



City of Brantford

Northwest Municipal Services Expansion Environmental Assessments

Oak Park Road Trunk Watermain: Schedule B Project File Report (Final)

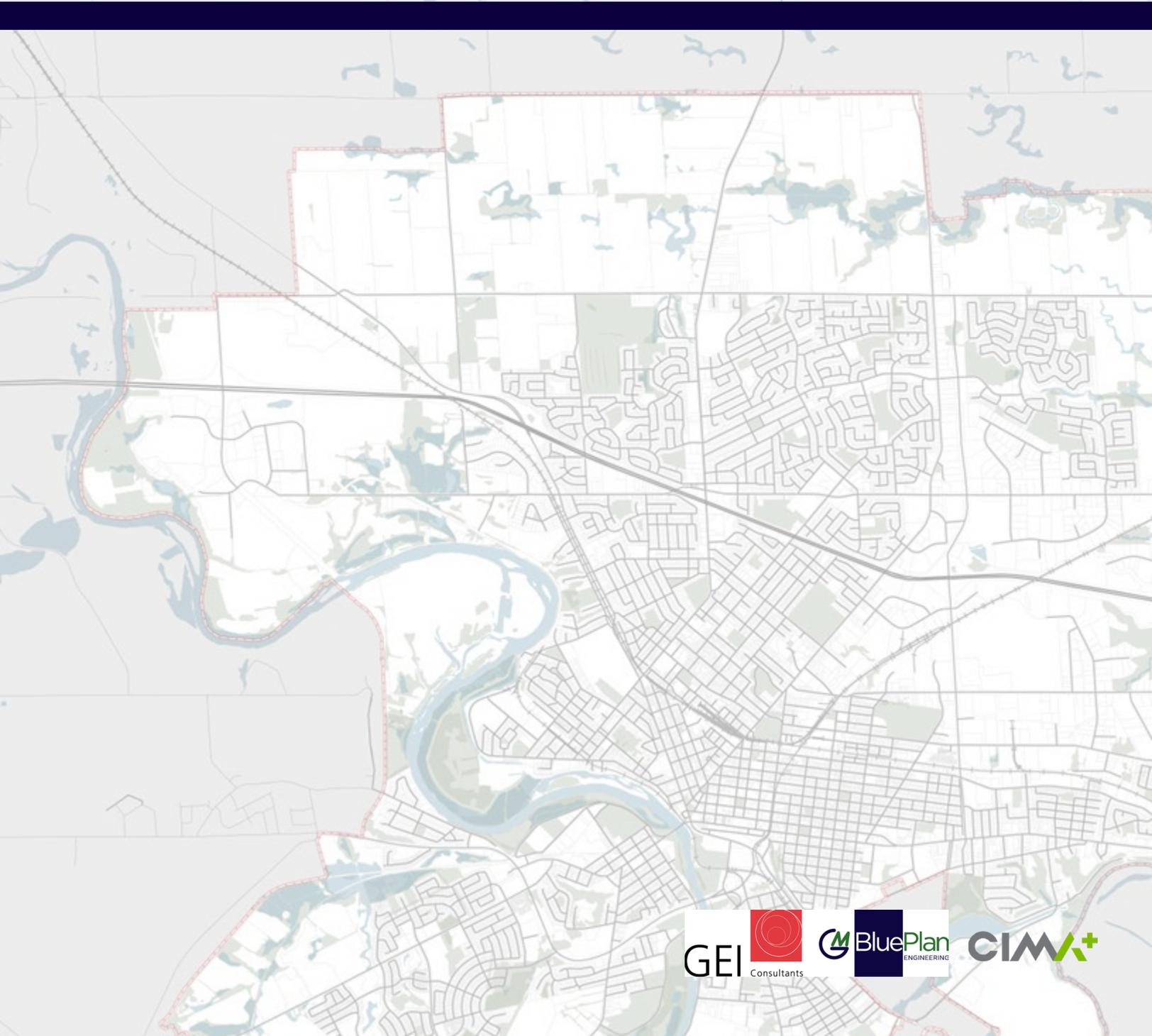


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Executive Summary

Project Context

The long-term growth strategy of the City of Brantford (the City), as outlined in the City’s Municipal Comprehensive Review (MCR), targets the majority of the City’s greenfield growth to occur along the City’s northern and eastern boundaries within the lands the City acquired as part of the 2017 land annexation, also known as the Boundary Expansion Lands. In support of the City’s MCR, the City undertook a Master Servicing Plan (MSP), and the Transportation Master Plan (TMP) to identify the critical municipal infrastructure required to service the City’s 2051 growth needs including the servicing of the Boundary Expansion Lands.

To support the future servicing of the Boundary Expansion Lands, the City’s MSP and TMP identified several major trunk infrastructure projects. Both the MSP and TMP identified the need to extend existing key water, wastewater, and transportation infrastructure from south of Highway 403 northwards, through the lands along Oak Park Road and south of Powerline Road (the Study Area) to the Northwest Employment Lands and boarder Boundary Expansion Lands. Additionally, the MSP identified the need for adequate stormwater management for the study area.

The Northwest Municipal Services Expansion Environmental Assessment (EA) Studies are being completed to satisfy the Municipal Class Environmental Assessment (MCEA) required for the seven (7) major infrastructure projects, identified through the City’s MSP and TMP, which all transect the study area. The study area is shown in Figure 1-1, while Table 0-1 describes the seven infrastructure projects.

Table 0-1 Project Descriptions

Project Name	Class EA Schedule	Description
Oak Park Road Trunk Sewer (MSP Project WW-SS-001)	B	Focus on determining the preferred Highway 403 crossing location to provide wastewater servicing to northwest Brantford. This project parallels the Oak Park Road Trunk Watermain.

Project Name	Class EA Schedule	Description
Powerline Road Trunk Sewer (MSP Project WW-SS-001)	B	Continuing from the Oak Park Road Trunk Sewer, this project determines the optimal alignment to provide wastewater servicing to the Paris Road and Powerline Road intersection. This project parallels the Powerline Road Trunk Watermain and is coordinated with the Powerline Road Widening project.
Oak Park Road Trunk Watermain (MSP Project W-M-002)	B	Focus on determining the preferred Highway 403 crossing location to provide water servicing to northwest Brantford. This project parallels the Oak Park Road Trunk Sewer.
Powerline Road Trunk Watermain (MSP Project W-M-003)	B	Continuing from the Oak Park Road Trunk Watermain, this project determines the optimal alignment to provide water servicing to the Paris Road and Powerline Road intersection. This project parallels the Powerline Road Trunk Sewer and is coordinated with the Powerline Road Widening project.
Stormwater Management in Grand River Northwest Catchment (MSP Project SW-LI-010)	B	With consideration for the future land use, this project seeks to determine the optimal stormwater management strategy within the study area.
Oak Park Road Widening (TMP Project Number 2)	C	Considers widening of Oak Park Road from Hardy Road to Powerline Road with the inclusion of active transportation and upgrade of the Highway 403 / Oak Park Road interchange.
Powerline Road Widening (TMP Project Number 7A)	C	Considers widening and potential realignment of Powerline Road from Oak Park Road to Paris Road with the inclusion of active transportation.

Due to the inter-related nature of these projects and the potential for the individual project elements to influence the alignment, phasing, and/or recommendation of one or more other infrastructure projects, the seven projects are being cohesively considered in a way that allows the identification of an overall optimal servicing strategy.

The Schedule B Oak Park Road Trunk Watermain and Oak Park Road Trunk Sewer projects were completed in an accelerated manner ahead of the remaining 5 projects to encourage development efficiencies within the lands immediately north of Highway 403.

Project Communication & Stakeholder Engagement

A stakeholder list was developed during Phase 1 based on the Project Team’s knowledge of the study area and was continuously updated throughout the project. The following notices were issued:

- Notice of Project Commencement: April 2023
- Notice of Public Information Centre #1: January 2024

A Public Information Centre (PIC) was held in January 2024 to highlight the preferred alternative for the Oak Park Road Trunk Sewer project.

The following major stakeholders were engaged through additional communications and workshops:

- Ministry of Transportation
- County of Brant
- Grand River Conservation Authority
- Hydro One
- GrandBridge Energy
- CN Rail
- Developers / Property Owners for the potentially affected properties

Key feedback from the various stakeholders was utilized to develop key technical project requirements and were incorporated into the evaluation and identification of the recommended solutions.

The following Indigenous Peoples were engaged for this project:

- Mississaugas of the Credit First Nation (MCFN)
- Six Nations of the Grand River (SNGR)

Both MCFN and SNGR indicated they were interested in participating in the project and were engaged in the process, including receiving project updates and notices, project workshops, and having the opportunity to review background review documents and providing input on the final project recommendations before project filing.

Evaluation Process

In accordance with the Class EA process, the Project Team developed a long list of alternative solutions to address the needs of the Oak Park Road Trunk Watermain and Oak Park Road Trunk Sewer. The Project Team then screened the alternatives according to the criteria below:

- Feasibility of Highway 403 crossing
- Adequately supports external servicing
- Minimizes property and easement requirements
- Feasibility of connection to existing trunk infrastructure
- Minimizes construction impacts
- Minimizes environmental impacts
- Supports internal servicing
- Limits disruption to external infrastructure

The Project Team subsequently evaluated the short list of alternatives for technical servicing and environmental constraints.

Development and Evaluation of Alternatives

The overarching study includes the evaluation of a wastewater servicing solution from south of Highway 403 to the intersection at Powerline Road and Paris Road. The alignment evaluations considered the joint impacts and construction requirements (phasing, etc.) as they will be constructed together. An evaluation of the full alignment from south of Highway 403 to Powerline Road and Paris Road was completed to identify the preferred alternative.

The Highway 403 crossing location was considered first as it is the most limiting factor in the evaluation. The Project Team identified seven (7) alternative solutions, which were categorized by Highway 403 crossing location, described below.

Alternative 1 – SC Johnson Trail: Connects to the existing trunk on Fen Ridge Court and crosses Highway 403 near the pedestrian bridge crossing, utilizes the SC Johnson Trail to the north.

Alternative 2 – Existing Easement: Connects to the City’s easement on Fen Ridge Court and crosses Highway 403 immediately west of the Oak Park Road interchange.

Alternative 3 – Oak Park Road: Connects to the trunk sewer on Oak Park Road and utilizes the Oak Park ROW, crossing Highway 403 through the Oak Park Road interchange.

Alternative 4 – Tall Grass Court: Connects to the trunk sewer on Oak Park Road, and crosses Highway 403 from Tall Grass Court.

Alternative 5 – East of Pond: Connects to the trunk sewer on Oak Park Road, and crosses Highway 403 east of the existing pond from Savannah Oaks Drive.

Alternative 6 – East of Ferrero: Connects to the trunk sewer on Oak Park Road, and crosses Highway 403 from the east of the Ferrero Canada business.

Three (3) servicing options were carried forward following the long list of alternatives screening: Alternatives 1, 2, and 5. The short list of alternatives was subsequently evaluated to reveal Alternative 2 as the preferred alternative. Table 0-2 provides an evaluation summary.

Table 0-2 Summary of Evaluation Results and Key Factors Influencing Evaluation

Evaluation Category	1 – Trail	2 – Easement	5 – East of Pond
Technical Feasibility	<ul style="list-style-type: none"> Longest route alignment Requires alignment along SC Johnson Trail Significant easement requirements Difficulty in achieving 14 m setback from MTO ROW 	<ul style="list-style-type: none"> Shortest possible route alignment Aligns with existing trunk water infrastructure 	<ul style="list-style-type: none"> Conflicts with existing infrastructure on Savannah Oaks Drive
Environmental Impacts	<ul style="list-style-type: none"> Significant environmental impacts due to alignment through Provincially Significant Woodland Tree clearing required along SC Johnson Trail Higher potential to affect Species at Risk 	<ul style="list-style-type: none"> Lowest impact to environmental features 	<ul style="list-style-type: none"> Proximity to existing pond south of Highway 403
Social / Cultural Impacts	<ul style="list-style-type: none"> Requires closure of the SC Johnson Trail Construction within areas of cultural significance and archaeological potential Impact to businesses along Fen Ridge Court 	<ul style="list-style-type: none"> Shortest possible route alignment Minimizes impact to businesses along Savannah Oaks Drive Avoids areas of cultural significance and archaeological potential 	<ul style="list-style-type: none"> Impact to businesses along Savannah Oaks Drive Required closure of Oak Park Road Avoids areas of cultural significance and archaeological potential
Financial Viability	<ul style="list-style-type: none"> Increase in cost compared to Alternative 2 due to length 	<ul style="list-style-type: none"> Lowest cost due to shortest distance 	<ul style="list-style-type: none"> Increase in cost compared to Alternative 2 due to length

Evaluation Category	1 – Trail	2 – Easement	5 – East of Pond
Evaluation Result	Not Recommended	Preferred Alternative	Not Recommended

Preferred Alternative

Alternative 2 – Easement was identified as the preferred based on having both the highest overall evaluation score, but also scoring as the highest rated alternative in each evaluation category which included technical feasibility, environmental and social / cultural considerations, and financial viability.

Project Implementation:

The City is proceeding with completing the other Class EAs within the overall study, including the Powerline Road Trunk Watermain project which will connect to the Oak Park Road Trunk Watermain and continue to the intersection of Powerline Road and Paris Road to provide servicing for northwest Brantford. While those projects as being completed, the design phase of the Oak Park Road Trunk Watermain can begin in Fall 2024 following the completion of this Class EA. Construction is subsequently planned to begin in 2027.

Project next steps include:

- Continued engagement with Indigenous Peoples
- Confirmation of approval for the preferred alternative from MTO, specifically for the Highway 403 crossing and infrastructure adjacent to the MTO ROW
- Coordination with property owner for required easement
- Completion of the Powerline Road Widening and Powerline Road Trunk Watermain projects
- Detailed design of the Oak Park Road Trunk Watermain project
- Tunneled construction, followed by open cut construction

Property Acquisition:

The preferred alternative is largely within existing easements and road ROWs. However, there is a portion of the alignment which requires a new easement to be acquired from the existing landowner for the portion of the alignment from north of Highway 403 to Oak Park Road. The location of the required easement is highlighted in the attached figure of the preferred alignment. The easement ensures that the

watermain and sewer will maintain a 14 m setback from the MTO boundary, and includes space required for open cut construction of the infrastructure. A total area of approximately 9,800 m² will be required. Coordination with the property owner will be required prior to detailed design.

Ministry of Transportation:

The preferred alternative is required to cross Highway 403. It is expected that construction of the trunk watermain and trunk sewer will not impact the highway; however, MTO will continue to be involved throughout the design and construction phases to ensure full compliance with all requirements.

A Highway Corridor Management Permit will be required as the work will occur adjacent to a provincial highway (Highway 403). The preferred alternative alignment and design specific to the Highway 403 crossing and construction near the MTO land boundary will require approval from MTO. MTO will also monitor the construction activities.

Other Mitigation Requirements:

The preferred alternative is within land that is already disturbed and is therefore unlikely to contain significant natural heritage and cultural heritage elements. The goal is to contain construction within the already disturbed areas of the site to minimize any impacts.

It is anticipated that typical construction impact mitigation measure will be required; however, the preferred alignment largely avoids existing active roads and/or conflicts with existing utilities, minimizing potential impacts to the public and business.

Acronyms and Abbreviations

AA	Archaeological Assessment
CCME	Canadian Council of Ministers of the Environment
CEPA	Canadian Environmental Protection Act
City	City of Brantford
CN Rail	Canadian National Railway
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk Ontario
DEM	Digital Elevation Model
EA	Environmental Assessment
EA Act	Ontario Environmental Assessment Act
ESR	Environmental Study Report
GGH	Greater Golden Horseshoe
GIS	Geographic Information System
GRCA	Grand River Conservation Authority
HVA	Highly Vulnerable Aquifer
IAA	Impact Assessment Act
IPZ	Intake Protection Zone
MBCA	Migratory Birds Convention Act
MCEA	Municipal Class Environmental Assessment
MCM	Ministry of Citizenship and Multiculturalism
MCR	Municipal Comprehensive Review
MEA	Municipal Engineers Association
MNRF	Ministry of Natural Resources and Forestry
MSP	Master Servicing Plan
MTO	Ontario Ministry of Transportation
OHA	Ontario Heritage Act
Project Team	GM BluePlan, CIMA+ and City of Brantford
ROW	Right-of-Way
SAB	Settlement Area Boundary
SAR	Species at Risk
SARA	Species at Risk Act
SGRA	Significant Groundwater Recharge Area
SPR	Source Protection Regions
SWP	Source Water Protection
TMP	Transportation Master Plan
VSA	Vulnerable Scoring Area
WHPA	Wellhead Protection Area

1.0 Introduction

1.1 Study Background and Overview

The long-term growth strategy of the City of Brantford (the City), as outlined in the City’s Municipal Comprehensive Review (MCR), targets the majority of the City’s greenfield growth to occur along the City’s northern and eastern boundaries within the lands the City acquired as part of the 2017 land annexation, also known as the Boundary Expansion Lands. In support of the City’s MCR, the City undertook a Master Servicing Plan (MSP), and the Transportation Master Plan (TMP) to identify the critical municipal infrastructure required to service the City’s 2051 growth needs including the servicing of the Boundary Expansion Lands.

To support the future servicing of the Boundary Expansion Lands, the City’s MSP and TMP identified several major trunk infrastructure projects. Both the MSP and TMP identified the need to extend existing key water, wastewater, and transportation infrastructure from south of Highway 403 northwards, through the lands along Oak Park Road and south of Powerline Road (the Study Area) to the Northwest Employment Lands and boarder Boundary Expansion Lands. Additionally, the MSP identified the need for adequate stormwater management for the study area.

The Northwest Municipal Services Expansion Environmental Assessment (EA) Studies are being completed to satisfy the Municipal Class Environmental Assessment (MCEA) required for the seven (7) major infrastructure projects, identified through the City’s MSP and TMP, which all transect the study area. Table 1-1 describes the seven projects.

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Project Name	Description
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Powerline Road Widening (TMP Project Number 7A)	Considers widening and potential realignment of Powerline Road from Oak Park Road to Paris Road with the inclusion of active transportation.

*MSP Project WW-SS-001 (Oak Park Road Trunk Sewer) identified a trunk sewer along Oak Park Road and Powerline Road. The Powerline Road Trunk Sewer EA project was added during Phase 1 to allow for development efficiencies north of Highway 403.

The study area for these projects is generally bounded by Powerline Road to the north, Highway 403 to the south, the Canadian National Railway (CN Rail) to the east, and the Grand River to the west. Figure 1-1 provides a visualization of the core study area.

Due to the inter-related nature of these projects and the potential for the individual project elements to influence the alignment, phasing, and/or recommendation of one or more other infrastructure projects, the seven projects are being cohesively considered in a way that allows the identification of an overall optimal servicing strategy.

1.2 Project File Report Structure

This Project File Report contains documentation of the Schedule B Class EA. Key elements of the Class EA process, as documented in this report, include:

- Section 1 Introduction:** Describes the study background and purpose.
- Section 2 Study Framework:** Details the Class EA process.
- Section 3 Policy Overview:** Provides an overview of relevant policies and legislation that influence this Class EA.
- Section 4 Data Sources:** Highlights relevant data sources used for the evaluation.
- Section 5 Existing Conditions:** Details the technical, environmental, and social/cultural conditions of the study area.
- Section 6 Technical Servicing Requirements:** Describes the technical servicing requirements.
- Section 7 Screening and Evaluation Methodology:** Explains the screening approach and methodology.
- Section 8 Development of Alternatives:** Provides an overview of the development of alternatives.
- Section 9 Evaluation of Alternatives:** Describes the evaluation of alternatives.
- Section 10 Preferred Alternative, Mitigation Measures, and Implementation Plan:** Presents the preferred alternative and its associated mitigation measures, and implementation plan.
- Section 11 Communications Summary:** Describes the public and agency consultation process undertaken as part of the Class EA process.
- Section 12 Conclusion:** Provides a conclusion and summary of findings.

- Existing Municipal Boundary
- Highway
- Arterials and Collectors
- Waterbody
- Expansion Study Area

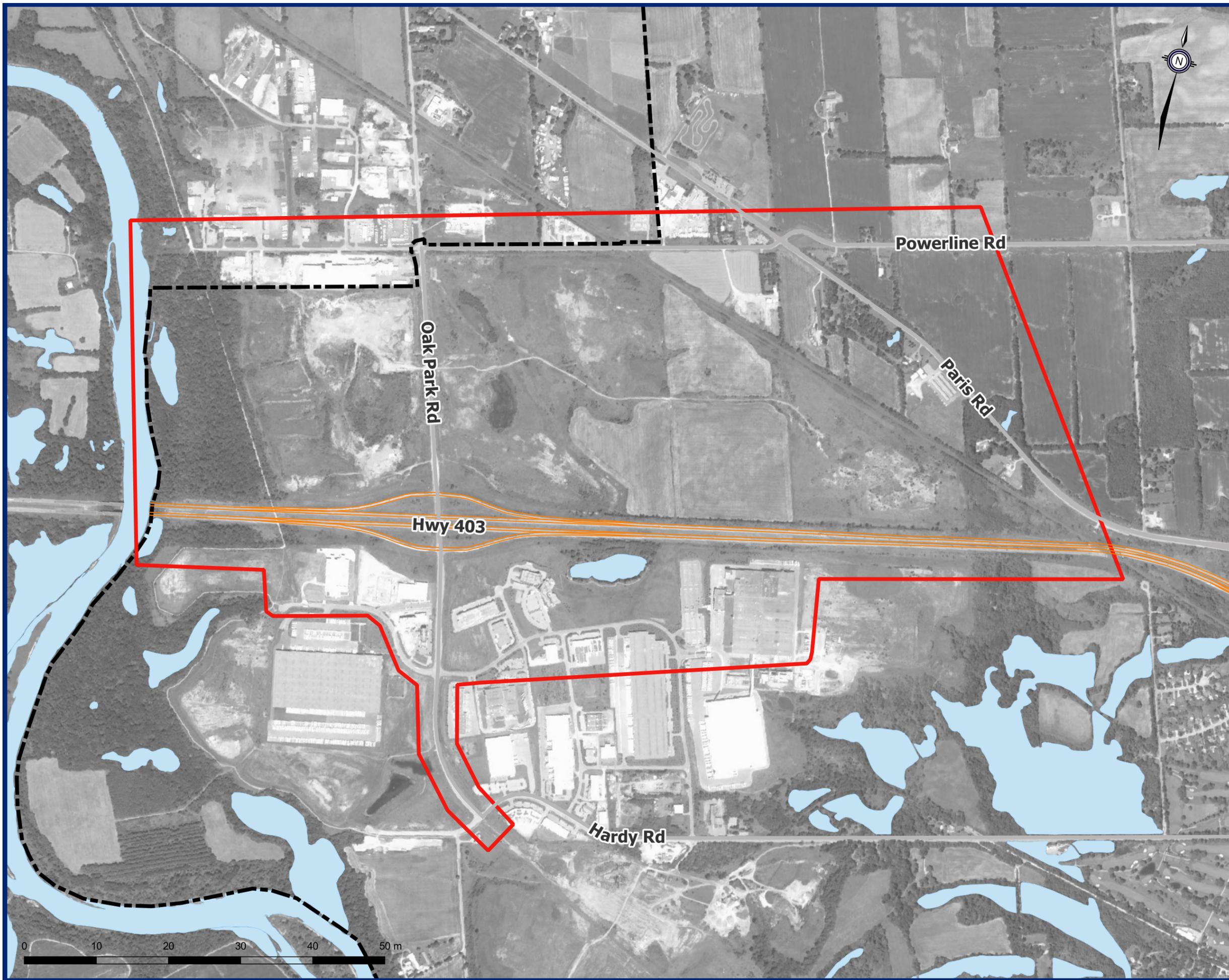


Figure 1-1
 Study Area

2.0 Study Framework

2.1 Municipal Class Environmental Assessment Process

Municipal infrastructure projects are subject to the Ontario Environmental Assessment Act (EA Act). The Class Environmental Assessment is an approved self-assessment process under the EA Act for a specific group or “class” of projects. Projects are considered approved, subject to compliance with an approved Class EA process. The MCEA prepared and managed by the Municipal Engineers Association (MEA), applies to municipal infrastructure projects including roads, water, and wastewater.

The MCEA process follows a prescriptive and phased approach that integrates consultation and engagement with Rights Holders, stakeholders, and the public. The process and underlying regulation and legislation are described in the following sections.

2.1.1 Ontario Environmental Assessment Act

The EA Act governs the protection, conservation, and management of the environment in Ontario and applies to public and private undertakings.

Under the EA Act, the environment is defined as:

- a) air, land, or water,
- b) plant and animal life, including human life,
- c) the social, economic, and cultural conditions that influence the life of humans or a community,
- d) any building, structure, machine, or other device or thing made by humans,
- e) any solid, liquid, gas, odour, heat, sound, vibration, or radiation resulting directly or indirectly from human activities, or
- f) any part or combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario

The EA Act establishes the overruling requirements for Environmental Assessments, including regulation of Class Environmental Assessments.

2.1.2 Principles of Environmental Planning

The Act sets a framework for a rational, objective, transparent, replicable, and impartial planning process based on the following five key principles:

- 1) **Consultation with affected parties.** Consultation with the public, government review agencies, Indigenous Communities and other stakeholders is an integral part of the planning process. Consultation allows the proponent to identify and address concerns cooperatively before final decisions are made. Consultation should begin as early as possible in the planning process.
- 2) **Consideration of a reasonable range of alternatives.** Alternatives include functionally different solutions, “alternatives to” the proposed undertaking and “alternative methods” of implementing the preferred solution.
- 3) **Identification and consideration of the effects of each alternative on all aspects of the environment.** This includes the natural, social, cultural, technical, and economic environments.
- 4) **Systematic evaluation of alternatives in terms of their advantages and disadvantages, to determine their net environmental effects.** The evaluation shall increase in the level of detail as the study moves from the evaluation of “alternatives” to the evaluation of “alternative methods”.
- 5) **Provision of clean and complete documentation of the planning process followed, to allow “traceability” of decision-making with respect to the project.** The planning process must be documented in such a way that it may be repeated with similar results.

2.1.3 Municipal Class Environmental Assessment Process

“Class” Environmental Assessments were approved by the Minister of the Environment in 1987 for municipal projects having predictable and mitigatable impacts. The Class EA approach streamlines the planning and approvals process for municipal projects that are: recurring, similar in nature, usually limited in scale, predictable in the range of environmental impacts, and responsive to mitigation.

The MCEA process includes engagement with Rights Holders, public, and review agency consultation, evaluation of alternatives, an impact assessment of the

recommended alternative, evaluation of design alternatives, and identification of measures to mitigate potential adverse effects.

The MCEA outlines the procedures to be followed to satisfy Class EA requirements for water, wastewater, stormwater management, and road projects. The process includes five phases:

Phase 1: Problem or Opportunity Definition

Phase 2: Identification and Evaluation of Alternative Solutions to Determine a Preferred Solution while taking input from the public and other stakeholders into consideration

Phase 3: Examination of Alternative Methods of Implementation of the Preferred Solution while taking input from the public and other stakeholders into consideration

Phase 4: Documentation of the Class EA process in the form of an Environmental Study Report (ESR) for public review

Phase 5: Implementation and Monitoring

Exempt Projects: These projects, most of which were formerly classified as Schedule A and A+ projects, include various municipal maintenance, operational activities, rehabilitation works, minor reconstruction or replacement of existing facilities, and new facilities that are limited in scale and have minimal adverse effects on the environment. These projects are exempt from the requirements of the Environmental Assessment Act.

Eligible for Screening to Exempt: Some projects may be eligible for exemption based on the results of a screening process. Proponents may choose to complete the applicable screening process to determine whether the project is eligible for exemption from the Act or proceed with the applicable Schedule B or C process. Projects that are eligible for screening are identified in the MCEA document. Proponents must fully and accurately complete the relevant screening process(es) outlined in the MCEA to proceed pursuant to the exemption.

Schedule B: These projects have the potential for some adverse environmental effects. The proponent is required to undertake the first two phases of the assessment process, involving mandatory contact with directly affected Rights Holders, public, First Nations, and relevant review agencies, to ensure that they are aware of the project and that their

concerns are identified and considered. A Project File Report must be prepared and made available for review by any interested person or party. If there are no outstanding concerns, then the proponent may proceed to implementation once the regulatory process has been completed. Schedule B projects generally include improvements and minor expansions to existing facilities or smaller new projects.



Figure 2-1 Schedule B Class EA Process

Schedule C: These projects have the potential for more significant environmental effects than a Schedule B project and as such a proponent is required to complete the full planning and documentation process set out in the MCEA. For Schedule C projects, proponents are required to prepare an Environmental Study Report for review by the public and review agencies. If there are no outstanding concerns, the proponent may proceed to implementation once the regulatory process has been completed. Schedule C projects generally include the construction of new facilities and major expansions to existing facilities.

Public and agency consultation are integral to the Class EA planning process. Projects subject to the Class EA process are classified into following four “schedules” depending on the degree of the expected impacts. Figure 2-2 illustrates the MCEA planning and design process with the phases required for the respective schedule.

This Class EA study is being completed as a Schedule B project in accordance with the requirements of the Municipal Class Environmental Assessment (MCEA) process (October 2000, as amended in 2007, 2011, 2015, and 2023). It will satisfy Phases 1 and 2 of the planning process. The Schedule B Project File Report will be prepared and placed on the public record for a 30-day review process.

PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Problem or Opportunity	Alternative Solutions	Alternative Design Concepts for Preferred Solution	Environmental Study Report (ESR)	Implementation
Identify Problem or Opportunity	Identify Alternative Solutions to Problem or Opportunity	Identify Alternative Design Concepts for Preferred Solution	Complete Environmental Study Report (ESR)	Complete Contract Drawings and Tender Documents
Discretionary Public Consultation to Review Problem or Opportunity	Inventory Natural, Social, Economic Environment	Detail Inventory Natural, Social, Economic Environment	Notice of Completion to Review Agencies and Public	Proceed to Construction and Operation
	Engagement. RE: Problem or Opportunity and Conceptual Solutions.	Identify Impact of Alternative Designs on Environment, and Mitigating Measures	Copy of Notice of Completion to Ministry of Environment Environmental Assessment Branch	Monitor for Environmental Provisions and Commitments
	Identify Impact of Alternative Solutions on the Environment, and Mitigating Measures	Evaluate Alternative Designs: Identify Recommended Designs	Environmental Study Report Placed on Public Record	
	Evaluate Alternative Solutions: Identify Recommended Solutions	Consult Review Agencies and Previously Interested and Directly Affected Public.	Opportunity to Request an Order Within 30 Days of Notification	
	Consult Review Agencies and Previously Interested and Directly Affected Public	Select Preferred Design		
	Select Preferred Solution	Preliminary Finalization of Preferred Design		

Figure 2-2 Class Environmental Assessment Process

2.1.4 Consultation and Engagement

Consultation and participation in the MCEA process by interested and affected parties are an important component to the success of this study and is mandated as part of the MCEA process. It is imperative that the EA includes meaningful consultation and extensive two-way communication with all stakeholders to provide information, listen to, and work to address issues and concerns. Effective consultation with the public and stakeholders will be used to obtain valuable comments and feedback on the overall study process, and better understand potential sensitivities and issues related to the

Class EA. The overarching strategy for consultation includes several goals and objectives that go beyond simply meeting legislative requirements:

- Presenting clear and concise information at key stages of the study process
- Soliciting community, regulatory, and other stakeholder input
- Identifying concerns that might arise from the undertaking
- Undertaking a comprehensive consultation and engagement program with Indigenous Communities
- Considering all comments received when developing the preferred solution
- Meeting and exceeding MCEA Consultation requirements

2.1.5 Section 16 Order Requests

The MCEA process includes an appeal provision - the Minister of the Environment, Conservation and Parks has the authority and discretion to make an Order under Section 16 of the Environmental Assessment Act. A Section 16 Order may require that the proponent of a project going through a Class EA process:

- Submit an application for approval of the project before they proceed. This is generally referred to as an Individual EA (s. 16(1) order)
- Meet further conditions in addition to the conditions in the Class EA. This could include conditions for: further study, monitoring and/or consultation (s. 16(3) order)

The minister can also refer a matter in relation to a section 16(6) Order request to mediation.

Before making an Order, the minister must consider the factors set out in section 16(5) of the Environmental Assessment Act.

If a Section 16 Order request is made, the project proponent cannot proceed with the project until the minister makes a decision on the request. If the minister makes a Section 16 Order, the proponent may only proceed with the project if they follow the conditions in the Order.

Reasons for Requesting an Order

A concerned party may ask the minister to make a Section 16(6) Order if:

- They have outstanding concerns that a project going through a Class EA process may have a potential adverse impact on constitutionally protected Aboriginal¹ and

¹ The term 'Aboriginal' is used here as it refers to the rights recognized and affirmed in Section 35 of the Constitution Act

treaty rights.

- They believe that an Order may prevent, mitigate, or remedy this impact.

A Section 16(6) Order request cannot be made to simply delay or stop the planning and implementation of a project that is going through the MCEA process. Prior to making a Section 16(6) Order request, the concerned party should first try to resolve any concerns directly with the project proponent, in this case, the City of Brantford.

Timing for an Order Request

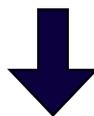
During the 30-day public comment period, anyone can review the documentation, submit any comments or concerns to the proponent, and request a Section 16(6) Order

To request a Section 16 Order for a project, on the grounds that an Order may prevent, mitigate, or remedy potential adverse impacts on constitutionally protected, Aboriginal and treaty rights, a concerned party must make the request before the public comment period is complete.

2.2 Problem and Opportunity Statement

The problem and opportunity statement defines the starting point in the undertaking of the Class EA study and assists in defining the scope of the project. The study area encompasses seven Class EA infrastructure projects, which are being completed concurrently. As such, the Project Team developed a single overarching problem and opportunity statement which represents the overarching study, as well as an individual statement representing the Oak Park Road Trunk Watermain project.

The Northwest Municipal Services Expansion Municipal Class Environmental Assessment studies will develop an optimized long-term municipal infrastructure strategy that supports existing users and future residential and employment growth opportunities in Brantford's northwest lands and that minimize potential impacts to the environment, existing utilities, and future land uses. There are opportunities to consider water, wastewater and transportation infrastructure improvements in an integrated manner through the seven Class EA studies.



The Oak Park Road Trunk Watermain study will identify and develop the preferred trunk watermain alignment that will provide the core water servicing link connecting the

existing water system south of Highway 403 to the northwest lands, with consideration for potential future trunk watermain infrastructure and water system improvements, service area expansions, and the potential impacts of climate change on future water needs.

3.0 Policy Overview

This section provides a summary of the Federal, Provincial, and Local legislation and policies affecting the study area and relevant to the Oak Park Road Trunk Watermain Schedule B Class EA.

3.1 Federal Legislation and Policy

3.1.1 Canadian Environmental Protection Act (CEPA)

The Canadian Environmental Protection Act (CEPA) was enacted in September of 1999 and provides the Canadian government the power to protect the environment and human health while contributing to sustainable development. CEPA does not relate directly to the Class EA projects associated with this study; however, it helps to advise and direct provincial policies.

3.1.2 Canadian Council of Ministers of the Environment Guidelines

In 2009, the Canadian Council of Ministers of the Environment (CCME) provided a framework for future actions and activities related to water through the development of a vision and action plan, such that Canadians have access to clean, safe, and sufficient water to meet their needs in ways that also maintain the integrity of ecosystems. The goals and rationale developed as part of the vision includes the following:

Goal 1: Aquatic ecosystems are protected on a sustainable watershed basis.

- Rationale: Enhance understanding and application of Integrated Water Resource Management to improve ecosystem health.

Goal 2: The conservation and wise use of water is promoted.

- Rationale: Improve understanding of the full value of water to achieve behavioral change.

Goal 3: Water quality and water quantity management is improved, benefitting human and ecosystem health.

- Rationale: Promote nationally consistent approaches to water quality and quantity monitoring, guidelines, and multi-jurisdictional public reporting. Encourage research and networks to enhance knowledge and understanding of ground and surface waters.

Goal 4: Climate change impacts are reduced through adaptive strategies.

- Rationale: Enhance water quality and quantity monitoring networks to support water and adaptation needs.

Goal 5: Knowledge about Canada’s water is developed and shared.

- Rationale: Help to spearhead value added information on water quality and quantity by supporting jurisdictional reporting efforts to Canadians in a systematic and consistent fashion.

3.1.3 Impact Assessment Act

The Impact Assessment Act (2019) (IAA 2019) and associated regulations came into effect on August 28, 2019. Under IAA 2019, a federal environmental assessment is required for “designated projects”. A designated project is one that includes one or more physical activities that are set out in the regulations under IAA 2019 or by order of the federal Minister of the Environment and Climate Change.

The IAA, under Sections 81 to 91 of the Act, also includes provisions for projects on federal lands and outside Canada that are not considered “designated projects” under the Physical Activities Regulations or designated by the Regulations Respecting Excluded Physical Activities (Newfoundland and Labrador Offshore Exploratory Wells).

The scope of the Oak Park Road Trunk Watermain Municipal Class Environmental Assessment study was reviewed by the project team against the federal Regulations Designating Physical Activities. The project team determined that the potential range of physical activities contemplated by the study are not “designated” and none of the project activities will be completed wholly or partly on federal lands. Hence, the project will not require consideration of a federal environmental assessment.

3.1.4 Fisheries Act

The Fisheries Act is a federal legislation for the protection of fish habitat from biological, physical, or chemical alterations that are harmful and/or destructive. Fisheries and Oceans Canada, in conjunction with various other agencies (Environment Canada; Ontario Ministry of Natural Resources and Forestry; Ontario Ministry of the Environment, Conservation, and Parks) are responsible for the enforcement and management of fisheries resources. Under the Fisheries Act, no undertaking or activity, including in-water works, shoreline works, and creek crossings should result in serious harm to fish or fish habitats. Impacts must be avoided or mitigated.

There are watercourses within or adjacent to the study area with fish and fish habitat, particularly the Grand River, and as such the Fisheries Act applies.

3.1.5 Migratory Bird Convention Act

The Migratory Birds Convention Act (MBCA) was established in 1917 and amended in 1994 and 2005, to protect migratory birds, their eggs, and their nests. The MBCA was created to implement the Migratory Birds Convention between Canada and the United States. The Act lists protected families and subfamilies of migratory birds and lays out legislation surrounding activities that may impact migratory birds or nests, including when and where activities may occur. The study area contains areas of deciduous and mixed forested land that may support migratory or nesting birds. Measures to avoid or mitigate impacts to migratory birds will be included as part of the preferred solution.

There are woodlots within the site area with potential to support migratory and nesting birds.

3.1.6 Species at Risk Act

The Species at Risk Act (SARA) focuses on restoring and maintaining populations of species that are at risk of extinction or extirpation due to human activity such as habitat destruction, hunting, introduction of competing species, or other anthropogenic causes. Species are designated at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) by using biological information on a species deemed to be in danger. The COSEWIC reviews research information on population and habitat status, trends and threats, and applies assessment criteria based on international standards. Once a species is added to Schedule 1 – List of Wildlife Species at Risk, it benefits from legal protection afforded and the mandatory recovery planning required under the Act. Through this study potential species at risk will be identified and measures to avoid or mitigate impacts will be developed.

While SARA applies to species on federal land, it also applies to species at risk migratory birds under the MBCA and fish anywhere they occur. Therefore, SARA applies to any fish species that are deemed a federal species at risk in the Study Area.

3.2 Provincial Legislation and Policy

3.2.1 Provincial Policy Statement (2020)

The Provincial Policy Statement (2020) is issued under the Planning Act and sets the policy foundation for land use planning and development in Ontario. The Provincial Policy Statement provides guidance and support for appropriate land use planning and development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment.

The Provincial Policy Statement applies to land use planning decisions made under the Planning Act by provincial ministers, municipal councils, local boards, and planning boards, among other approval authorities. All municipal decisions affecting planning matters shall be consistent with the policies outlined in the Provincial Policy Statement.

The Provincial Policy Statement contains policies relevant to water, wastewater, and stormwater infrastructure planning including, but not limited to:

- Requirement that infrastructure be provided in a coordinated, efficient, and cost-effective manner with considerations to climate change.
- Planning for infrastructure should be financially viable over their lifecycle and available to meet current and projected needs.
- Optimization of the use of existing infrastructure and public service facilities before developing new infrastructure.

More specifically, the Provincial Policy Statement recommends that water, wastewater, and stormwater services should:

- Direct and accommodate expected growth in a manner that promotes the efficient use and optimization of existing municipal water and wastewater services.
- Ensure that these systems are provided in a manner that:
 - Can be sustained by the water resources upon which such services rely;
 - Is feasible, financially viable, and complies with all regulatory requirements; and
 - Protects human health and the natural environment.
- Promote water conservation and water-use efficiency.
- Integrate servicing and land use considerations at all stages of the planning process.

3.2.2 Ontario Heritage Act

The Ontario Heritage Act (OHA) gives municipal council the authority to designate heritage properties that have cultural heritage value or interest based on their historical, contextual, and/or architectural significance in the community. Under the Act, designated heritage properties are protected from demolition and a Heritage Permit is required to make changes to a designated property. There are over 200 designated heritage properties in the City of Brantford.

The province and municipalities are enabled to conserve significant individual properties and areas through the OHA. The OHA, administered by the Ministry of Citizenship and Multiculturalism (MCM) requires that cultural heritage resources, including buildings, sites, and archaeological resources be protected. Impacts to these features must be avoided or mitigated. Through this Class EA project, the Project Team is undertaking Cultural Heritage and Archeological studies to mitigate risk.

3.2.3 Endangered Species Act

The Endangered Species Act (ESA) was originally written in 1971 and amended in 2008. Similar to the Federal Species at Risk Act (SARA), the ESA aims to provide protection to plant and animal species that are at risk of extinction or extirpation within Ontario. Species thought to be at risk in Ontario are initially determined by the Committee on the Status of Species at Risk in Ontario (COSSARO), and if approved by the provincial Ministry of Natural Resources and Forestry (MNR), species will be added to the provincial list of endangered and threatened species in compliance with the ESA. The ESA immediately provides habitat protection to all species listed as threatened, endangered or extirpated.

Given the characteristics of the area, there is potential for terrestrial and aquatic provincial SAR species. Impacts to these species must be mitigated in accordance with the ESA. The Project may be subject to a permit under the ESA and/or its regulatory exemptions under the Act.

3.2.4 A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020)

Ontario's A Place to Grow: Growth Plan for the Greater Golden Horseshoe (GGH) (2020) provides a framework for implementing the Province's vision for managing growth, and provides context on where and how to grow. The plan is issued under the authority of Section 7 of the Places to Grow Act (2005). The policies of this plan

regarding how land is developed, resources are managed and protected, and public dollars are invested are based on the following principles:

- Support the achievement of complete communities that are designed to support healthy and active living and meet people’s needs for daily living throughout an entire lifetime.
- Prioritize intensification and higher densities in strategic growth areas to make efficient use of land and infrastructure and support transit viability.
- Provide flexibility to capitalize on new economic and employment opportunities as they emerge, while providing certainty for traditional industries, including resource-based sectors.
- Support a range and mix of housing options, including additional residential units and affordable housing, to serve all sizes, incomes, and ages of households.
- Improve the integration of land use planning with planning and investment in infrastructure and public service facilities, including integrated service delivery through community hubs, by all levels of government.
- Provide for different approaches to manage growth that recognize the diversity of communities in the GGH.
- Protect and enhance natural heritage, hydrologic, and landform systems, features, and functions.
- Support and enhance the long-term viability and productivity of agriculture by protecting prime agricultural areas and the agri-food network.
- Conserve and promote cultural heritage resources to support the social, economic, and cultural well-being of all communities, including First Nations and Métis communities.
- Integrate climate change considerations into planning and managing growth such as planning for more resilient communities and infrastructure – that are adaptive to the impacts of a changing climate – and moving towards environmentally sustainable communities by incorporating approaches to reduce greenhouse gas emissions

Schedule 3 – Distribution of Population and Employment for the GGH to 2051

The Growth Plan provides population and employment forecasts for all upper- and single-tier municipalities in the GGH. The Provincial growth forecasts are a foundational component of the Growth Plan and must be reviewed in consultation with municipalities at least every five years. The City of Brantford is forecasted to have a population of 165,000 and a corresponding local employment base of 80,000 jobs by 2051.

The City’s new Official Plan (2023) has been prepared to appropriately plan where and how this growth will be accommodated and the supporting infrastructure that is required.

The City’s North Expansion Lands represent a significant area of growth for the City and is therefore a representation of the Act’s guiding principles.

3.2.5 Planning Act

The Planning Act establishes the rules for land use planning in Ontario. It describes how land uses may be controlled in communities. Changes to the planning system were introduced in 2006 by the Planning and Conservation Land Statute Law Amendment Act. Key changes are as follows:

- Municipalities must now update their Official Plan every ten years or ever five years after an update done through an amendment to the plan, followed by an update of the accompanying zoning by-law within three years after the new official plan is in effect;
- There are more opportunities for public input before local decisions are made;
- Municipalities have enhanced ability to plan for a range and mix of housing types and densities; and,
- Municipalities have additional ability to have the final say on whether designated employment lands can be changed to other uses.

3.2.6 More Homes Built Faster Act (Bill 23) (2022)

On November 28, 2022, the More Homes Built Faster Act received Royal Assent. The aim of the Act is to advance the province’s goal to increase housing supply in Ontario; The goal is to have 1.5 million new homes built over the next 10 years. It builds on the province’s early More Homes, More Choice Plan and the More Homes for Everyone Plan, and sets framework for growth by:

- Reducing the bureaucratic costs and red tape that are delaying construction and pushing home prices even higher;
- Promoting building up near transit and reforming zoning to create more “gentle density”; and
- Protecting homebuyers and utilizing provincial lands to build more attainable homes.

The Act amends various statutes to achieve the goal of increasing housing supply in Ontario, including the following:

Planning Act

The Planning Act and Provincial Policy Statement are described in Section 3.2.5. Key amendments to the Planning Act include changes to existing zoning by-

laws, third part appeal processes to the Ontario Land Tribunal, site plan controls and parkland requirements.

Growth Plan for the Greater Golden Horseshoe and Related Land Use Plans

To accommodate the expected growth and support the building of more homes, The Growth Plan for the Greater Golden Horseshoe was amended in 2020 to reflect changes in population and employment forecasts, the horizon for planning and other policies to increase housing supply, great jobs, attract business investments and better align with infrastructure.

Conservation Authority Act

Regulatory and policy changes under the Conservation Authorities Act were made in 2022 to improve conservation authority governance, oversight, transparency, and accountability. The amendments do not remove the mandate of Conservation Authorities over watershed management but change their roles with respect to approvals and appeal rights. Individual municipalities have regulatory responsibility under the Planning Act, and the Minister of Natural Resources now has the authority to determine permit applications in place of the Conservation Authorities.

3.2.7 Water Opportunities and Conservation Act

The Ontario Government passed the Water Opportunities and Conservation Act in 2010. The purposes of the Act are as follows:

- To foster innovative water, wastewater, and stormwater technologies, services and practices;
- To create opportunities for economic development and clean-technology jobs in Ontario; and,
- To conserve and sustain water resources for present and future generations.

To further the purposes of the Act, the Minister of the Environment, Conservation, and Parks may establish aspirational targets in respect of the conservation of water and other matters.

The Act requires certain municipalities, persons, and entities to prepare, approve, and submit to the Minister of the Environment, Conservation, and Parks municipal water sustainability plans for municipal water services, municipal wastewater services, and municipal storm water services under their jurisdiction. The Minister may establish performance indicators and targets for these services. The Act also authorizes the

making of regulations requiring public agencies to prepare water conservation plans, achieve water conservation targets, and consider technologies, services, and practices that promote the efficient use of water and reduce negative impacts on Ontario’s water resources.

3.2.8 Safe Drinking Water Act

The Safe Drinking Water Act was adopted in 2002. The Act provides for the protection of human health and the prevention of drinking water hazards through the control and regulation of drinking water systems and drinking water testing. Key features of the Act include the following:

- Legally binding standards for contaminants in drinking water;
- Requirement to use licensed laboratories for drinking water testing;
- Requirement to report any results that do not meet the standards to the Ministry of the Environment, Conservation, and Parks and the local Medical Officer of Health and to undertake corrective action;
- All operators of municipal drinking water systems must be trained and certified;
- Establishment of a licensing regime for drinking water systems; and,
- Inspections and enforcement to determine compliance with the Act.

3.2.9 Clean Water Act

The Clean Water Act was adopted in 2006 with the objective to protect existing and future sources of drinking water including rivers, lakes, and underground aquifers. The Act requires the following:

- That local communities assess existing and potential threats to their water, and that they set out and implement the actions needed to reduce or eliminate these threats;
- Empowers communities to take action to prevent threats from becoming significant;
- Public participation on every local source protection plan – the planning process for source protection is open to anyone in the community; and,
- That all plans and actions be based on sound science.

3.2.10 Source Water Protection

Under the Clean Water Act, O. Reg. 287/07, on-site sewage systems and sewage works may be considered a threat to drinking water. These activities may be deemed significant under certain conditions. The applicable Source Protection Plan policies have been considered throughout this Class Environmental Assessment.

Source Water Protection (SWP) Plans were prepared for the 19 watershed-based Source Protection Regions (SPR) across Ontario to protect existing and future sources and to identify areas of significant drinking water threats. The City of Brantford falls within the Lake Erie Source Protection Area.

The Source Water Protection Plans identify vulnerable areas that have been delineated under the Clean Water Act including Wellhead Protection Areas (WHPA), Intake Protection Zones (IPZ), Highly Vulnerable Aquifers (HVA), Significant Groundwater Recharge Areas (SGRA), and Vulnerable Scoring Areas (VSA) for Groundwater and Surface Water as well as water quantity vulnerable areas. According to the Source Protection Plan:

- WHPAs are areas on the land around a municipal well, the size of which is determined by how quickly water travels underground to the well, measured in years.
- IPZs are the areas on the water and land surrounding a municipal surface water intake.
- SGRAs are areas characterized by porous soils that allow the water to seep easily into the ground and flow to an aquifer.
- HVAs are aquifers that can be easily changed or affected by contamination from both human activities and natural processes as a result of (a) its intrinsic susceptibility, as a function of the thickness and permeability of overlaying layers, or (b) by preferential pathways to the aquifer.

As the City of Brantford’s water supply is from the Grand River, it is located within an IPZ, and the study area itself is located within an HVA.

3.2.11 Conservation Authority Regulation and Policy

The legislative mandate of the Conservation Authority, as set out in Section 20 of the Conservation Authorities Act, is to establish and undertake programs designed to further the conservation, restoration, development, and management of natural resources. Conservation Authorities are local agencies that protect and manage water and other natural resources at the watershed level. These agencies have a number of responsibilities and functions in the land use planning and development process. The study area falls entirely within the boundaries of the Grand River Conservation Authority (GRCA). The GRCA is a commenting agency on development applications under the Planning Act based on regulations approved by their Board of Directors and the province. These Conservation Authorities have agreements with partnering municipalities to provide technical services regarding matters associated with natural

heritage protection, hazardous land management, and water resources (e.g., stormwater management). In addition, Conservation Authorities have the delegated responsibility from the Ministries of Natural Resources and Forestry and the Ministry of Municipal Affairs and Housing to implement Section 3.1 (Natural Hazards) of the Provincial Policy Statement (2020), consistent with the Provincial one-window planning initiative. The GRCA also administers Ontario Regulation 150/06, under Section 28 of the Conservation Authorities Act. In general, these regulations prohibit altering a watercourse, wetland, or shoreline and prohibit development in areas adjacent to river and stream valleys, hazardous lands, and wetlands, without the prior written approval from the Conservation Authority (i.e., issuance of a permit).

3.3 Municipal Legislation and Policy

3.3.1 Land Swap

A Place to Grow is a growth plan for the Greater Golden Horseshoe within Ontario. It was first released in 2006, with the following goals:

- Promote economic growth;
- Prioritize intensification in strategic growth areas;
- Increase housing supply;
- Improve integration of land use planning with planning and investment in infrastructure and public service facilities;
- Protect and enhance natural heritage, hydrologic and landform systems, features and functions;
- Create jobs; and
- Build communities that make life easier, healthier and more affordable for people of all ages.

Amendment 2 to the Province’s Growth Plan came into effect on June 17, 2013. This amendment updated Schedule 3 population and employment forecasts to 2031 and extended forecasts to a 2041 horizon and subsequently a 2051 horizon in later amendments in 2020 (see Section 3.2.4). As such, to accommodate increased growth needs and population densities forecasted through this plan to the City, additional land acquisition was necessary. Through a Municipal Boundary Expansion Agreement between the City of Brantford and the County of Brant, 2,720 hectares² of lands was

² <https://www.brantford.ca/en/business-and-development/developing-in-the-expansion-lands.aspx>

transferred from the County to the City effective January 1, 2017. These lands are known as the Boundary Expansion Lands.

3.3.2 Municipal Comprehensive Review

In 2016, the municipal boundary between the City of Brantford and the County of Brant was adjusted in order to secure additional lands in the City for future growth. The boundary adjustment brought new lands into Brantford’s municipal boundary. To determine the extent that the Settlement Area expansion, the City was required to undertake a MCR as input into their new or amended Official Plan. Once completed, the new or amended Official Plan can designate urban land uses within the expanded Settlement Area boundary. The MCR identified both growth and intensification targets as well as Settlement Area boundary expansion needs. The Settlement Area Boundary Expansion Lands are further subdivided into the following sub-areas:

- North Expansion Lands;
- East Expansion Lands; and,
- Tutela Heights

The City’s North Expansion Lands are 1,883 ha and make up 70% of the total Expansion Lands. The study area for this project is within the North Expansion Lands.

3.3.3 Official Plan (2023)

The City’s Official Plan outlines the following policies for Water Servicing Infrastructure:

1. Development shall provide appropriate water servicing infrastructure as approved by the City and, where necessary, the Conservation Authority and the Province.
2. The City shall direct and accommodate growth in a manner that promotes the efficient use of water and maintains water quality in accordance with Provincial regulations.
3. Water servicing infrastructure shall be designed, constructed, and maintained to:
 - a. Provide adequate service to proposed developments;
 - b. Provide sufficient quantity and flow to meet capacity for domestic use and fire protection;
 - c. Accommodate full development of the service area; and,

d. Satisfy the servicing standards of the City.

The City's Official Plan outlines the following policies for Municipal Servicing Infrastructure:

- In planning for the expansion of existing and planned transportation and/or infrastructure corridors, the City will encourage the co-location of linear water, wastewater and storm water service infrastructure, wherever possible. Development of municipal infrastructure projects will be:
 - Coordinated and phased in a manner which is efficient, cost effective, and minimizes disruption; and,
 - Encouraged to locate underground, where feasible.

4.0 Data Sources

4.1 Historic Reports

4.1.1 Water, Wastewater, and Stormwater Master Servicing Plan Update – 2051 Amendment (2021)

The City’s MSP completed in 2020, provides a review, evaluation, and development of servicing strategies for the City’s water, wastewater, and stormwater systems. The strategies support existing needs as well as projected growth needs to 2051.

4.1.2 Transportation Master Plan Update – 2051 Addendum (2021)

The City’s Transportation Master Plan – 2051 Addendum evaluates the impacts of the incorporation of the most recent 2051 growth forecasts from the Province into the City’s Official Plan – Envisioning Our City 2051. It re-assessed and confirmed the assumption and recommendations of the 2020 Transportation Master Plan based on a 2041 horizon land use forecasts for a 2051 horizon year.

In terms of the impacts of growth, the following is noted with respect of the 2051 forecasts:

- Areas of population most impacted by the change:
 - North Expansion area - Powerline East block is expected to have an increase in population and redistribution between development blocks.
- Areas of Employment most impacted by the change:
 - North Expansion area – Paris Road Employment and the Powerline Road Employment blocks are expected to have an increase in employment.

A review of the transportation system identified potential capacity issues at Highway 403 / Oak Park Road interchange. The Transportation Master Plan proposed a recommended multi-modal transportation network for the 2051 Horizon year. Details specific to the study area of Oak Park Road and Powerline Road are as follows:

- In terms of active transportation, bike lane / paved shoulder proposed along Oak Park Road and a multi-use path / trail is proposed along Powerline Road. In addition, the Plan identified that special treatment is required across the Oak Park Road Bridge.
- In terms of infrastructure widening, Oak Park Road from Hardy Road to Powerline Road and Powerline Road from Oak Park Road to the City east limits are recommended for widening. The Plan also recommends upgrading the Highway 403

/ Oak Park Road Interchange to ultimate configuration.

4.1.3 Municipal Comprehensive Review Addendum Report (2020)

The City conducted a MCR as input to the Official Plan. The MCR identified both growth and intensification targets as well as Settlement Area Boundary Expansion Lands, which include:

- North Expansion Lands
- East Expansion Lands
- Tutela Heights

The North Expansion Lands include the study area for this project and comprises an additional 21,789 people and 12,383 jobs³ (total 34,172 population and employment), in an area of 1,833 ha.

4.1.4 Paris Master Servicing Plan Update (2020)

The County of Brant's Paris Master Servicing Plan Update (Paris MSP) was completed in 2020. The Paris MSP outlines the water, wastewater, and stormwater servicing strategy needed to support the Paris system growth. Growth projections were based on the Paris Settlement Area Boundary (SAB) buildout scenario, which includes full buildout of all residential and employment blocks within the SAB.

The Paris settlement area consists of 13 km² of land within the County of Brant, north of and adjacent to this project's study area. Under the SAB buildout scenario, an additional 153.8 L/s of capacity is required to service Paris. One option for servicing Zone 4 of the Paris SAB is to connect to the Brantford system via a connection to the future Oak Park Road trunk watermain.

4.1.5 Ministry of Transportation Interchange EA (2006)

MTO completed an EA in 2006 which proposed that the Highway 403 interchange at Oak Park Road be upgraded to Parclo A4 with initial and ultimate stages. The initial stage includes the existing structure with accommodation for four 3.5 m lanes and 1.0 m side clearances, and the ultimate stage includes a widened structure to accommodate speed change lanes on Oak Park Road for a total of six lanes. The ultimate stage is required when development reaches 95% and 75%, south and north of the interchange respectively. The proposed design in this EA does not account for active transportation.

³ Water, Wastewater, and Stormwater Master Servicing Plan Update – 2051 Amendment (2021)

4.2 Technical Tools

4.2.1 Geographic Information System (GIS) Mapping

The City provided geographic information system (GIS) mapping at the outset of the project, including all available water, wastewater, stormwater, and transportation infrastructure data, mapping of culverts and easements, digital elevation model (DEM), parcels, and municipal boundaries.

4.2.2 Technical Drawings

The City provided the following:

- Development plans within the study area
- As-built drawings of infrastructure within and surrounding Highway 403, Oak Park Road, Powerline Road, and Fen Ridge Court
- Available information from the Ministry of Transportation (MTO), such as traffic and OSIM data
- Available species and wildlife habitat data

The primary landowner within the study area for the properties 473-474 Oak Park Road also provided the following data: draft plans, preliminary grading plan and sediment control plan, preliminary geotechnical investigation reporting, and archeological reporting

4.2.3 Water System Model

The City's InfoWater hydraulic water model was updated as part of the MSP. The model will be used to analyze the existing and future system performance under different demand conditions, including average day demand (ADD), maximum day demand (MDD), peak hour demand (PHD), and maximum day demand plus fire flow (MDD+FF).

Any changes that have been made to water infrastructure within the study area will be included in the model that is used for this project.

4.3 Field Visits

The Project Team conducted a field visit on May 31, 2023. The purpose of the site visit was to gain context on the site, including visual observation of topography, traffic conditions, and proximity to utilities. These observations feed into the development of alternative solutions by helping to identify system opportunities and constraints.

5.0 Existing Conditions

5.1 Study Area Overview

The Northwest Municipal Service Expansion EA study area (Figure 1-1) generally includes the area from south of Highway 403 to Powerline Road in the north, and from the Grand River in the west to Paris Road in the east.

The majority of the study area consists of the future employment lands bound by Powerline Road to the north, Highway 403 to the south, the CN railway to the east, and SC Johnson Trail to the west. The future employment lands are a previously extracted aggregate pit, which has been partial naturalized with vegetation. The existing employment lands have historic draft plan approvals, and at the time of this study, the existing property owner is undertaking extensive site earthworks to re-grade the site in preparation of development. However, the grading plan, lotting, servicing and transportation plans have not been finalized.

North of the study area is the Paris settlement area in the County of Brant, with the lands fronting Powerline Road west of the railway being already developed employment lands. Transportation and stormwater needs will be considered for the interaction between the Paris settlement area and Study area.

5.1.1 Highway 403

Highway 403 traverses the study area, with the Oak Park Road interchange at the centre. The water and wastewater infrastructure will require crossing of Highway 403 to provide servicing to northwest Brantford, which represents the primary technical objective of this project. The Project Team consulted with Ministry of Transportation throughout the project to ensure technical requirements were addressed.

5.1.2 Hydro Infrastructure

Powerline Road, at the northern limit of the study area, serves as a major energy transmission corridor. There are extensive Hydro One and GrandBridge Energy Hydro utilities along Powerline Road near the existing roadway including 115kV hydro towers along the north side of the road, east of Oak Park Road and transitioning to the south side just west of the CN Rail. The towers are connected to the transformer station and substation to the east and west of the CN railway. There are also GrandBridge Energy hydro poles and hydro lines along Oak Park Road.

5.1.3 CN Rail

The CN Rail corridor is along the west side of the study area and intersects Powerline Road in the north. As part of the overarching study, the water and wastewater infrastructure will require crossing of the CN Rail corridor. At this time the transportation projects will complete the evaluation based on an at-grade crossing; however, all Class EA project technical evaluations make considerations for a future grade separated crossing.

5.1.4 Municipal Infrastructure

The study area north of Highway 403 does not include existing water, wastewater, stormwater infrastructure.

The City has existing water and wastewater trunk infrastructure south of Highway 403 with sufficient capacity to accommodate the development of the study area and the additional Boundary Expansion Lands. North of Powerline Road, the Brant County's Paris water system extends to Powerline Road and west along Powerline Road to Sharpe Road. Brant County's existing Paris wastewater system does not extend to Powerline Road with local properties being serviced via private septic systems.

The City has existing stormwater infrastructure south of Highway 403, which was not designed with consideration of lands north of Highway 403. The current site does not have an existing outlet, with stormwater generally collecting in local depressions before infiltrating into the soils or evaporating. The site area does receive runoff from the Paris Settlement Area with a culvert crossing Powerline Road east of Oak Park Road.

5.2 Existing Water System

The Brantford water system consists of one (1) water treatment plant, five (5) pumping stations (with a sixth station coming online in 2024), four (4) storage reservoirs, and two (2) elevated tanks (ETs) in operation and one new ET beginning construction in 2025. A water system schematic is provided in Appendix A. Further, the City of Brantford's water system is organized into three pressure districts: Pressure District 1 (PD1), Pressure District 2/3 (PD2/3), and Pressure District 4 (PD4).

Water supply originates from the Grand River and is treated at the Holmedale Water Treatment Plant (WTP). The WTP High Lift Pump (HLP) Station delivers water directly to PD1 including two Elevated Tanks (ETs) and reservoirs in PD2/3 and PD4, while

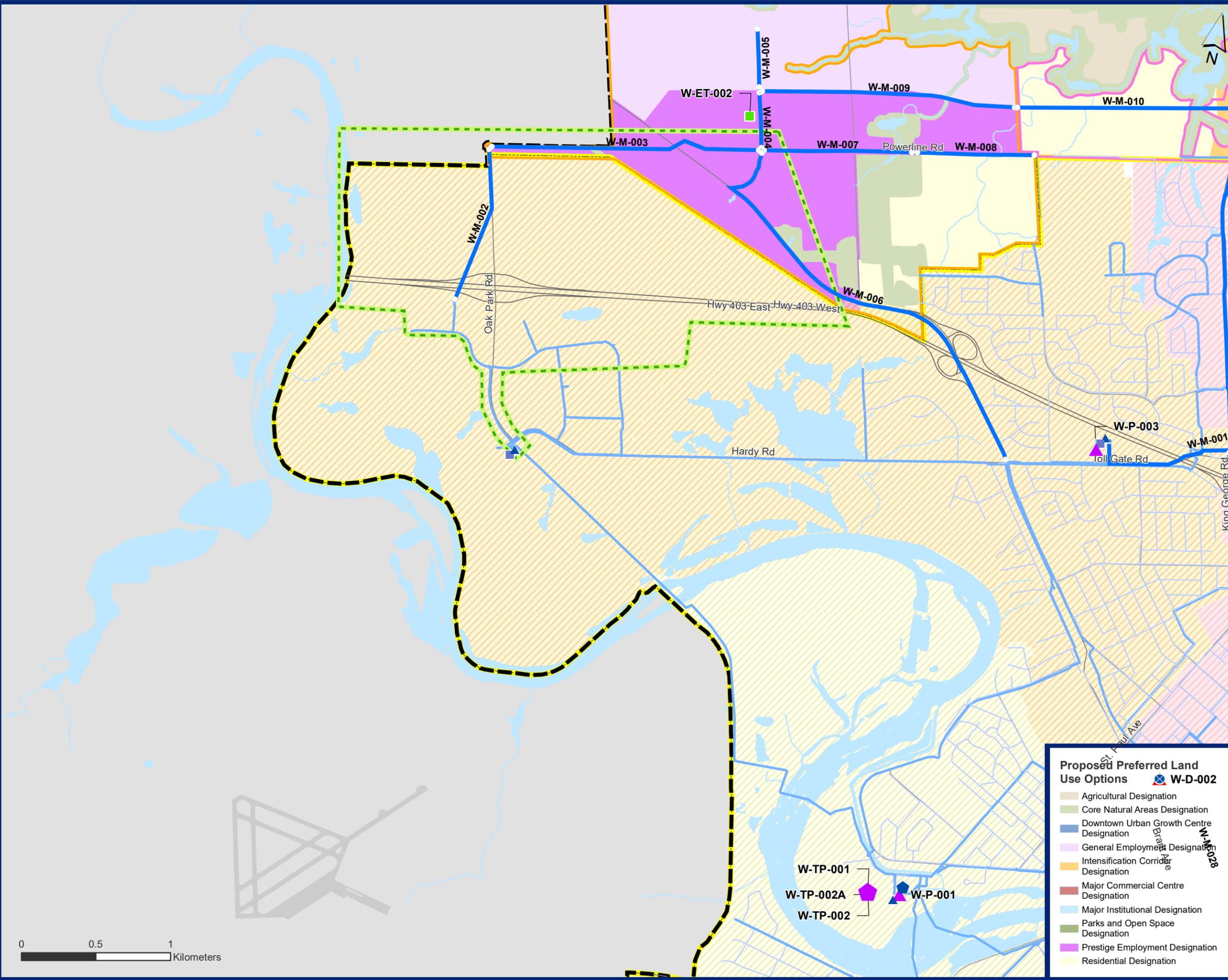
secondary pump stations deliver water within PD2/3 and PD4. The boundaries along the pressure districts consist of a series of closed valves and pipes, and pressure reducing valves (PRV) to decrease the pressure to the acceptance range of level of service. The hydraulic grade lines (HGL) for the three pressure districts are included in Table 5-1.

Table 5-1 Pressure District HGLs

Pressure District	HGL (m)
Pressure District 1	271
Pressure District 2/3	281
Pressure District 4	304

The North Expansion Lands are north of PD2/3 and PD4, and will ultimately be serviced to the existing system’s trunk watermain along the northern boundary. Servicing opportunities to the North Expansion Lands were explored in the MSP. Ultimately, the full water capital program in the MSP identified the upgrades shown in Figure 5-1, including the Oak Park Road trunk watermain (W-M-002) which will service the Northwest Employment Lands.

Water servicing within the Study Area and Northwest Employment lands will be serviced as an extension to the existing PD4 via of a looped watermain network with the trunk watermain generally following Powerline Road and making a secondary connection to Paris Road. In addition, a new ET and supporting watermain infrastructure will be sized to support the employment in North Expansion Lands and existing PD4 needs.



Capital Program Projects

- Watermains
- Decommission Elevated Tank
- Decommission Pumping Station
- New Pressure Reducing Valve
- New Elevated Tank
- New Pumping Station
- Existing Pumping Station Upgrade
- Water Treatment Plant Upgrade

Water Network

- Water Treatment Plant
- Pumping Station
- Elevated Tank / Reservoir
- Pressure Reducing Valve
- Watermains (< 400 mm)
- Water Transmission (>= 400 mm)

Water Pressure Districts

- Pressure Zone 1
- Pressure Zone 2/3
- Pressure Zone 4

Proposed Pressure District Expansions

- To be serviced by PD 1
- To be serviced by PD 2/3
- To be serviced by PD 4

General Features

- New Municipal Boundary
- 2016 Municipal Boundary
- Study Area
- Six Nations of the Grand River Territory
- Waterbody

Proposed Preferred Land Use Options

- Agricultural Designation
- Core Natural Areas Designation
- Downtown Urban Growth Centre Designation
- General Employment Designation
- Intensification Corridor Designation
- Major Commercial Centre Designation
- Major Institutional Designation
- Parks and Open Space Designation
- Prestige Employment Designation
- Residential Designation



Figure 5-1
Master Servicing Plan Water Capital Program

5.3 Growth and Planning Context

Significant growth is planned for the City by 2051 – an additional population and employment of 67,626 and 46,207, respectively. Figure 5-2 shows the breakdown of population growth throughout the City to 2051 by traffic area zone.

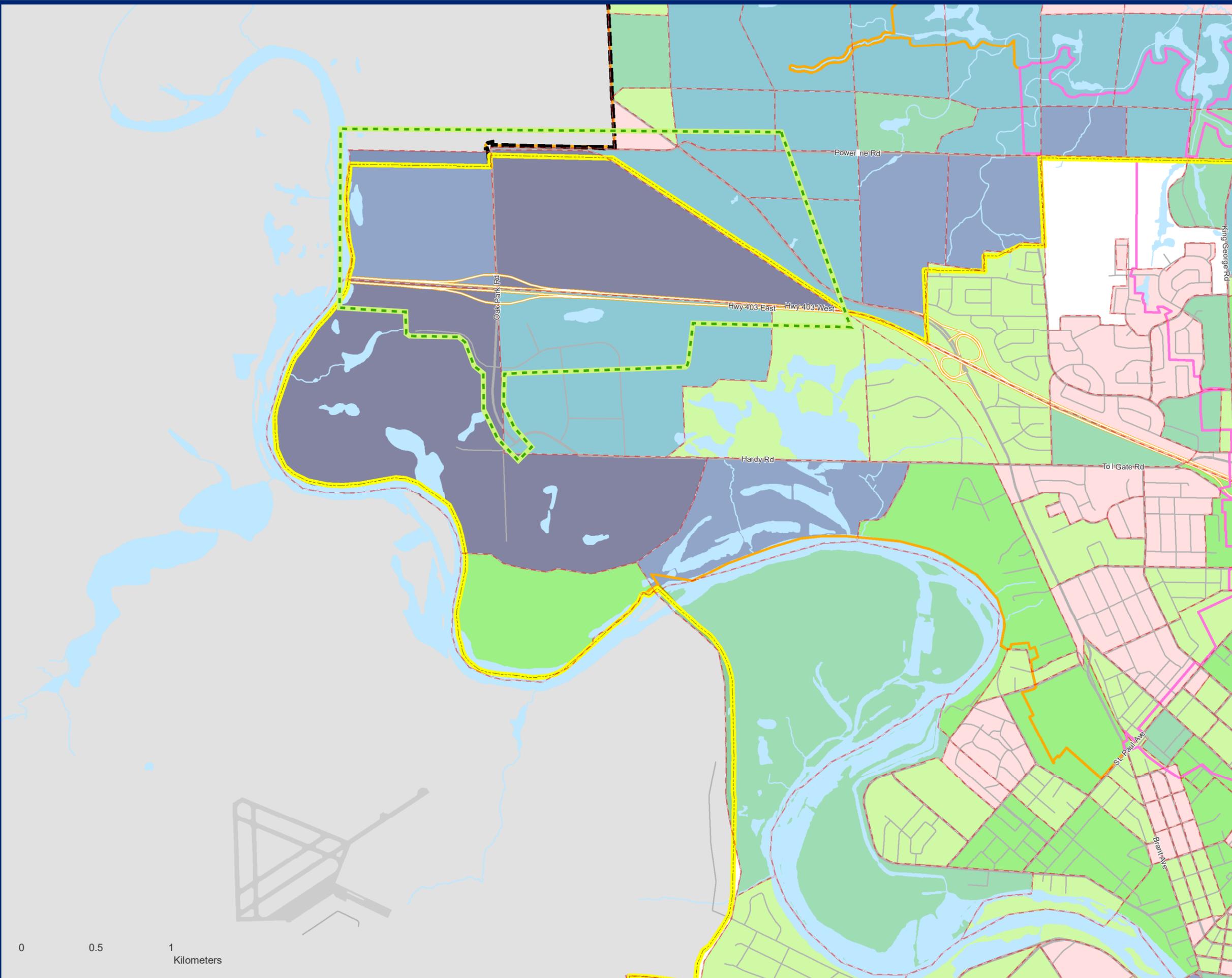
The City’s North Expansion Lands were identified as part of the Municipal Comprehensive Review as one of the primary designated areas of growth. Through the City’s MSP, the PD4 growth projections are anticipated to be a total of 36,766 people and jobs by 2051. This forecast used a Traffic Zone based distribution and includes the North Expansion Lands. Table 5-2 summarizes the existing and 2051 populations.

Table 5-2 Population and Employment Growth in PD4

	Residential	Employment	Total
2016	10,215	3,845	14,060
2051	14,306	22,460	36,766
Growth	4,091	18,615	22,706

Due to the access to and proximity of study area and North Expansion Lands to the Highway 403 corridor, the City of Brantford Official Plan identifies these lands as Prestige Employment Designation and General Employment Designation, as indicated in Figure 5-3.

The study area is adjacent to the City’s North Expansion Lands. As these lands will have significant growth over the next 30 years, the study area has been identified as a critical infrastructure corridor which will connect existing trunk infrastructure to the expansion lands.

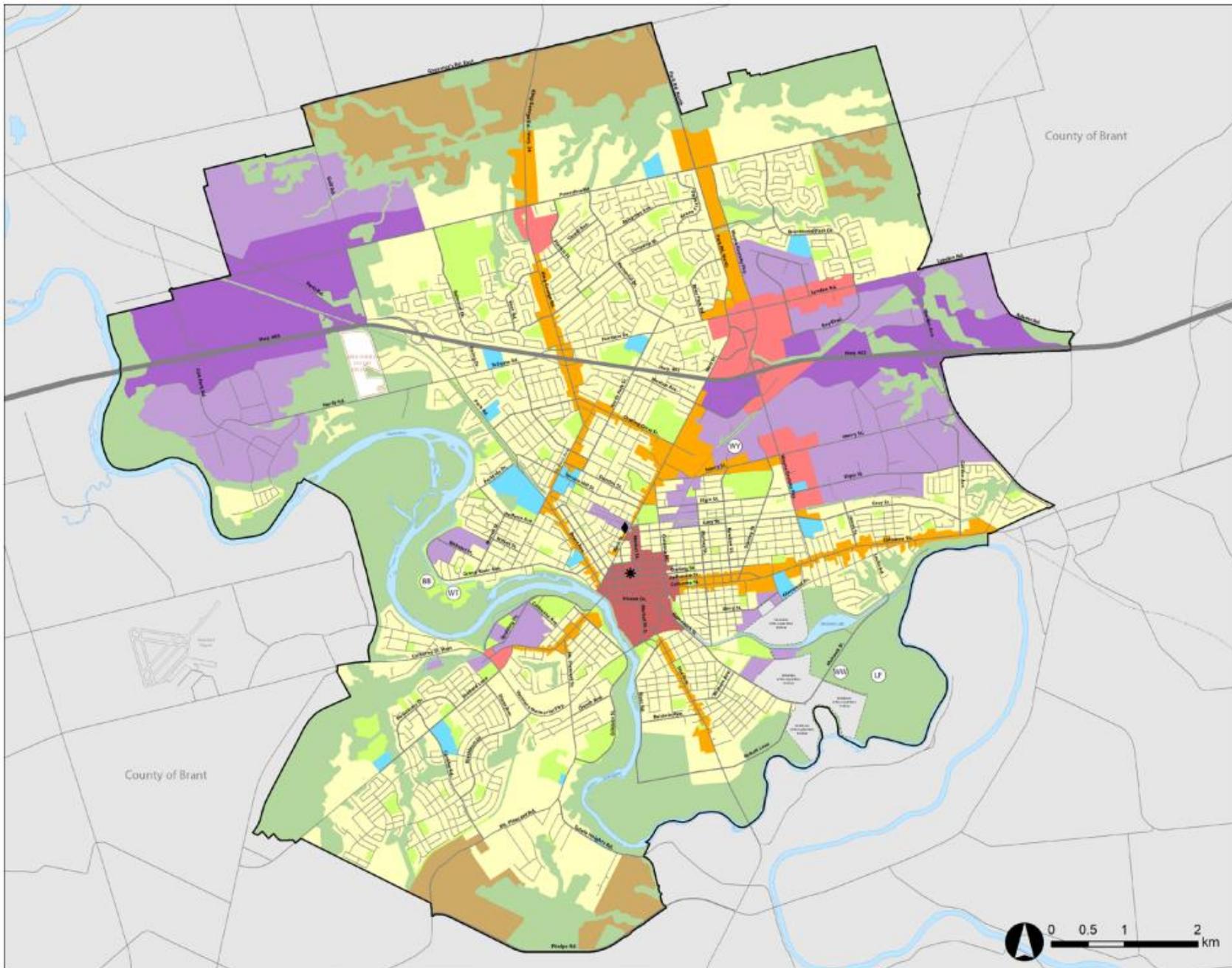


Expressway / Highway	Growth
Arterial and Collectors	No growth
2016 Municipal Boundary	1 - 100
New Municipal Boundary	101 - 200
Six Nations of the Grand River Territory	201 - 500
Study Area	501 - 1000
Parks	1001 - 2500
Waterbody	2501 - 4510
	Water Pressure Zone
	Pressure District 1
	Pressure District 2/3
	Pressure District 4

0 0.5 1 Kilometers

**Figure 5-2
Master Servicing Plan
Growth**

City of Brantford
Official Plan
Schedule 3
Land Use Plan



Legend

- Agricultural Designation
- Core Natural Areas Designation
- Neighbourhoods**
- Residential Designation
- Major Institutional Designation
- Parks and Open Space Designation
- Strategic Growth Areas**
- Downtown Urban Growth Centre Designation
- Major Commercial Centre Designation
- Intensification Corridor Designation
- Employment Areas**
- Prestige Employment Designation
- General Employment Designation

Symbols

- LF Sanitary Landfill Site
- W1 Water Treatment Facility
- W2 Wastewater Treatment Facility
- W3 Municipal Works Yard
- WB Transit Bus Barns
- ✱ Downtown Transit Terminal
- ◆ VIA Rail Station



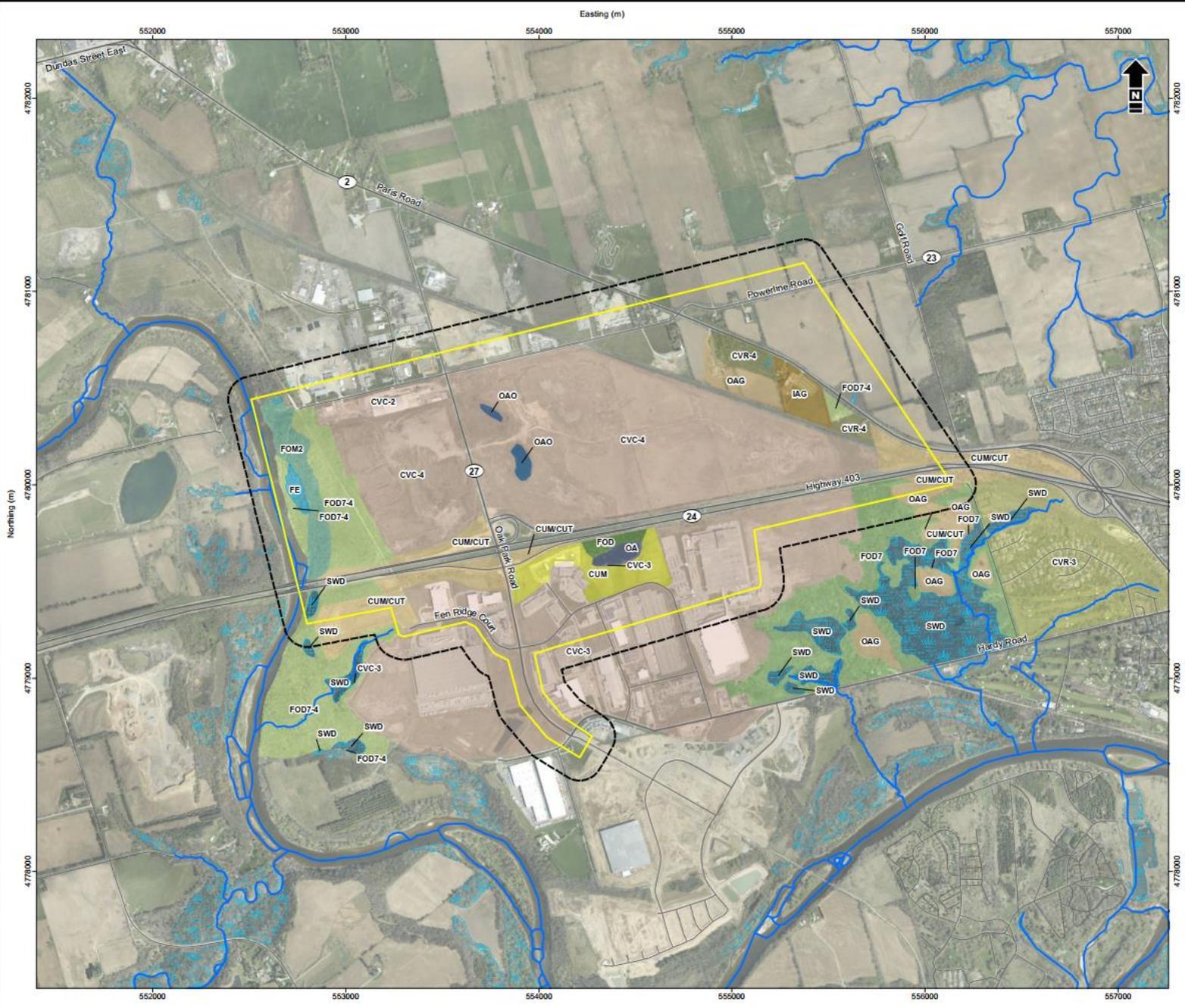
5.4 Natural Environment

A desktop Natural Heritage study was completed to identify natural heritage features within the study area, including but not limited to Species at Risk and potential for rare vegetation. The results of the study are used to guide the evaluation process, to identify potential mitigation requirements, and to confirm if additional investigations are required. The Natural Heritage Existing Conditions Report is included in Appendix B. The report summarizes background information and the findings of field investigations, as well as a preliminary assessment of impacts and mitigation measures. A map of vegetation within the study area is shown in Figure 5-4.

The following constraints were identified for the study area:

- Multiple mapped natural heritage features, including:
 - Brantford Perched Fens Provincially Significant Wetland Complex
 - Brantford Northwest Provincially Significant Wetland Complex
 - Brantford Tufa Mounds, a Provincially Significant Earth Science ANSI
 - Grand River, and its associated tributaries; and
 - Valley lands associated with the Grand River
- Potential for 20 SAR, 13 species of conservation concern, and 9 significant wildlife habitats
- Potential for species that are regionally or locally rare
- Potential for eight rare vegetation communities

The studies recommended upon completion of this Class EA are a wetland boundary delineation, a detailed vegetation inventory and ecological land classification (ELC), and a detailed investigation of the vegetation within the area to better inform constraints.



- Study Area
- Study Area - 120m Buffer
- Wetland (GCRA)
- Watercourse (GCRA)
- Highway
- Road
- Ecological Land Classification**
- CUM - Cultural Meadow
- CUM/CUT - Cultural Meadow/Cultural Thicket
- CVC-2 - Light Industry
- CVC-3 - Heavy Industry
- CVC-4 - Extraction
- CVR-3 - Single Family Residential
- CVR-4 - Rural Property
- FE - Fen
- FOD - Lowland Deciduous Forest
- FOD7 - Fresh-Moist Lowland Deciduous Forest
- FOD7-4 - Fresh-Moist Black Walnut Lowland Deciduous Forest
- FOM2 - Fresh White Pine, Maple, Oak, Mixed Forest Ecosite
- IAG - Agricultural Infrastructure
- OA - Open Aquatic
- OAG - Open Agricultural
- OAO - Open Water
- SWD - Deciduous Swamp

Reference: Coordinate information derived under the Open Government Licence - Ontario. Coordinate information made available under Grand River Conservation Authority's Open Data License (ODL) Project (2017). Source: ERI, Hous, Earthstar Geographics, and the GIS User Community.

1:20,000 metres
 200 0 200 400
 NAD 1983 UTM Zone 17N



GM BluePlan Engineering Ltd.
 Northwest Brantford

Vegetation Communities

Date:	July 2023	Project:	36051	Submittal:	B. Cole	Reviewer:	S. Muscat
Disclaimer: The information contained herein may be compiled from resources that are subject to periodic change without prior notification. While every effort has been made to ensure the accuracy of the information presented at the time of publication, Matrix Solution s Inc. assumes no liability for any errors, omissions, or inaccuracies in the final party rendered.							

5.5 Stage 1 Archaeological Assessment

A Stage 1 Archeological Assessment, included in Appendix C, was carried out to evaluate the potential for archeological resources within or adjacent to the study area. This was completed by reviewing physiographic, land use, historical information and mapping for the subject area and relevant surrounding area, conducting a property inspection for the area to inspect its current condition, and by contacting the Ministry of Citizenship and Multiculturalism (MCM) to determine if there were any known archaeological sites within a 1 km radius of the study area.

The Stage 1 Archaeological Assessment determined that there are 77 previously registered archaeological sites located within 1 km of the study area. However, none of these that exist within 50 m of the study area have been noted to have further cultural heritage value or interest. The property inspection undertaken revealed that parts of the study area exhibit archaeological potential which will require further assessment.

The key recommendations disseminated from the report are as follows:

- The parts of the study area identified to exhibit archaeological potential (Figure 5-5) will require Stage 2 archaeological assessment by test pit/pedestrian survey at five metre intervals where appropriate.
- A Stage 2 archaeological assessment is required prior to any proposed construction activities within the study area.
- The remainder of the study area does not retain archaeological potential on account of deep and extensive land disturbance, slopes in excess of 20 degrees; as such, these lands do not require further archaeological assessment.
- Finally, should proposed work extend beyond the current study area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.



STUDY AREA
 ARCHAEOLOGICAL POTENTIAL

Source: City of Brantford, Maxar		
Projection: NAD 1983 UTM Zone 17N Scale: 1:12,000 Page Size: 11 x 17	ASI Project No.: 22EA-207 Date: 6/15/2023 5:14 PM	Drawn By: cnettleton File: 22EA207_AMP

5.6 Cultural and Built Heritage Assessment

A Cultural Heritage Report was conducted as part of the Cultural Environment Assessment. The Cultural Heritage Report focused on analyzing background research and field survey results to identify known and potential cultural heritage resources located in the study area which could be impacted by the study. This Report is included in Appendix D.

The Cultural Heritage Report focused on the existing conditions of the study area. The report identified two (2) Built Historical Resources (BHR) and four (4) potential Cultural Heritage Landscapes (CHL). Figure 5-6 identifies these features.

Upon completion of this review, the following recommendations were presented:

- Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to the identified BHRs and CHLs.
- Once preferred alternatives for the municipal servicing expansion
- 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 BHRs and CHLs.



- STUDY AREA
- IDENTIFIED AS GROUP B PROPERTY IN BRANTFORD HERITAGE REGISTER PROJECT
- PHOTO LOCATION AND DIRECTION
- IDENTIFIED DURING BACKGROUND RESEARCH AND FIELD REVIEW
- WATERCOURSE
- DESIGNATED AS A CANADIAN HERITAGE RIVER

<p>Source: City of Brantford, Maxar</p>	<p>0 500</p> <p style="text-align: center;">Metres</p>	<p>ASI Project No.: 22CH-137 Date: 5/18/2023 3:50 PM</p>
<p>Projection: NAD 1983 UTM Zone 17N Scale: 1:10,000 Page Size: 11 x 17</p>	<p>Drawn By: cnettleton File: 22CH137_CHR</p>	

5.7 Geotechnical and Hydrogeological Conditions

The initial project input consisted of a desktop geotechnical and hydrogeological report included in Appendix E. The review describes the local geology, anticipated subsurface conditions along the potential new water transmission main and sanitary trunk sewer, an evaluation of alternative alignments from a geotechnical and hydrogeological perspective and input regarding any potential construction related constraints.

Based on background borehole information at the existing servicing easement off Fen Ridge Court, it is anticipated that the Highway 403 crossing will encounter very dense sand and gravel with possible boulders. As the groundwater table's elevation ranges between 233 and 232 masl, horizontal directional drilling (HDD) or jack and bore are likely suitable installation methods. Additionally, as long as the vertical alignment remains above the water table, dewatering at launching and receiving locations are unlikely to be required.

6.0 Technical Servicing Requirements

6.1 City’s Design Standards

6.1.1 Design and Construction Linear Municipal Infrastructure Manuals

The Design and Construction Linear Municipal Infrastructure manuals provide City staff, consulting engineers, contractors, developers and the general public with a common reference to ensure the consistent application of design and construction practices of linear municipal infrastructure within the City. The manuals are intended to aid in the planning, design and construction, maintenance and operational activities of the municipal infrastructure for both new and the retrofit of existing infrastructure.

The City’s Design and Construction Standards Manual for Watermains (Version 8 – February 2024) will be used as a key reference in the development of the preferred alternative in order to ensure the design and construction is consistent with other infrastructure in the City.

6.1.2 Urban Design Manual

The Urban Design Manual provides a consolidated set of citywide urban design guidelines. It reflects the City’s commitment to good urban design and provides a consistent baseline for assessing development proposals on both public and private lands.

6.1.3 Master Servicing Plan – System Performance Objectives

Design criteria and level of service (LOS) targets for this study as they relate to the water use and system performance will be adopted from the MSP and modified as required to adhere to the City’s Design and Construction Manual Linear Municipal Infrastructure Standards (2024). Design criteria are detailed in Table 6-1.

Table 6-1 Water Design Criteria

Criteria	Target
Per capita rate	270 L/cap/day
Max day peaking factor	1.8
Pressure range	40-100 psi; 20 psi during fire flow / emergency
Fire flow	50 – 250 L/s based on land use
Velocity	1.5 m/s maximum during peak hour 0.9 m/s minimum for flushing

6.2 Brantford’s Water System Capacity Needs

6.2.1 Growth Projections

Through the City’s MSP, the PD4 growth projections are anticipated to be a total of 36,766 people and jobs by 2051. This forecast used a Traffic Zone based distribution and includes the North Expansion Lands. Table 6-2 summarizes the existing and 2051 populations.

Table 6-2 Population and Employment Growth in PD4

	Residential	Employment	Total
2016	10,215	3,845	14,060
2051	14,306	22,460	36,766
Growth	4,091	18,615	22,706

6.2.2 Water Servicing Needs

The projected water demands for PD4 calculated using the population and employment growth numbers along with the design criteria, as detailed in the City’s MSP, are shown in Table 6-3.

Table 6-3 Water System Demands

Demand	Pressure District 4
2016 Average Day Demand (MLD)	3.8
2016 Maximum Day Demand (MLD)	6.6
2051 Average Day Demand (MLD)	8.4
2051 Maximum Day Demand (MLD)	14.9

As the Study Area is within PD4, the water infrastructure for this study will be sized to support the PD4 buildout capacity and support the future ET. In addition, a future connection to Paris in Brant County described in Section 6.2.2.1 will be considered in the sizing of all infrastructure.

As discussed previously, the North Expansion Lands are a significant area of the City’s total growth. The Oak Park Road watermain will serve as a significant link from the City’s existing system to the North Expansion Lands.

6.2.2.1 Potential Paris Connection

The County of Brant’s Paris Master Servicing Plan Update (2020) identified a long-term water supply capacity shortfall of approximately 4.5 MLD under the Capital Planning Horizon and up to 13.3 MLD under ultimate buildout. The Paris Master Servicing Plan Update identified two potential supply options consisting of securing additional groundwater sources north of the Paris Settlement Area or to purchase water from the City of Brantford via a connection on Oak Park Road.

The Oak Park Road Watermain project analysis will need to consider the viability of and the impacts on the preferred alignment resulting from the potential service connection to Paris in Brant County.

6.2.3 Watermain Sizing

The MSP identified the watermain size as 600 mm. Through this study the watermain sizing was validated. Table 6-4, provides a summary of watermain velocity under various water demand scenarios considering the future (2051) demand, as well as the City’s design criteria, calculated using the Hazen-Williams equation. Under the maximum flow for the Northwest Pump Station rated capacity, the watermain velocity is 1.49 m/s.

Table 6-4 Summary of Watermain Flows and Velocities

	Desing Flow (MLD)	Design Flow (L/s)	Watermain Velocity (m/s)
2051 ADD (Brantford PD4)	8.4	97	0.34
2051 MDD (Brantford PD4)	14.9	172	0.61
2051 MDD (Brantford PD4 + Brant 4.5MLD)	19.4	225	0.79
Northwest Pump Station Rated Capacity	36.3	420	1.49
2051 MDD (Brantford PD4 + Brant 4.5MLD) + Fire Flow (250 L/s)	41.0	475	1.68

6.3 Agency Requirements

Technical considerations for this project include factors which will influence the construction strategy, including potential road closures, staging areas, and requirements of utility and government stakeholders.

6.3.1 Ministry of Transportation

The Ministry of Transportation (MTO) has outlined requirements with respect to the Highway 403 right of way, including the following:

- 14 m setback for any construction staging
- Highway crossing location should be outside the functional footprint of the interchange
- Depth of cover shall start at 5 m beneath the lowest point of ditch, and maintain consistent elevation through the crossing, and be fully encased
- 20 m separation held for the SC Johnson Trail culvert box structures and pedestrian bridge crossing

6.3.2 Hydro One

Hydro One has identified the following requirements with respect to construction in proximity to the hydro infrastructure:

- 3 m radius around each tower footing from the edge of trench must be left unpaved for access to the footing
- 6 m access route along the corridor to access each transmission structure during construction
- 10 m radial exclusion zone during construction around each affected hydro tower (measured from the face of the tower legs), including excavation. This means that no grading / excavation work shall be carried out using heavy machinery within 10 m of tower footings.
- 15 m radial exclusion zone around each affected structure (measured from the nearest structure member: base of pole, tower leg footing, or structure anchor) for maintenance operations. This clearance must be maintained at all times, and storage or staging activities are not permitted within this area at any time.
- Underground infrastructure must be designed to withstand the loading conditions created by heavy maintenance vehicles
- Pipelines on ROWs must adhere to the provisions of CSA Standard 22.3 No. 6

A Secondary Land Use Technical Review is required for a full list of Hydro One requirements for work within the right of way. The requirements and checklist document for this review is provided in Appendix F.

6.4 General Construction Considerations

General construction considerations for tunneled and open cut infrastructure were made to help inform the evaluation process in terms of determining which sections are tunneled or open cut, how many tunnel shafts are required, and the size of easement

that is required. The following encompasses a summary of construction best practices which were used to inform the alternatives evaluation:

- For tunneled infrastructure:
 - Tunnel shafts are assumed to be 10 m in diameter
 - 1.8 m tunnel height assumed for person entry
 - 1 km maximum tunnel length between tunnel shafts
 - Minimum 2,000 m² staging area (including the tunnel shaft), with 10 m on at least one side of shaft to allow for truck access
- For open cut infrastructure:
 - Assume maximum depth is 10 m for cost effectiveness
 - Minimum 1:1 trench slope during construction

For all linear infrastructure construction, it is anticipated that road closures will be required along the alignment where tunnel staging, and open cut construction are undertaken. Easements are required for the area needed for construction and maintenance of the water and wastewater infrastructure. Staging areas may fall outside of the easements, in which case a temporary construction easement or permit may be required.

Water and wastewater infrastructure shall be separated by a minimum of 2.5 m horizontally per the MECP Procedure F-6-1: Procedures to Govern Separation of Sewers and Watermains. The procedure also states that for tunneled infrastructure, if a tunnel is of sufficient size to permit person entry (i.e. 1.8 m described above), the watermain and sewer may be in the same tunnel provided that the watermain is suspended above the sewer. Therefore, where a tunnelling is required under Highway 403 and the CN Rail, the watermain and sewer will share the same tunnel.

7.0 Screening and Evaluation Methodology

Phase 2 of the Class EA process identifies alternative solutions to address the problem and opportunity statement by considering the existing environment from an environmental, social / cultural, technical, and economic perspective. This Phase also includes the evaluation of alternatives and identification of a recommended solution. After consultation with the public, Indigenous Peoples, agencies, and other interested stakeholders, the preferred solution is developed and reflects input received.

The overarching study includes the evaluation of a water and wastewater servicing solution from the south of Highway 403 to the intersection at Powerline Road and Paris Road. The water and wastewater alignment evaluations considered the joint impacts and construction requirements (phasing, etc.) as they will be constructed together. An evaluation of the full water and wastewater alignment from south of Highway 403 to Powerline Road and Paris Road was completed to identify the preferred alternative.

Constraints along Powerline Road were common to all water and wastewater alternatives; further, the preferred water and wastewater alignment for the Powerline Road projects is dependent on the outcome of the Powerline Road Widening project, whereas the Highway 403 constraints for each water and wastewater alignment are largely independent of the Oak Park Road Widening and Powerline Road Widening projects. The Highway 403 crossing location was considered first as it is the most limiting factor in the evaluation.

The Powerline Road Trunk Sewer project was added following the Notice of Commencement and grouped with the Powerline Road Trunk Watermain project to encourage development efficiencies north of Highway 403. Similarly, the Oak Park Road water and wastewater alignments are considered together with respect to determining the best Highway 403 crossing location and alignment; however, the evaluation for each project was conducted independently.

This section describes the process undertaken to identify, develop and evaluate alternative solutions to address the problem and opportunity statement, summarized by Figure 7-1.

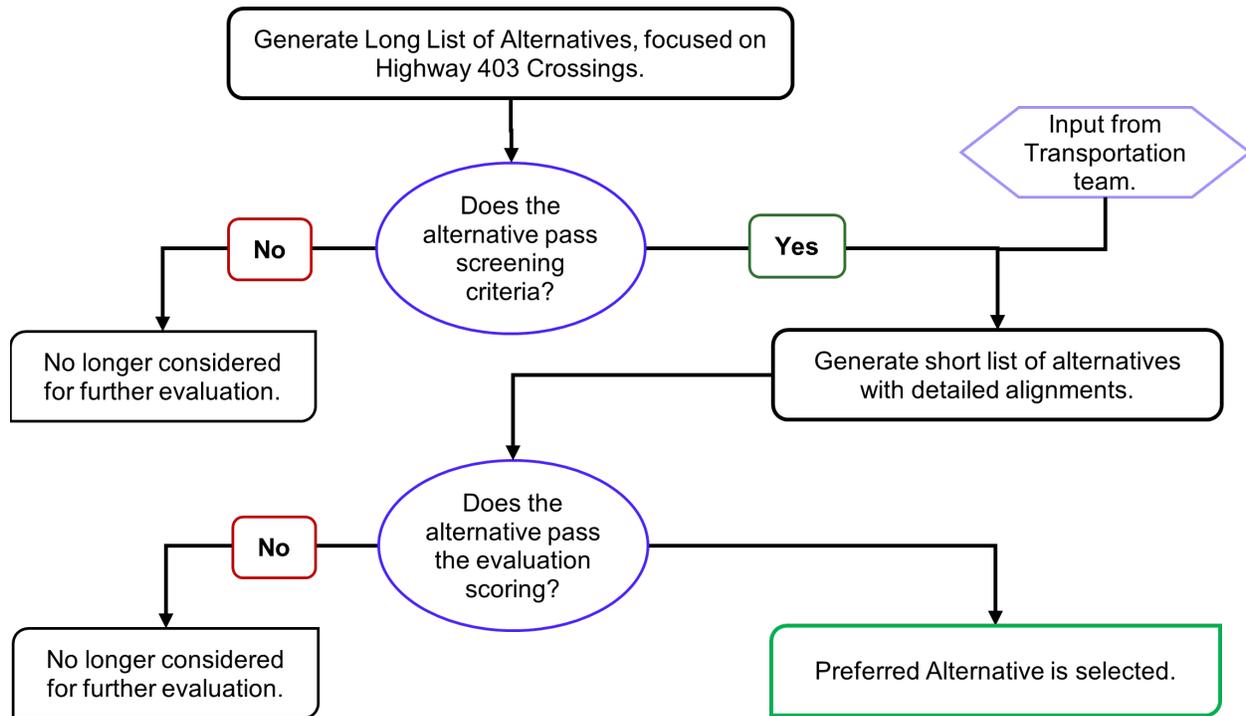


Figure 7-1 Screening and Evaluation Process

7.1 Screening Approach

In accordance with the Class EA process, the Project Team developed a long list of alternative solutions to address the needs of the Oak Park Trunk Watermain. The Project Team then screened the alternatives according to the criteria detailed in Table 7-1.

Table 7-1 Screening Criteria

Screening Criteria	Definition
Feasibility of Highway 403 crossing	<ul style="list-style-type: none"> Aligns with Ministry of Transportation requirements with respect to crossing being outside the functional footprint of the interchange at Oak Park Rd
Adequately supports servicing external to the Study Area	<ul style="list-style-type: none"> Supports servicing needs north of the Study Area Supports efficient connection to County of Brant
Minimizes property and easement requirements	<ul style="list-style-type: none"> Limits the additional property acquisition and easements required for construction and servicing
Feasibility of connection to existing trunk infrastructure	<ul style="list-style-type: none"> Ability to connect and ease of connection to the existing trunk infrastructure south of Highway 403
Minimizes construction impacts	<ul style="list-style-type: none"> Limits additional disruption to residents, businesses, and existing infrastructure caused by construction works (road closures, access to businesses)

Screening Criteria	Definition
Minimizes environmental impacts	<ul style="list-style-type: none"> Limits the disruption to environmental features and additional permits required for construction
Supports internal servicing	<ul style="list-style-type: none"> Limits the amount of additional infrastructure required for connection through the developer’s lands
Limits disruption to external infrastructure	<ul style="list-style-type: none"> Limits additional disruption to infrastructure, particularly relating to hydro and rail corridors

The alternatives were screened using the following scoring:

- Meets criteria ✓
- Additional mitigation / investigation needed ≈
- Does not meet criteria ✗

7.2 Evaluation Approach

GM BluePlan evaluated the short list of alternatives within the following four categories:

- Technical Feasibility
- Natural Environment Considerations
- Social / Cultural Considerations
- Financial Viability

Table 7-2 summarizes the evaluation criteria. GM BluePlan reviewed and scored each long list alternative according to the evaluation criteria.

Table 7-2 Evaluation Criteria Definitions

Criteria	Definition
Technical Feasibility	
Meets existing and future servicing needs	Ability to satisfy the project problem and opportunity statements and to achieve the desired system technical level of service objectives. This includes the ability to provide sufficient capacity to meet existing levels of service and support future growth targets.
Provides opportunity for connection to County of Brant	Feasibility of providing a future connection to the County of Brant to support existing and future servicing needs.
Aligns with planned system strategy and configuration	Aligns with current planned configuration and operation, while minimizing length and maximizing use of existing facilities.
Provides reliable servicing	System configuration’s ability to support flexibility in system operations, redundancy in system supply capacity, and minimizes the risk related to single element failure. Includes the feasibility and maintenance of implementation and adaptation to increases in system requirements or reduction in supply capacity.
Minimizes conflict with existing infrastructure and utilities	Adheres to Ministry of Transportation, Canadian National Rail, Hydro One, requirements for construction and operation within proximity to existing infrastructure.
Ease of property / land acquisition for construction	Impacts that any required property may have on the implementation process (expropriation of land / land purchase or temporary / permanent easements) and compatibility with surrounding land use.
Minimizes and manages construction risk	Constructability including scope, time required to complete construction, and feasibility of design, as well as timing and technical suitability of project implementation with the aim of improving the overall flexibility in project phasing and reducing the number of critically dependent components.
Natural Environmental Considerations	
Protects environmental and natural heritage features	Assess, monitor, and ensure the preservation and protection of aquatic resources and natural features within the site location, alignment, and surrounding environment. This includes potential impacts to wetlands, terrestrial habitat/features, vegetation, wood lots, and steep slopes identified by Conservation Authorities, Municipalities, or the Province of Ontario
Protects wildlife and Species at Risk	Potential impacts to wildlife (including Species at Risk) within the site location and construction zone. The implementation must not affect the function of habitat for locally significant wildlife, including endangered or threatened species. The habitat includes nesting sites, hibernation areas, foraging areas, areas of wildlife travel.
Minimizes climate change impacts	Use of technology and best practices, where applicable, to minimize climate change impacts and reduce greenhouse gas contributions. This includes consideration during the construction process, day to day operations, and future maintenance requirements.
Social / Cultural Considerations	
Minimizes impacts to residents	Minimize short and long-term impacts to existing and / or future residents including noise / dust / vibration, traffic, and sightlines.
Minimizes impacts to businesses	Minimize short and long-term impacts to existing and / or future businesses including noise / dust / vibration, traffic, and sightlines. This includes potential future disruptions due to required maintenance.
Manages and minimizes construction impacts	Potential impacts to existing built-up areas (residents, businesses) due to construction activities, including creating noise / dust / vibrations, traffic, and traffic flow, temporarily limiting access to properties, or other. This also includes identifying needs to alter timing and scope of the construction practices to minimize impacts.

Criteria	Definition
Protects cultural heritage features	Potential impacts to a structure, property, district, feature, or landscape that has been previously identified to be of cultural heritage value or interest. Impacts may be deemed as temporary (i.e. site access) or permanent (i.e. altering the existing conditions).
Protects archaeological features and Indigenous interests	Potential impacts to areas previously determined to have high archeological potential, moderate / unknown archeological potential, or low / no archeological potential. Preserve Indigenous use of land and natural resources, protect cultural environment and archaeological resources, and minimize impact to Indigenous economy and way of life.
Financial Viability	
Low lifecycle cost, including capital and operating & maintenance	Minimize the lifecycle cost of new infrastructure. This includes capital, operating, and maintenance costs over a 50-year period.

Scores on a scale of 0 to 4 were provided for each alternative under all criteria according to scoring definition below.

0. Solution presents permanent negative impacts and / or presents significant technical challenges
1. Solution presents temporary negative impact and / or presents major technical challenges
2. Solution presents low or neutral impacts after mitigation and / or some technical challenges
3. Solution presents no adverse impacts and has no substantial technical challenges
4. Solution presents ideal conditions and / or generates beneficial impacts

Following the independent evaluation of each individual criteria, a consolidated score was calculated for each of the four primary categories (Technical Feasibility, Environmental Considerations, Social / Cultural Considerations, and Financial Viability). A total score out of 100 was calculated for each alternative using equal category weighting (25 points per category).

8.0 Development of Alternatives

The Project Team identified six (6) alternative solutions, which were categorized by Highway 403 crossing location. Table 8-1 presents the long list of alternatives, which are summarized in Section 8.1.

8.1 Long List of Alternatives

Alternative 1 – SC Johnson Trail: Connects to the existing trunk on Fen Ridge Court and crosses Highway 403 near the pedestrian bridge crossing, utilizes the SC Johnson Trail to the north.

Alternative 2 – Existing Easement: Connects to the City’s easement on Fen Ridge Court and crosses Highway 403 immediately west of the Oak Park Road interchange.

Alternative 3 – Oak Park Road: Connects to the trunk watermain on Oak Park Road and utilizes the Oak Park Road ROW, crossing Highway 403 through the Oak Park Road interchange.

Alternative 4 – Tall Grass Court: Connects to the trunk watermain on Oak Park Road, and crosses Highway 403 from Tall Grass Court.

Alternative 5 – East of Pond: Connects to the trunk watermain on Oak Park Road, and crosses Highway 403 east of the existing pond from Savannah Oaks Drive.

Alternative 6 – East of Ferrero: Connects to the trunk watermain on Oak Park Road, and crosses Highway 403 from the east of the Ferrero Canada business.

Table 8-1 Long List of Alternatives: Opportunities and Challenges

Alternative	Opportunities	Challenges
Alternative 1 - SC Johnson Trail	<ul style="list-style-type: none"> Alignment outside limits of Highway 403 Interchange Potential conflict with existing pedestrian bridge Utilizes historical rail corridor – help to minimize transportation and business impact but increases disruption to public (loss of trail during construction) Opportunity to provide connection to County of Brant Paris system Moderately aligns with current site plan north of Highway 403; increase length of internal infrastructure to support connection at the southwest 	<ul style="list-style-type: none"> Requires additional trunk sewer and watermain construction on Fen Ridge Crt – Ability to minimize disruption to existing road right-of-way Causes minimal disruption to existing road right-of-way on Oak Park Rd and moderate disruption to Powerline Rd Proximity to environmental features may require additional mitigation Portion of the alignment within Brant County along Powerline Road
Alternative 2 -Existing Easement	<ul style="list-style-type: none"> Aligns with existing easement and trunk infrastructure that was anticipated to be used for Highway 403 crossing Generally avoids environmental features Opportunity to provide connection to County of Brant Paris water/wastewater systems Aligns with current site plan north of Highway 403; ability to provide internal servicing 	<ul style="list-style-type: none"> Alignment within limits of Highway 403 Interchange; however, avoids major structural elements. Additional crossing depth may help to mitigate MTO concerns. Will require additional discussions with MTO Causes moderate disruption to existing road right-of-way on Oak Park Rd and Powerline Rd
Alternative 3 - Oak Park Road	<ul style="list-style-type: none"> Shortest potential alignment Generally avoids environmental features Opportunity to provide connection to County of Brant Paris water/wastewater systems Aligns with current site plan north of Highway 403; ability to provide internal servicing 	<ul style="list-style-type: none"> Alignment fully within limits of Highway 403 Interchange Fully within City ROWs Abandoning of trunk infrastructure on Fen Ridge Crt Causes significant disruption to existing road right-of-way on Oak Park Rd and Powerline Rd
Alternative 4 - Tall Grass Court	<ul style="list-style-type: none"> Opportunity to provide connection to County of Brant Paris water/wastewater systems Generally avoids environmental features Aligns with current site plan north of Highway 403; ability to provide internal servicing 	<ul style="list-style-type: none"> Alignment within limits of Highway 403 Interchange Causes moderate disruption to existing road right-of-way on Oak Park Rd and Powerline Rd Abandoning of trunk infrastructure on Fen Ridge Crt Requires additional trunk sewer and watermain construction on Savannah Oaks Dr
Alternative 5 - East of Pond	<ul style="list-style-type: none"> Alignment outside limits of Highway 403 Interchange Avoids disruption to existing road right-of-way on Oak Park Rd and Powerline Rd Generally avoids environmental features Moderately aligns with current site plan north of Highway 403; ability to provide internal servicing at an increased depth 	<ul style="list-style-type: none"> Abandoning of trunk infrastructure on Fen Ridge Crt Requires additional trunk sewer and watermain construction on Savannah Oaks Dr Limits Opportunity to provide connection to County of Brant Paris water/wastewater systems
Alternative 6 - East of Ferrero	<ul style="list-style-type: none"> Alignment outside limits of Highway 403 Interchange Avoids disruption to existing road right-of-way on Oak Park Rd and Powerline Rd Generally avoids environmental features 	<ul style="list-style-type: none"> Abandoning of trunk infrastructure on Fen Ridge Crt Requires additional trunk sewer and watermain construction on Savannah Oaks Dr Additional servicing within site may be required due to distance from properties and extreme depth of infrastructure Limits Opportunity to provide connection to County of Brant Paris water/wastewater systems Requires additional coordination with several property owners north of Highway 403

Alignment Alternatives

- 1- Trail —
- 2 - Easement —
- 3 - Oak Park —
- 4 - Tall Grass —
- 5 - East of Pond —
- 6 - Ferrero —
- Future Potential Alignment Alternative - - -

Watermain

- Transmission Main (> 400 mm) —
- Distribution Main (<= 400 mm) —

City of Brantford Features

- Study Area []
- Rail [+]
- Property Boundary []
- Waterbody []
- Wooded Area []
- Available Easement []
- Hydro Easement []
- Existing GRCA Regulation Limits []

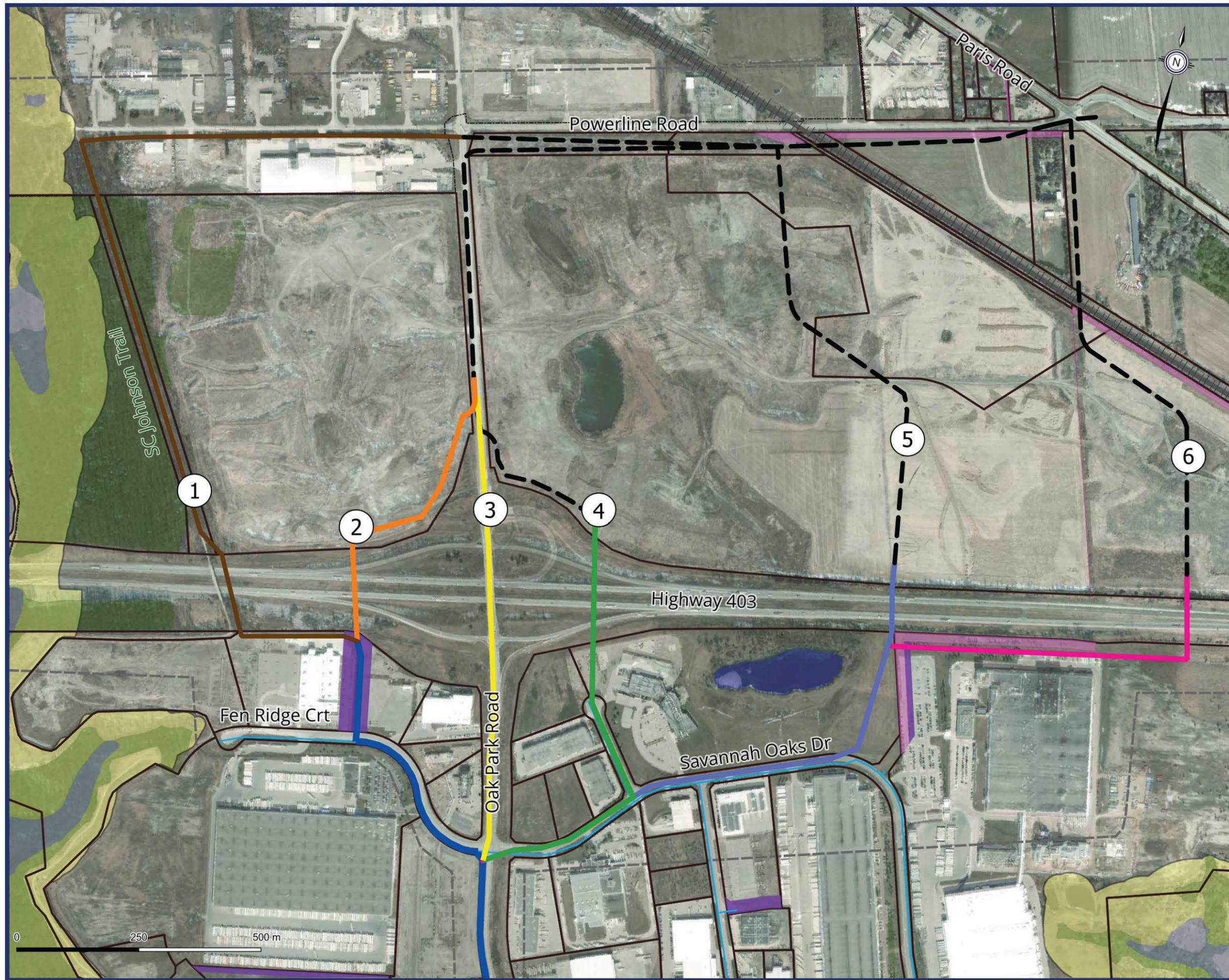


Figure 8-1
Long List Alternatives for Water Servicing

8.2 Long List Screening

GM BluePlan screened the long list of alternatives according to the screening methodology outlined in Section 7.1 and the opportunities and challenges identified in Section 8.1. Table 8-2 summarizes the screening results for each alternative and criterion, defined using the following symbols:

- Meets Criteria: ✓
- Additional investigation or mitigation required: ≈
- Does not meet criteria: ✗

Table 8-2 Long List of Alternatives Screening Results

Screening Criteria	1 – Trail	2 – Easement	3 – Oak Park	4 – Tall Grass	5 – East of Pond	6 – East of Ferrero
Feasibility of Highway 403 crossing	✓	≈	✗	✗	✓	✓
Adequately supports external servicing	✓	✓	✓	✓	≈	≈
Minimizes property and easement requirements	≈	✓	✓	✓	≈	✗
Feasibility of connection to existing trunk infrastructure	✓	✓	✓	≈	≈	✗
Minimizes construction impacts	✓	✓	✗	≈	≈	≈
Minimizes environmental impacts	≈	✓	✓	✓	≈	≈
Supports internal servicing	≈	✓	✓	✓	✓	✗
Limits disruption to external infrastructure	≈	≈	≈	≈	✓	✓
Carried forward to short list?	Yes	Yes	No	No	Yes	No

Alternatives 1, 2, and 5 were carried forward following the long list screening. These are further described and evaluated in Section 9.0.

Alternative 3 was screened out because it is fully within the limits of the Oak Park Road Highway 403 interchange, and it has significant impacts along Oak Park Road during construction.

Alternative 4 was screened out because the location of the Highway 403 crossing is within the limits of the interchange.

Alternative 6 was screened out as it would require more easements for construction and maintenance, it requires significant additional infrastructure due to the distance from the trunk watermain, and it would require additional servicing of the development north of Highway 403 due to the distance from properties.

9.0 Evaluation of Alternatives

Three (3) servicing options were carried forward following the long list of alternatives screening: Alternatives 1, 2, and 5 (Figure 9-1). GM BluePlan subsequently completed a detailed evaluation of these alternatives according to the evaluation methodology outlined in Section 7.2.

9.1 Short List of Alternatives Overview

The following sections provide an overview of the three shortlisted alternatives (Figure 9-1), including alternative maps and profiles that highlight the constructability features of each alignment, including tunnelling locations, depth of watermain, and general alignment. Note that the dashed lines on the figures represent a potential future Powerline Road watermain alignment and is not satisfied under this Project File Report.

Table 9-1 provides an overview of the key physical and technical differentiators between the different alternatives. Note, the values provided in Table 9-1 are inclusive of the future Powerline Road segment.

Table 9-1 Overview of Key Alternatives Differentiators

	Alternative 1 – Trail	Alternative 2 – Easement	Alternative 5 – East of Pond
Total Length (m) ¹	3,400	2,450	2,830
Tunneled Length (m) ^{1,2}	450	420	570
Shaft Locations (#)	4	4	4
Easement / Land acquisition Requirements (m)	3,215	1,760	2,035
Impacted Archaeological / Cultural Heritage Sites	1 Built Heritage Resource 1 Canadian Heritage River (Grand River) 1 Cultural Heritage Landscape (CN Rail)	1 Cultural Heritage Landscape (CN Rail)	1 Cultural Heritage Landscape (CN Rail)
Impacted Natural Heritage Area (sq.m)	8,750	0	2,000
Construction Cost	\$14.9 M	\$11.6 M	\$19.2 M

1: Total length is measured from the trunk connection south of Highway 403 to Powerline Road & Paris Road intersection

2: Actual total length and tunneled length will be confirmed during detailed design

Alignment Alternatives

- 1 - Trail —
- 2 - Easement —
- 5 - East of Pond —
- Future Potential Alignment Alternative - - -

Watermain

- Transmission Main (>400 mm) —
- Distribution Main (<= 400 mm) —

City of Brantford Features

- Study Area []
- Rail [+]
- Property Boundary []
- Waterbody []
- Wooded Area []
- Available Easement []
- Hydro Easement []
- Existing GRCA Regulation Limits []

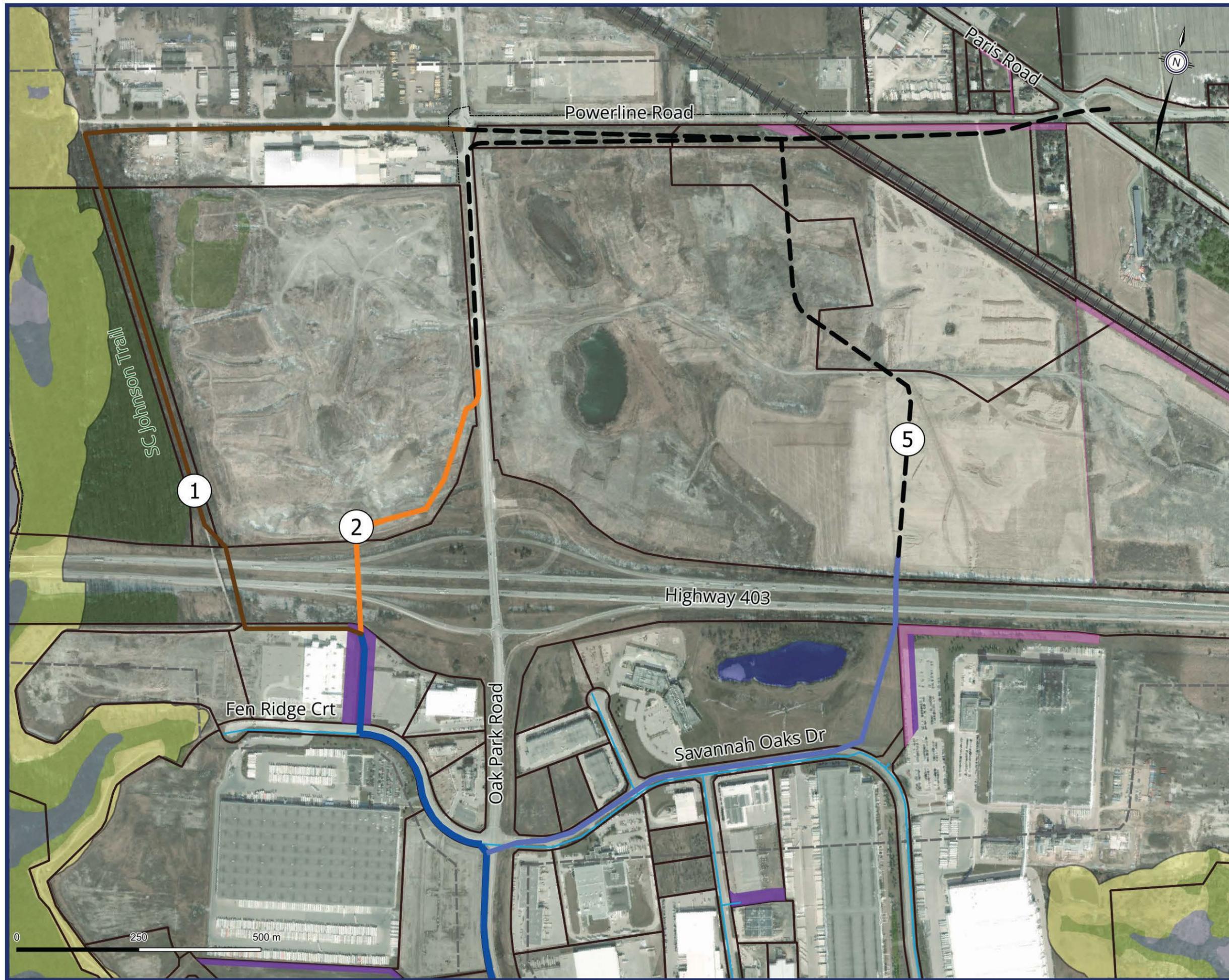


Figure 9-1
Short List Alternatives for Water Servicing

9.1.1 Alternative 1 (Tail)

Figure 9-2 and Figure 9-3 show the profile and map of the shortlisted Alternative 1 (Tail). The alignment makes use of the City's existing easement on Fen Ridge Court, then traverses west along the MTO property boundary to the opposite of the SC Johnson Trail, maintaining a 20 m distance from the SC Johnson Trail box culvert structures and pedestrian bridge crossing. The alignment then follows the SC Johnson Trail to Powerline Road and then east to Oak Park Road. The alignment beyond Oak Park Road will be confirmed in a following study. This alignment requires 2 tunnel crossings – one at Highway 403 and one at the CN Rail crossing.

Alternative 1 is the longest alignment at 3,400 m. Due to the route length, construction time is increased. In addition, due to the extents of tunneling required for the sanitary sewer, phasing is likely very difficult to achieve.

South of Highway 403, the minimum 14 m setback from the MTO boundary is difficult to achieve as the crossing location is in close proximity to adjacent buildings and the crossing must also maintain a minimum of 20 m from the pedestrian bridge. This creates a very constrained work area south of Highway 403.

North of Highway 403, the route follows the SC Johnson Trail, which is within GRCA lands. The lands are naturalized and includes a Provincially Significant Woodland with a higher potential to affect SAR. The tunnel shaft and staging area north of Highway 403, as well as the open cut construction of the trunk watermain will require tree clearing along the alignment to accommodate construction and work areas. The alignment is adjacent to the Grand River, which is designated as a Canadian Heritage River; however, given the distance from the river, disturbance can be prevented. This alternative is also within an area of cultural significance and archaeological potential.

This alternative significantly impacts residents using the SC Johnson Trail, which requires closure during construction as well as tree clearing for open cut construction. There is also impact to businesses along Fen Ridge Court during construction.

While the alternative provides an opportunity to connect to County of Brant infrastructure, it does not align with the Developer's servicing strategy north of Highway 403. The portion of the alignment along Powerline Road is also within County of Brant lands and will require easement and/or permit from the County to construct and maintain the infrastructure. The alignment along Powerline Road is also in proximity to a

designated Built Heritage Resource. Alternative 1 also has the longest segment in proximity to the significant hydro corridor on Powerline Road compared to the other shortlisted alternatives.

Generally, the alignment on private properties or within limited access areas increases complexity for future operating and maintenance activities. It also increases the total easements required.

Using a unit cost of \$12,460/m for the length of tunneled watermain and \$3,140/m for the length of open cut watermain, a high level estimate provides a total cost estimate of \$14.9 M. Unit costs are based on typical component costs using historical tender and construction information.

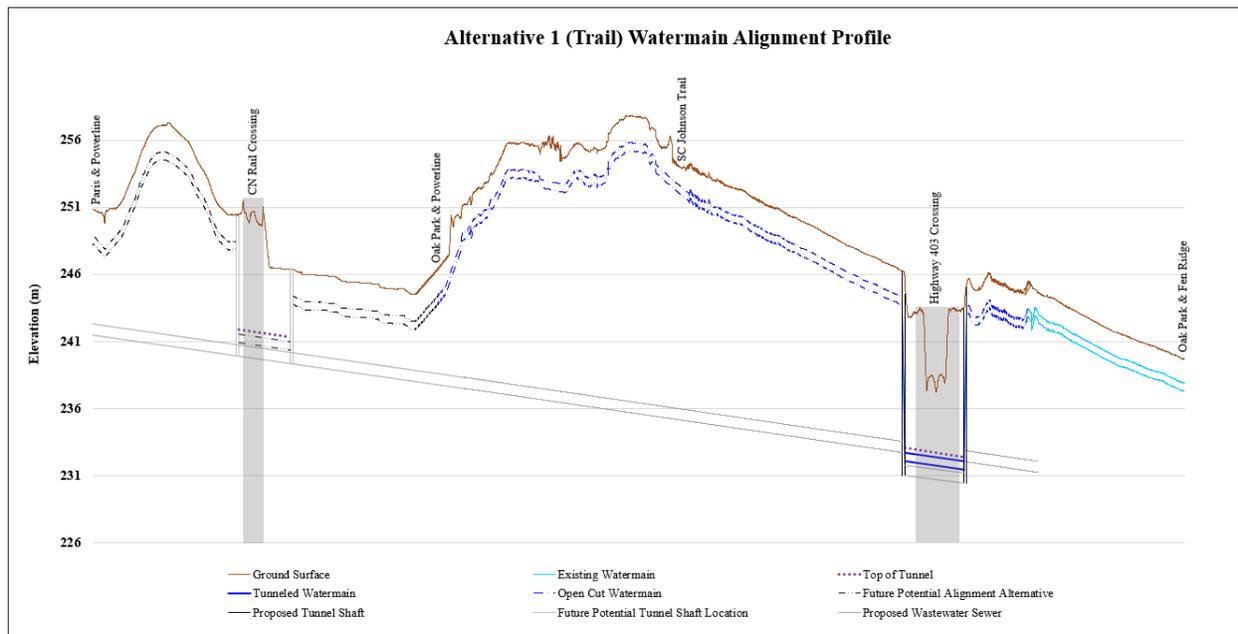
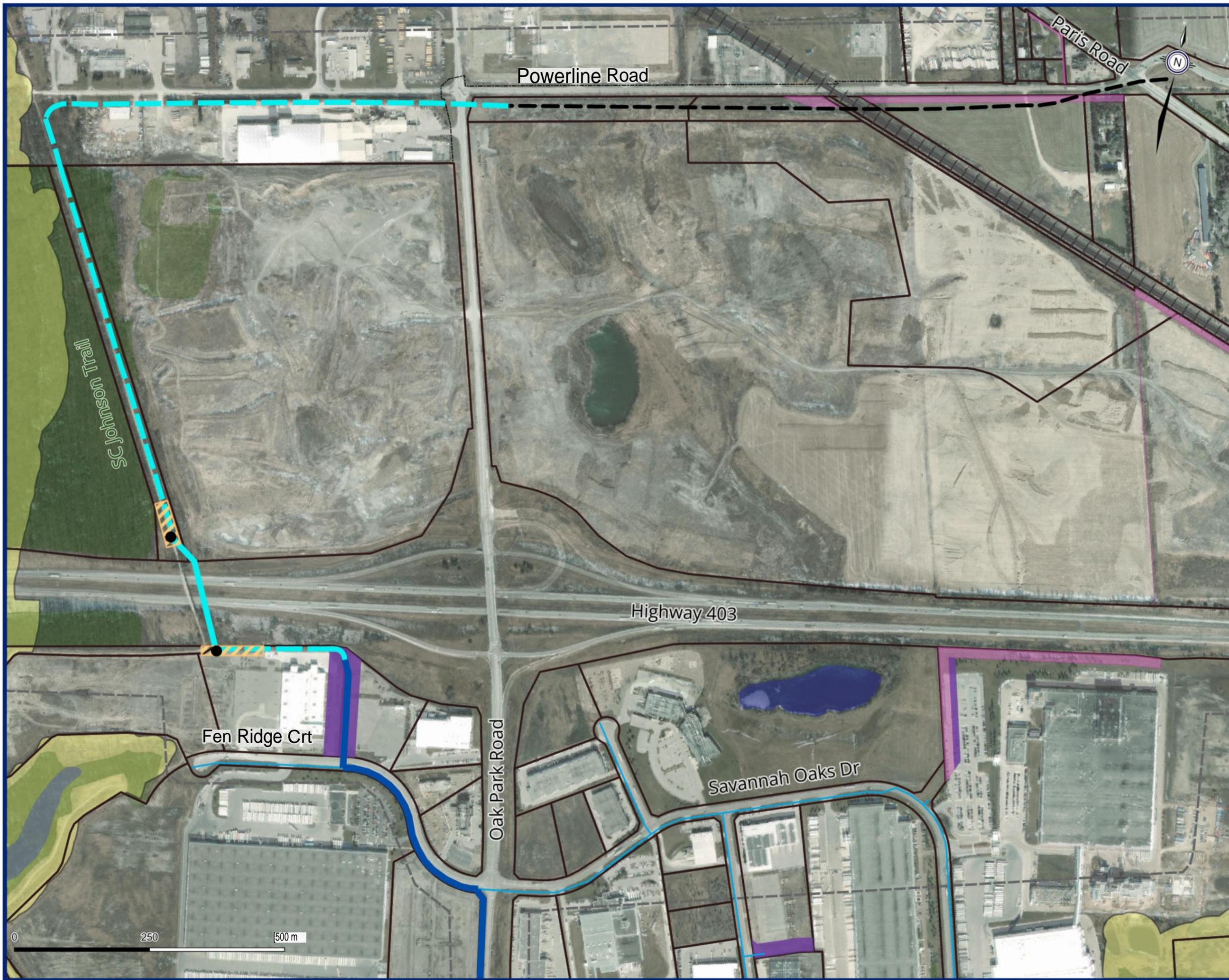


Figure 9-2 Alternative 1 (Trail) Profile



Brantford Northwest Municipal Services Expansion



Alignment Construction

- Tunneled Watermain
- Open Cut Watermain
- Future Potential Alignment Alternative
- Proposed Staging Area
- Proposed Tunnel Shaft

Watermain

- Transmission Main (>400 mm)
- Distribution Main (<= 400 mm)

City of Brantford Features

- Study Area
- Rail
- Property Boundary
- Waterbody
- Wooded Area
- Available Easement
- Hydro Easement
- Existing GRCA Regulation Limits

Figure 9-3
Alternative 1 (Trail) Watermain Alignment



April, 2024
622120-000
Projection EPSG:26917

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9.1.2 Alternative 2 (Easement)

The Alternative 2 (Easement) alignment makes use of the City's existing easement on Fen Ridge Court and crosses Highway 403 from the end of that easement. The alignment then follows the property boundary to Oak Park Road. The alignment beyond Oak Park Road will be confirmed in a following study. This alignment requires 2 tunnel crossings – one at Highway 403 and one at the CN Rail crossing. It is the shortest alignment at 2,450 m. Construction phasing is likely achievable for this alignment.

This alternative provides an opportunity to connect to County of Brant infrastructure and aligns with the Developer's servicing strategy north of Highway 403.

The alignment is partially within the Oak Park Road interchange footprint but is able to achieve the required 14 m setback from the MTO ROW for shaft locations and staging areas.

This alternative generally follows road ROWs, except for the portion within development lands between north of Highway 403 and Oak Park Road. Therefore, the total easement and property acquisition requirements are minimized in comparison to the other shortlisted alternatives.

The alignment is primarily within the built-up areas. Therefore, it has the lowest impact to environmental features. It also avoids cultural heritage features, except for the CN Rail; however, tunneling can avoid disturbance of the CN Rail corridor. There is no identified archaeological potential.

During construction, this Alternative will have a moderate impact to businesses along Fen Ridge Court.

Using a unit cost of \$12,460/m for the length of tunneled watermain and \$3,140/m for the length of open cut watermain, a high level estimate provides a total cost estimate of \$11.6 M. The alternative with the next lowest estimated cost (Alternative 5) is 20% higher. Unit costs are based on typical component costs using historical tender and construction information.

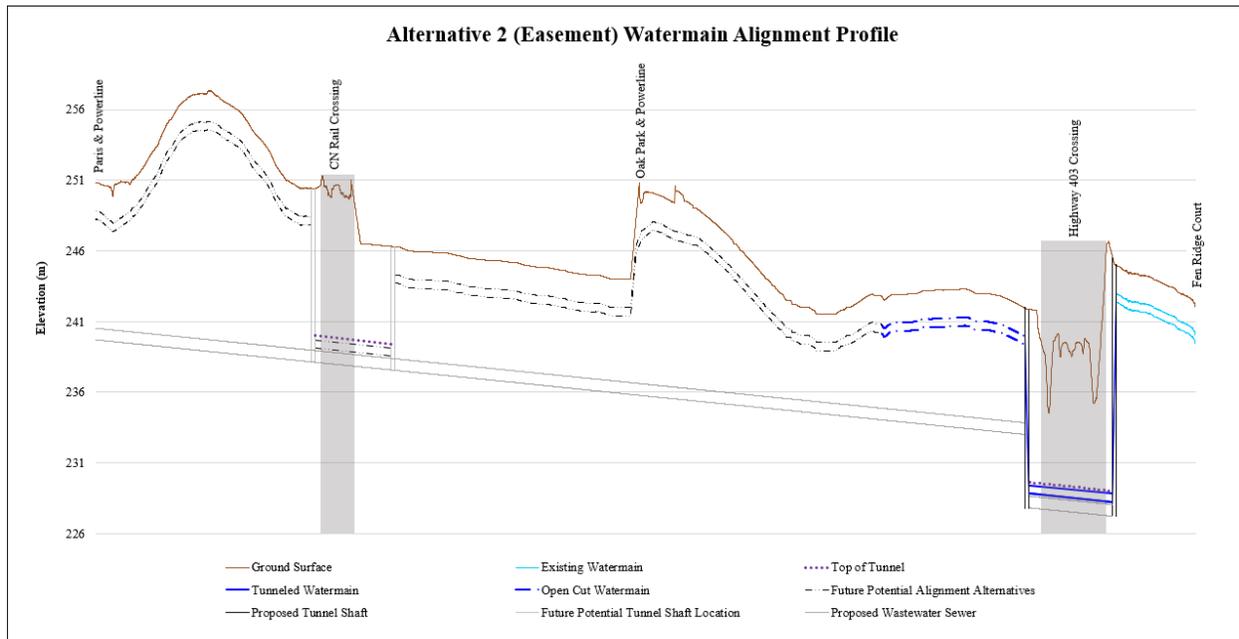


Figure 9-4 Alternative 2 (Easement) Profile

Alignment Construction

- Tunneled Watermain 
- Open Cut Watermain 
- Future Potential Alignment Alternative 
- Proposed Staging Area 
- Proposed Tunnel Shaft 

Watermain

- Transmission Main (>400 mm) 
- Distribution Main (<= 400 mm) 

City of Brantford Features

- Study Area 
- Rail 
- Property Boundary 
- Waterbody 
- Wooded Area 
- Available Easement 
- Hydro Easement 
- Existing GRCA Regulation Limits 



Figure 9-5
**Alternative 2 (Easement)
Watermain Alignment**

9.1.3 Alternative 5 (East of Pond)

The Alternative 5 (East of Pond) alignment does not make use of the City's existing easement on Fen Ridge Court; rather, it connects with the existing trunk infrastructure at the intersection of Oak Park Road and Fen Ridge Court. The alignment then traverses east along Savannah Oaks Drive before turning north toward the Highway 403 crossing. It crosses Highway 403 east of the pond and west of the parking lot off Ferrero Boulevard. The alignment beyond the Highway 403 crossing will be confirmed in the Powerline Road Trunk Watermain Class EA, but the potential alignment shown in the map and profile generally follows a proposed site plan for the properties. This alignment requires 2 tunnel crossings – one at Highway 403 and one at the CN Rail crossing.

There is existing watermains on Savannah Oaks Drive; however, the existing watermains are undersized to support the servicing needs. As such, this alternative does not align with the existing trunk infrastructure as it must connect to the Oak Park Road trunk watermain and run parallel to the existing local infrastructure on Savannah Oaks Drive.

The full alignment is 2,830 m. Construction phasing is likely not possible for this alignment due to the significant length of tunneling required for the Oak Park Road sewer project following the same alignment.

This alternative is able to achieve the required 14 m MTO ROW setback. However, it presents significant impacts during construction with a closure of Oak Park Road and significant construction along Savannah Oaks Drive. These closures cause disruption to residents and businesses using these roads.

The alignment is adjacent to an existing pond; however, otherwise there are minimal impacts to natural features and low potential to affect SAR. The alignment avoids cultural heritage features, except for the CN Rail; however, tunneling can avoid disturbance of the CN Rail corridor. There is no identified archaeological potential.

The alignment is in line with the Developer's servicing strategy north of Highway 403; however, easements are required for through the Developer's lands. This alternative provides an opportunity to connect to County of Brant; however, unlike Alternative 1 and Alternative 2 which would allow for a direct connection, the Alternative 5 alignment

requires additional trunk infrastructure through the Developer’s land and Oak Park Road, adding additional capital cost.

Using a unit cost of \$12,460/m for the length of tunneled watermain and \$3,140/m for the length of open cut watermain, a high level estimate provides a total cost estimate of \$19.2 M. Unit costs are based on typical component costs using historical tender and construction information.

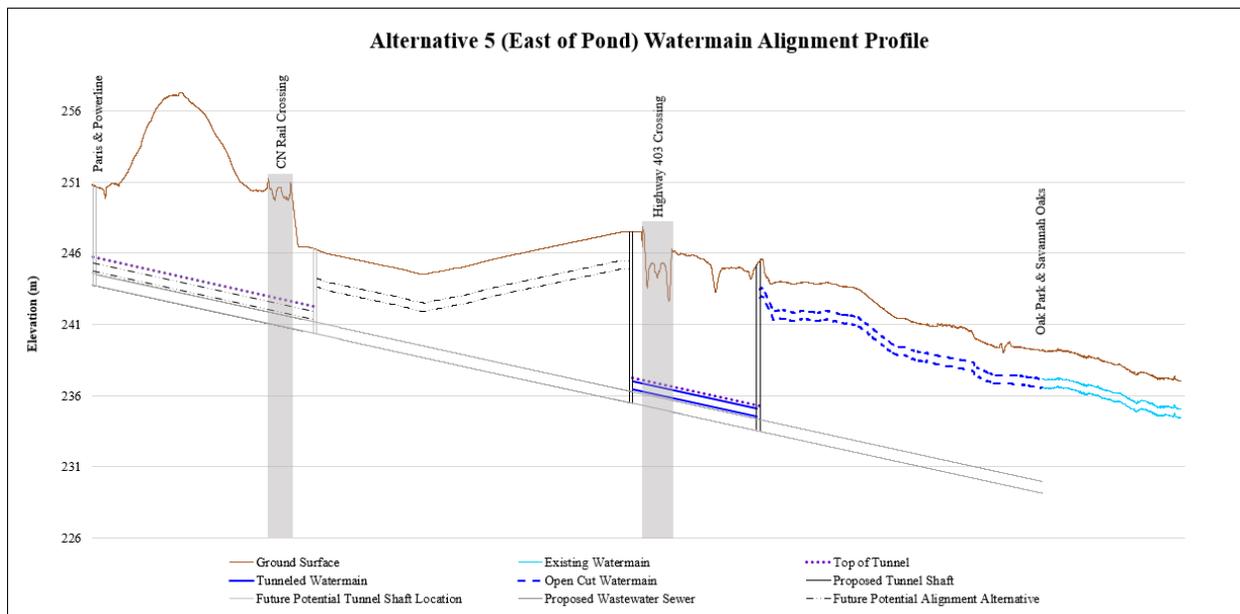


Figure 9-6 Alternative 3 (East of Pond) Profile



Brantford Northwest Municipal Services Expansion

Alignment Construction

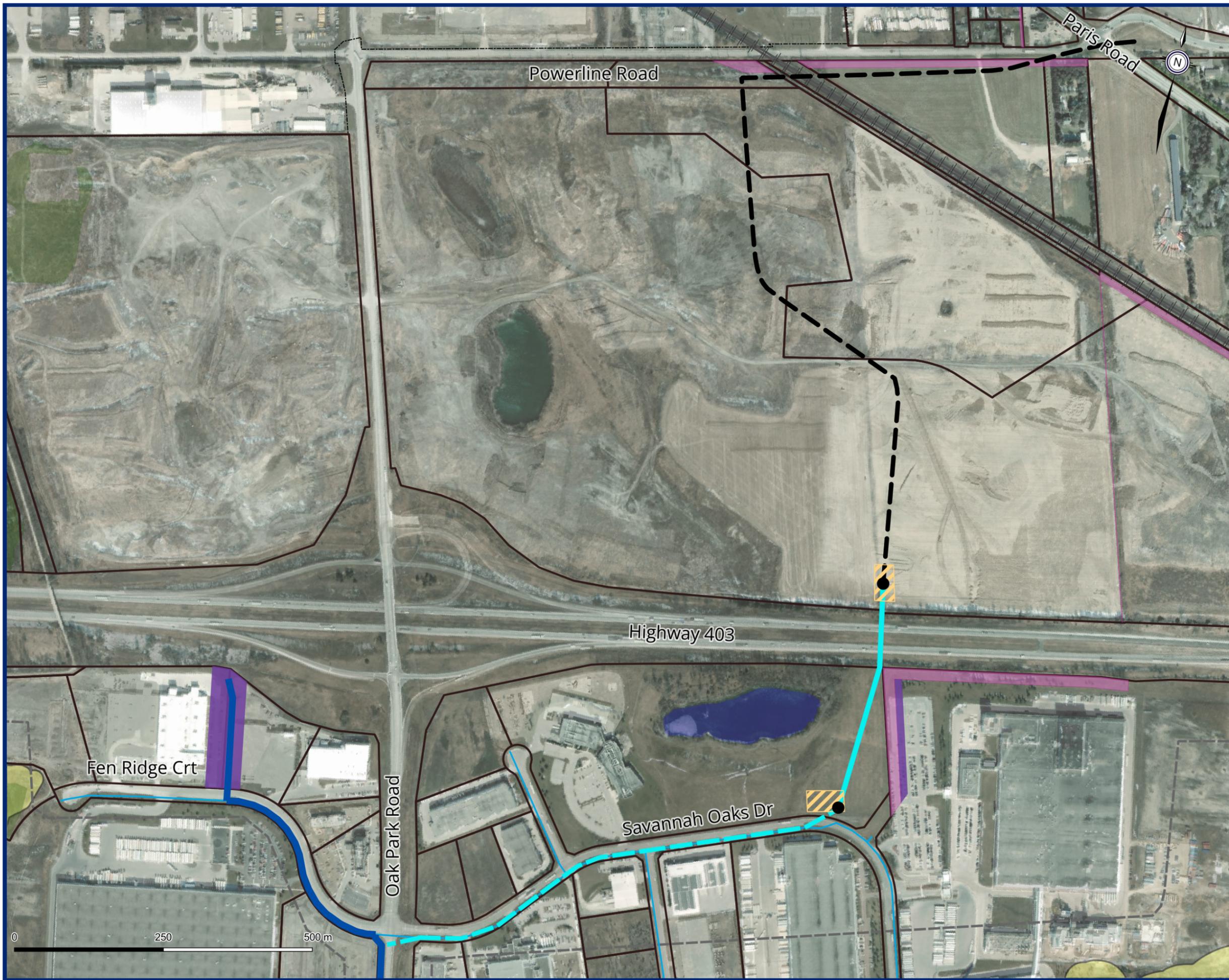
- Tunneled Watermain
- Open Cut Watermain
- Future Potential Alignment Alternative
- Proposed Staging Area
- Proposed Tunnel Shaft

Watermain

- Transmission Main (>400 mm)
- Distribution Main (<= 400 mm)

City of Brantford Features

- Study Area
- Rail
- Property Boundary
- Waterbody
- Wooded Area
- Available Easement
- Hydro Easement
- Existing GRCA Regulation Limits



Alternative 5 (East of Pond) Watermain Alignment

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9.2 Technical Feasibility

GM BluePlan evaluated the short list of alternatives for technical feasibility as per the criteria definitions described in Section 7.2. Key factors influencing the technical evaluation were the alignment locations, meeting existing and future servicing needs, property / easement requirements, interaction and potential conflict with existing infrastructure and utilities.

Alternative 2 has the highest score for technical feasibility as it meets the technical requirements, utilizes existing infrastructure, aligns with planned system configuration including opportunity for connection to County of Brant.

Alternative 1 and Alternative 5 have a tie for the lowest score. Alternative 1 is technically challenging due to the significant interaction with the SC Johnson Trail and GRCA and County of Brant lands, including easements required, as well as difficulty in achieving appropriate 14 m setbacks for MTO south of Highway 403. Alternative 5 abandons existing infrastructure within easement, and requires construction of parallel watermain within the built-up area.

Table 9-2 summarizes the technical feasibility scoring results.

Table 9-2 Technical Feasibility Scoring Summary

Criteria	Comments	1 - Trail	2 - Easement	5 - East of Pond
Meets existing and future servicing needs	All alternatives meet existing and future servicing needs.	4	4	4
Provides opportunity for connection to County of Brant	Alternatives 1 and 2 can provide a connection to Paris via a connection at Oak Park Rd and Powerline Rd. Alternative 5 can accommodate a connection to the Paris system but would require 650 m of additional watermain along Powerline Rd.	4	4	2
Aligns with planned system strategy and configuration	Alternative 1 utilizes existing infrastructure within easement north of Fen Ridge Crt but does not align with the Developer servicing strategy and is the longest proposed route alignment. Alternative 2 utilizes the existing infrastructure within easement, aligns with the Developer servicing strategy, and is the shortest possible route alignment. Alternative 5 abandons existing infrastructure within easement, does not align with the Developer servicing strategy, and requires construction parallel watermain within the built-up area.	2	4	1

Criteria	Comments	1 - Trail	2 - Easement	5 - East of Pond
Provides reliable servicing	Alternative 1 and Alternative 2 require deep tunneling below Highway 403. Alternative 1 and Alternative 5 have potential for more difficult maintenance due to the additional easements required.	2	3	3
Minimizes conflict with existing infrastructure and utilities	Alternative 1 alignment is along the SC Johnson Trail, requires the longest alignment along Powerline Rd adjacent to the hydro corridor, is adjacent to the existing pedestrian bridge, and requires deep tunnelling below Highway 403. Alternative 2 interacts with hydro infrastructure along Oak Park Rd and Powerline Rd. Alternative 5 minimizes the interaction with hydro corridor, but significantly conflicts with existing infrastructure on Savannah Oaks Dr.	1	2	1
Ease of property / land acquisition	Alternative 1 has tunnel staging within the GRCA lands, has alignment and staging within County of Brant lands, requires easements along Fen Ridge Crt, and has difficulty achieving the minimum 14 m setback south of Highway 403. Alternative 2 has minimal easement requirements for tunnel staging and alignment through Developer lands. Alternative 5 requires property for tunnel staging south of Highway 403.	1	3	2
Minimizes and manages construction risk	Alternative 1 is the longest route alignment, increasing construction time. Phasing is likely not possible due to extents of tunneling. Presents significant risks due to location and depths. Difficulty in achieving the minimum 14 m setback south of Highway 403. Alternative 2 is the shortest route alignment, which may decrease the time for construction. Staging may be possible with opportunities for open-cut construction. Alternative 5 is a longer route alignment than Alternative 2. Staging may not be possible due to tunnelling extents.	1	3	2
Total Score		15	23	15
Weighted Score		13.4	20.5	13.4

9.3 Natural Environment Considerations

A desktop Natural Heritage report was completed as described in Section 5.4. The results from the study were used in the evaluation of the short list of alternatives. Table 9-3 summarizes the environmental considerations scoring results.

Alternative 2 has the highest score for environmental considerations as it has minimal to no interaction natural heritage features and SAR with construction primarily within the built-up areas. Alternative 1 is the lowest scoring due to its interaction along the SC Johnson Trail and potential to affect SAR in the naturalized area.

Table 9-3 Natural Environmental Considerations Scoring Summary

Criteria	Comments	1 - Trail	2 - Easement	5 - East of Pond
Protects environmental and natural heritage features	Alternative 1 alignment traverses a Provincially Significant Woodland and requires significant tree clearing for the tunnel shaft staging and construction along SC Johnson Trail. Alternative 2 and Alternative 5 alignments are primarily through areas which have already been disturbed. Staging areas are within existing easements and built-up areas. Alternative 5 alignment has proximity to an existing pond to the west.	1	4	3
Protects wildlife and Species at Risk	Alternative 1 has the highest potential to affect wildlife and Species at Risk with construction and staging within the naturalized area. Alternative 2 has the lowest potential to affect wildlife and Species at Risk with construction primarily within the built-up areas. Alternative 5 has low potential to affect wildlife and Species at Risk with construction primarily within the built-up areas, with the exception of the proximity to a pond to the west of the alignment.	2	4	3
Minimizes climate change impacts	For all alternatives, standard operations and maintenance procedures can minimize climate change impacts.	3	3	3
Total Score		6	11	9
Weighted Score		12.5	22.9	18.8

9.4 Social / Cultural Considerations

The Project Team completed desktop Cultural Heritage report and Stage 1 Archaeological Assessment as described in Sections 5.5 and 5.6. The results from the studies were used in the evaluation of the short list of alternatives. Table 9-4 summarizes the social / cultural considerations scoring results.

Alternative 2 has the highest score for social / cultural considerations as construction is within the built-up areas with no proximity to cultural heritage features, and only moderate impact to residents who use Oak Park Road. Alternative 1 has the lowest score as it encounters cultural heritage features, has archaeological potential, and

significantly impacts residents using the SC Johnson Trail, which requires closure during construction as well as tree clearing for open cut construction.

Table 9-4 Social / Cultural Considerations Scoring Summary

Criteria	Comments	1 - Trail	2 - Easement	5 - East of Pond
Minimizes impacts to residents	Alternative 1 requires the closure of the SC Johnson Trail during construction, as well as tree clearing along the trail. Alternative 2 has a moderate impact to residents who use Oak Park Rd. Alternative 5 has moderate impact to residents who use Savannah Oaks Dr and requires closure of Oak park Rd during construction.	2	3	3
Minimizes impacts to businesses	Alternative 1 has a high impact to businesses on Fen Ridge Crt during construction. Alternative 2 has a moderate impact to businesses on Fed Ridge Crt and those who use Oak Park Rd. Alternative 5 has high impact to businesses on Savannah Oaks Dr and requires closure of Oak Park Rd during construction.	2	2	2
Manages and minimizes construction impacts	Alternative 1 requires the longest distance of open cut construction through naturalized areas. Alternative 2 requires the shortest distance of open-cut construction, primarily through previously disturbed areas. Alternative 5 has high impact along Savannah Oaks Dr, limiting access to businesses.	1	3	1
Protects cultural heritage features	Alternative 1 contains naturalized areas within GRCA lands and along SC Johnson Trail, which have cultural significance. There is one Built Heritage Resource located within the alignment at Powerline Rd near the SC Johnson Trail, and it is adjacent to the Grand River, a designated Canadian Heritage River. Alternative 2 and Alternative 5 avoid most cultural heritage features.	2	4	4
Protects archeological features	Alternative 1 have areas of archaeological potential within the GRCA lands and would require a Stage 2 Archaeological Survey. Alternative 2 and Alternative 5 have no identified archaeological potential as the alignments are within disturbed areas.	2	4	4
Total Score		9	16	14
Weighted Score		11.3	20.0	17.5

9.5 Financial Viability

Financial viability was primarily based on the length of new watermain that is required. Table 9-5 summarizes the financial viability scoring results.

Alternative 2 has the highest score due to having the shortest alignment length, providing the lowest cost option. Alternative 1 and Alternative 5 tie for lowest score, having longer alignments and presenting higher total potential lifecycle cost.

Table 9-5 Financial Viability Scoring Summary

Criteria	Comments	1 - Trail	2 - Easement	5 - East of Pond
Low lifecycle cost, including capital and operating & maintenance	Alternative 2 has the shortest alignment length, providing the lowest cost option. Alternative 1 and Alternative 5 have longer alignments, presenting higher potential lifecycle cost.	3	4	3
Total Score		3	4	3
Weighted Score		18.8	25	18.8

9.6 Evaluation Scoring Summary

The consolidated scoring results are shown below in Table 9-6 and Figure 9-8.

Table 9-6 Summary of Evaluation Scoring Results

Category	Criteria	1 - Trail	2 - Easement	5 - East of Pond
Technical Feasibility	Meets existing and future servicing needs	4	4	4
	Provides opportunity for connection to County of Brant	4	4	2
	Aligns with planned system strategy and configuration	2	4	1
	Provides reliable servicing	2	3	3
	Minimizes conflict with existing infrastructure and utilities	1	2	1
	Ease of property / land acquisition	1	3	2
	Minimizes and manages construction risk	1	3	2
	Total Score	15	23	15
	Weighted Score	13.4	20.5	13.4
Environmental Considerations	Protects environmental and natural heritage features	1	4	3
	Protects wildlife and Species at Risk	2	4	3
	Minimizes climate change impacts	3	3	3
	Total Score	6	11	9
	Weighted Score	12.5	22.9	18.8
Social / Cultural Considerations	Minimizes impacts to residents	2	3	3
	Minimizes impacts to businesses	2	2	2
	Manages and minimizes construction impacts	1	3	1
	Protects cultural heritage features	2	4	4
	Protects archeological features	2	4	4
	Total Score	9	16	14
Weighted Score	11.3	20.0	17.5	
Financial Feasibility	Low lifecycle cost, including capital and operating & maintenance	3	4	3
	Total Score	3	4	3
	Weighted Score	18.8	25.0	18.8
Score Out of 100		55.9	88.5	68.4
Rank		3	1	2

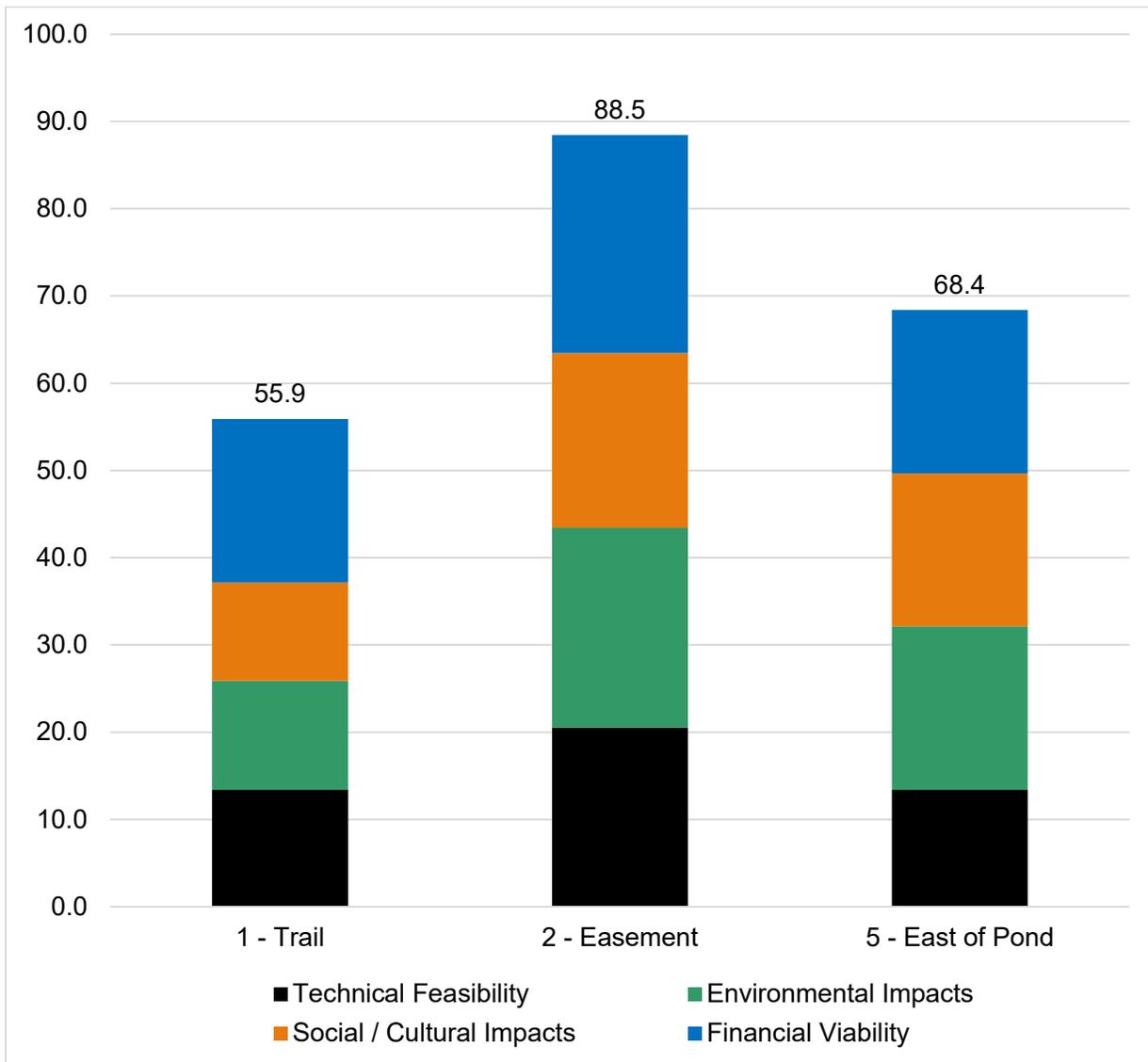


Figure 9-8 Evaluation Scoring Results

Table 9-7 provides a summary of the key factors influencing the evaluation results.

Table 9-7 Summary of Evaluation Results and Key Factors Influencing Evaluation

Evaluation Category	1 – Trail	2 – Easement	5 – East of Pond
Technical Feasibility	<ul style="list-style-type: none"> Requires alignment along SC Johnson Trail Significant easement requirements Difficulty in achieving 14 m setback from MTO ROW 	<ul style="list-style-type: none"> Shortest possible route alignment Aligns with existing trunk water infrastructure 	<ul style="list-style-type: none"> Conflicts with existing infrastructure on Savannah Oaks Drive
Environmental Impacts	<ul style="list-style-type: none"> Significant environmental impacts due to alignment through Provincially Significant Woodland Tree clearing required along SC Johnson Trail Higher potential to affect Species at Risk 	<ul style="list-style-type: none"> Lowest impact to environmental features 	<ul style="list-style-type: none"> Proximity to existing pond south of Highway 403
Social / Cultural Impacts	<ul style="list-style-type: none"> Requires closure of the SC Johnson Trail Construction within areas of cultural significance and archaeological potential Impact to businesses along Fen Ridge Court 	<ul style="list-style-type: none"> Shortest possible route alignment Minimizes impact to businesses along Savannah Oaks Drive Avoids areas of cultural significance and archaeological potential 	<ul style="list-style-type: none"> Impact to businesses along Savannah Oaks Drive Required closure of Oak Park Road Avoids areas of cultural significance and archaeological potential
Financial Viability	<ul style="list-style-type: none"> Increase in cost compared to Alternative 2 due to length 	<ul style="list-style-type: none"> Lowest cost due to shortest distance 	<ul style="list-style-type: none"> Increase in cost compared to Alternative 2 due to length
Evaluation Result	Not Recommended	Preferred Alternative	Not Recommended

9.7 Coordination with Other Projects

The Oak Park Road Trunk Watermain will be constructed simultaneously with the Oak Park Road Trunk Sewer project. These projects are being completed prior to the completion of the Powerline Road Trunk Watermain and Powerline Road Trunk Sewer in order to move forward with detailed design expeditiously and provide the opportunity for construction phases for these segments. The Powerline Road projects will be finalized following the determination of the preferred Powerline Road alignment which is being determined through the Powerline Road Widening project.

During construction of the Oak Park Road trunk watermain and trunk sewer, some sections of wastewater sewer will require tunneling due to the depth being greater than

10 m, whereas only the Highway 403 and CN Rail crossings will require a tunnel for the watermain. All other sections of watermain can be open cut.

Where tunnelling is required for both the watermain and wastewater sewer, it is anticipated that a shared tunnel will be used with the watermain hung above the wastewater sewer. Where open cut construction is possible for the sewer, the watermain and sewer may share the same trench box during construction and the minimum horizontal spacing will be maintained. These details will be confirmed during detailed design.

9.8 Recommended Alternative

The recommended alternative is Alternative 2 – Easement based on the evaluation of technical feasibility, environmental and social / cultural considerations, and financial viability. Alternative 2 scored highest within each individual category (20.5, 22.9, 20.0, and 25.0), resulting in a total score of 88.5/100. The mitigation measures and implementation plan are provided in Section 10.0.

10.0 Preferred Alternative, Mitigation Measures, and Implementation Plan

This section provides a description of the potential impacts of the preferred solution and the associated mitigation measures, and next steps for this project.

10.1 Preferred Alternative

Alternative 2 – Easement (Figure 10-1) is the preferred solution based on the evaluation of alternatives. This alternative includes the construction of a new 600 mm trunk watermain from the City’s existing easement, crossing Highway 403, following the property boundary to the north and ending on Oak Park Road. The work completed will primarily be within the already disturbed areas.

10.2 Mitigation Measures

Primary impacts and mitigation measures are described in the following sections, with additional impacts and mitigation measures highlighted in Table 10-1.

10.2.1 Natural Heritage Features and Wildlife Habitat

The natural environment is described in Section 5.4. The preferred alternative is within land that is already disturbed and is therefore unlikely to contain significant wildlife habitat or SAR. The goal is to contain construction within the already disturbed areas of the site; however, it is important to also be aware of potential sensitive species. Following confirmation of the full alignment including the Powerline Road portion, a more detailed vegetation and SAR inventory may be completed.

10.2.2 Species at Risk

The preferred alternative has low potential to affect wildlife and SAR with the alignment being within the disturbed built-up areas.

10.2.3 Archaeological Resources

The Stage 1 AA shows that the preferred alternative is outside of the lands identified with having archaeological potential and requiring a Stage 2 AA. Therefore, the lands do not require further archaeological assessment. However, should deeply buried archaeological resources be identified during ground disturbance activity, ground disturbance activities should be immediately halted and the Archaeology Program Unit of the MCM and identified Indigenous Peoples shall be notified.



Brantford Northwest Municipal Services Expansion



City of Brantford Features

- Property Boundary
- Existing GRCA Regulation Limits

Existing Water System

- Transmission Main (>400 mm)
- Distribution Main (<= 400 mm)

Proposed Water Alternative

- Proposed Watermain (Open)
- Proposed Watermain (Tunnel)

Staging

- Shaft
- Available Easement
- Required Easement

- Hydro Lines
- Hydro Poles

Existing Wastewater System

- Trunk Sewer (>=600 mm)
- Gravity Sewer (< 600 mm)

Proposed Wastewater Alternative

- Proposed Sewer (Open)
- Proposed Sewer (Tunnel)

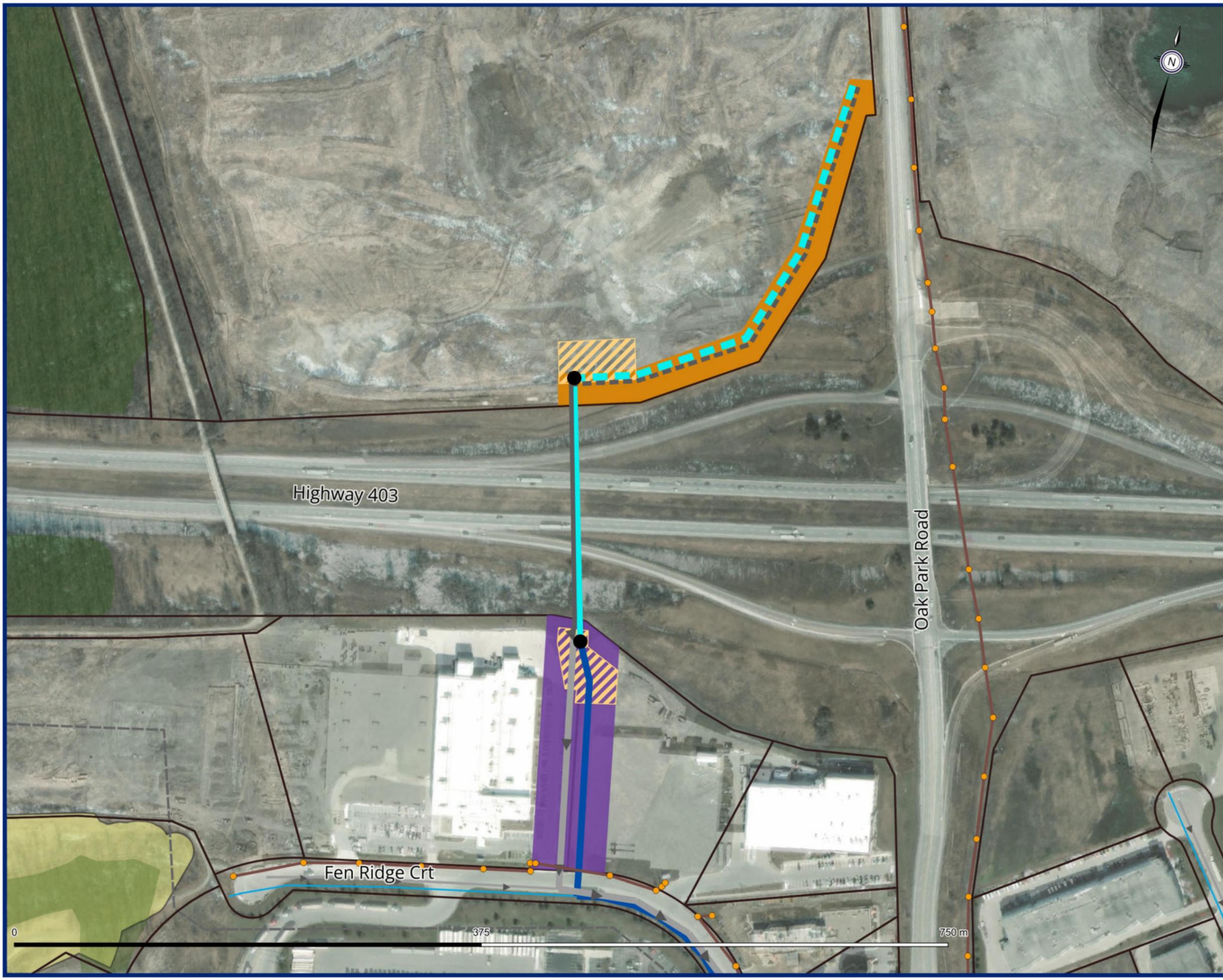


Figure 10-1
Preferred Alternative



Document Path: W:\Hamilton\62200\622120 Brantford Northwest Municipal Services Expansion EAO Work\Progress\GIS and Databases\0204-04-19_622120-000_..._Project_Plans

10.2.4 Cultural and Built Heritage Features

Cultural and Built Heritage Features are described in Section 5.6. The desktop report identified two (2) BHR and four (4) potential CHL. None of these features are affected by the construction of the Oak Park Road Trunk Watermain.

10.2.5 Climate Change

Infrastructure projects have the potential to accelerate climate change by increasing greenhouse gas (GHG) emissions as a result of construction and operation. Potential climate mitigation techniques are:

- Decrease in GHG emissions during construction through the selection and delivery of materials (e.g., recycled, or natural building materials that produce less carbon dioxide when manufactured).
- Restoring natural / grassed areas back to original or enhanced natural conditions, including tree replacement plans where necessary.
- Carrying out construction activities outside of key ecological periods to minimize damage to the natural environment and wildlife habitat (e.g., construction outside breeding bird season and high runoff periods in spring).

10.2.6 Source Water Protection

The preferred solution is within an area of medium level aquifer vulnerability. The Grand River is to the west, but not within the preferred alignment. The preferred alternative has no impact to source water protection and therefore no mitigation measures are required.

10.2.7 Property/Easement Acquisition

The preferred alternative is largely within existing easements and road ROWs. However, there is a portion of the alignment which requires a new easement to be acquired from the existing landowner for the portion of the alignment from north of Highway 403 to Oak Park Road. The location of the required easement is highlighted in Figure 10-1. The easement ensures that the watermain and sewer will maintain a 14 m setback from the MTO boundary, and includes space required for open cut construction of the infrastructure. A total area of approximately 9,800 m² will be required. Consultation was conducted with the affected landowner throughout this Class EA and during the evaluation process. The landowner is in support of the identified easement; however, further consultation and coordination with the property owner will be required prior to detailed design.

10.2.8 Best Management Construction Practices

To minimize risks and disruption during construction, the City will implement the following best practices:

- Clean, inspect and maintain construction equipment (including trucks)
- Implement surface protection measures to minimize soil compaction
- Store construction material, excess material, construction debris, and empty containers away from businesses
- Maintain a distance of 14 m from MTO ROW for all construction and staging activities
- Use low noise equipment during construction, where possible
- Restrict working hours for construction, in accordance with local Noise Control By-laws

The site will be returned to pre-construction conditions upon construction completion.

10.2.9 Traffic

Construction of the route will cause minimal impacts to local traffic. The portion of the watermain south of Highway 403 will connect to the trunk watermain within the City's existing easement, with the tunnel shaft location and staging area utilizing the existing easement with a small portion of parking lot as well. The portion of the alignment north of Highway 403 will be within Developer's land, and therefore construction will need to be coordinated with the property owners. If tunneling is required north of the known portion of the alignment on Oak Park Road, the tunnel shaft and staging area will be accommodated within the Developer's lands, generally avoiding disturbance to Oak Park Road.

10.2.10 Ministry of Transportation

The preferred alternative is required to cross Highway 403. It is expected that construction of the trunk watermain will not impact the highway; however, MTO will continue to be involved throughout the design and construction phases to ensure full compliance with all requirements.

A Highway Corridor Management Permit will be required as the work will occur adjacent to a provincial highway (Highway 403). The preferred alternative alignment and design specific to the Highway 403 crossing and construction near the MTO land boundary will require approval from MTO. MTO will also monitor the construction activities.

10.2.11 Utilities

The preferred alignment generally avoids utilities. There are hydro poles along Oak Park Road; therefore, any proximity to existing hydro infrastructure will be coordinated with the necessary utility (Hydro One or GrandBridge Energy).

Table 10-1 Potential Impacts and Mitigation Measures

Potential Impact	Mitigation Measures	Additional Studies	Monitoring Requirements
Disturbance to surrounding terrestrial areas	<ul style="list-style-type: none"> Construction setbacks from natural features Minimize construction areas 	<ul style="list-style-type: none"> Site-specific natural features inventory of potentially affected areas 	<ul style="list-style-type: none"> Environmental monitoring during construction by qualified natural features specialist
Disturbance to wildlife	<ul style="list-style-type: none"> Restrict construction activities to work areas Install protection fencing to prevent wildlife from entering construction areas 	<ul style="list-style-type: none"> Complete site-specific natural species inventory to identify sensitive species that may potentially be impacted by construction 	<ul style="list-style-type: none"> Environmental monitoring during construction by qualified natural features specialist
Potential impact to undiscovered archaeological resources	<ul style="list-style-type: none"> Stage 1 Archaeological Assessment (AA) completed. No archaeological sites within proposed area of construction. 	<ul style="list-style-type: none"> Need for a Stage 2 AA to be determined during design 	<ul style="list-style-type: none"> Should previously undocumented archaeological resources be discovered during construction, the City will cease construction until the MCM is contacted, and appropriate mitigation or resource recovery is implemented
Impacts to Cultural Heritage features	<ul style="list-style-type: none"> Existing information indicates that the preferred alternative does not traverse any cultural heritage properties or historical buildings that would be impacted by construction 	<ul style="list-style-type: none"> No further study necessary. 	<ul style="list-style-type: none"> N/A

Potential Impact	Mitigation Measures	Additional Studies	Monitoring Requirements
<p>Impacts to surrounding areas</p>	<ul style="list-style-type: none"> • Clean, inspect and maintain construction equipment (including trucks). • Develop an emergency and response management plan to address the potential for spills. • Use low noise equipment during construction, where possible. • Restrict working hours for construction, in accordance with local Noise Control By-laws. • Manage truck traffic to and from the construction site 	<ul style="list-style-type: none"> • Develop construction management plan 	<ul style="list-style-type: none"> • Follow approved safety and management protocols during construction

10.3 Implementation Plan

10.3.1 Schedule

The City is proceeding with completing the other Class EAs within the overall study, described in Section 1.1, including the Powerline Road Trunk Watermain project which will connect to this trunk watermain and continue to the intersection of Powerline Road and Paris Road to provide servicing for northwest Brantford. While those projects as being completed, the design phase of this Oak Park Road Trunk Watermain can begin in Fall 2024 following the completion of this Class EA. Construction is subsequently planned to begin in 2026.

Project next steps include:

- Continued engagement with Indigenous Peoples throughout the project
- Confirmation of approval for the preferred alternative from MTO, specifically for the Highway 403 crossing and infrastructure adjacent to the MTO ROW
- Coordination with property owner for required easement
- Completion of the Powerline Road Widening and Powerline Road Trunk Watermain projects
- Detailed design of the Oak Park Road Trunk Watermain and Oak Park Road Trunk Sewer projects
- Tunneler construction, followed by open cut construction
- Environmental monitoring during construction by qualified natural features specialist

10.3.2 Coordination with Trunk Sewer Construction

The Oak Park Road Trunk Watermain will be constructed simultaneously with the Oak Park Road Trunk Sewer project to provide efficiency. The watermain and sewer will use a shared tunnel for the Highway 403 crossing, with the watermain to be hung above the sewer in accordance with MECP Procedure F-6-1: Procedures to Govern Separation of Sewers and Watermains.

For the portion of open cut construction (north of Highway 403 to Oak Park Road), the watermain and sewer may share the same trench box, while maintaining the minimum horizontal spacing (2.5 m per MECP Procedure F-6-1). It should be noted that through the detailed design process there is potential that the preferred construction method will be the continuation of the watermain within the shared wastewater sewer tunnel.

10.3.3 Continued Communication and Engagement

Through the remaining Class EA studies and through the design stages of this project, the City will continue to consult with property owners and government review agencies. The City will also continue to engage Indigenous Communities.

10.3.4 Permitting and Approval

During design, the City will continue discussions with relevant agencies to ensure all applicable approvals are received prior to construction. Key permits and approvals that may be required in advance of the construction activities to be confirmed following land acquisition and detailed design are provided in Table 10-2.

Additional approvals may become applicable or be specified by affected agencies at any time.

Table 10-2 Permits and Approvals

Agency	Description of Permit / Approval
Ministry of Transportation	<ul style="list-style-type: none"> Highway Corridor Management Permit
Ministry of Citizenship and Multiculturalism (MCM)	<ul style="list-style-type: none"> The MCM is reviewing the Stage 1 Archaeological Assessment (AA) to ensure that it is compliant with the Ministry’s Standards and Guidelines for Consultant Archaeologists
Ministry of the Environment, Conservation and Parks	<ul style="list-style-type: none"> Environmentally Sensitive Area/Species at Risk Permits (if found)
City of Brantford	<ul style="list-style-type: none"> Right-of-Way Activity Permit is required for activities within City road ROW
GrandBridge Energy	<ul style="list-style-type: none"> Approval for construction occurring adjacent to hydro infrastructure
Private Landowners	<ul style="list-style-type: none"> Permanent easements for the preferred route Temporary or permanent permission to enter during construction and operation/maintenance

11.0 Communications Summary

Consultation with potentially affected or interested stakeholders, such as the public, review agencies, Indigenous Peoples, and other stakeholders, is an integral component of the Class EA process, enabling the City to inform interested parties about the study while eliciting input from potentially interested and affected parties.

At the outset of the public consultation process, the City developed a consultation and communication program with the goal to effectively obtain feedback. The primary objective of the program was to encourage meaningful consultation and two-way communication with the community, regulatory agencies, stakeholders, and City staff. More specifically, the program was intended to:

- Provide a coordinated approach to all methods of communication and stakeholder and agency engagement, through common templates for notifications and Public Information Centre, as well as consistent project contacts, messaging, and language.
- Provide estimated timelines for meetings, workshops, presentations, and Public Information Centres (PICs).
- Provide an outline of project documentation required, including comments management tracking, project website, and public documents.
- Provide details on how and when external agencies will be able to be involved in the project.
- Provide details for Indigenous Peoples consultation, as required.

A variety of methods were utilized including public notices, direct mailings, meetings and workshops, informative website content, and meaningful and clear information available at PICs.

The Class EA specifies two (2) mandatory points of contact for Schedule B projects:

- An invitation for the public, Indigenous Peoples, agencies, and other stakeholders to comment on the alternative solutions under consideration.
- A Notice of Completion for the project and an opportunity for the public, Indigenous Peoples, agencies, and other stakeholders to review the Project File Report.

Documentation of the Class EA Consultation and communication process is summarized in the following sections.

11.1 Study Stakeholder List

A stakeholder list for the study was developed during Phase 1 based on the Project Team’s knowledge of the study area and has been continuously updated throughout the process to include any relevant agencies, stakeholders, Indigenous Peoples, utilities, and other special interest groups. A copy of the stakeholder list is provided in **Appendix G**.

All stakeholders were contacted throughout the duration of the study using notices and PICs. Additional meetings were also held with the following major permitting and approval agencies:

- Ministry of Transportation
- County of Brant
- Grand River Conservation Authority
- Hydro One
- GrandBridge Energy

Indigenous engagement followed the City’s Indigenous communication and engagement policies. The following Indigenous Peoples were engaged during this study:

- Mississaugas of the Credit First Nation (MCFN)
- Six Nations of the Grand River (SNGR)

11.2 Project Website

A project website was established in Phase 1, which included publishing the study commencement, study area and key background information, as well as the project team’s contact information. A link to the project website ([Northwest Brantford Municipal Services Expansion - City of Brantford](#)) was also provided in the notices that were distributed. The website was continually updated throughout the study with important notices, relevant information, PIC materials, and a copy of this Project File Report.

11.3 Project Notices

11.3.1 Notice of Project Commencement

A Notice of Commencement was issued via mail and email to the stakeholder list on April 13, 2023. The notice was also posted on the project website and published in the following local newspapers:

- Civic News via Expositor Brantford (April 13, 2024)
- Two Row Times (April 19, 2023)
- Turtle Island News (April 19, 2023)

Contact information for the project team was provided on the notices to allow for interested parties to obtain additional information or request they be added to the stakeholder contact list.

The MECP was notified directly through the filing of the Notice of Commencement to elicit important project information such as the identification of key indigenous Peoples in the study area.

The Notice of Commencement and associated MECP response can be found in **Appendix H**.

11.3.2 Notice of Public Information Centre

The Notice of PIC was issued via mail and/or email to the stakeholders identified at the outset of the project, as well as additional stakeholders who requested future notification and project communications. The notice was emailed and/or mailed on January 4, 2024, posted on the project website and advertised in the following local newspapers:

- Civic News via Expositor Brantford (January 4, 2024)
- Two Row Times (January 10, 2024)
- Turtle Island News (January 10, 2024)

The Notice of PIC is provided in **Appendix H**.

11.3.3 Notice of Project Completion

The Notice of Completion was distributed to stakeholders on July 4, 2024 to notify the public that this Project File Report was being placed on the “public record” for the required 30-day review period. Stakeholders were informed of the Notice of Completion by the following means:

- Emailed copy of the notice
- Advertised in local newspapers
- Advertised on the project website at:
<https://www.brantford.ca/en/your-government/northwest-brantford-municipal-services-expansion.aspx>

A copy of the notice is provided in **Appendix H**. During the review period, the MCEA entitles interested persons, Indigenous Peoples, or government agencies who have

significant concerns which cannot be resolved to request the MECP to issue a Section 16 Order under the EA Act.

If there are concerns regarding the study, a request may be made to the MECP for an order requiring a higher level of study (i.e., requiring a Schedule C Class EA or Individual/ Environmental Assessment), or that conditions be imposed (e.g., require further studies), only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. Requests on other grounds will not be considered. Requests should include the requester contact information and full name for the Ministry.

Requests should specify what kind of order is being requested (request for additional conditions or a request for an individual/comprehensive environmental assessment), how an order may prevent, mitigate or remedy those potential adverse impacts, and any information in support of the statements in the request. This will ensure that the Ministry is able to efficiently begin reviewing the request.

Requests should be sent by email or in writing to:

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

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

11.4 Public Information Centre

A PIC was held to encourage attendees to review project information and display boards. The purpose of the PIC was to present and receive feedback on:

- The study area, objectives, and Problem and Opportunity statement.
- Existing conditions and the alternatives servicing options.
- Evaluation of alternative options and identification of preliminary preferred solutions.

The PIC was held in person at the Wayne Gretzky Municipal Golf Course and Learning Centre on January 17, 2024. The PIC included information display boards and a presentation with an open question and answer session. The question and answer session included the discussion presented in Table 11-1.

A questionnaire was developed to allow the attendees to submit comments to the project team. The questionnaire included the following questions:

- Do you have any questions or comments about the content presented today?
- Do you have any questions or comments about the study in general?

No responses were received via the questionnaire.

Copies of the Notice, display boards, and other materials available at the PIC are included in Appendix I.

Table 11-1 PIC 1 Questions and Answers

Question	Answer
<p>Are the industrial lands north of Powerline Road in the County of Brant lands being consulted in completing the water, wastewater and stormwater studies?</p>	<ul style="list-style-type: none"> • A portion of the County lands drain into the site, so they are being consulted heavily on the SW component. • Sizing of the pipes is not set in stone yet but there are recommendations from the Master Servicing Plan (MSP) completed in 2021. • We’re considering building capacity to service lands outside of the noted site, right now we’re establishing the core trunks/spines such that connections can be made outwards into the future. • We’re consulting with the County of Brant on the land development and servicing strategy in the area adjacent to the study area.
<p>Are the eastern lines going to be designed/able to connect to the system via gravity connections? Assumption is that sanitary and water pipes moving from Paris Road and Powerline Road will all follow gravity on their course towards Highway 403.</p>	<ul style="list-style-type: none"> • Sizing has not been finalized, and there is potential that during conceptual design that external catchments may influence the pipe sizing and that the recommended pipe sizes we've put forth will be adjusted. • There are sizing recommendations being made about pipe sizes from MSP and about downstream connections and the potential upstream connections are not presently affecting the pipe sizing but there is flexibility for those upstream future connections.
<p>What is being satisfied tonight/showing completion of in the context of PICs 1 and 2?</p>	<ul style="list-style-type: none"> • The big component for tonight is the water/wastewater alignment in crossing the 403 and travelling to Oak Park Road.

Question	Answer
<p>When will the sizing of pipes be identified and provided?</p>	<ul style="list-style-type: none"> • In the completion of the EA, we will provide a preliminary plan and recommendation but that is subject to change based on the detailed design phase. • We also must consider the density and magnitude of growth within the areas surrounding the NW expansion lands.
<p>Are the trigger lands/those catchments included or considered in these project recommendations?</p>	<ul style="list-style-type: none"> • In the previous MSP, the general approach was that the best alternative was that the trigger lands would have their own developed servicing strategy as they're further east and the site-specific areas would be excluded from the trigger lands water main planning. • However, as we move through this evaluation process, we are flexible in combining some of these projects/planning because we need to evaluate how sensitive the solution we're developing for this project is, and its potential in meeting the needs for the trigger lands as well.
<p>Is there a preliminary construction schedule?</p>	<ul style="list-style-type: none"> • Not at this point. • Timing will be based on the City's capital programs budget and schedule [for other projects]. • Usually when the EA is finished, the City will be given approval to move forward with detailed design and then there are still other phases to be finalized ahead of completion, construction is one of these. • Right now, the project completion is scheduled from 2026-2027 (completion of Phase 5 of the EA process). • The end of 2024 marks the project completion for Phase 1/2 of the Water/Wastewater and Stormwater EA projects (potentially Phase 3 for transportation). Earliest construction could even be is 2026 due to detailed design phases beginning in 2025.

Question	Answer
<p>Oak Park and Powerline Road are a highlight, but it seems that everything (i.e., project considerations) stops at Paris Road. Is there a plan for the intersection/other projects or design considerations beyond Paris Road?</p>	<ul style="list-style-type: none"> • Currently considering a potential roundabout at the intersection of Paris Road and Powerline Road, but Powerline Road extends further east and there are discussions of potential tie ins [with the County of Brant] with projects extending further along that way. As such, projects north/south along Paris Road are not currently a major priority.
<p>Is expanding sanitary, water and stormwater servicing in the Northwest Expansion lands a prelude for expansion into the industrial corridor north of Paris Road?</p>	<ul style="list-style-type: none"> • Yes, and this site is also flagged as employment lands and so we're addressing the NW expansion lands but there are plans to address other MSP identified employment/industrial areas.
<p>Concerns raised about northwards exit from the 403 along Paris Road.</p>	<ul style="list-style-type: none"> • That interchange is an MTO-led exercise and so we will not be addressing it within this project, but we must look forward to the future to keep in mind. • We (City of Brantford) are continually meeting with MTO, and we can bring this up with them at future meetings.

11.5 Stakeholder Meetings and Consultation

Key approval agencies and affected municipalities were contacted throughout the Class EA. Details on these communications are provided in the section below.

11.5.1 County of Brant

A formal meeting was conducted on September 13, 2023 to provide an overview of the project, problem and Opportunity statements, key background information, objectives, review of alternatives options, and next steps. Communication with the County was ongoing on the staff level and through shared service committees.

11.5.2 Grand River Conservation Authority

Communication with Grand River Conservation Authority was ongoing throughout the Class EA and involved the following:

- A formal meeting was conducted on May 2, 2023 to provide an overview of the project objectives, anticipated recommendations, and project context.
- A formal meeting was conducted on January 23, 2024 to provide an overview of the project, specifically the stormwater component, information on the technical evaluation and alternatives, field investigations, and next steps. An action item from this meeting was to develop a stormwater analysis methodology technical memorandum and provide for review. This technical memorandum was provided for review via email on February 27, 2024.

11.5.3 Ministry of Transportation

Communication with Ministry of Transportation was ongoing throughout the Class EA and involved the following:

- A formal meeting was conducted on May 9, 2023 to provide an overview of the project, objectives, anticipated recommendations, and next steps.
- A formal meeting was conducted on October 16, 2023 to provide a project update, information on the technical evaluation and alternatives, and next steps.

11.5.4 Hydro One and GrandBridge Energy

Communication with Hydro One and GrandBridge Energy was ongoing throughout the Class EA and involved the following:

- A formal meeting was conducted on September 20, 2023 to provide an overview of the project, objectives, anticipated recommendations, technical evaluation and

alternatives, and next steps.

- A formal meeting was conducted on October 17, 2023 to provide a project update, information on the technical evaluation and alternatives, and next steps.
- A follow up meeting was conducted on November 23, 2023 to discuss the impact and future planning for infrastructure in the area.

11.6 Comments Received

Table 11-2 presents a summary of comments received during the Class EA and associated responses for government agencies and the public.

Table 11-2 Comments Received During the Class EA

Stakeholder	Comment/Concern	Response/Action
Hydro One	Follow up from the Notice of Commencement requesting input and guidance to evaluate project alternatives due to proximity to hydro infrastructure.	Hydro One provided general conditions as a reference point. It was noted if there are plans to cross or work within the hydro corridor, their stakeholders would need to review plans and conduct a technical review to ensure no negative impacts to their infrastructure.
Hydro One	Additional information about planned works was provided along with a request for availability to plan a meeting. Shapefiles were also requested for project mapping that would include hydro infrastructure.	Hydro One confirmed availability for the proposed meeting. Also indicated as-built drawings aren't available for infrastructure.
Kaneff Group	Requested update on the status of the ongoing EA for the Oak Park Road and Powerline Road Trunk Watermain and whether the Oak Park Trunk Sewer Extension is included within the scope of this EA. Schedule of Public Information Centre meetings and workshops was also requested.	The Project Team responded noting the sewer project is within the scope of this study and a PIC will be held on January 18 and attached the Notice of PIC.
Kaneff Group	Provided questions related to the PIC materials and alignment options for the Oak Park Road and Powerline Road projects and confirmation the services will be extended east of Paris Road.	The Project Team responded noting the scope of the study and the scope of the alignments to extend water and wastewater infrastructure. It was noted the determination of the preferred extension of the water and wastewater services beyond Paris Road and Powerline Road will be completed via other studies.
Kaneff Group	Requested confirmation whether the further extension of services east of Paris Road is included within the scope of the current EA or subject to a separate EA process. The inquiry was related to a specific property noted extending services east of Paris Road is critical for the purpose of unlocking the development potential of the NW employment lands and if the current EA does not include the further extension of services it could delay development.	The Project Team responded noting the expansion of services east of Paris Road and Powerline Road is beyond the scope of the current EA and the extension of infrastructure east of Paris Road may be subject to further studies. In preparation of the scope for the study, the City reviewed combined recommendations of the Master Servicing Plan and Transportation Master Plan. It also noted that although the scope of this study won't identify the preferred sewer and watermain alignment east of Paris Road, the study does incorporate servicing needs for the remaining northwest expansion lands. The Project Team noted the City had just initiated a Powerline Road Transportation Capacity EA and the Notice of Commencement was recently distributed.
Panattoni Development Company	The Project Team sent a follow up inquiring whether data had been shared with the City's Engineering department. A meeting was requested to clarify details and the Project Team encouraged Panattoni to share their transportation study findings with the City and MTO.	Panattoni confirmed the report was not shared with the City as it was GM BluePlan that requested the functional TIS but there's no concerns with sharing with the City's engineering department.
214 Carson Co. Inc. (Development Company)	Received email requesting topographic survey information.	A copy of base mapping produced for the project was provided noting the completed surveys along Powerline Road and Oak Park Road were compiled for the purposes of the City and this project and are not to be used outside the original intended purpose.

Stakeholder	Comment/Concern	Response/Action
Grand River Conservation Authority	The Project Team provided a technical memorandum regarding stormwater analysis methodology for the project and requested feedback. A later follow up was sent requesting the status of the review.	GRCA confirmed receipt of the memorandum and indicated they will undertake a review and provide feedback when it's available. GRCA later noted the memorandum was still under review and with a large number of submissions and staff shortages, review timelines are longer than anticipated.
WALTERFEDY	Received a letter via email on behalf of landowners providing comments on PIC No. 1 indicating the opinion the scope of the project should be expanded to include a detailed review of the water and wastewater servicing limits contributing the Oak Park Trunk watermain and trunk sewer.	The Project Team responded noting they would review the feedback and follow up. It was also noted that sewer servicing limits and triggering considerations are typically a master servicing plan exercise and that the City is expected to conduct an MSP update to better understand and service the Expansion Lands. The Project Team provided a formal letter confirming the scope of the study.
Fisheries and Oceans Canada	Received response to the Notice of Public Information Centre that noted projects avoid causing death of fish or any harmful alteration, disruption, or destruction of fish and/or fish habitat unless authorized; however, the Fish and Fish Habitat Protection is not able to provide comment regarding general planning. If planned works may cause any prohibited effects, a Request for Review form should be completed for the works.	No action required.
Ministry of Citizenship and Multiculturalism	Received a response to a request about identifying Part iv designated properties within the study area. MCM confirmed no properties have been designated within or adjacent to the study area.	No action required.
Transport Canada	Noted that Transport Canada does not require receipt of all individual or Class EA notifications, and requested that proponents self-assess whether the project interacts with federal property and/or waterway by reviewing the Directory of Federal Real Property, or will require approval and/or authorization under any Acts administered by Transport Canada.	No action required.

11.7 Indigenous Peoples

As directed by City Council, based on the City of Brantford's Indigenous communication and engagement policies, the following Indigenous Peoples were engaged for this project:

- Mississaugas of the Credit First Nation (MCFN)
- Six Nations of the Grand River (SNGR)

Both MCFN and SNGR indicated they were interested in participating in the Class EA and were engaged in the process, including receiving project updates and notices, being invited to participate in project meetings, workshop and site visits, receiving and reviewing study reports and project file reports throughout the Class EA, and as further detailed in the following subsections.

11.7.1 Communication Protocol

The Indigenous engagement program developed for this project set out culturally appropriate and sensitive approaches to achieve the following basic objectives with Indigenous Peoples:

- Build and/or strengthen relationships between Indigenous Peoples and the City of Brantford.
- Share information on the Class EA projects.
- Undertake a collaborative engagement process that meets the needs of Indigenous Peoples.
- Obtain input and feedback from Indigenous Peoples.
- Complete the Class EA planning process and the recommended plan for this study in a way that is respectful of the rights and interests of Indigenous Peoples.

The mandatory points of contact under the Class EA process were embedded into the development of the strategy, and while the intention of the Indigenous Engagement strategy was to expand beyond the mandatory points, they served as a process milestone. While the overall strategy provided a starting point, ultimately individual approaches were co-developed with each Indigenous community following their specific protocols, preferences, staff capacity, and their level of interest in the study.

11.7.2 Six Nations of the Grand River (SNGR)

The Project Team met with SNGR twice throughout the project on February 21, 2023 and October 13, 2023. These meetings provided an opportunity to discuss project

objectives, process, work plan, anticipated recommendations and review of the technical evaluation/alternatives, and background studies including Natural Heritage, Cultural Heritage and Stage 1 Archaeology. SNGR provided feedback around boundary expansion, wildlife, stormwater management, soft erosion control measures, buffers and setbacks.

11.7.3 Mississaugas of the Credit First Nation (MCFN)

The Project Team met with MCFN on November 7, 2023 to discuss project objectives, process, workplan, anticipated recommendations and review of the technical evaluation/alternatives and background studies including Natural Heritage, Cultural Heritage and Stage 1 Archaeology. MCFN provided feedback around background studies and options for avoidance and protection, wetland features, involvement in Stage 2 Archaeology (if required), and coordinating a site tour.

12.0 Conclusion

The Oak Park Trunk Watermain Schedule B Class EA has developed a preferred servicing alternative to support existing and future servicing requirements in northwest Brantford. Based on the comprehensive review of alternative solutions against a multiple bottom-line evaluation process that considered technical, environmental, social / cultural, and financial factors, Alternative 2 – Existing Easement was identified as the preferred alternative.

Alternative 2 is the shortest route alignment, utilizes the existing easement for the purpose of crossing Highway 403, has minimal impact to environmental and social / cultural factors, and is the lowest cost option.

12.1 Public Review

At the conclusion of Phase 2 of the MCEA process for Schedule B projects, this Project File Report was prepared, and a Notice of Completion was issued. The Project File Report for the Oak Park Road Trunk Watermain documents the decision-making process during the Class EA. The Notice of Completion for this Class EA (issued on July 4, 2024) notified members of the public and agencies that the Project File Report would be available for public review for a thirty-day period (30-days). The Project File Report is available for public review at the following locations during normal business hours:

Brantford Public Library – Main Branch: 173 Colborne Street, Brantford ON

Brantford Public Library – St. Paul Branch: 441 St. Paul Avenue, Brantford ON

Written comments on this Project File Report should be submitted to:

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In accordance with the Municipal Class Environmental Assessment (2000, as amended in 2007, 2011, and 2015; and 2023), if no concerns are expressed by the conclusion of the specified review period, the City may proceed with the design and construction of the project as described in this Project File.