed vertical profile largely matches the existing road centreline, with slope adjustments and sag curves added for proper sight line and drainage. To minimize grading impacts on private properties with short driveways or frontages, vertical differentials were carefully managed along the roadway profile. This assessment included the driveways for 1642, 1650, 1715, 1720, 1728, 1750, 1739, and 1866 Stevenson Road North. Detailed assessment on the cut and fill analysis to minimize excess soils will be further analyzed during detailed design.

The Preliminary Design Drawings are provided in **Appendix K.**

6.3 INTERSECTION CONFIGURATION

With the Taunton Road West-Stevenson Road North intersection under Durham Region's jurisdiction, the preliminary design of this intersection reconfiguration incorporated comments and requirements from Region staff and is to be further developed and coordinated during detailed design. To add dedicated left and right turning lanes to both the north and south intersection legs, a removal of the full road median on the south intersection leg along Airport Boulevard is proposed to ensure roadway centerline alignment and lanes are aligned across the intersection. The design of the Conlin Road-Stevenson Road North intersection is to be further coordinated with an adjacent Region of Durham project proposed on Conlin Road, during detailed design.

In addition to the roadway design criteria outlined in **Table 18** above, the width of all proposed lanes (turning, through, and curb lanes) are to be 3.5m on Stevenson Road North and Airport Boulevard approaching Taunton Road West; with 3.5m measured to the edge of pavement (curb gutter) for curb lanes. Exceptions to the 3.5m lane widths are below:

- The northbound curb lane on the north intersection leg is to be 4.25m as per City of Oshawa standards (as outlined in **Table 18** above), however aligned with the left edge of the northbound right turn lane on the south intersection leg.
- The southbound curb lane on the south intersection leg is to utilize the remainder of the existing pavement width after assigning 3.5m to all other northbound lanes, however aligned with the left edge of the southbound right turn lane on the north intersection leg.

Swept path analysis using WB-20 and HSU templates informed the design of curb radii and left-turn lane stop bar setbacks for large truck movements at intersections. The City of Toronto Curb Radii Guideline was applied to propose the starting positions for WB-20 right turns, using the adjacent lane due to infrequent truck volumes. This approach was proposed to reduce crosswalk lengths and enhance pedestrian safety. HSU right turns were analyzed using the curb lane to accommodate potential industrial traffic from Northwood Business Park. A 0.3m buffer around vehicles and a 1.5m clearance for opposing left turns were applied, aligning with TAC GDG. This analysis for the Taunton Road West-Stevenson Road North intersection will be refined during detailed design.

The Swept Path Analysis of HSU and WB-20 movements is provided in **Appendix K**.

6.4 DRAINAGE AND STORMWATER MANAGEMENT

Stevenson Road North currently features a rural cross section without minor system drainage infrastructure. Drainage relies on roadside ditches conveying flow to four (4) existing outfalls discharging directly or indirectly to Oshawa Creek or Goodman Creek. These outfalls are located at Conlin Road, existing Culvert CL-2, existing Culvert CL-3 and Taunton Road West. Within the Study limits, there are no existing SWM/LID features. Groundwater conditions along Stevenson Road North is generally considered shallow within the project limits and is reported to be between 1.5 to 3.9 m deep.

With the proposed urbanization and improvements to Stevenson Road North, design of the drainage and stormwater management are to be based on the latest applicable design standards and guidelines from the City of Oshawa, Central Lake Ontario Conservation Authority (CLOCA), the Region of Durham, the MECP and MTO. The design criteria utilized in the preliminary design for the Stevenson Road North Study Area is shown in **Table 19** and **Table 20** below.

Table 19: Stormwater Design Criteria

Design Criteria	Site Requirements	Reference
Storm Sewer Drainage	<u>Minor System</u> All storm sewers will be analyzed for 1-year storm conveyance. Receiving sewer at Taunton Road is expected to require conveyance of the 10-year event and overcontrol to ensure rates discharged to the sewer will not be exceeded from existing conditions.	City of Oshawa Design Criteria Manual (2024)
	<u>Major System</u> The site will convey 100-year major system along the Stevenson Road ROW to each respective outfall. Review of major system and potential impacts to the safe passage of vehicles.	
Water Quality	In accordance with City practice, prior to discharge to the receiving storm sewer system, high density, commercial and mixed-use lands require on-site water quality treatment in the form of OGS. Where feasible, quality control measures should be designed to provide Enhanced levels of treatment (80% of total suspended solids (TSS)) per MOE guidelines, this may be achieved using a treatment train approach.	City of Oshawa Design Criteria Manual (2024) MECP Stormwater Management Manual (2003).
Water Quantity	Maintain Watershed Boundaries – The proposed approach will be made to maintain watershed boundaries and flow patterns. In the event any changes to watershed boundaries occur, the team will have pre-consultation with the City for any proposed change to watershed boundaries. Post-to-Pre-Controls – Post-development peak flows will be designed to not exceed corresponding pre-development rates for all design storm events or as per the Master Environmental Servicing Plan (MESP), or approved watershed, subwatershed or site-specific studies.	City of Oshawa Design Criteria Manual (2024)

Design Criteria	Site Requirements	Reference
	Overcontrol – If there is a known deficiency in the downstream conveyance system, additional quantity control measures may be proposed based on the capacity of the receiving system. No Downstream Impacts – In some cases, quantity control may not be required due to the nature of the hydrologic responses of creeks and timing of peak flows, as per approved watershed, subwatershed or site-specific studies, and subject to approval.	

Table 20: Culvert Crossing Design Criteria

Design Criteria	Site Requirements	Reference
Existing Conditions		
Roadway Classification	Rural Arterial	Functional classification map
Minimum Culvert Size	600 mm diameter for circular culverts 600 mm rise for elliptical or arch culverts 900 mm rise for box culverts	HDDS WC-8 Section 3.1
Design Flow (span < 6.0m)	25-yr Return Period	HDDS WC-1 Section 1.1.1
Check Flow for Scour (Arterial Road)	115% of 100-yr flow	HDDS WC-1 Section 1.1.1
Range of Flows and Upstream Water Surface Elevations	5-yr to 100-yr	HDDS WC -1 Sections 2.2
Flood Depth at Culvert	HW/D ≤ 1.5 for culverts with diameter or rise <3m	HDDS WC-7 Section 3.5
Freeboard	≥ 1.0 m to the edge of the travelled lane (25-yr storm)	HDDS WC-7 Section 3.2
Water Level Generated by the Check Flow	Water Level from Check Flow (115% of 100-yr)	HDDS WC-7 Section 3.6
	Water Level < Edge of the travelled lane	
Proposed Conditions		
Roadway Classification	Urban Arterial	Functional classification map
Minimum Culvert Size	600 mm diameter for circular culverts 600 mm rise for elliptical or arch culverts 900 mm rise for box culverts	HDDS WC-8 Section 3.1
Design Flow (span < 6.0m)	50-yr Return Period	HDDS WC-1 Section 1.1.1
Check Flow for Scour (Arterial Road)	130% of 100-yr flow	HDDS WC-1 Section 1.1.1
Range of Flows and Upstream Water Surface Elevations	5-yr to 100-yr	HDDS WC -1 Sections 2.2
Flood Depth at Culvert	HW/D ≤ 1.5 for culverts with diameter or rise <3m	HDDS WC-7 Section 3.5
Freeboard	≥ 1.0 m to the edge of the travelled lane (25-yr storm)	HDDS WC-7 Section 3.2
Water Level Generated by the Check Flow	Water Level from Check Flow (115% of 100-yr)	HDDS WC-7 Section 3.6

The proposed drainage and stormwater management plan for the new urbanized roadway has been incorporated to meet the above design criteria and is included in the complete Drainage and Stormwater Management Report provided in **Appendix L**.

6.5 TRAFFIC SIGNALS

With the lane reconfiguration and roadway centerline realignment at the Taunton Road West-Stevenson Road North intersection, the traffic signal poles, arms, heads, and all other equipment will need to be relocated and redesigned to suit the overall proposed intersection design. Additional considerations for the relocation of any associated streetlighting poles, shared streetlighting-traffic signal poles, and power supply connections will be reviewed. A proposed traffic signals layout is to be further designed and confirmed during detailed design.

6.6 ILLUMINATION

A preliminary lighting assessment was prepared to estimate the lighting levels and pole locations for the proposed roadway upgrades for the Stevenson Road North Study corridor. It is noted that two hydro poles along Stevenson Road North just north of Taunton Road West are required to be relocated to suit the proposed roadway design, with other existing poles potentially requiring modifications to be further confirmed during detailed design. For the photometric analysis (as shown in **Appendix K**, existing hydro pole locations (with the exception of the two required to be relocated to suit the proposed roadway design) were utilized. City of Oshawa approved Cree XSP Series LED 95W, 135W and 184W roadway lighting fixtures were used for calculations and photometric layouts for the illumination of the roadway midblock and multi-use path. The required lighting levels are as per City of Oshawa standards and IES RP-8-22 and proposed lighting fixtures are proposed to be newly installed or replaced on the hydro poles on the west side of Stevenson Road North. A proposed streetlighting layout is to be further designed and confirmed during detailed design.

Intersection safety lighting at the Taunton Road West-Stevenson Road North intersection is to be further designed and confirmed with the proposed traffic signals layout during detailed design.

The complete Lighting Assessment Report is provided in **Appendix M**.

6.7 UTILITIES

A preliminary compilation of existing utility information was reviewed and correlated with at-grade utility features from a topographic survey conducted for the Study. Composite Utility Plans are provided in **Appendix K**.

The proposed urbanization and roadway upgrades will require utility relocations and further coordination with utility companies during detailed design. Existing utility poles, overhead cables, underground conduits, gas mains, and pipelines within the Study Area are to be reviewed for conflicts with proposed infrastructure and with construction methodology, and relocations minimized where possible. Bell Canada, Rogers Communications, Enbridge Gas Inc., Trans-Northern Pipelines Inc., Oshawa Power and Utilities Corp., and Hydro One Networks Inc. are to be coordinated and consulted with in the detailed design development and any subsequent SUE investigations – further details on existing utility assets and future coordination efforts can be found in the Utility Conflict and Identification Matrix and Future Commitments Matrix in **Appendix J and N** (respectively).

The proposed storm sewer network, sanitary sewer, and watermain infrastructure along the Stevenson Road North Study Area are to be designed and located as per City of Oshawa and Region of Durham standards. The design of these municipal services is to be further developed and coordinated with the Region of Durham during detailed design to connect to existing and/or future municipal servicing infrastructure. Further details on existing utility

assets and future coordination efforts can be found in the Utility Conflict and Identification Matrix and Future Commitments Matrix in **Appendix J and N** (respectively).

6.8 PAVEMENT STRUCTURE

Results from a preliminary geotechnical investigation concluded that a full pavement structure reconstruction is recommended to not only address the poor condition of the existing pavement, but to also align with the pavement structure thickness requires for the proposed usage/volumes of the road (Arterial Type C as per City of Oshawa standards). The below pavement thickness is recommended based on the preliminary geotechnical investigation and as per the City of Oshawa Design Criteria Manual (for Type 'E' roads as per the City of Oshawa's geotechnical classification):

- 50mm Surface Asphalt HL3HS PGAC 64-28XJ
- 80mm Base Asphalt HDBC PGAC 64-28XJ
- 150mm Granular 'A'
- 920mm Granular 'B' Type II

The complete Geotechnical Investigation Report is provided in **Appendix E**.

6.9 PROPERTY REQUIREMENTS

The proposed urbanization and roadway upgrades are maintained within the existing City Right-of-Way (ROW) and no ROW widening, roadway encroachment, or permanent property acquisition is anticipated with the proposed preliminary design.

Temporary property easements during construction for grading impacts and additional studies and assessments within private properties to inform subsequent design efforts will be reviewed and confirmed during detailed design. Permanent and temporary property easements for relocated utility infrastructure within private properties will be reviewed and confirmed during detailed design.

6.10 PRELIMINARY COST ESTIMATE

A preliminary cost estimation for the proposed urbanization, roadway upgrades, and new municipal utilities for Stevenson Road North was prepared with the preliminary design and is estimated at approximately $45.0 million, inclusive of taxes. An additional 30% contingency was included to account for unknown items, inflation and/or other unforeseen cost escalations. This preliminary cost estimate excludes costs for contract administration and any temporary property easement requirements. Further confirmation of this preliminary cost estimate is to be reviewed during detailed design. A summary of the Preliminary Cost Estimate is shown in **Table 21**.

The complete Preliminary Cost Estimate is provided in **Appendix O**.

Table 21: Preliminary Cost Estimate Summary

Category	Amount
Roadway Works	$4,665,230.00
Stormwater Management and Drainage	$2,247,158.00
Municipal Utilities	$12,220,000.00
Miscellaneous	$2,869,859.00

Category	Amount
Electrical	$251,000.00
Landscaping	$50,000.00
Construction Cost Estimate	**$22,303,247.00**
Additional Contingency / Cost Escalation (30%)	$6,690,975.00
Relocation of Other Utilities (Design and Construction)	$10,780,000.00
Total (Exclusive of Taxes)	**$39,774,222.00**

7.0 CONSULTATION

Consultation with the public, agencies and stakeholders having interest in the project is an integral component of the planning process. Technical agencies, stakeholders and Indigenous Communities were identified at the onset of the Study and invited to provide input and/or express concerns relevant to the Study. The following section documents the key points of contact throughout the project as well as consultation with the public, agencies, and Indigenous Communities.

7.1 POINTS OF CONTACT

For this Study, the key points of contact are summarized in **Table 22**, and included the following:

- Notice of Commencement advertised through direct mailing, newspaper publications, e-mail notifications and posting to the City of Oshawa project website. The Region of Durham, the Town of Whitby and City of Oshawa staff, Emergency Services, School Board Staff, Student Transportation Services and Utility Companies identified on the Stakeholder Contact List were notified of project activities through the Notice which was accompanied by a letter that introduced the project and requested feedback on the existing conditions within the Study Area, as well as any issues or concerns.
- Notice of PIC # 1 advertised through direct mailing, newspaper publications, e-mail notifications and posting to the City of Oshawa project website;
- Notice of PIC # 2 advertised through direct mailing, newspaper publications, e-mail notifications and posting to the City of Oshawa project website;
- Notice of Completion advertised through direct mailing, newspaper publications, e-mail notifications and posting to the City of Oshawa project website;

Table 22: Points of Contact

Point of Contact/Date	Notification	Purpose
Notice of Study Commencement	▪ Published as a newspaper advertisement on April 13, 2023. ▪ Email notification sent to stakeholders and Indigenous Communities identified in the Stakeholder Contact List on April 13, 2023. ▪ Notice mailed to residents by the City. ▪ Posted on the City of Oshawa's website on April 4, 2023.	A Notice of Study Commencement was issued to announce the initiation of the project. The notice introduced the project and requested feedback on the existing conditions within the Study Area, as well as any issues or concerns.
Public Information Centre (PIC) #1	▪ Email notification sent to stakeholders and Indigenous Communities identified in the Stakeholder Contact List on June 1, 2023. ▪ Published as a newspaper advertisement on June 8, 2023.	The first of two planned in-person PIC events during the Stevenson Road North Environmental Assessment from Taunton Road West to Conlin Road West project that is intended to provide background information, identify

Point of Contact/Date	Notification	Purpose
	▪ Posted on the City of Oshawa's website on June 8, 2023. ▪ PIC Notice along with letters mailed to residents by the City. ▪ Posted on social media on June 8, 2023. Subsequent reminders posted in June 15 and June 21, 2023. ▪ PIC #1 was held on Thursday, June 22, 2023, at the Embassy Church (North-East Conference Room), 416 Taunton Road West, Oshawa, Ontario, L1L 0N8, from 6:00 PM to 8:00 PM.	the problems and opportunities that will be addressed through the Study, and to solicit community feedback.
Public Information Centre (PIC) #2	▪ Email notification sent to stakeholders and Indigenous Communities identified in the Stakeholder Contact List on June 3, 2024. ▪ PIC Notice along with letters mailed to residents by the City. ▪ Posted on the City of Oshawa's website on June 5, 2024. ▪ Posted on social media on June 5, 2024. Subsequent reminders posted in June 13 and June 17, 2024 ▪ PIC #2 was held on Tuesday, June 18, 2024, at the Embassy Church (Family Centre Auditorium), 416 Taunton Road West, Oshawa, Ontario, L1L 0N8, from 6:00 PM to 8:00 PM.	The second of the two planned in-person PIC events during the Stevenson Road North Environmental Assessment from Taunton Road West to Conlin Road West project that is intended to provide background information, summarize the information and community feedback received in PIC #1, address the development and evaluation of alternative Design Concepts for the preferred solution, the technically preferred Design Concept, the next steps in the Study, and to solicit community feedback.
Notice of Completion	▪ Published as a newspaper advertisement and posted on the City of Oshawa's website on April 30, 2025. ▪ Email notification sent to stakeholders and Indigenous Communities identified in the Stakeholder Contact List on April 30, 2025.	A Notice of Completion was issued to announce the completion of the Study.

7.2 CONSULTATION WITH EXTERNAL AGENCIES

Responses were received from various agencies acknowledging the Notice of Study Commencement of the project (**Table 23**). The CLOCA provided comments regarding potential environmental impacts and Alternative Solutions and Bell Canada provided an attachment to their existing utilities in area. The Ministry of Natural Resources and Forestry (MNRF), the Ministry of Economic Development, Job Creation and Trade, Durham Regional Police, and Trans-Northern Pipelines Inc. (TNPI) has responded with acknowledgement.

Notice of PIC #1 were emailed to external agencies on June 1, 2023. No responses have been received. A copy of the correspondences can be found in **Appendix P**.

Notice of PIC #2 were emailed to external agencies on June 3, 2024. The CLOCA and Bell Canada responded with acknowledgement. A copy of the correspondences can be found in **Appendix P**.

Table 23: External Agencies Comments Received

Date	Comments Provided By	Comments Received	Consideration of Comments Received
April 13, 2023	Bell Canada	▪ Provided alternate contact for Bell.	▪ Comment noted.
April 13, 2023	Central Lake Ontario Conservation Authority (CLOCA)	▪ Provided alternate contact for CLOCA and suggestions to the scope.	▪ Comment noted.
April 13, 2023	Durham Regional Police	▪ DRPS acknowledge the email has been received.	▪ Comment noted.
April 13, 2023	Indigenous Services Canada	▪ Provided alternate contact for ISC.	▪ Comment noted.
April 13, 2023	Ministry of Economic Development, Job Creation and Trade	▪ Ministry of Economic Development, Job Creation and Trade acknowledge the email has been received.	▪ Comment noted.
April 14, 2023	Bell Canada	▪ Bell added the Implementation Manager for Oshawa in the email.	▪ Comment noted.
April 17, 2023	Bell Canada	▪ Bell provided mark up of existing utilities in project area.	▪ Comment noted.
April 17, 2023	Ministry of Natural Resources and Forestry (MNRF)	▪ MNRF attached information to support information gathering for this Stevenson Road North project	▪ Comment noted.

Date	Comments Provided By	Comments Received	Consideration of Comments Received
April 18, 2023	Trans-Northern Pipelines Inc. (TNPI)	▪ TNPI acknowledged the Municipal Class Environmental Assessment Study.	▪ Comment noted.
April 28, 2023	Central Lake Ontario Conservation Authority (CLOCA)	▪ CLOCA acknowledged receiving the notice and would like to set up a meeting with the project team.	▪ Followed up to confirm whether CLOCA will be providing a formal response letter in regard to the Stevenson Road North EA, or if email received serves as the letter response noted below. A placeholder invitation has been sent out for a Technical Advisory Committee meeting.

A series Technical Advisory Committee (TAC) meetings were held to discuss the purpose of the project as well as providing project updates, and to obtain agency feedback. The following agencies were in attendance of the TAC meetings:

- City of Oshawa;
- Durham Region;
- CLOCA;
- Town of Whitby;
- Gannett Fleming; and
- TraffMobility.

A total of five (5) TAC meetings were conducted between September 2022 and September 2024. Details of when TAC meetings were held are summarized below.

- TAC Meeting #1 – September 26, 2022
- TAC Meeting #2 – May 23, 2023
- TAC Meeting #3 – November 21, 2023
- TAC Meeting #4 – March 7, 2024
- TAC Meeting #5 – September 17, 2024

Copies of the meetings slide decks and minutes can be found in **Appendix P**.

7.3 CONSULTATION WITH INDIGENOUS COMMUNITIES

One (1) response has been received from the Huron-Wendat Nation regarding archaeological potential along the width of the Right-of-Way (ROW). Gannett Fleming has informed the Huron-Wendat Nation that a Stage 1 Archaeological Assessment has been completed in November 2022 which determined further Archaeological Assessment is required.

Notice of PIC #1 were emailed to Indigenous Communities on June 1, 2023. The Oshawa Durham Region Metis Council has responded with acknowledgment of the PIC #1. No further responses have been received. A copy of the correspondence can be found in **Appendix P**.

Notice of PIC #2 were emailed to Indigenous Communities on June 3, 2024. No responses have been received. A copy of the correspondences can be found in **Appendix P**.

Table 24: Indigenous Communities Comments Received

Date	Comments Provided By	Comments Received	Consideration of Comments Received
April 19, 2023	Huron-Wendat Nation	▪ Can you please tell us if the whole width of the Right of Way has been assessed for archeological resources? In addition, we would like to send monitors for the purpose of archeological monitoring and construction monitoring whenever non-fill material is being dug into.	▪ Provided a copy of the Stage 1 Archaeological Assessment for reference.
June 1, 2023	Oshawa Durham Region Metis Council	▪ It does fall under our Council. I have forwarded to our LRC Branch for their review.	▪ Email forwarded to the Oshawa Durham Region Metis Council LRC Branch. Comment noted.

7.4 CONSULTATION WITH THE PUBLIC

Public Information Centre (PIC) #1
The first PIC was held on Thursday, June 22, 2023, at the Embassy Church (North-East Conference Room), 416 Taunton Road West, Oshawa, Ontario, L1L 0N8, from 6:00 PM to 8:00 PM.

The purpose of the PIC was to provide background information, identify the problems and opportunities that will be addressed through the Study, proactively engaging the public to review and receive input about the Alternative Solutions and the preliminary identification of preferred solution. Visitors were encouraged to review the information and provide feedback. The PIC followed a 'drop-in' format in the first thirty (30) minutes to allow attendees to review information presented on the display boards. Two (2) comment sheets were received from PIC #1, only one (1) was received at the PIC. A copy of the display boards can be found in **Appendix P**.

Table 25: PIC#1 Comments Received

Comments Provided By	Comments Received	Consideration of Comments Received
Resident Comment	▪ Board 16: Raised Cycle tracks - safer & easier to maintain. ▪ Board 23: Instead of mid-block Arterial Road. Install MUP.	▪ Board 16: Comment Noted, will further review during MCEA Phase 3 - Design Option Development.

Comments Provided By	Comments Received	Consideration of Comments Received
		▪ Board 23: Kindly note that it is recommended to remove the Mid-Block Arterial from the Official Plan.
Resident Comment	▪ Total 3 options presented, one recommended for 4 lane road with 30 m width? My sincere concern is that why 4 lane with existing 20 m not considered as an option? ▪ I felt like public/ neighborhood consultation was to inform and sale recommended option of 60 m widths. When questions were asked it felt like a recommended alternative was defended rather than listening concerns from public. ▪ With 20 m 4 lane could serve future traffic as and when airport is gone, and Stevenson Road is connected south of Taunton Road. ▪ 20 m width 4 lane will minimize environmental impact. ▪ 20 m widths 4 lane will serve and support City's industrial growth by maximizing developable land/ footprint. ▪ 30 m 4 lane road will have more negative impact on both environmental and potential development for industrial establishments, it could limit potential industrial development/ investment attractions. ▪ If properly designed, existing 20 m width can accommodate, 4 lanes, walkways, bicycles lane, and storm water lines, utilities (water, sewer, electrical, phone/internet). ▪ Storm water lines can go below walkways, which can take water from road lanes as well as surrounding area by proper sideway water entry to deep storm water lines. ▪ Water main can be installed deeper than minimum 1.8 m below ground because water mains are pressure water, which will allow sewer mains to install at appropriate separation distance from storm and water main. ▪ Electrical, phone internet can be installed shallow depth.	▪ 4-lane with existing 20m ROW has been reviewed during the MCEA Phase 1 and 2. However, this does not align with the current city standards for a 4-lane roadway. Additionally, it will not provide sufficient space for active transportation. ▪ The 30m ROW for the ultimate 4 lane alternative has been selected based on the evaluation criteria, following the MCEA framework, presented at the PIC. ▪ Additional design futures will be further reviewed during MCEA Phase 3 - Design Option Development.

Public Information Centre (PIC) #2

The second PIC was held on Tuesday, June 18, 2024, at the Embassy Church (Family Centre Auditorium), 416 Taunton Road West, Oshawa, Ontario, L1L 0N8, from 6:00 PM to 8:00 PM. The purpose of this second PIC was to provide a summary of the first PIC, present the development and evaluation of the alternative Design Concepts, and solicit community feedback on the Study and the recommended Design Concept. Visitors were encouraged to review the information and provide feedback. The PIC followed a 'drop-in' format in the first thirty (30) minutes to allow attendees to review information presented on the display boards. Two (2) comments were received for PIC #2, one (1) comment sheet was received at the PIC and one (one) comment was received via e-mail. A copy of the display boards can be found in **Appendix P**.

Table 26: PIC #2 Comments Received

Comments Provided By	Comments Received	Consideration of Comments Received
Resident Comment	▪ Preferred #2. Please widen MUP to 3.5-4 m makes it easier to pass + walk + ride with friends + family.	▪ Comment is noted – further design development will consider the latest infrastructure standards from the City and minimal impact to properties. Currently the City standard for the width of multi-use paths is 3.0m.
Resident Comment	▪ As a homeowner on Stevenson Rd N, Oshawa I am very much in favour of the proposed road improvements outlined in the environmental assessment, as per the June 18, 2024, public information meeting.	▪ Comment is noted – response is appreciated, and we look forward to progressing this project.

8.0 IMPACTS, MITIGATION MEASURES AND MONITORING

The following section documents the impacts, mitigation measures and monitoring for the implementation of the preferred Design Concept.

8.1 NATURAL ENVIRONMENT

Aquatic Habitats and Communities

The reconstruction of Stevenson Road North has the potential to result in impacts to aquatic habitat only at Crossing 2, where the tributary of Oshawa Creek crosses the roadway. Effects on this aquatic feature related to the proposed road reconstruction could include:

- Temporary disruption or permanent loss of site-specific habitat;
- Temporary changes to water quality; and,
- Changes in water temperature.

The tributary of Oshawa Creek at Crossing 2 is an indirect fish habitat, and any culvert works completed for this project will maintain flows to downstream direct fish habitat in Oshawa Creek. However, indirect impacts during construction and due to potential increases in site runoff could occur.

To reduce the potential for a Harmful Alteration, Disruption or Destruction (HADD), the following environmental protection measures have been developed:

- Work areas will be delineated with construction fencing to minimize the area of disturbance;
- Appropriate sediment control structures will be installed prior to and maintained during construction to prevent entry of sediments into the watercourse;
- If dewatering measures are to be employed, effluent will be treated prior to discharge to receiving watercourse;
- Good housekeeping practices related to materials storage/stockpiling, equipment fueling/ maintenance, etc. Will be implemented during construction; and,

  If necessary, disturbed riparian areas will be vegetated and/or covered with an erosion control blanket as quickly as possible to stabilize the banks and minimize the potential for erosion and sedimentation.

Changes to water quality will be mitigated through the isolation of the work areas behind deployed and maintained erosion and sediment controls, and the treatment of effluent from dewatering prior to its release. To improve storm water quality, runoff will be treated by OGS units installed prior to water outletting to watercourses/drainage features. Additional water quality treatment will be explored during detailed design. In addition, all exposed areas should be vegetated as quickly as possible once the work is completed.

It is expected that there will be no significant increase in water temperature as a result of the proposed works as long as appropriate mitigation measures (see above) are implemented.

Vegetation and Vegetation Communities

The proposed improvements to Stevenson Road North have the potential to result in impacts to vegetation and vegetation communities. Clearing of vegetation will be required to accommodate the proposed improvements to Stevenson Road North. **Table 27** provides a summary of the total area of vegetation communities that will be removed to accommodate the improvements to Stevenson Road North.

Table 27: Summary of Impact to Vegetation Communities

Vegetation Community	Total Area (ha) to be impacted
Dry-Moist Old Field Meadow (CUM1-1)	0.32
Coniferous Plantation (CUP3)	0.03
Mineral Cultural Savannah (CUS1)	0.09
Mineral Cultural Thicket/Mineral Swamp Thicket (CUT1/SWT2)	0.1
Mineral Cultural Woodland (CUW1)	0.64
Dry-Fresh White Pine-Maple-Oak Mixed Forest (FOM2)	0.39
Mineral Deciduous Swamp (SWD4)	0.02
Manicured (M)	0.65
Total	**2.24**

Cultural and naturalized vegetation communities are widespread throughout Ontario and the loss of a portion of these vegetation communities is not anticipated to have any negative impacts to the remaining cultural meadows and communities provided Forest Edge Management is implemented within the Study Area.

Wildlife and Wildlife Habitat

Works associated with the Stevenson Road North reconstruction will take place within a relatively small footprint mainly within the existing road ROW. As such, most of the area affected will be within areas previously disturbed and along the edges of more natural habitats. The removal of vegetation to accommodate the road reconstruction is not expected to have any significant impact on wildlife and/or wildlife habitat using the area. Displacement of SAR habitat is not anticipated.

Based on the results of the assessment, the following recommendations have been developed.

- Disturbance, clearing, or disruption of vegetation where birds may be nesting should be completed outside the window of April 1 to August 31 to avoid the breeding bird season for the majority of the bird species protected under the act.
- Vegetation removals along Stevenson Road North should occur outside of the breeding bird window to minimize disturbance to birds and other wildlife species utilizing habitats within the Study Area.
- Construction duration and disturbance in the vicinity of natural habitats within the Study Area should be minimized to the extent possible.
- Edge management should be implemented along all natural area edges created by the project to ensure encroachment is minimized.

Summary of Natural Environment Mitigation and Monitoring Commitments

The following table provides an overview of potential impacts and effects resulting from project activities along with mitigation and monitoring commitments.

Table 28: Summary of Natural Environment Mitigation and Monitoring Commitments

Potential Impacts	Mitigation and Monitoring Measures
Aquatic Habitat and Communities	
▪ Temporary disruption or permanent loss of site-specific habitat; ▪ Temporary changes to water quality; and, ▪ Changes in water temperature	▪ Delineate work areas with construction fencing to minimize the area of disturbance; ▪ Appropriate sediment control structures will be installed prior to and maintained during construction to prevent entry of sediments into the watercourse; ▪ If dewatering measures are to be employed, effluent will be treated prior to discharge to receiving watercourse; ▪ Good housekeeping practices related to materials storage/stockpiling, equipment fueling/ maintenance, etc. Will be implemented during construction; and, ▪ If necessary, disturbed riparian areas will be vegetated and/or covered with an erosion control blanket as quickly as possible to stabilize the banks and minimize the potential for erosion and sedimentation.
Vegetation and Vegetation Communities	
▪ Vegetation clearing to accommodate the proposed improvements to Stevenson Road North	▪ Implementation of Forest Edge Management within Study Area
Wildlife and Wildlife Habitat	
▪ Impact on wildlife and/or wildlife habitat using the area. ▪ Displacement of SAR habitat is not anticipated.	▪ Disturbance, clearing, or disruption of vegetation where birds may be nesting to be completed outside the window of April 1 to August 31 to avoid the breeding bird season. ▪ Vegetation removals to occur outside of the breeding bird window to minimize disturbance to birds and other wildlife species utilizing habitats within the Study Area. ▪ Construction duration and disturbance in the vicinity of natural habitats within the Study Area should be minimized to the extent possible. ▪ Edge management should be implemented along all natural area edges created by the project to ensure encroachment is minimized.

8.2 LAND USE AND SOCIO-ECONOMIC ENVIRONMENT

Property Requirements

As noted in Section 6.9 – Property Requirements, no permanent property acquisition is anticipated with the proposed preliminary design. Any temporary property easements during construction for grading impacts and additional studies and assessments within private properties to inform subsequent design efforts will be reviewed and confirmed during detailed design. Permanent and temporary property easements for relocated utility infrastructure within private properties will be reviewed and confirmed during detailed design.

Driveway & Access Restrictions
All private driveways along the Study Area corridor will require grading modifications and driveway culvert relocations to suit the proposed roadway urbanization and upgrades. Further investigations during detailed design are to be reviewed for minimized impacts to all private properties, particularly with private properties with shorter driveway lengths.

The full road reconstruction and installation of municipal utilities along Stevenson Road North will require temporary disruptions to traffic operations within the Study Area. Traffic management plans will be further developed during detailed design to mitigate disruptions and investigate how traffic, pedestrian access, and private property accesses will be maintained during construction.

Summary of Land Use and Socio-Economic Environment Mitigation and Monitoring Commitments
The following table provides an overview of potential impacts and effects resulting from project activities along with mitigation and monitoring commitments.

Table 29: Summary of Land Use and Socio-Economic Environment Mitigation and Monitoring Commitments

Potential Impacts	Mitigation and Monitoring Measures
▪ Property requirements ▪ Driveway and access restrictions	▪ No permanent property acquisition is anticipated with the proposed preliminary design. ▪ Review temporary property easements during construction for grading impacts and additional studies and assessments within private properties ▪ Develop traffic management plans to mitigate disruptions and investigate how traffic, pedestrian access, and private property accesses will be maintained during construction

8.3 CULTURAL HERITAGE

A total of 2 built heritage resources (B.H.R.s) and 4 cultural heritage landscapes (C.H.L.s) were identified within the Study Area which are historically and contextually associated with land use patterns in the City of Oshawa. **Table 30** outlines the potential impacts on all identified B.H.Rs and C.H.Ls within the Study Area. The preliminary impact assessment determined the following:

- Minor property encroachment is anticipated for B.H.R. 1 (580 Taunton Road) and C.H.L. 3 (2000 Stevenson Road North), which may result in minor vegetation removals. No direct or indirect adverse impacts to the property are anticipated as the proposed work is greater than 50 m form any potential heritage attribute;
- Ground disturbance including grading, excavation, and vegetation removal should be limited to the extent required to complete the proposed works. Where removal of mature vegetation is required, post-construction rehabilitation with sympathetic replanting should be considered to mitigate impacts. In this respect, consultation with a qualified arborist and Indigenous Communities should be completed to determine the most appropriate species;
- Indirect adverse impacts from construction-related vibration are possible for C.H.L. 1 (1680 Stevenson Road North) and C.H.L. 3 (2000 Stevenson Road North) as heritage attributes on the property are within 50 m of the proposed works within the right-of-way;
- To address the potential for indirect impacts due to construction related vibration, undertake a baseline vibration assessment during detailed design to determine potential vibration impacts.

Table 30: Preliminary Impact Assessment and Recommended Mitigation Measures

Feature I.D.	Location/Name	Type and Description of Potential/Anticipated Impact	Mitigation Strategies
B.H.R. 1	580 Taunton Road Potential B.H.R. – Identified on mapOshawa as Heritage – 70 plus years	It is understood that the limits of the proposed improvements will encroach approximately two m into the property at 580 Taunton Road West at the southeast corner of the property and follow Stevenson Road North for about 40 m. It has been determined that the preferred alternative area terminates approximately 70 m east of the heritage attributes of B.H.R. 1. Therefore, no direct or indirect adverse impacts are anticipated to any character-defining elements of the residence.	Ground disturbance on the eastern property frontage including grading, excavation, and vegetation removal should be limited to the extent required to complete the proposed works. Where removal of mature vegetation is required, post-construction rehabilitation with sympathetic replanting should be considered to mitigate impacts. In this respect, consultation with a qualified arborist and Indigenous communities should be completed during the detailed design phase to determine the most appropriate species.
B.H.R. 2	1520 Stevenson Road North Potential B.H.R. – Identified on mapOshawa as Heritage – 70 plus years	It is understood that the proposed improvements will result in minor grading changes on the property at 1520 Stevenson Road North at each of the two existing driveways. Access to the property using these driveways will continue following improvements. The limits of the proposed improvements will terminate more than 50 m of the potential heritage attributes. Therefore, no negative impacts are anticipated as construction will not be directly or indirectly impacting any character-defining elements of the residence.	No further work required.
C.H.L 1	1680 Stevenson Road North Potential C.H.L.– Identified on mapOshawa as Heritage – 70 plus years	It is understood that the limits of the proposed improvements will be confined to the right-of-way adjacent to C.H.L. 1. Adverse indirect impacts from construction-related vibration are possible as the structure is located within 50 m of the proposed work. No additional indirect impacts	Construction and staging should be suitably planned to avoid impacts to C.H.L. 1. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified B.H.R.s and C.H.L.s, etc.

Feature I.D.	Location/Name	Type and Description of Potential/Anticipated Impact	Mitigation Strategies
		were identified.	To address the potential for indirect impacts due to construction related vibration, undertake a baseline vibration assessment during detail design to determine potential vibration impacts.
C.H.L 2	1725 Stevenson Road North Potential C.H.L.– Identified on mapOshawa as Heritage – 70 plus years	1725 Stevenson Road North at each of the two existing driveways. Access to the property using these driveways will continue following improvements. The limits of the proposed improvements will terminate approximately 200 m west of the potential heritage attributes. Therefore, no negative impacts are anticipated as construction will not be directly or indirectly impacting any character-defining elements of the residence	No further work required.
C.H.L 3	2000 Stevenson Road North Potential C.H.L. – Identified during background research and field review	It is understood that the limits of the proposed improvements will encroach approximately two m into the property at 2000 Stevenson Road North along the frontage of the property. No direct or indirect adverse impacts are anticipated as there are no potential heritage attributes adjacent to the right-of-way. Adverse indirect impacts from construction-related vibration are possible as the structure lies within 50 m of the proposed work. No additional indirect impacts were identified.	Construction and staging should be suitably planned to avoid impacts to C.H.L. 3. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified B.H.R.s and C.H.L.s, etc. To address the potential for indirect impacts due to construction related vibration, undertake a baseline vibration assessment during detail design to determine potential vibration impacts.
C.H.L 4	50 Conlin Road Potential C.H.L. – Identified on	The proposed work is anticipated to be confined to Stevenson Road south of the subject property, greater than 50 m from the identified potential heritage attributes. No direct or indirect	No further work required.

Feature I.D.	Location/Name	Type and Description of Potential/Anticipated Impact	Mitigation Strategies
	mapOshawa as Heritage – 70 plus years	adverse impacts are anticipated to C.H.L. 4.	

Based on the results of the assessment, the following recommendations have been developed.

1. Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to identified built heritage resources and cultural heritage landscapes. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified B.H.R.s and C.H.L.s, etc.

2. Ground disturbance including grading, excavation, and vegetation removal should be limited to the extent required to complete the proposed works. Where removal of mature vegetation is required, postconstruction rehabilitation with sympathetic replanting should be considered to mitigate impacts. In this respect, consultation with a qualified arborist and Indigenous Communities should be completed to determine the most appropriate species.

3. To ensure that 1680 Stevenson Road North (C.H.L. 1) and 2000 Stevenson Road North (C.H.L. 3) are not adversely impacted during construction, baseline vibration monitoring should be undertaken during detailed design. Should this advance monitoring assessment conclude that the structure(s) on these properties will be subject to vibrations, prepare and implement a vibration monitoring plan as part of the detailed design phase of the project to lessen vibration impacts related to construction.

   Should future work require an expansion of the Study Area then a qualified heritage consultant should be contacted in order to confirm the impacts of the proposed work on potential heritage resources.

Summary of Cultural Heritage Mitigation and Monitoring Commitments
The following table provides an overview of potential impacts and effects resulting from project activities along with mitigation and monitoring commitments.

Table 31: Summary of Cultural Heritage Mitigation and Monitoring Commitments

Potential Impacts	Mitigation and Monitoring Measures
▪ Minor property encroachment which may result in minor vegetation removals. ▪ Indirect adverse impacts from construction-related vibration	▪ Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to identified built heritage resources and cultural heritage landscapes. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified B.H.R.s and C.H.L.s, etc. ▪ Ground disturbance including grading, excavation, and vegetation removal should be limited to the extent required to complete the proposed works. ▪ Where removal of mature vegetation is required, post-construction rehabilitation with sympathetic replanting should be considered to mitigate impacts.

Potential Impacts	Mitigation and Monitoring Measures
	▪ Consultation with a qualified arborist and Indigenous Communities should be completed to determine the most appropriate species; ▪ Undertake a baseline vibration assessment during detailed design to determine potential vibration impacts.

8.4 ARCHAEOLOGY

The Stage 1 background assessment determined that four (4) previously registered archaeological sites are located within one km of the Study Area. The property inspection determined that parts of the Study Area exhibit archaeological potential and will require archaeological assessment.

Based on the results of the assessment, the following recommendations have been developed.

1. Parts of the Study Area exhibit archaeological potential. These lands require Stage 2 archaeological assessment by test pit and pedestrian survey at five m intervals, where appropriate. Stage 2 is required prior to any proposed construction activities on these lands;

2. The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance, low and wet conditions, slopes in excess of 20 degrees or being previously assessed. These lands do not require further archaeological assessment; and,

3. Should the proposed work extend beyond the current Study Area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

Notwithstanding the results and recommendations presented in the Stage 1 Archaeological Assessment, it is noted that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Archaeology Programs Unit of the Ministry of Tourism, Culture and Sport (MTCS) should be immediately notified.

The above recommendations are subject to Ministry approval, and it is an offence to alter any archaeological site without Ministry of Tourism, Culture and Sport concurrence. No grading or other activities that may result in the destruction or disturbance of any archaeological sites are permitted until notice of MTCS approval has been received.

Summary of Archaeology Mitigation and Monitoring Commitments

The following table provides an overview of potential impacts and effects resulting from project activities along with mitigation and monitoring commitments.

Table 32: Summary of Archaeology Mitigation and Monitoring Commitments

Potential Impacts	Mitigation and Monitoring Measures
▪ Potential for the disturbance of unassessed or documented archaeological resources.	▪ All work shall be performed in accordance with the recommendations from the Stage 1 AA report and any subsequent AAs as well as applicable guidelines and regulations.

Potential Impacts	Mitigation and Monitoring Measures
▪ Potential for the recovery of archaeological resources during construction	▪ Should the proposed work extend beyond the current Study Area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands. ▪ For areas determined to have archaeological potential or contain archaeological resources that will be impacted by project activities, additional AA will be conducted by a professionally licensed archaeologist prior to disturbance. ▪ In the event that archaeological resources are encountered or suspected of being encountered during construction, all work will cease. The location of the findspot should be protected from impact by employing a buffer in accordance with requirements of the MCM. A professionally licensed archaeologist will be consulted to complete the assessment. If resources are confirmed to possess cultural heritage value/interest then they will be reported to the MCM, and further AA of the resources may be required. If it is determined that there is a potential for Indigenous artifacts, Metrolinx should be contacted and Applicable Law will be followed. ▪ If human remains are encountered or suspected of being encountered during project work, all activities must cease immediately and the local police/coroner as well as the Bereavement Authority of Ontario on behalf of the Ministry of Government and Consumer Services must be contacted. Archaeological investigations of human remains will not proceed until police have confirmed the remains are not subject to forensic investigation. Once human remains have been cleared of police concern, the MCM will also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act. If the human remains are determined to be of Indigenous origin, Metrolinx should be contacted and all Applicable Law must be adhered to. ▪ All AA findings will be shared with Indigenous Communities that were engaged in the Stage 1 AA.

8.5 NOISE

Sound levels for the outdoor living areas (OLAs) were calculated both with and without the project using the STAMSON v 5.04 computer program and the ORNAMENT prediction model. The calculations were made 3 meters from the building's rear face and 1.5 meters above the ground, based on a 16-hour daytime Leq (07:00–23:00).

Three conditions were assessed: Existing (2022), Future "Do Nothing" (2033), and Future "With Reconstruction Within the ROW" (2033). The existing sound levels serve as a reference but are not used in determining the need for noise mitigation. Since the project doesn't add travel lanes, the traffic volumes for the Future "Do Nothing" and Future "With Reconstruction Within the ROW" scenarios are the same. The main changes affecting sound levels are minor shifts in the roadway alignment. The predicted sound levels are summarized in the table below.

Table 33: Predicted Sound Levels

Receptor	Daytime Sound Level (dBA, 16-hour, Leq)			Noise Impact due to Project* (dB)	≥ +5 dB Impact
	Existing (2022)	Future "Do Nothing" (2033)	Future "With Reconstruction Within ROW" (2033)		
1	41.0	42.4	42.5	0.1	No
2	40.2	41.7	41.7	0	No
3	43.3	44.6	44.7	0.1	No
4	42.6	44.1	44.1	0	No
5	41.9	43.4	43.4	0	No
6	42.7	44.2	44.2	0	No
7	40.3	43.4	43.4	0	No
8	54.2	55.4	55.4	0	No

*The noise impact is defined as the Future "With Reconstruction within ROW" noise level minus the Future "Do Nothing" sound level.

As shown in the above table, the changes in sound levels with the project do not exceed 5 dB at any of the receptors. This is expected as the only substantive change that would affect the overall sound levels are minor shifts in the roadway alignment. While the Region of Durham's noise policy does not apply to a City road, it should be noted that all sound levels are still below 60 dB and would not require noise mitigation in any case.

Construction noise is temporary and will cease once the project is completed. As it is transient and not permanent, the associated effects of construction noise will be short term in nature. It is recommended the City of Oshawa Noise By-law be adhered to by the contractor during construction of the project.

In addition to adhering to the by-law, the contractor's equipment must also meet the MECP guidelines as found in NPC-115 and NPC-118, which sets sound emission standards for various items of construction equipment according to the date of manufacture of the equipment.

Much of the construction equipment that is likely to be required for the proposed road construction work is not unusual. As a result, the sounds associated with the construction activities will not be alien to most residents in an urban area. It is recommended the City's standard complaints procedure be applied to this project, to provide a forum for residents to voice their concerns over unwarranted construction noise. If warranted, the Region may request the contractor to conduct sound level monitoring of construction activities.

Noise mitigation is not required as the change in sound levels with the project is less than 1 dB when compared to the sound levels without the project at all the receptors. This is well below the 5 dB impact needed to consider noise mitigation measures.

8.6 AIR QUALITY

The modelling for this assessment considered vehicle emissions from Stevenson Road North, and its major intersecting roadways; Conlin Road and Taunton Road West. The maximum combined concentrations for the Future Build emissions scenario were below their respective MECP guidelines or CAAQS, with the exception of the

24-hr PM10, annual benzene, and 24-hour and annual Benzo(a)pyrene. Note that background concentrations exceeded the guideline for all of these contaminant averaging periods. The overall contribution from the roadway emissions to the combined concentrations was small.

During construction of the roadway, dust is the primary contaminant of concern. Other contaminants including NOx and VOC's may be emitted from equipment used during construction activities. Due to the temporary nature of construction activities, there are no air quality criteria specific to construction activities. However, the Environment Canada "Best Practices for the Reduction of Air Emissions from Construction and Demolition activities" document provides several mitigation measures for reducing emissions during construction activities.

Mitigation techniques discussed within the Air Quality report include material wetting or use of non-chloride dust suppressants to reduce dust, use of wind barriers, and limiting exposed areas which may be a source of dust and equipment washing. Furthermore, as the 24-hr PM10 level will exceed the corresponding guideline due to ambient background levels, additional mitigation measures such as planting vegetation (for example coniferous species and shrubs) should be considered to minimize particulate impacts at nearby sensitive receptors. It is recommended that these best management practices be followed during construction of the roadway to reduce any air quality impacts that may occur.

Mitigation measures for air quality are not warranted, due to the small number of days which are expected to exceed the guideline.

8.7 GEOTECHNICAL

The results of the Geotechnical Investigation Report determined that no groundwater problem was anticipated for the construction of the road. Mitigation measures associated with subgrade preparation and temporary construction dewatering are described below.

Subgrade Preparation

Following the removal of existing pavement structure (topsoil within the road widening area if required), the site should be stripped off all loose fill and any organic or otherwise unsuitable soils to the full depth of the roads, both in cut and fill areas under roads.

Following stripping, the site should be graded to the subgrade level and approved. The subgrade should then be proof-rolled, in the presence of the Geotechnical Engineer, by at least several passes of a heavy compactor having a rated capacity of at least 8 tonnes. Any soft spots thus exposed should be removed and replaced by select fill material, like the existing subgrade soil and approved by the Geotechnical Engineer. The subgrade should then be re-compacted from the surface to at least 98% of its Standard Proctor Maximum Dry Density (SPMDD). The final subgrade should be cambered or otherwise shaped properly to facilitate rapid drainage and to prevent the formation of local depressions in which water could accumulate.

Due to the clayey (i.e. impervious) nature of the subsoil in the upper portions, proper cambering and allowing the water to escape towards the sides (where it can be removed by means of sub-drains) is considered to be beneficial for this project. Otherwise, any water collected in the granular sub-base materials could be trapped thus causing problems due to softened subgrade, differential frost heave, etc. For the same reason damaging the subgrade during and after placement of the granular materials by heavy construction traffic should be avoided. If the moisture content of the local material cannot be maintained at ±2% of the optimum moisture content, imported granular material may be required.

Any fill required for regrading the site or backfill should be select, clean material, free of topsoil, organic or other foreign and unsuitable matter. The fill should be placed in layers and compacted to at least 95% of its SPMDD. The degree of compaction should be increased to 98% within the top 1.0 m of the subgrade. The compaction of the new fill should be checked by enough field compaction tests.

The reconstruction strategy should be carried out in conformance with the City of Oshawa as follows:

- Mill/excavate the existing asphalt full depth (ranging between 20 and 150 mm) and dispose offsite. The existing asphalt concrete millings may be re-used as reclaimed asphalt pavement (RAP) in recycled hot-mix asphalt mixtures;
- Excavate the existing granular fill material and subgrade to a depth of 700 mm below ground surface to accommodate the new pavement structure and dispose the excavated material offsite;
- Proof-roll the exposed sub-grade material to identify "weak zones/soft area" under the supervision of a qualified geotechnical engineer. In weak areas excavate the subgrade to competent subgrade and replace with new Granular B, Type I and compact to 100% of the materials' Standard Proctor Maximum Dry Density (SPMDD);
- Place a minimum of 420 mm Granular B Type II sub-base course on the prepared subgrade compact to 100%of the material's Standard Proctor Maximum Dry Density (SPMDD) and provide the required crossfall. It should be noted that excessive rolling using heavy rollers and/or dynamic compaction can lead to subgrade softening;
- Place 150 mm Granular A base course, compact to 100% of the material's SPMDD and provide the required crossfall;
- Place two (2) lifts of new hot-mix asphalt concrete consisting of one (1) lift of 40 mm of SP 12.5 B or HL3 surface course and one (1) lift of 80 mm of SP 19.0 B or HL8 binder courses, placed and compacted in conformance with OPSS.MUNI 1151 and OPSS 310. The surface of the completed pavement should be provided with a minimum centre-to-edge cross-fall of 2 percent, and
- Place tack coat between the hot-mix asphalt lifts.

Temporary Construction Dewatering

Upon completion of boreholes, un-stabilized groundwater was measured at depth of 1.8 to 2.7 meters below ground surface (mbgs) and stabilized groundwater measured in the installed monitoring wells were found at 1.5 to 3.9 mbgs. No groundwater issue is anticipated for the pavement reconstruction.

Summary of Geotechnical Mitigation and Monitoring Commitments

The following table provides an overview of potential impacts and effects resulting from project activities along with mitigation and monitoring commitments.

Table 34: Summary of Geotechnical Mitigation and Monitoring Commitments

Potential Impact and/or Project Activity	Mitigation and Monitoring Measures
▪ Pavement investigation and recommendation	▪ Existing and proposed pavement structure to be confirmed during detailed design.
▪ Construction requirements	▪ Additional soil and groundwater sampling and chemical analysis should be undertaken during detailed design to gain a better understanding of soil disposal and groundwater dewatering requirements.

8.8 CONTAMINATION

Environmental Due Diligence for Property Acquisitions

To undertake the roadway improvements, if property acquisitions are required within APECs of high to moderate potential for contamination, it is recommended that property specific Phase One ESAs (and if necessary, Phase Two ESAs) are completed in general accordance with O. Reg, 153/04 for environmental due diligence.

Road Construction and Management of Excess Soil

Concerning construction activities and management of excess soil, it is recommended that an Assessment of Past Uses, Sampling and Analysis Plan (if required) and Soil Characterization Report (if required) is completed, where excavation is proposed in accordance with O. Reg. 406/19: On-Site and Excess Soil Management.

Summary of Contamination Mitigation and Monitoring Commitments

The following table provides an overview of potential impacts and effects resulting from project activities along with mitigation and monitoring commitments.

Table 35: Summary of Contamination Mitigation and Monitoring Commitments

Potential Impact and/or Project Activity	Mitigation and Monitoring Measures
▪ Property acquisition within APECs of high to moderate potential for contamination	▪ Complete property specific Phase 1 ESAs (and Phase 2 if necessary) in general accordance with O. Reg, 153/04.
▪ Generation and management of excess soil	▪ Prepare an Assessment of Past Uses, Sampling and Analysis Plan (if required) and Soil Characterization Report (if required), where excavation is proposed, in accordance with O. Reg. 406/19: On-Site and Excess Soil Management

9.0 CLIMATE CHANGE

The Ministry of the Environment, Conservation and Parks (MECP) guide, Consideration of Climate Change in Environmental Assessment in Ontario, outlines expectations for incorporating climate change into Environmental Assessments, supporting the province's Climate Change Action Plan.

The guide identifies two key considerations for climate change in EAs:

1. A project's impact on climate change. This requires projects to give consideration to Mitigation Measures, such as greenhouse gas emission reduction and carbon sinks (natural landscapes) protection.
2. Climate change's impact on the project. This requires projects to give consideration to Adaptation Measures that make the project more resilient to the effects of climate change.

9.1 POTENTIAL FOR PROJECT TO IMPACT CLIMATE CHANGE

Project specific recommendations outlined in Section 6 support Climate Change Mitigation Measures. For example:

- Multi-use paths recommended on the east side of Stevenson Road North will accommodate cyclists and pedestrians, thus encouraging active transportation and discouraging single occupancy automobile use.
- Maintaining existing ROW to minimize impact to adjacent natural landscape.

To mitigate potential construction-phase impacts, the following best practices are recommended:

- Erosion and Sediment Control: Implement detailed erosion and sediment control measures throughout all construction phases to minimize sediment entering drainage systems.
- Dust Suppression: Employ dust suppression techniques during construction to reduce air quality impacts.
- Traffic Management: Develop a traffic staging plan during detailed design to maintain local access and through traffic, minimize detours, and reduce congestion. Additional measures to minimize idling will also be explored.
- Construction Vehicle Access: Specify construction vehicle access and movement requirements in contract documents prepared during detailed design.

9.2 POTENTIAL FOR CLIMATE CHANGE TO IMPACT THIS PROJECT

Project specific recommendations outlined in Section 6 support Climate Change Mitigation Measures to enhance resilience to climate change impacts and extreme weather events. For example:

- Low impact development strategies are proposed to be explored to improve water infiltration and reduce flooding risks.
- Tree plantings are proposed to be accommodate in the boulevards, as space permits, for slope stabilization and reducing roadway heat impacts.

10.0 FUTURE WORK COMMITMENTS, PERMITS AND MONITORING

The following section documents the key next steps that should be complete during the subsequent project phases, based on consultation completed to date with the public, agencies, and Indigenous Communities.

10.1 FUTURE WORK AND COMMITMENTS

The ESR identifies specific items to be reviewed and confirmed during detailed design. Some of these commitments will address specific issues raised by stakeholders during the EA process.

Arborist Study
An arborist assessment will be undertaken during the detailed design phase.

Subsurface Utility Engineering (SUE) Investigation
A SUE will be undertaken during the detailed design phase, in accordance with ASCE Standard 38-02 "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data.

Fluvial Geomorphology
A fluvial geomorphological assessment of a local tributary will be required for the culvert replacement during the detailed design phase.

Coordination with Adjacent Projects
Coordination with adjacent projects (e.g., regional, municipal, development, utilities) is to continue throughout the detailed design phase to ensure seamless integration of project designs and effective construction planning.

The complete Future Commitments Matrix is provided in **Appendix N**.

10.2 PERMITS AND MONITORING

The ESR identifies specific permits and approvals likely required during the detailed design. Those will form the basis of the permits and approvals register for the subsequent project phases.

Fisheries Act
The proposed works are likely to cause a HADD at the tributary of Oshawa Creek at Crossing 2. However, since the watercourse is indirect fish habitat and there will be a change to the footprint of the culvert due to its replacement with a longer pipe, DFO review will be necessary once the design is finalized. Therefore, it is recommended that a DFO request for review is completed and submitted during detailed design.

Species At Risk Act
The proposed works along Stevenson Road North will not affect any species listed under Schedule 1 of SARA. During detailed design, if any additional species at risk are encountered (unlikely), consultation with DFO and MECP regarding the works proposed may need to be undertaken to determine whether a permit is required (SARA, at this location, applies to aquatic species only).

Endangered Species Act
No species regulated under the Endangered Species Act will be affected by the proposed project. Further detailed studies are recommended during detailed design to ascertain the presence/absence of SAR bats along the Stevenson Road North corridor as several snags/dead trees were noted along the roadway during 2022 field work. If required, the necessary permit(s) will be secured during detailed design.

Ontario Regulation 41/24

Based on a review of CLOCA mapping, portions of the proposed of the Stevenson Road North Study Area are subject to Ontario Regulation 41/24 (previously CLOCA's Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses). A permit from the CLOCA, pursuant to O. Reg. 41/24, will be secured during detail design.

Ontario Heritage Act

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Act.

Archaeological sites recommended for further archaeological field work or protection remain subject to Section 48(1) of the Act and may not be altered, nor may artifacts be removed from them, except by a person holding an archaeological license

The Funeral, Burial and Cremation Services Act

If any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the Registrar of Cemeteries at the Ministry of Consumer Services is also immediately notified.

11.0 SUMMARY

In accordance with the Municipal Class Environmental Assessment (MCEA), this report documents the planning and design process carried out for the upgrades to the Stevenson Road North corridor from Taunton Road West to Conlin Road West. This Study is being conducted as a Schedule 'C' project under the Municipal Class Environmental Assessment (2023), which includes Phases 1 to 4 of the EA process. Phase 5, focused on implementation, will take place during the detailed design and construction stages. Stevenson Road North, classified as a Type 'C' Arterial in the City of Oshawa's Official Plan, is currently a two-lane, rural road with no paved shoulders or sidewalks and faces roadside safety issues due to road geometry and sightlines. There are no municipal services in the Study area, and stormwater is managed through roadside drainage ditches. There is an opportunity to enhance the road's function by upgrading the infrastructure and municipal services, which would support the development of adjacent lands and promote economic growth. The improvements would also focus on enhancing road safety and supporting active transportation, such as walking and cycling.

This Study involved the collection and summary of existing conditions data through a combination of background research, field investigations, and the identification of environmental constraints and sensitivities. The investigations covered the following technical areas: land use & socio-economic assessment, natural environment assessment, cultural heritage assessment, archaeological assessment, transportation & infrastructure assessment, noise assessment, air quality assessment, soil contamination, geotechnical investigations and utilities.

Future transportation conditions were analyzed as part of the Study to assess the transportation needs of the Study Area, taking into account planned developments, anticipated changes in land use, and projected increases in traffic demand. The analysis focused on two future horizon years, 2033 and 2051, and incorporated consultations with the City of Oshawa, the Town of Whitby, and the Region of Durham. The 2033 horizon year was selected based on the 2033 Region-Wide Development Charge Background Study's population and employment forecasts, which formed key inputs for the analysis. Furthermore, the 2051 horizon year was selected to undertake sensitivity analyses to assess the potential closure of the Oshawa Executive Airport in 2041 and the redevelopment of the airport lands with Stevenson Road North extending south from Taunton Road West to Rossland Road West.

For the future 2033 horizon year, the analysis identified that a two-lane configuration for Stevenson Road North between Taunton Road West and Conlin Road West would sufficiently addresses the transportation needs while the Oshawa Executive Airport is operational.

For the future 2051 horizon year, when the Oshawa Executive Airport ceases operations, several assumptions and estimations were made for the redevelopment of the airport lands. It was identified that a four-lane configuration may be warranted for 2051 and beyond, necessitating a Right-of-Way (ROW) widening. Due to the uncertainty surrounding the timing of the closure of the Oshawa Executive Airport, and because assumptions and estimations were made in the transportation needs analysis, along with the limited details available at the time of the Study regarding the redevelopment of the airport's lands, as well as the four-lane configuration not being warranted until 2051 and beyond, this Study focused on the 2033 horizon year and a two-lane configuration for Stevenson Road North.

As part of this Study, three Alternative Solutions were developed and evaluated based on how well they addressed the identified problems and opportunities; Alternative 1: Do Nothing, Alternative 2: Minor Operational Improvements, and Alternative 3: Reconstruct and Widen Right-of-Way (ROW). The Alternative Solutions developed in the Study were evaluated against several criteria including their impacts on the natural environment, socio-economic environment, cultural environment, transportation, and cost.

Following the evaluation of alternatives, Alternative 3: Reconstruct and Widen Stevenson Road North was selected as the preferred solution because it best addresses the identified issues, improves road conditions, enhances safety, and accommodates all modes of transportation, including cars, transit, pedestrians, and cyclists.

Following consultation with stakeholders, the public, and relevant agencies, the recommended solution for the Study involves a two-phase approach. Phase 1 involves addressing the needs for the Interim Condition while the Oshawa Executive Airport is still in operation by reconstructing Stevenson Road North to an urbanized two-lane configuration within the existing City right-of-way (ROW) of approximately 20.1 meters. Phase 2 involves addressing the needs of the Ultimate Condition where the Oshawa Executive Airport ceases operation, as well as the possible need for a four-lane configuration and a 30.0-meter ROW (as per the City of Oshawa's standard OS-208A). As this improvement need is not required until 2051 or later, the Study focused on the Interim Condition by preserving the existing ROW, minimizing additional property acquisition, and reducing impacts on residents. However, in order to accommodate future transportation needs, it is recommended that a four-lane configuration and a 30.0-meter ROW be protected for Stevenson Road North. Any property requirements for widening to a 30.0-meter ROW should be addressed through future development approvals as the Study Area redevelops. The ultimate condition for a four-lane, 30.0-meter ROW configuration was not explored further as part of this Study.

After selecting the recommended Alternative Solution for Phase 1 – Interim Condition, Design Concepts were developed to examine how the recommended Alternative Solution will be implemented. Three (3) Design Concepts were developed, each including a two-lane roadway configuration, full roadway reconstruction of the pavement structure, and added municipal services underneath the proposed pavement structure. In all Design Concepts, the locations of utilities, streetlighting, and tree planting will vary based on space availability within the right-of-way (ROW) with efforts to minimize removals and relocations of existing infrastructure.

Design Concept 2: Two-Lane Urban (East MUP) was recommended as it best addresses the Problem/Opportunity Statement with minimized impacts to properties, areas of archaeological potential, areas of cultural heritage significance, and the natural environment. In comparison to the other two Design Concepts, Design Concept 2 has more opportunities to reduce relocations of existing streetlighting and utility poles, provide areas for LIDs, and provide a dedicated active transportation facility.

Consultation points with the stakeholders, public, and agencies through the project included a Notice of Commencement, PIC 1 and PIC 2, as well as a series of Technical Advisory Committee (TAC) meetings.

A preliminary cost estimation for the proposed urbanization, roadway upgrades, and new municipal utilities for Stevenson Road North was prepared based on the preliminary design and is estimated at approximately $45.0 million, inclusive of taxes and contingency.

Following the filing of the Environmental Study Report, detailed design for the project is expected to begin in 2025, followed by construction. Future work will include an Arborist Study, Subsurface Utility Engineering (SUE), and a Fluvial Geomorphology assessment for the culvert replacement. Coordination with adjacent projects will ensure integrated designs and effective construction planning. Various permits and monitoring will be required during the design and construction phases, including a *Fisheries Act* review by DFO due to potential culvert changes. While no impacts on listed species are anticipated under the *Species at Risk Act*, further consultation may be necessary. Additional studies on bats may be required under the *Endangered Species Act*, and a permit from CLOCA for *Ontario Regulation 41/24* will be needed. Consultation and fieldwork may also be required under the *Ontario Heritage Act* if archaeological discoveries are made, and any burial sites found must be reported as per the *Funeral, Burial, and Cremation Services Act*.