



TOWNLINE ROAD SERVICING

Municipal Class Environmental Assessment Phase 1 & 2 Project File

22-2054

July 6, 2026



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REPORT SNAPSHOT

Project Snapshot is a WT Infrastructure Solutions Inc. initiative to communicate the five to ten key pieces of information that are important for the reader to take away from the report. It is not intended to replace a comprehensive review of the report.

- The existing average wastewater production within the study area is approximately 180 m³/d with a maximum daily flow equal to 810 m³/d. Under ultimate build-out, it is anticipated that the average wastewater production will increase to a design flow of 1,000 m³/d with a maximum daily flow of 4,445 m³/d. This is conservative and variable, depending on the development plans for the undeveloped lands.
- In order to service both development lands and existing properties, three sanitary servicing options, which include and exclude Black Creek Leisure Homes, have been identified in this report. The alternatives can be summarized as follows:
 - **Alternative A – Do Nothing.** This alternative will not meet the future servicing needs of the study area and will result in surcharged sanitary systems, and severely limit growth. This alternative is carried forward into the evaluation process as a base case.
 - **Alternative B – Centralized Sanitary System.** This alternative considers the possibility to connect the study area to the existing sewer system in order to collect wastewater and discharge it to the Stevensville Lagoon. Two options have been considered:
 - **Alternative B.1– New Sanitary Sewer Servicing Future Development Lands and Adjacent Lands including Black Creek Leisure Homes.** This alternative requires the construction a gravity sewer, pumping station along Townline Road, and forcemain to the treatment plant. The total capital cost for this alternative is \$6.0 M (+/-25%). **This was identified as the preferred alternative.**
 - **Alternative B.2 – New Sanitary Sewer Servicing Future Development Lands excluding Black Creek Leisure Homes.** This alternative requires the construction of 0.65 km of 250mm sanitary sewer and a pumping station along Townline Road, and a 1.35 km forcemain from the pumping station to the Stevensville Lagoons. The estimated cost of this alternative is \$ 5.3M (+/- 25%). This was not identified as the preferred alternative as it is not a comprehensive solution for the area by maintaining a private system risk in the system.
 - **Decentralized Sanitary Sewer: On-Site Septic Systems.** This alternative is characterized by smaller treatment systems placed close to the point of treatment need, serving a more localized area. Due to the proximity of the Stevensville Lagoon Treatment Plant, the installation of decentralized treatment within the study area was not considered as an advantageous solution to pursue under a cost-effective prospective considering the proximity of the existing municipal wastewater treatment system. Therefore, ***this alternative has been excluded from the assessment.***
- Three alternatives have been identified for stormwater management:
 - **Alternative A – Do Nothing.** This alternative is carried forward into the evaluation process as a base case.
 - **Alternative B - Providing a single communal SWM facility for the lands north of Townline Road.** This alternative would provide a single communal stormwater management facility

at an estimated cost of \$3.36M (+/- 25%). This was not identified as the preferred alternative.

- **Alternative C - Individual lot-level control and storage.** This alternative would require individual lot-level control and storage as the responsibility of the individual landowners. The estimated cost of this alternative is \$ 0.23M (+/- 25%). **This was identified as the preferred alternative.**
- The cost recovery mechanism for this project is based on proportional allocation of wastewater demand. Black Creek Leisure Homes (BCLH), accounting for 88% of the required capacity, will contribute approximately \$2.0M (\$3,205 per unit), while the remaining \$163K will be distributed among other properties at about \$14,825 per household on average. The Town has chosen annual repayment over 20 years as the preferred financing method, ensuring payments remain manageable for landowners.

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1 INTRODUCTION

1.1 Class Environmental Assessment Process

The Environmental Assessment Act of Ontario, R.S.O 1990 (EA Act) provides for the protection, conservation, and management of the environment in Ontario. The Ministry of the Environment, Conservation and Parks (MECP) is responsible for administration of the EA Act.

The Municipal Class Environmental Assessment (MCEA) is an approved Class EA under the EA Act that applies to municipal infrastructure projects including roads, water, wastewater and stormwater. This process provides a comprehensive planning approach to consider alternative solutions and evaluate their impacts based on a set of criteria (e.g., environmental, socio-economic, engineering considerations) and determine mitigating measures to arrive at a preferred alternative for addressing an identified problem or opportunity. The MCEA process, illustrated in Figure 1-1, involves a rigorous public consultation component that includes various provincial and municipal agencies, Indigenous communities, and the public.

The MCEA is undertaken prior to modifications or additions to municipal infrastructure, to consider potential impacts associated with all project aspects.

The MCEA process consists of the following phases:

- Phase 1: Identify the problem/opportunity.
- Phase 2: Identify and evaluate alternative solutions.
- Phase 3: Identify and examine alternative design concepts for the preferred solution.
- Phase 4: Formally document the planning process.
- Phase 5: Proceed to implementation of the project.

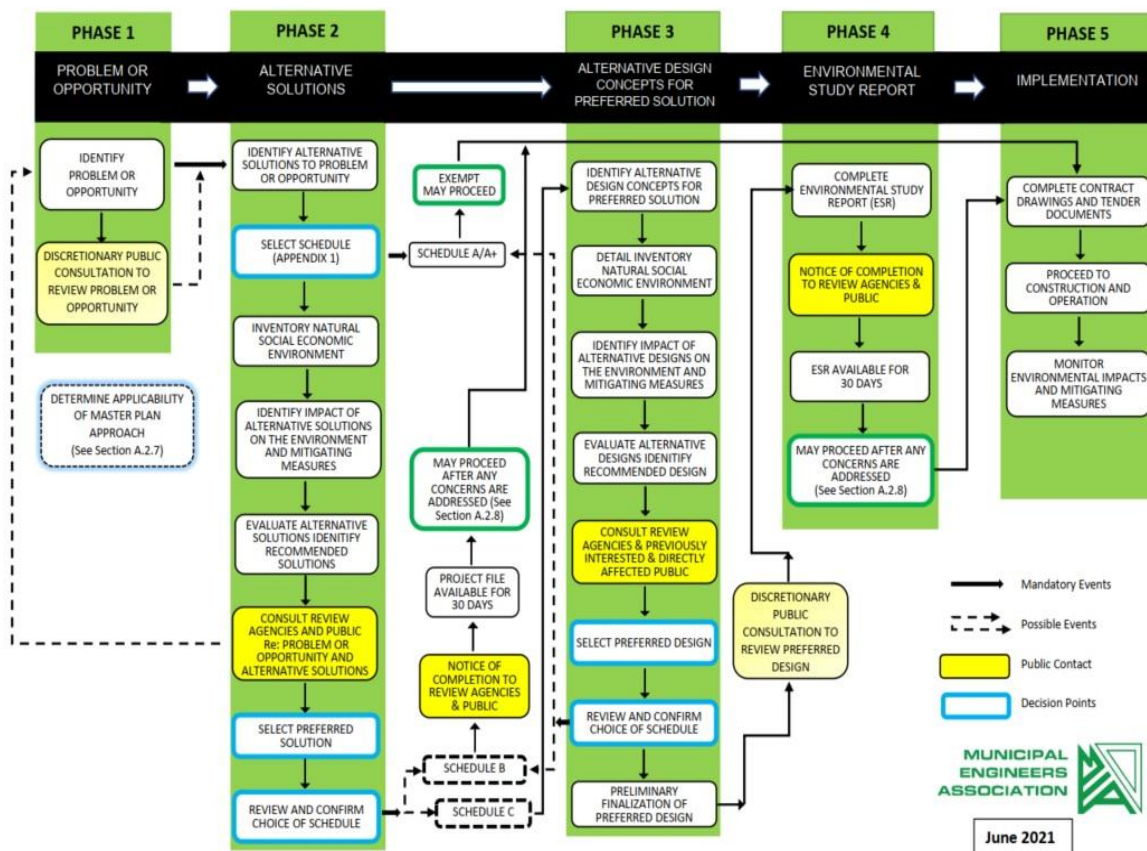


Figure 1-1 - Municipal Class EA process flowchart

1.2 Confirmation of Project Schedule

Four types of projects are identified in the Class EA document and summarized in Table 1-1. The Townline Road Servicing Study follows the Schedule B process of the Municipal Class EA because it involves new municipal servicing infrastructure and has potential for minor environmental impacts. As a result, the study must complete Phases 1 and 2 of the Class EA process, which include defining the problem, evaluating alternative solutions, and consulting with the public and agencies. This classification reflects the project's moderate scale, localized nature, and need for consultation, consistent with Schedule B requirements under the Municipal Class EA.

Table 1-1 - Municipal Class EA schedules and project requirements

Class EA schedule	Projects
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 their project is eligible for exemption from the EA or proceed with the applicable Schedule B or C process.
Schedule B	Projects that have the potential for some adverse environmental impacts and, therefore, the proponent is required to proceed through a screening process, including consultation with affected parties. Generally, these projects include improvements and minor expansions to existing facilities. Projects within this category are subject to Phases 1, 2, and 5.
Schedule C	Projects that have the potential for greater environmental impacts and are subject to all five Class EA Phases. Generally, these projects include the construction of new facilities and major expansions to existing facilities.

1.3 Problem and Opportunity Statement

The Town of Fort Erie has initiated a Municipal Class Environmental Assessment to evaluate and select the preferred solution to provide sanitary and stormwater servicing solutions to connect developable ICI lands north of Townline Road, as well as all lands within the existing urban area south of Townline Road.

The area object of this study is currently serviced by a municipal water supply, but it does not have sanitary and stormwater servicing in place. The only sanitary servicing that exists in the area is the Black Creek Leisure Homes (BCLH) private sanitary system consisting of gravity sewers, a pumping station, and a forcemain that discharges to the Stevensville sewage lagoons.

The intent of this study is to support the Town in the development and assessment of technical solutions to provide sanitary and stormwater services for current and future development within the study area.

The proposed servicing will need to consider existing and proposed development consistent with Town standards. Water servicing is available via a 200mm Town Watermain in the study area; on the other hand, the only existing sanitary service is a private sanitary system on the south side of Townline Road owned by the BCLH and used to serve the BCLH area. The sanitary system does not extend to all the homes in the Town's urban boundaries and no sanitary or stormwater systems are currently in place on the north side of Townline Road. Therefore, an extension of the sanitary sewer and stormwater systems is required enhancements to meet the projected demands of growth.

This study is intended to support the forecasted growth based on the following objectives:

- Assess future capacity requirements related to wastewater and stormwater servicing.
- Provide reliable wastewater and stormwater services to accommodate the projected development within the study area.
- Develop a long-term servicing strategy and capital forecast to ensure the maintenance of services for existing residents and businesses as well as to support current and future development within the study area

Each solution will be assessed with consideration to the natural, cultural, technical, and economic environments, and the preferred solution will be selected in consultation with regulatory agencies and the public to allow the Town to proceed to implementation with a clearly identified scope, cost estimate, and risk register in order to maximize value for the system.

1.4 Regulatory Framework

Under the Municipal Act, the Province has given municipalities the power to finance and provide water and sewage services. In very general terms, municipalities may have sole responsibility, or the responsibility may be shared for the oversight, and delivery, of these services. The legislative and regulatory changes of the past 15 to 20 years have improved water and wastewater quality in Ontario and, ultimately, these utilities are recognized as global leaders in the management and delivery of these services. These changes however have significantly increased the role and responsibility of municipalities, who, as owners, oversee the management and operation of these services. A brief description of regulatory framework subject to this study is presented below.

1.4.1 Wastewater

Key Acts, Regulations and Guidelines which wastewater system owners and operators are subject to include:

- Fisheries Act, 2019 as amended.
- Ontario Water Resources Act (OWRA).
- Clean Water Act (CWA).
- Nutrient Management Act (NMA).
- Environmental Protection Act (EPA).
- Ministry of the Environment, Conservation and Parks Design Guidelines for Sewage Works, 2008.

A brief description of each regulation is provided below.

Fisheries Act, 2019

The Fisheries Act provides provisions on the conservation and the protection of freshwater and marine fish habitat in order to sustain fish species. The Fisheries Act focuses on the protection of the productivity of commercial, recreational and Aboriginal fisheries, improved implements for both compliance and protection, enhanced stakeholder partnerships (e.g., government agencies, local groups) and ensuring regulatory requirements are clear and consistent.

Ontario Water Resources Act, 1990 (OWRA)

The purpose of this Act is to provide for the conservation, protection, and management of Ontario's waters and for their efficient and sustainable use in order to promote Ontario's long-term environmental, social and economic well-being. The Act governs sewage disposal and sewage works prohibiting the discharge of polluting materials that may impair water quality.

Clean Water Act, 2006 (CWA)

Together with the Safe Drinking Water Act, 2002, the Clean Water Act, 2006 captures the multi-barrier response recommended by the Walkerton Inquiry. The Act seeks to protect sources of

municipal residential drinking water systems by establishing multi-stakeholder, decision-making source protection committees which include municipalities. The committees are responsible for developing source water protection plans and for ensuring that activities (e.g., municipal planning decisions), conform to that source water protection plan.

Nutrient Management Act, 2002 (NMA)

As part of Ontario's Clean Water Strategy, the Nutrient Management Act, 2002 was designed to reduce the potential for water and environmental contamination from some agricultural practices. The Act establishes the framework for best practices regarding nutrient management. The Nutrient Management Act also provides standards for nutrient storage and how nutrients are applied to farmland, in order to reduce the likelihood of ground or surface water contamination.

Environmental Protection Act (EPA)

The Environmental Protection Act is the primary pollution control legislation in Ontario and can be used interchangeably with the Water Resources Act. The legislation prohibits discharge of any contaminants into the environment that cause or are likely to cause adverse effects. Amounts of approved contaminants must not exceed limits prescribed by the regulations. The Act also requires that spills of pollutants are reported and cleaned up promptly.

Ministry of the Environment, Conservation and Parks Design Guidelines for Sewage Works, 2008

The Design Guidelines for Sewage Works are intended to provide guidance during the design of sewage works. Guidelines with associated Procedures that should be consulted include:

- Guideline F-5, Levels of Treatment for Municipal and Private Sewage Treatment Works Discharging to Surface Waters (1994):
- Guideline F-6, Sewer and Watermain Installation: Separation Distance Requirements (1994):
- Guideline F-8, Provision and Operation of Phosphorus Removal Facilities at Municipal, Institutional and Private Sewage Treatment Works (1994):
- Procedure F-8-1, Determination of Phosphorus Removal Requirements for Municipal, Institutional and Private Sewage Treatment Works

1.4.2 Stormwater

Stormwater management is required to mitigate the effects of urbanization on the hydrologic cycle including increased runoff and decreased infiltration of rain and snowmelt. Without proper stormwater management, reduced baseflow, degradation of water quality, and increased flooding and erosion can lead to reduced diversity of aquatic life, fewer opportunities for human uses of water resources, and loss of property and human life.

Stormwater regulations and guidelines for the study area include:

- Provincial Policy Statement (PPS), 2024
- Ontario Stormwater Planning and Design Manual, 2003.

Provincial Policy Statement (PPS), 2024

Under the Provincial Planning Statement (PPS), 2024, stormwater management is addressed as an integral component of land use and infrastructure planning, with an emphasis on long-term sustainability, watershed health, and risk reduction. The PPS directs that stormwater be planned and managed in a manner that minimizes adverse environmental impacts while protecting public health, safety, and property.

The stormwater-related policies focus on reducing the impacts of development by minimizing increases in runoff volumes, contaminant loads, erosion, and changes to the natural water balance.

The PPS encourages a proactive approach that prioritizes managing stormwater close to its source, rather than relying solely on end-of-pipe solutions. This includes the use of green infrastructure, low impact development (LID) techniques, and other best practices to support infiltration, evapotranspiration, and water quality improvement.

Stormwater management planning under the PPS, 2024 is required to be coordinated with planning for water and wastewater services, ensuring that systems are optimized, feasible, resilient, and financially viable over their full lifecycle. Where appropriate, existing systems should be improved or retrofitted to enhance performance and reduce long-term risks.

Consistent with this approach, the PPS, 2024 identifies the following key principles for stormwater management planning:

- Integration with planning for sewage and water services to ensure systems are optimized, feasible, and financially viable over the long term.
- Minimization, and where feasible prevention, of increases in stormwater runoff volumes and contaminant loads.
- Minimization of changes in water balance and erosion.
- Avoidance of increased risks to human health and safety, and to property.
- Maximization of the extent and function of vegetative cover and pervious surfaces.
- Promotion of stormwater management best practices, including stormwater attenuation, stormwater re-use, and low impact development measures.

Ontario Stormwater Planning and Design Manual, 2003

Ontario's Stormwater Manual has a combination of lot level, conveyance, and end of pipe management practices to mitigate the negative impacts of stormwater. The main purpose of the manual is to maintain the hydrologic cycle, protection of water quality, and preventing increased erosion and flooding.

The strategy of the manual is to control the stormwater on-site through the following methods:

- **Lot Level and Conveyance Control:** Lot levels and conveyance controls include methods to increase storage and infiltration such as rooftop storage, planting grass, trees and vegetables, making stormwater corridors and directing stormwater to backyard ponds to capture stormwater as much as possible on-site. The purpose is to reduce stormwater runoff rate during peak hours, which is important to decrease overflows due to stormwater.
- **End Of Pipe Control:** End of Pipe control include methods to decrease the impacts of stormwater discharge to waters which come through the stormwater conveyance facilities by treating it. Wetlands, wet ponds, dry ponds and infiltration basins are defined as End of Pipe management facilities.

2 EXISTING CONDITIONS

2.1 Study Area

The study area is part of the Douglastown - Black Creek Subdivision, within the Town of Fort Erie. As illustrated in Figure 2-1, the area is bounded by Netherby Road, Townline Road and the Queen Elizabeth Way (QEW).

In particular:

- **QEW-Townline Road-Netherby Road:** the area bounded by QEW-Townline Road-Netherby Road is identified as a commercial area. This defined area of approximately 17.39 ha, with a Provincially Significant Wetland (PSW) of approximately 4.0 ha, has been long held as highway commercial lands intended to provide service and cater to major highway traffic. Its location at the full interchange with Netherby Road provides

good visibility and exposure to the Queen Elizabeth Way (QEW) yet has remained undeveloped to date.

- **South side of Townline Road:** Black Creek Leisure Homes (BCLH) is located on the south side of Townline Road while, east of the Black Creek Trail, there are commercial lands permitted, including a metal fabrication facility in operation since approximately 1975, as well as a single detached residential dwelling on a private septic system.
- **Southwest corner of Townline Road at Netherby Road:** The land on the southwest corner of Townline Road, at Netherby Road, is identified as an approximately 1.9ha commercial site. Currently, this area is zoned for automotive service station uses and may continue to retain the commercial designation and zoning that provides for such use under the Secondary Plan.



Figure 2-1 - Study Area

2.2 Existing Infrastructure

2.2.1 Municipal Water System

The Municipal Water System in the Town of Fort Erie is a split jurisdictional model between the Regional Municipality of Niagara (Region) and the Town.

Niagara Region is responsible for water treatment, transmission watermain facilities, water storage, and residual disinfection. Niagara Region supplies drinking water to the Fort Erie Drinking Water Distribution System from the Rosehill Water Treatment Plant (WTP) through 52 kilometres of transmission watermain, ranging in size from 150 mm to 600 mm diameter. The transmission watermains are mainly constructed of polyvinyl chloride (PVC), asbestos-cement (AC) and concrete pressure pipe (CPP).

The Fort Erie Distribution System is comprised of approximately 278 km of distribution watermain ranging in size from 50 mm – 400 mm diameter, within a single pressure zone. The majority of these watermains are cast iron (CI), AC, or PVC pipes. The Town purchases water from the Region and supplies it to serviced areas within all urban and settlement areas of the Municipality.

As indicated in Figure 2-2, a 400 mm diameter Regional-watermain passes through the study area, along Townline Road, to serve the urban area of Douglastown, while a 200 mm diameter watermain, owned by the Town, brings potable water to the privately owned Black Creek water system.



Figure 2-2 - Existing Municipal Water System

2.2.2 Sanitary Sewer System

The Town's wastewater system includes local and regional gravity sewers, and various pumping stations and forcemains. The Town's wastewater collection system is divided into three (3) separate systems: Stevensville/Douglastown to the north, Anger Avenue to the east, and Crystal Beach to the southwest.

The study area is within the Stevensville/Douglastown wastewater collection system. However, as the municipal sanitary servicing does not extend to all homes in the Town's urban boundaries, no sanitary or stormwater systems are currently in place on the north side of Townline Road.

As indicated in Figure 2-3, the only existing sanitary service is a private sanitary system is on the south side of Townline Road, which consists of 150 mm and 200 mm diameter gravity sewers, a pumping station (PS), and a 200 mm diameter forcemain that discharges to the Stevensville sewage lagoons. This system is currently in place to serve the Black Creek Leisure Homes development.



Figure 2-3 - Existing Sanitary System

2.2.3 Stormwater Drainage System

The study area is within the Black Creek watershed. Black Creek is a natural watercourse with its outlet at the Niagara River and is regulated by the Niagara Peninsula Conservation Authority (NPCA). This watercourse flows toward the northeast along the southern boundary of the study area. The water level in Black Creek is governed by the water level of the Niagara River. The “Fort Erie Creeks – Watershed Plan” (2008), released by the NPCA further defines the study area as being part of the BLK-106 sub-watershed. This sub-watershed is identified in the report as being roughly 3km in size and having an overland slope from West to East of 0.25%. The study area forms the easternmost third of the sub-catchment.

When viewing 1934 aerial imagery (overlaid with present-day Google Maps roadways) below, historically the study area likely drained to the roadside ditches of old Netherby Road (now Townline Road). When the QEW highway was constructed, Townline Road was realigned at Netherby Road and the existing old Netherby Road roadside ditches were rerouted to the Creek. The presence of portions of the original ditches are evident within the old Netherby and Black Creek Road right of ways which cuts through the now commercially zoned parcels of land.



Figure 2-4 – 1934 Aerial Imagery (Brock University Map Library).

The study area is now comprised almost entirely of this historical farmland now zoned for commercial development, in addition to existing low-density residential, a metal fabrication business, and the BCLH (an existing medium-density residential development).

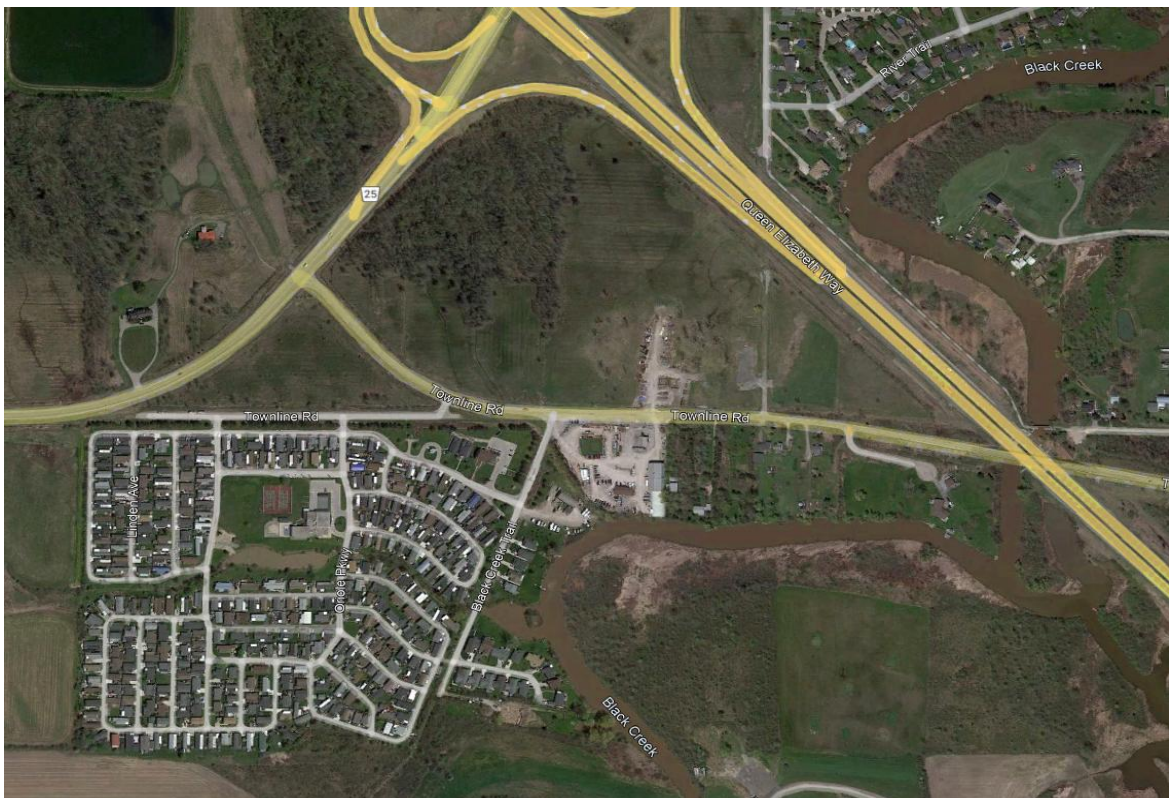


Figure 2-5 – 2022 Satellite Imagery (Google Earth).

The commercial land consists entirely of undeveloped meadowland and woodlot. Whatever stormwater does not infiltrate directly into the ground flows overland to the nearest roadside ditch. Being just north of Black Creek, the low-density residential drains south overland directly to Black Creek. When it was constructed in the early 1990s, the BCLH designed their minor and major storm drainage to be directed internally to a pond and watercourse within the property and is not directed through a public right of way prior to discharging to Black Creek.

The original ditch outlets to Black Creek on the old Netherby Road were historically located just north of the overpass. Due to the grade separation required for the overpass these two roadside ditches were split with flow on the north side of Townline Road being directed north under the QEW in a concrete box culvert and the south side of Townline Road being directed south to one of two realigned outfalls to the creek.

A total of three existing ditch outlets have been identified within the study area where stormwater is collected along the Townline, Netherby and QEW road allowances and discharged into Black Creek. In the figure below, outlets are shown as red dots while the black arrows indicate the drainage flow direction for each area. A fourth, privately-owned, stormwater outlet services the BCLH portion of the study area.

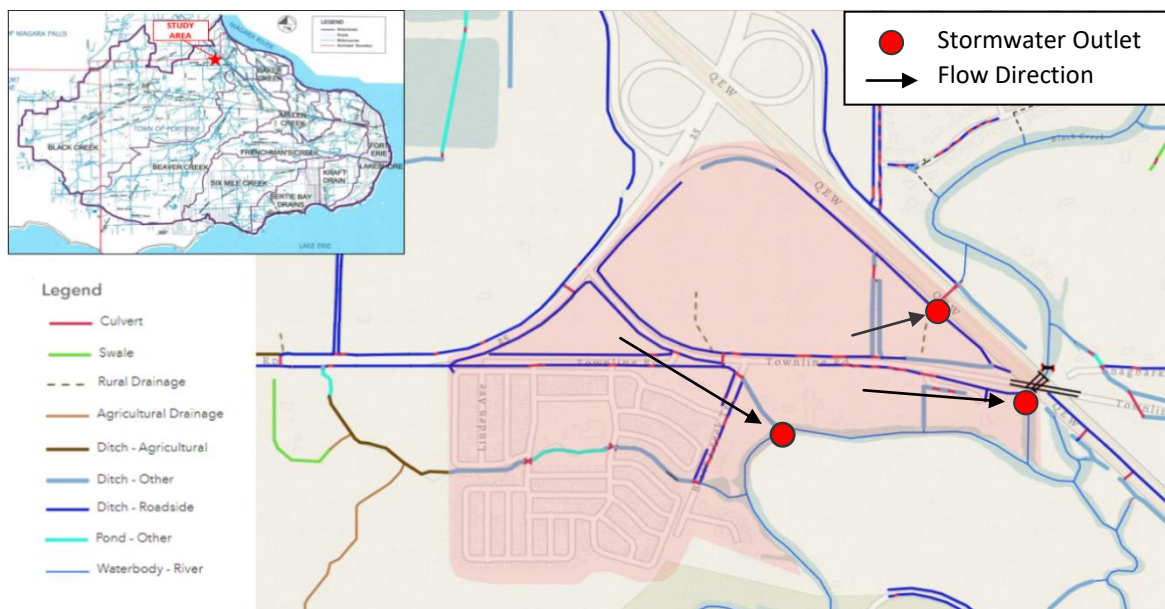


Figure 2-6 – Current Stormwater Drainage System

The rerouting of the original roadside ditches is evident by the curved dark and light blue lines in the figure above. The ditching in front of the metal fabricator business appears to have been filled in and rerouted along its western property line to allow for a large unloading gravel pad in front of the business. Due to the number of modifications made to the original ditches and low slope of the sub-watershed, significant sediment build-up has likely occurred over that time limiting the capacity of the existing ditch network as evidenced by the reedy vegetation, indicative of standing water.

2.3 Planning Context

In 2011, The Region approved the Town's Official Plan to provide the strategy and policy framework to guide development and growth over a 20-year time horizon.

The Official Plan, consolidated in September 2021, identifies where residential, open space, commercial, industrial, and institutional uses will be located and how such uses will be developed. Specific policies for select areas within that Plan Area are provided by Secondary Plans which include detailed land use designations and policy direction for specific areas within the Municipality.

The study area is part of the “Douglastown – Black Creek Secondary Plan” reported in Figure 2-7, which provides a policy framework for new development in the Plan Area serving as the guide for planning activities to, at minimum, 2031, and is subject to amendments, being included the Town’s 5-year review of its Official Plan. The study area is designated as commercial area with some areas south of Townline Rd identified as medium and low-density development.

In addition, it is noted that the Town has adopted a new Official Plan 2051, which is currently under review by the Ministry of Municipal Affairs and Housing. While not yet approved, the adopted Official Plan 2051 continues to envision the north side of Townline Road—including the study area—for Commercial uses, along with areas designated for Environmental Protection, indicating general policy continuity for the lands relevant to this study.

Based on information provided by the Town, potential development will likely occur on the north side of Townline Road, in the triangular commercially designated and zoned lands. The development would include:

- A convenience store, gasoline bar, and a restaurant with a drive thru. This proposal would change the existing Highway Commercial (C3-551) zoning to a new site-specific Highway Commercial (C3) Zone that permits a gasoline bar on the site.
- A Public Storage facility along the QEW.

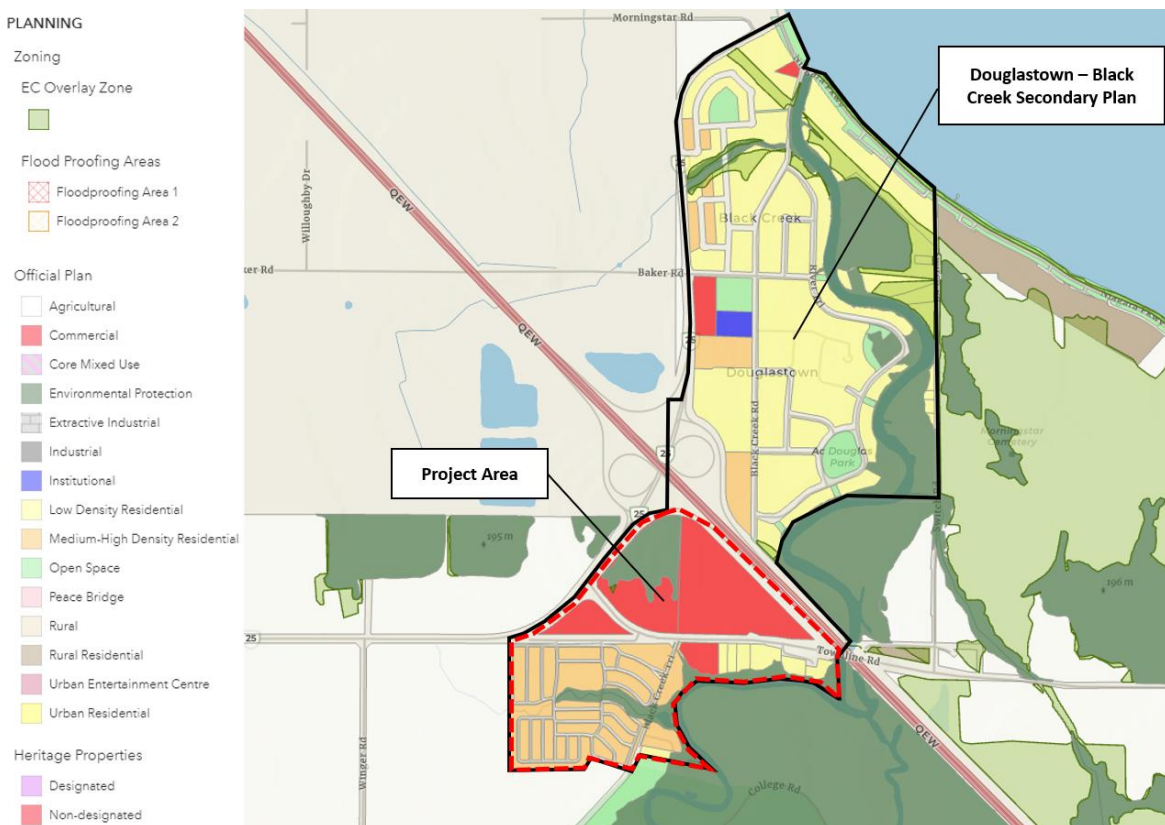


Figure 2-7 - Douglastown – Black Creek Secondary Plan

2.4 Environmental Inventory

Inventories and general investigations were completed along the core alignments and areas to document the existing natural and social environments. The results of these studies are considered in the evaluation of alternatives.

2.4.1 Natural Environment

Local Ecology and Aquatic Environment

In Ontario, the Ministry of Natural Resources (MNR) defines ecological units on the basis of bedrock, climate (temperature, precipitation), physiography (soils, slope, aspect) and corresponding vegetation, creating an Ecological Land Classification (ELC) system.

Ontario's ELC system is founded on Angus Hills' Site Regions and Districts, first adopted in the 1950s. The Ontario's ecological land classification system has six units. The six ecological land classification units are reported in Figure 2-8. From largest to smallest, they are classified as follows:

- **Ecozones:** Ecozones are defined by broad climate patterns and the type of underlying bedrock, which influence ecosystem processes and the plants and animals that can occur. Ecozones are used for reporting the status and trends of aquatic stress, land cover type, and vegetative growing season.
- **Ecoregions:** Ecoregions are defined by patterns in temperature, precipitation, humidity and other climate variables and they are used to identify and assess significant wildlife habitat and report on the status and trends of forest cover and disturbance.
- **Ecodistricts:** are defined based on bedrock and topography. This determines local vegetation and habitats in each ecodistrict.
- **Ecosections:** Ecosections are defined based on patterns in slope, landforms, soil texture and soil moisture. Ecosections have not been developed or used in Ontario.
- **Ecosites:** Ecosites are based mainly on physical features (e.g., moisture, soils, etc.) that influence what plant species are present. Each ecosite has a dominant vegetation type and substrate type. Ecosites are used by sustainable forest license holders, resource managers, municipalities and conservation authorities for land use planning, sustainable forest management, and wildlife habitat management.
- **Ecoelements:** Ecoelements are the smallest of Ontario's land classification units, and they are used to understand the composition of ecosites and to support fine scale planning in southern Ontario. Ecosites contain many Ecoelements. Each Ecoelement has a single type:

- Substrate: Substrate types are the materials that plant species grow in (e.g., amount of water in the soil, depth of the soil, texture of the soil).
- Vegetation: Vegetation types are recurring groups of plants that grow in similar conditions.

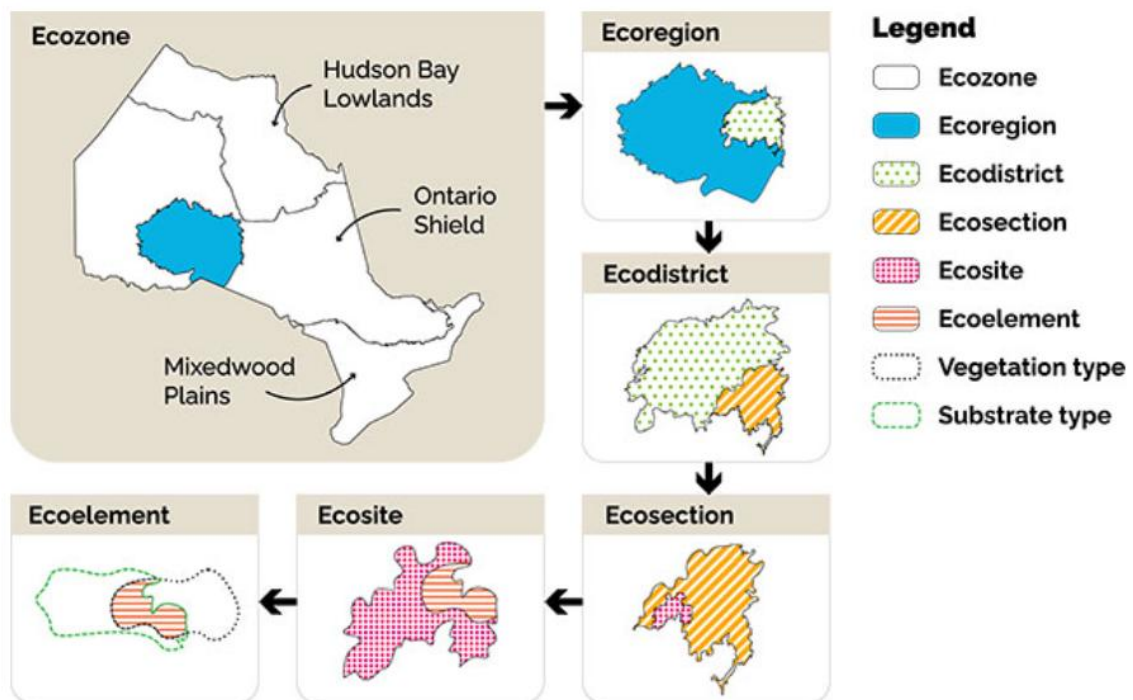


Figure 2-8 The Six Ecological Land Classification Units and Ecodistricts.

As can be seen in Figure 2-9, the study area is part of the **Southern Ontario's Mixed Wood Plains Ecozone**. The Ontario's southernmost ecozone, occupying less than 10% of the province, is defined by the limestone and dolostone bedrock that occurs south of the Precambrian Shield. This ecozone is bounded in the south and west by Lake Huron, Lake Erie, Lake Ontario, and the St. Lawrence River. The predominant type of natural disturbance in forest ecosystems is gap-phase dynamics, although major wind events and insect outbreaks can cause more extensive disturbance. In wetland systems, beavers are a major force of change. Vegetation is diverse, despite the conversion of many natural lands for agriculture and urban development. Mixed forests of deciduous and coniferous trees occur, as well as areas dominated by deciduous tree species as in Carolinian forests. Two globally imperilled ecosystems occur in the ecozone: tallgrass prairie and limestone barrens called 'alvars.' Wetlands are numerous in certain areas, although many have been drained. Plants and wildlife in this ecozone are among the most diverse in Canada, but they face significant challenges due, in large part, to habitat loss and fragmentation. Characteristic wildlife in this ecozone include White-tailed Deer, Red Fox, Coyote, Raccoon, Striped Skunk, Eastern Gray Squirrel, Great Blue Heron, Red-tailed Hawk, Black capped Chickadee, Wood Thrush, Yellow Warbler, Painted Turtle, Red backed Salamander and Smallmouth Bass. Alien invasive species are an increasing threat to native species in this ecozone.

The study area is also part of the **Lake Erie – Lake Ontario Ecoregion (7E)**. Lake Erie – Lake Ontario Ecoregion extends from Windsor and Sarnia east to the Niagara Peninsula and Toronto, with shoreline on Lakes Huron, Erie, and Ontario. This ecoregion is the most heavily urbanized and industrialized ecoregion in Ontario.

The underlying bedrock is primarily limestone bedrock. Except for the Niagara Escarpment from Burlington south to Queenston, and some morainal deposits and drumlin fields in the north-central part of the ecoregion, the topography is flat and overlain by deep undulating deposits of ground

moraine. Most substrates in the ecoregion are comprised of calcareous mineral material with a minor component of the landscape composed of organic material. There are substantial glaciolacustrine deposits left over from historical lakes, including the Norfolk sand plain, the clay plain adjacent to Lake St. Clair, and the Haldimand clay plain.

There are hundreds of small aquifers in sand and gravel deposits throughout the Lake Erie – Lake Ontario Ecoregion. Although most wetlands have been eliminated, some coastal marshes, deciduous and coniferous swamps, and open fens remain scattered throughout the ecoregion. The Lake Erie coastal marshes (e.g., Point Pelee, Rondeau Bay, Long Point, and Turkey Point) support the largest diversity of flora and fauna in the Great Lakes.

Lake Erie – Lake Ontario Ecoregion (7E) is characterized by six (6) Ecodistricts. **The study area is part of the Niagara Ecodistrict.** The Niagara Ecodistrict extends from the community of Jarvis in the west to the Niagara River in the east. The northern boundary occurs near the community of Ancaster and extends south to Lake Erie. The gently rolling landscape is dominated by fine-textured, calcareous, glaciolacustrine deposits, representing lake-bed sediment from a series of glacial lakes that inundated the area approximately 12,000 years ago. Approximately three-quarters of the area has been converted to pasture and cropland. Deciduous forests are scattered throughout the landscape. Trees species commonly associated with these forests include sugar maple, American beech, northern red oak, red maple, white ash, American basswood, eastern hop-hornbeam, white oak, balsam poplar, yellow birch, large-toothed aspen, black cherry, butternut, blue-beech, trembling aspen, and paper birch. Shagbark hickory, northern pin oak, eastern cottonwood, bitternut hickory, black walnut, American chestnut, sycamore, black willow, rock elm, slippery elm, and black maple may also occur. Wetter conditions may grow green ash, black ash, silver maple, American elm, and bur oak as well as Manitoba maple.

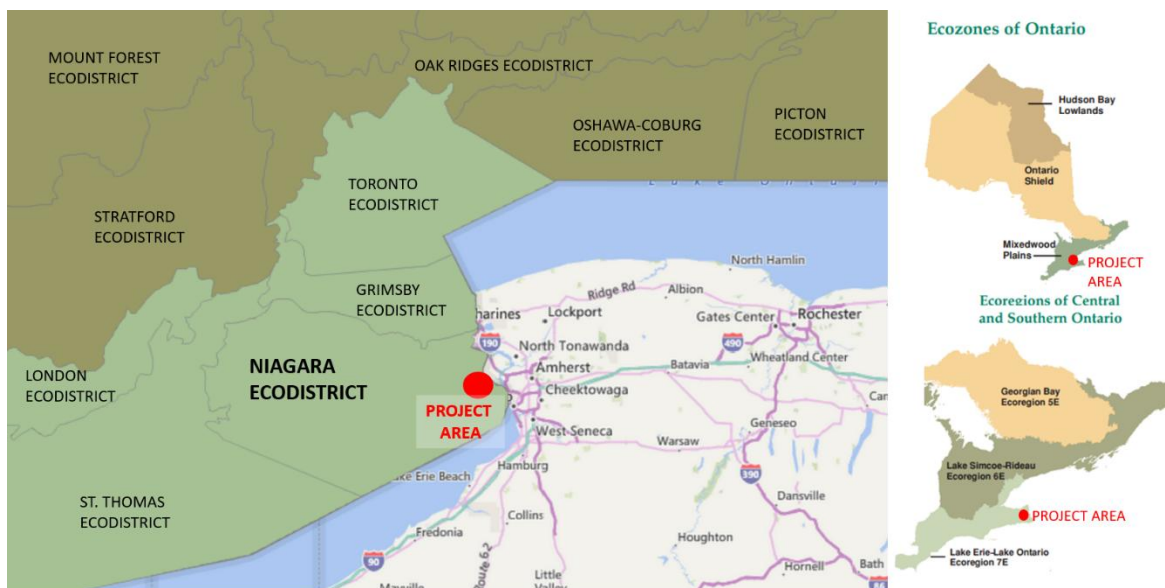


Figure 2-9 Ecological Land classification for Long Sault and Ingleside

With regard to the aquatic environment, the Ministry of Natural Resources and Forestry (MNRF) is responsible for sustainably managing and deriving economic benefit from the fisheries and water resources in the ~500,000 km of Ontario's rivers and streams. The purpose of the aquatic ecosystem classification (AEC) is to provide a universal and consistent spatial framework for Ontario's flowing waters that captures the general ecological nature of streams and rivers. The AEC reduces the complexity of these vast aquatic networks using consistent and quantitative methods to build a standardized data foundation that helps MNRF staff with landscape level planning and policy development.

The study area is part of the Lake Ontario Aquatic Ecosystem, and it is within the Black Creek watershed, regulated by the Niagara Peninsula Conservation Authority (NPCA). Black Creek is the largest watercourse within the study area.

The fish community within Black Creek is typical of a low gradient, warmwater stream, of moderate size in this part of Ontario. Table 2-1 reports the fish species that are part of the Black Creek watershed area accordingly to the information reported by the Fort Erie Creeks Watershed Plan.

Table 2-1 Fish Species within the Black Creek Watershed

	Fish Species
Black Creek Watershed	Centrarchids (largemouth bass, rock bass, sunfishes, crappies), bullheads, common white sucker, certain minnow species, Esocids (northern pike, grass pickerel, and muskellunge), Gizzard shad (found on several occasions during summer as far as 10 km upstream in Black Creek), Emerald shiners.

Natural Heritage Evaluation Study

A Natural Heritage Evaluation Study was undertaken on October 6th, 2023, by Aboud & Associates Inc. (AA) to perform a Species at Risk (SAR) Habitat assessment, Significant Wildlife Habitat (SWH) assessment, and an Ecological Land Classification & one-season botanical inventory for the study area. The Natural Heritage Evaluation report is included in **Appendix A**.

A Natural Heritage Evaluation Study is typically required to characterize and document natural heritage features within the study area, determine potential constraints and assess impacts, outline additional policy requirements under the applicable Official Plans and Conservation Authority requirements, and any expected permit requirements for the proposed works under the Ministry of Natural Resources and Forestry (MNRF), Ministry of Environment, Conservation and Parks (MECP), Species at Risk Act (SARA) and Endangered Species Act (ESA).

The following are the findings reported by the Natural Heritage Evaluation study:

- A background review found 225 wildlife species, with 28 of these being species of conservation concern.
- The site visit identified incidental observations of three bird species. Potential habitat for 22 SAR was identified. Significant Wildlife Habitat in the form of Deer Wintering Areas was confirmed, while candidate SWH in the form of Bat Maternity Colony, Seeps and Springs, Amphibian Breeding Habitat/Corridor, Terrestrial Crayfish and Special Concern & Rare Wildlife Species was identified within the servicing area. The botanical inventory identified one species: Pin Oak (*Quercus palustris*), with a conservation coefficient greater than eight (8).

Considering the findings detailed in the succeeding sections, the following recommendations are presented:

- Following the environmental assessment and determination of the preferred options, a scoped Environmental Impact Study is recommended to identify actual impacts and determine appropriate mitigation measures per the preferred options within the entirety of the servicing area. This study should include the following detailed field assessments at minimum, to determine if habitat for species at risk or significant wildlife habitat occurs within proximity of the preferred options and has the potential for impacts:

- Additional Ecological Land Classification outside of the pumping station area,
- Wetland delineation,
- Woodland Dripline delineation,
- Breeding Bird, including Grassland breeding bird protocols where appropriate.

Mitigation measures should be developed for any selected alternative to minimize impacts to protected natural heritage features during construction and retain and enhance the overall ecological integrity of the area. Mitigation recommendations for each alternative should be developed at the EA stage, and further refined through detailed design, in conjunction with the necessary agencies including NPCA, MECP, MNRF and DFO. Additionally, if impacts to Species at Risk are anticipated through any selected alternative, permits may be required under the ESA and SARA.

Areas of Natural and Scientific Interest

Areas of Natural and Scientific Interest (ANSI) are areas of land and water containing natural landscapes or features which have been identified as having values related to protection, natural heritage appreciation, scientific study, or education. There are two types of ANSIs:

- **Earth science ANSIs:** Are geological in nature and contain significant examples of bedrock, fossils, landforms, or ongoing geological processes.
- **Life science ANSIs:** Represent biodiversity and natural landscapes. They include specific types of forests, valleys, prairies, wetlands, native plants, native animals, and their supportive environments. Life science ANSIs contain relatively undisturbed vegetation and landforms and their associated species and communities.

As shown in Figure 2-10, no ANSI areas have been reported within or near the boundaries of the study area.

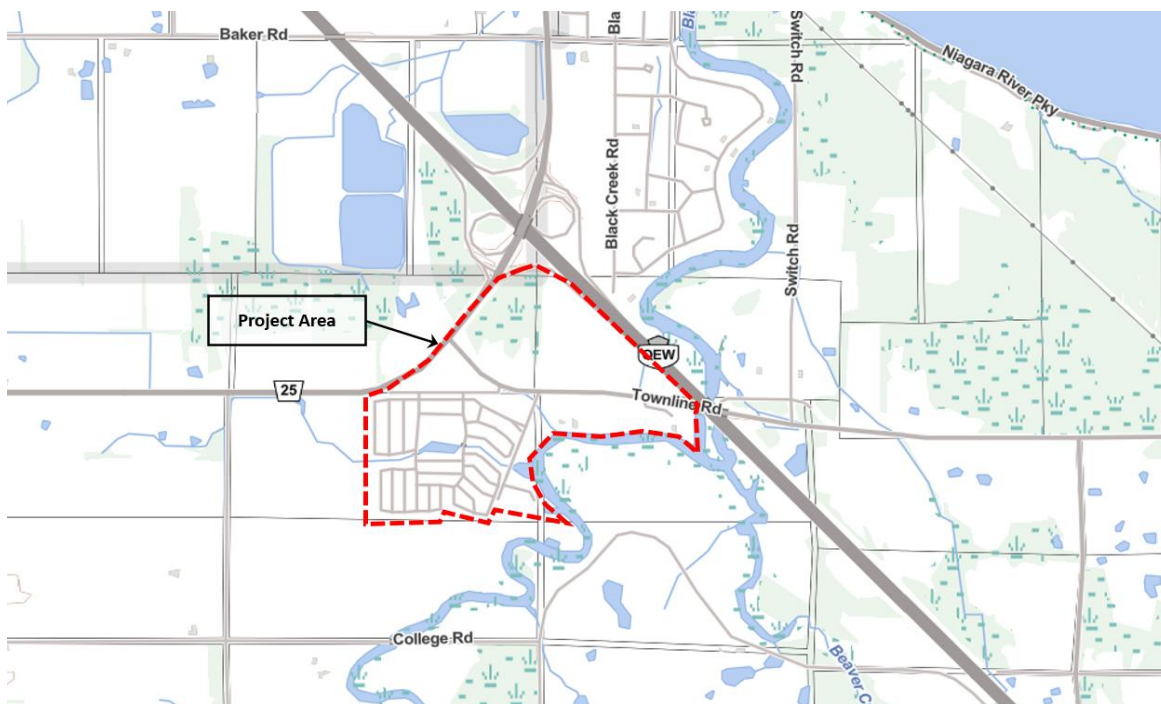


Figure 2-10 Areas of Natural and Scientific Interest within the Study Area

2.4.2 Cultural Heritage Resources

Archaeological Resources

A Stage 1 archaeological assessment (AA) (under Project Information Form number (PIF) #P1106-0041-2024) was undertaken on April, 2024, by Archaeological Research Associates Ltd (ARA) for

the study area. A Stage 1 AA consists of a review of geographic, land use and historical information for the property and the relevant surrounding area, and contacting MCM to find out whether, or not, there are any known archaeological sites on or near the property. Its purpose is to identify areas of archaeological potential and further archaeological assessment (e.g., Stage 2-4) as necessary. The Stage 1 AA report is included in **Appendix B**.

The following are the findings reported by the Stage 1 AA and presented in Figure 2-11 below:

- The Stage 1 assessment resulted in the identification of several features of archaeological potential in the vicinity of the study area. The closest and most relevant indicators of archaeological potential (i.e., those that would affect survey interval requirements) include several primary water sources (i.e. Black Creek, Beaver Creek and Niagara River), 27 previously identified sites, one historical community (Black Creek), two historical roadway (Townline Road and Black Creek Trail), and multiple historical structure localities. Background research did not identify any features indicating that the study area has the potential for deeply buried archaeological resources.
- Although proximity to a feature of archaeological potential is a significant factor in the potential modelling process, current land conditions must also be considered. Section 1.3.2 of the 2011 S&Gs emphasizes that 1) quarrying, 2) major landscaping involving grading below topsoil, 3) building footprints and 4) sewage/infrastructure development can result in the removal of archaeological potential, and Section 2.1 states that 1) permanently wet areas, 2) exposed bedrock and 3) steep slopes (> 20°) in areas unlikely to contain pictographs or petroglyphs can also be evaluated as having no or low archaeological potential. Areas previously assessed and not recommended for further work also require no further assessment.
- The Regional Municipality of Niagara's Archaeological Management Plan indicates that the study area retains large areas of archaeological potential. However, this modelling was not the result of a property-specific assessment and, therefore, does not fully account for land-use history and current conditions. Four previously assessed areas of no further concern were identified within the study area and do not require re-evaluation. Two additional previously assessed areas were identified that recommended further work. The recommendations of these reports have been incorporated into the current assessment with slight revisions due to subsequent residential developments and changes in methodology (i.e., Marine Checklist for Watercourses).
- ARA's visual inspection, coupled with the analysis of historical sources and digital environmental data, resulted in the identification of several areas of no archaeological potential. Specifically, deep land alterations have resulted in the removal of archaeological potential from the established roadways, ditched areas, utilities, berms, driveways and footprints of subsurface foundations. Past earth-moving/construction activities clearly impacted these areas, causing significant soil disturbance to a significant depth and severe damage to the integrity of archaeological resources. Black Creek was observed, but archaeological potential modelling for marine contexts is beyond the purview of any land-based assessment.
- The remainder of the study area has potential for Indigenous and Euro-Canadian archaeological materials or requires test pit survey to confirm disturbance. The areas of archaeological potential include various grassed areas, scrub lands and wood lots. It seems likely that the Black Creek Retirement community and lands adjacent to the laydown area north of Townline Road were previously impacted, but this could not be verified based on the inspection alone. Specifically, many of the structures within the mobile home park are situated on concrete pads and lack subsurface foundations. Accordingly, these lands have been categorized as areas of archaeological potential

and must be empirically tested to confirm that archaeological potential has been removed.

In summary, the Stage 1 assessment determined that the study area comprises a mixture of areas of archaeological potential and areas of no archaeological potential. Considering the findings detailed in the succeeding sections, the following recommendations are presented:

- The Stage 1 assessment determined that the study area comprises a mixture of areas of archaeological potential and areas of no archaeological potential. It is recommended that all areas of archaeological potential that could be impacted by the project be subject to a Stage 2 property assessment in accordance with Section 2.1 of the 2011 S&Gs. The areas of no archaeological potential do not require any additional assessment. If any in-water work is planned within the watercourse, the Criteria for Evaluating Marine Archaeological Potential checklist should be consulted.
- The agricultural fields must be assessed using the pedestrian survey method at an interval of 5 m. All ground surfaces must be recently ploughed (typically within the month prior to assessment), weathered by one heavy rainfall or several light rains, and provide at least 80% visibility. If archaeological materials are encountered, the transect interval must be decreased to at least 1 m and a close inspection of the ground must be conducted over a minimum of a 20 m radius around the find. This interval must be continued until the full extent of the scatter has been defined.
- The grassed areas, scrubland, and woodlots must be assessed using the test pit survey method. A survey interval of 5 m is warranted due to the proximity of the lands to the identified features of archaeological potential.
- Given the likelihood that the Black Creek Retirement community and lands adjacent to the laydown area north of Townline Road were previously impacted, a combination of visual inspection and test pit survey should be utilized to confirm the extent of disturbance in accordance with Section 2.1.8 of the 2011 S&Gs. This will allow for the empirical evaluation of the integrity of the soils and the depth of any impacts. If disturbance cannot be confirmed, then a test pit survey interval of 5 m must be maintained.
- Each test pit must be excavated into at least the first 5 cm of subsoil, and the resultant pits must be examined for stratigraphy, potential features and/or evidence of fill. The soil from each test pit must be screened through mesh with an aperture of no greater than 6 mm and examined for archaeological materials. If archaeological materials are encountered, all positive test pits must be documented, and intensification may be required.

Further recommended assessment (e.g., Stage 2-4) will be completed as early as possible in the detailed design phase and prior to any ground disturbing activities.

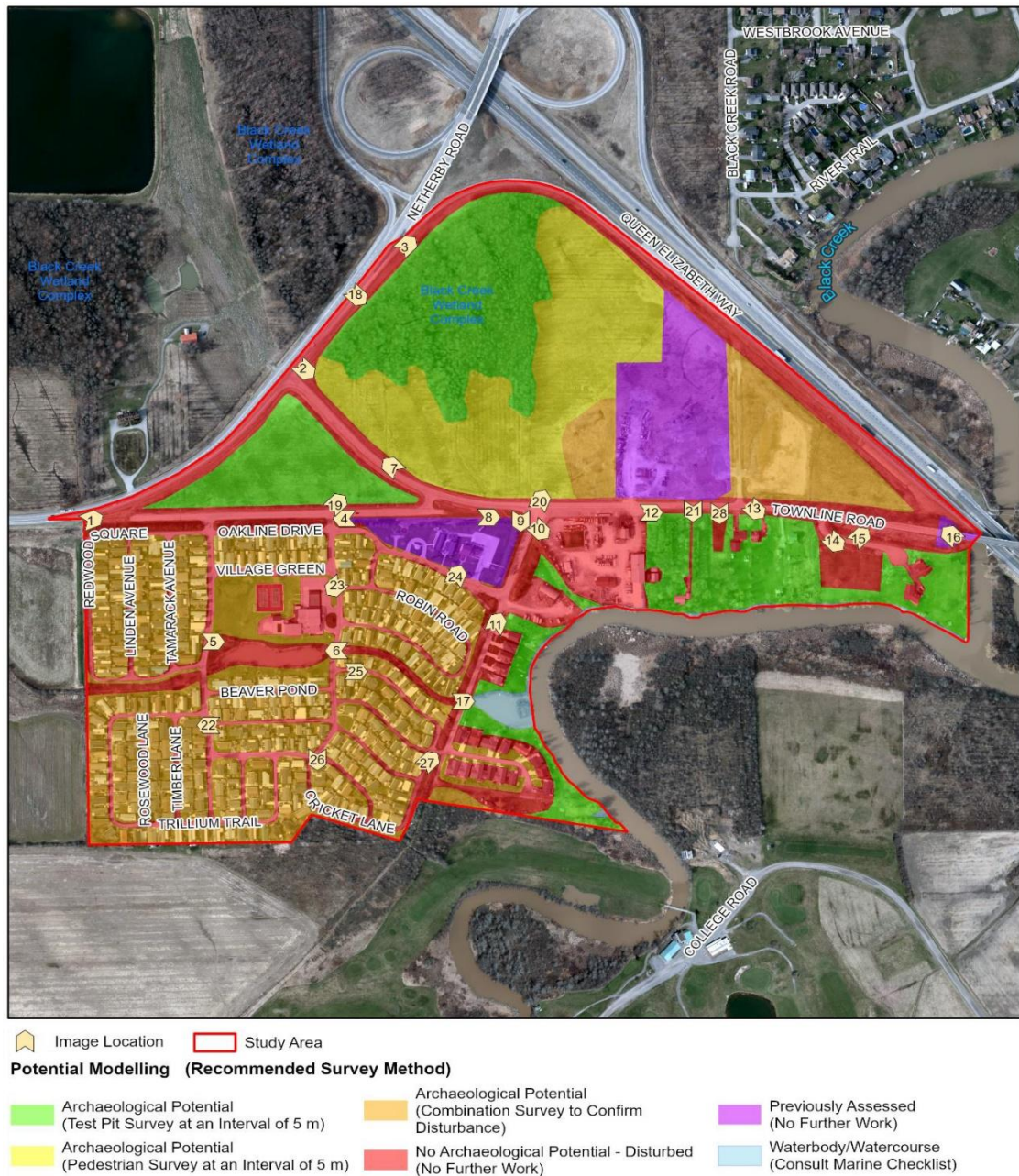


Figure 2-11 Stage 1 AA results of the study area

Cultural Heritage

The Ontario Heritage Act (OHA), R.S.O. 1990, c.018) is the guiding piece of provincial legislation for the conservation of significant cultural heritage resources in Ontario. The OHA gives provincial and municipalities governments the authority and power to conserve Ontario's heritage. The following are key concepts for any discussion pertaining to cultural heritage resources:

- **Cultural Heritage Value or Interest (CHVI)**, also referred to as Heritage Value, is identified if a property meets one of the criteria outlined in O. Reg. 9/06 namely historic or associate value, design, or physical value and/or contextual value. Provincial significance is defined under Ontario Heritage Act (OHA) O. Reg. 10/06.
- **Built Heritage Resource (BHR)** can be defined in the PPS as: "a building, structure, monument, installation or any manufactured or constructed part or remnant that contributes to a property's cultural heritage value or interest as identified by a community, including Indigenous community. Built heritage resources are located on property that has been designated under Parts IV or V of the Ontario Heritage Act, or that may be included on local, provincial and/or federal and/or international registers" (MMAH 2020:41).
- **Cultural Heritage Landscape (CHL)** is defined in the PPS as: "a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Indigenous community. The area may include features such as buildings, structures, spaces, views, archaeological sites, or natural elements that are valued together for their interrelationship, meaning or association. Cultural heritage landscapes may be properties that have been determined to have cultural heritage value or interest under the Ontario Heritage Act or have been included on federal and/or international registers, and/or protected through official plan, zoning by-law, or other land use planning mechanisms.)" (MMAH 2020:42).
- **Protected heritage property** is defined as "property designated under Parts IV, V or VI of the Ontario Heritage Act; property subject to a heritage conservation easement under Parts II or IV of the Ontario Heritage Act; property identified by the Province and prescribed public bodies as provincial heritage property under the Standards and Guidelines for Conservation of Provincial Heritage Properties; property protected under federal legislation, and UNESCO World Heritage Sites" (MMAH 2020:49).

The Town's GIS keeps a Municipal Heritage Register that outlines properties of cultural heritage value and are identified as being important to the community. As can be seen in Figure 2-11, no heritage properties have been identified within the study area.

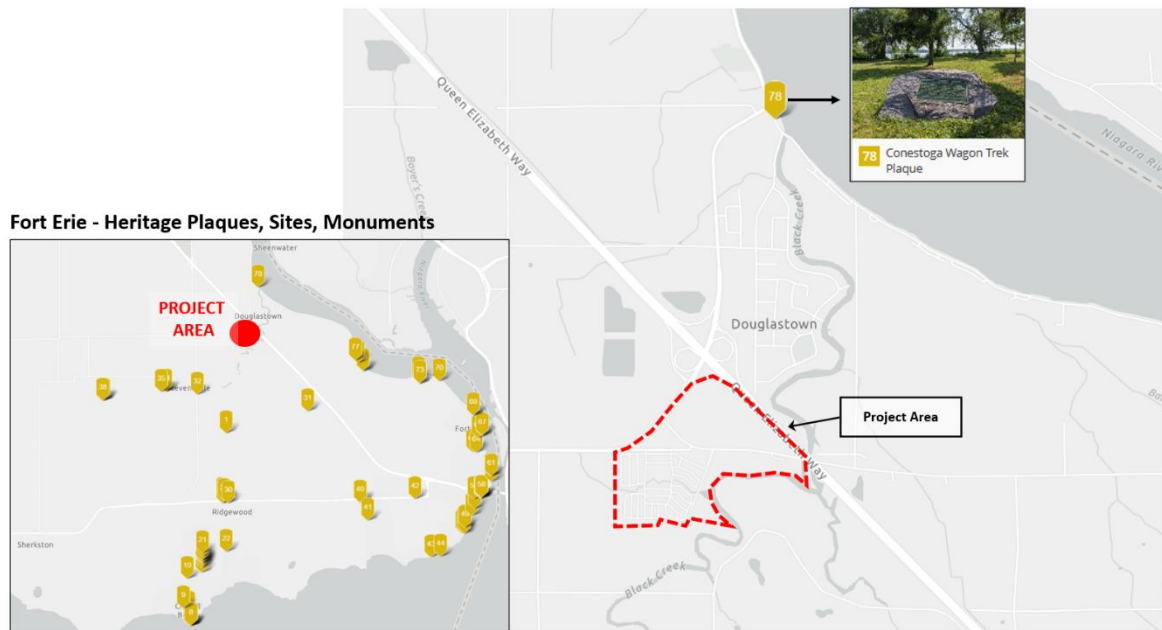


Figure 2-12 Heritage Plaques, Sites and Monuments within the Study Area

2.4.3 Economic Environment

The study area is mainly designated as commercial area with some areas south of Townline Rd identified as medium and low-density development. The lack of service within the area is currently restricting potential development and possibility to maximize the use of this land. As each household will be required to pay for the cost of servicing extensions/implementation with available after-tax income, the 2021 Census Data on the 2020 household income was used to identify the median after tax household income in order to determine the affordability of the sanitary servicing extension project.

A brief description regarding the population economic position and project affordability has been provided in the next sections.

Population Economic Position

According to the 2021 census, The Town of Fort Erie has an average household income (after-tax) of \$82,000. Approximately 25% of the people living in Fort Erie have an income of \$100,000 or more, compared to the 36.5% of households living within the province. However, the prevalence of households that fall under the Low-Income Cut-Off After Tax (LICO-AT) within The Town of Fort Erie is 3.2%, which is less than the provincial average (5.3%).

Affordability Factors

Table 2-2 summarizes the water and wastewater rates for The Town of Fort Erie.

Table 2-2 Current Water and Wastewater Rates within the Town of Fort Erie

	2025 Water and Wastewater Rates		
	Water	Wastewater	Total
per m ³	\$1.870	\$3.042	\$4.912
Commercial users per 1,000 gallons (~3.78 m ³)	\$8.500	\$13.827	\$22.327
Commercial Users (water only) per m ³	\$1.920	n/a	\$1.920
Flat Rates Per Month (Base Rate plus Consumption Rate Estimate for a less than 25 mm meter)	\$58.43	\$95.32	\$153.75
Monthly Base Rates	Based on meter size		

The Town's water services non-rate revenue is collected via Local Improvement Charges, grants, and fines/penalties. However, the greatest source of revenue is secured from the consumptive water rates and minimum bills. The total annual water and wastewater revenues are forecast to increase from \$23.6 million in 2024 to \$31.2 million by 2029.

In 2024, the water and wastewater rates for 2024 were set as follows:

- Water Charges:
 - Base charge: \$26.52
 - Rate charge: \$1.781
- Wastewater Charges:
 - Base charge: \$44.43
 - Rate charge: \$2.984

Therefore, from the 2024 to the 2025, the water and wastewater consumptive rate increased by 5% and 13.3%, respectively. As per the water and wastewater the rate forecast, the average annual water and wastewater charges would increase by 6.5% every year up to the 2029, thus resulting in an increase to the annual bill for the Fort Erie customers of 6.5% per year.

Using the most recent Census Data, the following measures of affordability will be used:

- If the annual household cost of extending the service is equal to, or less than 5% of the median after-tax household income, the project would be considered reasonable affordable.
- If the annual household cost of extending the service is greater than 5% but less than 10% of the median after tax household income, the project would require additional analysis to determine affordability, including:
 - Consideration of local support of servicing extension.
 - Consideration of additional financial support from the Town in order for the project to proceed to meet the affordability threshold of 5%.
- If the annual household cost of extending the service is equal to or greater than 10% of the median after tax household income, the Project would be considered not reasonable for both the Town and the benefitting property owners.

The 2021 Census Data outlined that the Town of Fort Erie median after-tax income of households is \$82,000.

Table 2-3 Project affordability metrics

	Town of Fort Erie
Median after Tax Income per household (2020)	\$82,000
Reasonable (≤ 5%)	\$4,100/yr. per household
Not Reasonable (>10%)	\$8,200/yr. per household

3 DESIGN CRITERIA

The Design Criteria establish the minimum design requirements for Alteration to an existing Municipal Sewage Collection System. The findings of the design basis review are summarized in the following sub-sections.

3.1 Population

3.1.1 Current Population

Most of the current population within the boundary of the study area is related to the BCLH development and counts approximately 597 residents, according to the Niagara Region Master Servicing Plan (2017). As the Master Servicing Plan did not report any potential growth for the Leisure Homes from 2016 to date, it is assumed that the number of current residents has not changed significantly.

It is noted, however, that BCLH has recently submitted an application for the development of 16 additional residential units within the site. While this application indicates the potential for a modest increase in population within the study area, it remains subject to planning approvals. As such, the population estimate of approximately 597 residents is considered representative of current conditions, with the understanding that future conditions may reflect a minor increase associated with the proposed residential units.

Based on a review of aerial photography, three additional houses have been identified south of Townline Road. Assuming a person per unit value of 2.14, according to the Douglastown – Black Creek Secondary Plan, those three houses represent a population of seven (7) residents.

A metal fabricator industry is located at the intersection of Townline Road (south side) and Black Creek Trail which has 36 employees.

Table 3-1: Study Area Current Population

	Residents	Employees	Total Population
2022	604	36	640

3.1.2 Future Population

The future population was estimated based on the Douglastown – Black Creek Secondary Plan, Zoning By-Law 129-90 and its amendment, By-Law 35-2016, as well as the Town Subdivision Control Guidelines for commercial and industrial development.

Table 3-2 presents the 20-year forecasted population and housing within the study area for residential and commercial development, organized by area, as indicated in Figure 3-1, below.

Table 3-2 - Projected population and residential units within the study area

20-years forecast						
Zone	Land available for development (ha)	Max Density	Units	Residents	Employees	Total Population
C3	3.6	125* persons/ha	-	-	450	450
C3 (H)	0		-	-	0	0
C3-16 (H)	0		-	-	0	0
C3-551	9.7		-	-	1,213	1,213
C4	1.9		-	-	238	238
C5-20	0	50 units/ha	0	0	-	0
C5-314	0		0	0	-	0

R1-544	0.71	16 units/ha	11	24	-	24
R1-545	0.8		13	27	-	27
R1-547	0.3		5	10	-	10
Total	17		29	61	1901	1962

*Based on the Town Subdivision Guidelines for commercial and industrial areas

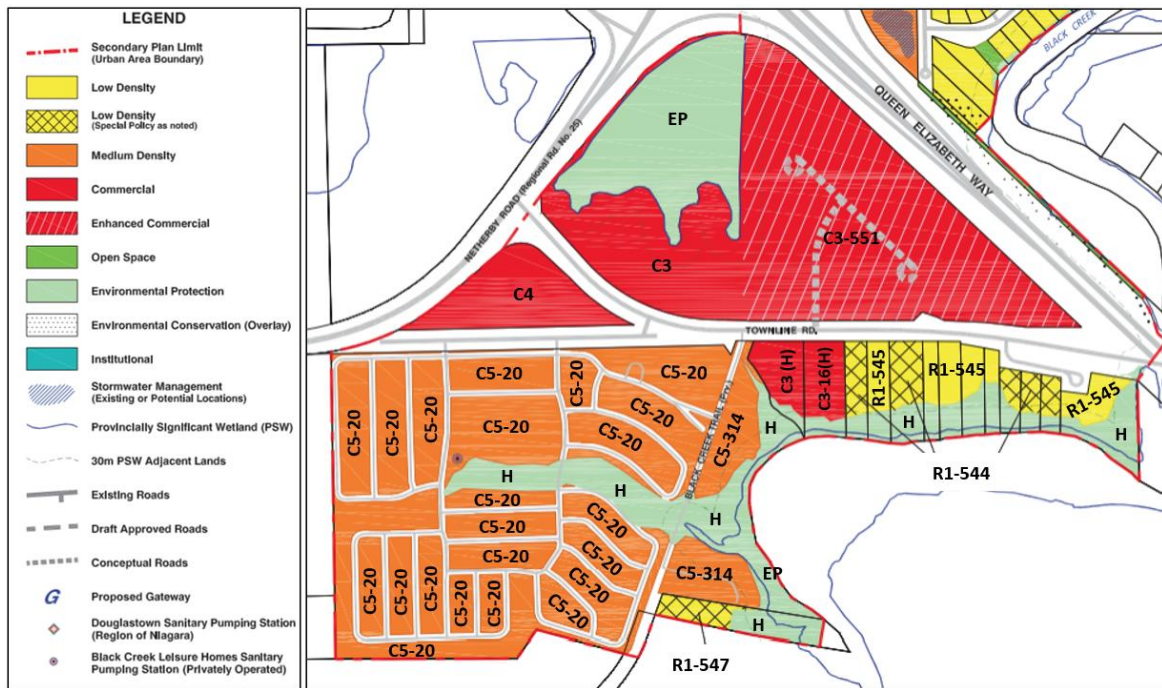


Figure 3-1 - Town of Fort Erie zoning areas as per Zoning By-Law 129-90 and its amendment.

3.2 Current Wastewater Production

As sewage flow is divided into wet weather flows and dry weather flows to estimate the current wastewater production within the study area, flows generated by routine water usage plus external flow contributions coming from inflow and infiltration were considered.

Per the Town of Fort Erie Subdivision Control Guidelines, the following design criteria were used:

- Average Day Flow: 180 m³ as per Town data
- Peaking Factor: $2 < \frac{5}{p^{0.2}} < 4.5$
- Infiltration Allowance: 0.28 L/s/ha

The estimated wastewater production within the study area is detailed in Table 3-3.

Table 3-3 - Current wastewater production

	Total Wastewater Production	Description
Average Daily Flow	180 m ³ /d	Town data
Maximum Daily Flow	810 m ³ /d	Average Daily Flow X Peaking factor

3.3 Future Wastewater Production

The calculation of the future wastewater production is based on the projected residential and commercial populations detailed in Table 3-2, plus an allowance for infiltration and inflow. The following design parameters were used in accordance with the Town of Fort Erie Subdivision Control Guidelines:

- Average Day Flow: 320 Lpcd
- Infiltration Allowance: 0.15 L/s/ha for new tributary areas
- Peaking Factor: $2 < \frac{5}{p^{0.2}} < 4.5$

Average and maximum wastewater production are reported in Table 3-4 for the whole study area, while Figure 3-2 shows the current and future peak flows organized by area. It should be noted that the design criteria used by Town of Fort Erie differ from the Niagara Region Design Criteria, resulting in a higher peak flow equal to 4,600 m³/d versus a peak flow of 3,500 m³/d if the Regional Design Criteria were used. As the Town Design Guidelines are based on historical technical background design approaches and experience specifically relevant to the Town of Fort Erie, those will be used during the infrastructure design stage.

Table 3-4 - Future wastewater production

	Total Wastewater Production (20-year forecast)	Description
Average Daily Flow	1,000 m ³ /d	According to section 3.8 Sanitary – Design Flow of the Town Subdivision Control Guidelines
Maximum Daily Flow	4,600 m ³ /d	

It should also be noted that the forecasted maximum daily flow is higher than rated capacity of the Stevensville lagoons, which is equal to 2,289 m³/d. According to the *Niagara Region – Stevensville-Douglastown Wastewater System 2024 Annual Performance and Summary Report*, the Stevensville lagoons are currently operating at 61% of their rated capacity. This would result in just 893 m³/d of available capacity at the plant for future development. Moreover, the lagoon is subject to infiltration and inflow, recording spikes of flow during typical wet weather seasons.

Therefore, planning applications for future growth within the study area are subject to the available capacity of the plant which needs to be verified before proceeding with potential development. It must also be noted that the 2021 Regional Water and Wastewater Master Servicing Plan identifies potential long-term servicing options for the Stevensville–Douglastown system, including lagoon decommissioning, diversion of flows to the Anger Avenue WWTP via a new interceptor (e.g., Bowen Road), and potential expansion, upgrading, or optimization of existing lagoon infrastructure as part of broader regional system reconfiguration.

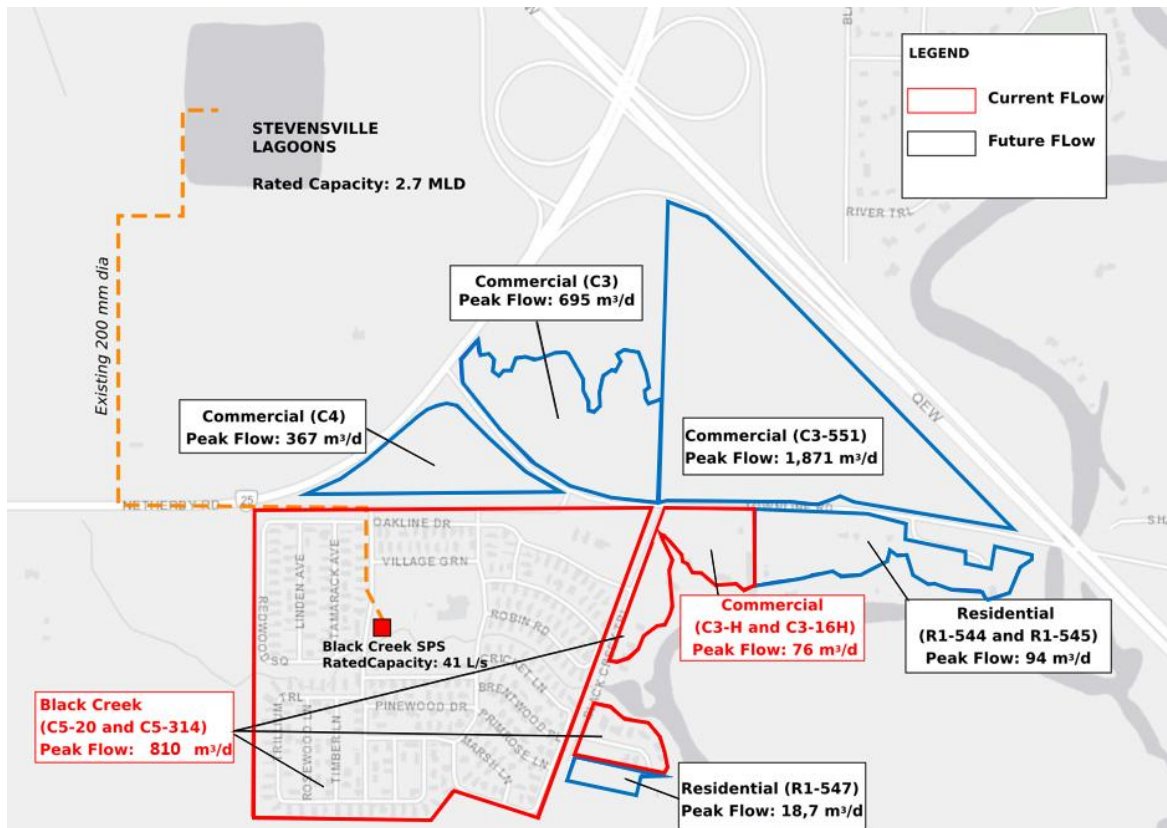


Figure 3-2 - Current and Future wastewater flow by catchment area

3.4 Stormwater Management Criteria and Design

This study is focused on the impact of proposed development on the three parcels of land zoned C4, C3 & C3-551, north of Townline Road, and their impact on municipally owned and maintained stormwater infrastructure. The existing commercial and low-density residential south of Townline Road is directly connected to, and slopes toward, BCLH; therefore, stormwater generated on these properties does not utilize the municipal right-of-way to drain. The BCLH development has their own Stormwater Management facilities and is also not included in the stormwater study area. The woodlot north of Zone C3, zoned EP, is required to remain unchanged and will continue to drain north under the QEW to Black Creek post development.

The Town of Fort Erie's "Design Guidelines for Site Plan Control/Subdivisions Control" (2021) requires that the stormwater drainage system within a proposed property development meets the following criteria:

- The design of the minor stormwater conveyance system (i.e., storm sewers) within a property shall be sized to convey up to and including the 5-year storm event.
- The design of major stormwater conveyance system (i.e., overland flow, ditches, culverts, road allowances) within a property shall be designed to prevent flooding or excessive ponding up to and including the 100-year storm event, with consideration to the impact of the regional storm.
- Developers are also required to provide a Stormwater Management Report to indicate how they plan to meet lot-level quality and erosion control requirements set out in the MECP's "Stormwater Management Planning and Design Manual."

From the Town of Fort Erie's "Zoning By-Law," Zone C4 must have a minimum of 10% landscaping, while zones C3 & C3-551 have no such requirement and could therefore be completely, though not likely, covered in impervious surfaces.

From the Town of Fort Erie’s “Design Guidelines for Site Plan Control/Subdivisions Control” (2021), the runoff coefficients for flat woodland are 0.2 and for suburban commercial is 0.8, therefore these were the runoff coefficients utilized for pre-development and post-development, respectively.

Table 3-5 – Pre & post development stormwater flows from Zones C4, C3 & C3-551

Return Period	Pre-Development (L/s)				Post-Development (L/s)				Target Release Rate (L/s)
	Total	C4	C3	C3-551	Total	C4	C3	C3-551	
2-yr	570	71	135	364	2258	264	540	1454	570
5-yr	729	91	173	465	2889	337	691	1861	729
100-yr	1169	146	277	746	4632	541	1107	2984	1169

If the zoning by-law for impervious lot coverage was maximized, this would result in an increase in runoff during a 100-year storm of approximately 3,500 L/s or about three times the amount of runoff generated pre-development.

If the difference between the post-development 100-year and pre-development 2-year storm was stored, this would result in approximately 4,000 m³ of stormwater storage. If a stormwater management pond were installed to contain this amount of storage, it would need to have 2m depth of active quantity storage and be approximately 50m wide by 50m long. In order to create a SWM pond with active storage of that size, an area of roughly 5,000m² (0.5 ha) would be required to be set aside to allow for the construction of a communal stormwater management pond for quantity and quality control.

3.5 System Design Criteria and Constraints

For this study, the overall objective is to provide sanitary, and stormwater servicing solutions to connect developable ICI lands north of Townline Road, as well as all lands within the existing urban area south of Townline Road. The following are the criteria and constraints for the proposed problem evaluation.

It is important to recognize that the proposed infrastructure that may be implemented as a result of this study has a useful life of a minimum of 50 years and up to 100 years or more depending on the component.

3.5.1 Criteria

The preferred alternative must be able to meet the following criteria related to the conveyance of the wastewater within the system:

- For wastewater system, convey short-term 810 m³/d (~9.5 L/s) and long-term 4,600 m³/d (~54 L/s) wastewater demand to the Stevensville Sewage Lagoon in an efficient manner.
- For stormwater system, the design of the minor stormwater conveyance system (i.e., storm sewers) within a property shall be sized to convey up to and including the 5-year storm event, while the design of major stormwater conveyance system (i.e., overland flow, ditches, culverts, road allowances) within a property shall be designed to prevent flooding or excessive ponding up to and including the 100-year storm event, with consideration to the impact of the regional storm.
- Minimize off-site impacts (natural, social, cultural). This includes new land acquisition, proximity of downstream receptors (noise, odour, sewer back-ups), and impacts on existing and undeveloped areas.

- Minimize risk associated with system operation (traffic, noise, odour, back-up, single points of failure).
- Design complies with MECP design guidelines, Ten State Standards and Town's guidelines.
- System design considers operational and economic efficiencies in terms of components and location.
- System design allow for staging to avoid oversizing the system for current flows while minimizing the capital requirements in order to meet ultimate sewer shed build-out.

3.5.2 Constraints

The constraints associated with the identified problem are as follows:

- **Wastewater System Constraints**
 - The Stevensville lagoons capacity: According to the Niagara Region's *Fort Erie Long-Term Wastewater Servicing Strategy*, the Lagoons are approaching capacity, reaching the 80% planning trigger by 2031, and will require an upgrade within the 2051-time horizon. The current rated average daily flow capacity of the plant is 2.3 MLD, with an existing flow of 1.4 MLD and a projected 2051 average daily flow of 2.5 MLD, which exceeds the lagoons' rated capacity. Niagara Region is reviewing the long-term plan to 2051 to address sewage treatment in Fort Erie.
 - Existing 200mm Forcemain owned by the Black Creek Leisure Homes: This 200 mm diameter forcemain collects wastewater from the Black Creek Leisure Homes and discharges to the Stevensville sewage lagoons. The existing forcemain is approximately 30-years old and its condition will need to be assessed.
 - Black Creek Leisure Homes Sanitary System: The existing sanitary service within the study area is privately owned by Black Creek Leisure Homes and services that development. This system consists of 150 mm and 200 mm diameter gravity sewers and a Sanitary Pumping Station (SPS).
- **Stormwater System Constraints**
 - Ditch Outlets: A total of three existing ditch Ditch Outlets outlets have been identified within the study area where stormwater is collected along the Townline, Netherby and QEW road allowances and discharged into Black Creek. Some of the ditches in the area appears to have been filled in and rerouted along its western property line to allow for a large unloading gravel pad. Due to the number of modifications made to the original ditches and low slope of the subwatershed, significant sediment build-up has likely occurred over that time limiting the capacity of the existing ditch network as evidenced by the existing reedy vegetation indicative of standing water.
- **Natural/Social Environmental System Constraints**
 - Provincially Significant Wetland and Environmental Protection areas within the study area: Activities near to those areas shall comply with the 30m setback from the Provincially Significant Wetland and/or Environmental Protection areas.
 - Species at Risk (SAR) Presence: The study area contains Potential habitats for Species at Risk (SAR); therefore, consultation with the Ministry of Conservation,

Environment and Parks (MECP) and mitigation measures are required to ensure no damage to SAR and their habitat will results from the proposed work.

- Type I Critical Fish Habitat: Any development activity near to this area shall comply with the 30m setback provisions from top of bank in order to protect fish habitat.
- Niagara Peninsula Conservation Authority (NPCA) Regulated Floodplain: Permit would be required prior to any construction within this area regulated by the NPCA.

4 IDENTIFICATION OF ALTERNATIVES

The following section addresses the identification of alternatives to address the problem statement. The identified alternatives are generally focused on the specifics of the study area. There may be numerous iterations that can be developed from different combinations of components (size, location, routing, etc.); however, for the purposes of this study, the identification of alternatives will be focused on dissimilar solutions and the preferred alternative will be optimized for implementation to mitigate identified impacts or risks.

4.1 Drinking Water System

A 200 mm diameter watermain, owned by the Town, passes through the study area to bring potable water to the privately owned Black Creek water system. According to discussion with the Town, there is capacity within the system to serve the proposed developments.

4.2 Stormwater Management System

WT has assessed the two main alternatives to identify the optimum stormwater management scheme for the ICI lands north of Townline Road. The alternatives are as follow:

- **Alternative A:** Do Nothing
- **Alternative B:** Providing a single communal SWM facility for the lands north of Townline Road.
- **Alternative C:** Individual lot-level control and storage.

4.2.1 Alternative A: Do Nothing

The “Do Nothing” or null alternative is always an alternative that is reviewed to ensure that the study is in fact necessary. The “Do Nothing” scenario means that the no changes or improvements to the existing system will be considered. The “Do Nothing” alternative is carried forward into the evaluation process as a base case. It is recognized that the Do Nothing alternative will not meet the future servicing needs of the study area and will result in surcharged sanitary systems, and severely limit growth. The Do Nothing alternative will maximize the use of existing infrastructure but will not meet the future servicing needs.

4.2.2 Alternative B: Providing a single communal SWM facility for the lands north of Townline Road.

This alternative considers the possibility to install a communal SWM facility which would act as a natural catch basin helping to mitigate flood risks by collecting excess rainwater and enhance local water quality through biofiltration, breaking down pollutants and providing cleaner, healthier environments.

The communal SWM pond would be a Town-owned and maintained facility, located near the existing outfalls to Black Creek in the easternmost corner of the commercial zone between the Townline grade separation and the QEW.

The communal SWM pond would require a significant portion of land acquisition and its size would be dependent on the total increase in imperviousness of the total development proposed which,

if imperviousness allowed by zoning were maximized, would result in a pond needing roughly 5000m² (0.5 ha) of area to construct.

Some design considerations are listed below:

- The pond will be volume-based sized, designed to treat first flush rain (~25 mm rainfall depth).
- The max depth of the SWM pond should not exceed 3.3m, including a max freeboard of 0.3m.
- The depth of permanent pool must be 1.0-1.5m
- The 25mm storm event extended detention should discharge over a 24-to-48-hour period.

It must be noted that culvert replacement and ditch rehabilitation/realignment would be required due to the low slopes generally present within the study area. The existing ditches appear to be in poor operational condition as a result of years of winter road maintenance and as evidenced by the abundance of aquatic vegetation. Culverts would likely need to be replaced and increased in size to accommodate a 100-year storm as the current culverts are likely undersized. However, to avoid triggering a higher Municipal Class EA, the flows to, and size of, existing outfalls should not be increased. Approval for a SWM pond would also likely require MTO approval due to its proximity to the QEW and may be at future risk if the highway were to be widened.

It is assumed that the existing roadside ditching systems and 'rural' road cross section will remain for Townline Road and, therefore, the impervious footprint within the right of way will remain virtually unchanged.

The estimated preliminary cost associated to the Town for this alternative is approximately \$3.36 M (+/-25%). Table 5-1 illustrates a breakdown of the estimated cost of this option.

Table 4-1 Estimated costs for Alternative B: Single communal SWM facility for the lands north of Townline Road.

	UNIT	QUANTITY	UNIT PRICE	TOTAL
Land Acquisition	L.S	1	\$1,155,000	\$1,155,000
Ditch Rehabilitation and Regrading	m	2600	\$40	\$104,000
Existing Culvert Replacements	m	60	\$580	\$34,800
Supplemental Stormwater Conveyance	m	300	\$870	\$261,000
New Storm Culvert	m	30	\$580	\$17,400
Stormwater Pond Construction (excavation, disposal, and grading)	cu.m.	8000	\$50	\$400,000
Misc. Inlet and Outlet Controls	LS	1	\$115,500	\$115,500
Reinstatement	sq.m.	5000	\$30	\$150,000
SUBTOTAL				\$2,237,700
BONDING / OVERHEAD (10%)				\$223,770
ENGINEERING AND APPROVALS (15%)				\$335,655
CONTINGENCY (25%)				\$559,425
TOTAL				\$3,360,000

Note: Cost Estimates have been escalated by 10% due to market condition changes since the estimates were presented in draft form. This does not change the recommended alternative. Total may not sum due to rounding.

4.2.3 Alternative C: Individual lot-level control and storage

Lot-level control would mean that SWM facilities would be privately owned and operated by each landowner and outlet to the roadside ditch. The developers of each property would be required to meet quantity and quality control requirements within the development areas before discharging to the Town. In particular, landowners would need to store up to, and including, the difference between pre-post development flows for up to the 100-year storm on each property.

As per Alternative B, culvert replacement and ditch rehabilitation/realignment would be required. Culverts would need to be replaced and increased in size to accommodate a 100-year storm as the current culverts are likely undersized.

The estimated preliminary cost to allow the Town to proceed with implementing lot-level, individual controls is approximately \$0.23 M (+/-25%), covering enabling works within the municipal right-of-way. Table 5-1 illustrates a breakdown of the estimated cost of this option.

Table 4-2 – Estimated costs for the stormwater infrastructure (Alternative B)

	UNIT	QUANTITY	UNIT PRICE	TOTAL
Ditch Rehabilitation and Regrading	m	2600	\$40	\$104,000
Existing Culvert Replacements	m	60	\$580	\$34,800
New Storm Culvert	m	30	\$580	\$17,400
SUBTOTAL				\$156,200
BONDING / OVERHEAD (10%)				\$15,620
ENGINEERING AND APPROVALS (15%)				\$23,430
CONTINGENCY (25%)				\$39,050
TOTAL				\$235,000

Note: Cost Estimates have been escalated by 10% due to market condition changes since the estimates were presented in draft form. This does not change the recommended alternative. Total may not sum due to rounding.

4.3 Sanitary Sewer System

Based on the existing and proposed zoning in the study area, several alternatives have been explored. Typically, there are two main ways to plan wastewater systems:

- **Centralized systems**, characterized by large-scale plants that serve expansive municipal or regional service areas. For the purpose of this study and the proximity to the Stevensville Lagoon treatment plant, this alternative considers the possibility to connect the study area to the existing sewer system in order to collect wastewater and discharge it to the Stevensville Lagoon.
- **Decentralized systems**, characterized by smaller treatment systems placed close to the point of treatment need, serving a more localized area, this alternative consider the following treatment solutions:
 - On-site Septic System: On-site septic systems are typically characterized by two basic components, a septic tank (for solids and scum) and a tile bed for effluent disposal. Due to the limited treatment capability of septic tanks, the effluent must be discharged below the ground into the drain field.
 - Advanced Wastewater Treatment Package Plant: This alternative would consider the possibility of installing a package wastewater treatment plant in the north area of Townline Road, where development will occur, in order to collect wastewater coming from new development areas. Due to the higher level of effluent water quality provide by advanced treatment units, discharge from these systems can be

both below grade, as septic systems, or above grade when discharged is permitted based on effluent water quality requirements.

Due to the proximity of the Stevensville Lagoon Treatment Plant, the installation of decentralized treatment within the study area was not considered as an advantageous solution to pursue under a cost-effective prospective. ***Therefore, this alternative has been excluded from the assessment.***

Among all the potential centralized and decentralized options, three potential servicing alternatives have been identified:

- **Alternative A:** Do Nothing
- **Alternative B:** Centralized System:
 - **Alternative B.1:** New sanitary sewer servicing future development in the study area and the BCLH development.
 - **Alternative B.2:** New sanitary sewer servicing future development in the study area only.

A description of each alternative is provided in the next section. In accordance with servicing objectives, all areas that border the proposed development areas would be included for servicing. This is concerned good planning practice to provide sanitary servicing where water servicing is available; however, it may not be a popular solution in areas such as this where some properties have existing private servicing and are not currently motivated to connect to municipal services.

4.3.1 Alternative A: Do Nothing

The “Do Nothing” or null alternative is always an alternative that is reviewed to ensure that the study is in fact necessary. The “Do Nothing” scenario means that the no changes or improvements to the existing system will be considered. The “Do Nothing” alternative is carried forward into the evaluation process as a base case. It is recognized that the Do Nothing alternative will not meet the future servicing needs of the study area and will result in surcharged sanitary systems, and severely limit growth. The Do Nothing alternative will maximize the use of existing infrastructure but will not meet the future servicing needs.

4.3.2 Alternative B.1: New Sanitary Sewer Servicing Future Development Lands and Adjacent Lands including Black Creek Leisure Homes

Figure 4-1 illustrates the potential layout of this alternative. This alternative would require the construction of a new gravity sewer along Townline Road sized to convey both wastewater coming from future development in the study area and wastewater currently produced by the BCLH development. The sewer would need to convey a total peak flow of 55 L/s under ultimate build-out.

This alternative consists of:

- Installing a new sanitary sewer owned by the Town of Fort Erie along Townline Road:
 - The total length of the new sanitary sewer would be approximately 0.95 km and it would be located within the Right-of Way. The anticipated size of the new sanitary sewer would be 250 mm diameter.
- Decommissioning the existing BCLH pumping station and installing a pumping station along Townline Road:
 - The new pumping station should be sized for a maximum capacity of 60 L/s, having two pumps (one duty, one standby), receiving flow from both Townline Rd and BCLH.
 - Wastewater produced by the BCLH will flow through a 250 mm gravity sewer (estimated length: 175 m) into the new pumping station. According to the MECP

guidelines, to allow the 250 mm sewer to flow by gravity, the new pumping station would need to be 10-15m deep and 3m wide diameter.

- The new pumping station would be installed on Town property as indicated in Figure 4-1. There would be the possibility of connecting the new pumping station to the existing 200 mm forcemain on Townline Road in order to convey wastewater to the Stevensville sewage lagoons. As the new pumping station would be sized for a maximum capacity of 60 L/s, this would meet the Niagara Region Design Standard for maximum velocity of 2 m/s in a full flow pipe and it will reduce potential capital costs associated with the construction of a new forcemain.

The main advantage of this alternative is the possibility of connecting the new sanitary sewer to the existing 200 mm diameter forcemain. This would avoid the construction of a new forcemain to deliver flow from the new pumping station to the Stevensville sewage lagoons, thus reducing potential capital costs. However, the existing forcemain is approximately 30-years old and therefore its condition will need to be assessed.

Furthermore, there would be the possibility to have a shared sanitary system with BCLH which would reduce the capital costs to the Town. However, as the BCLH sanitary system is privately owned, a shared system would require the Town to enter into an agreement with BLHC to decommission the existing BLHC sanitary pumping station (SPS) and transfer of ownership of the existing forcemain to the Town.

Table 4-1 and Table 4-2 present the estimated costs associated to the Town and to BCLH, respectively. The direct costs associated to BCLH include the decommissioning of the existing BCLH SPS and sanitary sewer, construction of new sanitary sewer on BCLH property and deeper wet well for the new pumping station.

Table 4-3 - Estimated Costs for Alternative B.1: Study Area Including Black Creek Leisure Homes

	UNIT	QUANTITY	UNIT PRICE	TOTAL
GENERAL CONTRACT ITEMS				
Mobilization and Demobilization	L.S.	1	\$23,100	\$23,100
Precondition Survey	L.S.	1	\$3,500	\$3,500
Erosion and Sediment Control	L.S.	1	\$3,500	\$3,500
Excess Soil Management and Disposal*	cu.m.	5,000	\$75	\$375,000
SANITARY SEWER				
Installation of 250mm sewer**	m.	950	\$ 700	\$665,000
Installation of 200mm forcemain**	m.	950	\$ 580	\$551,000
Maintenance Hole	ea.	9	\$ 11,600	\$104,400
Connection to Stevensville Lagoon	L.S.	1	\$100,000	\$100,000
PUMPING STATION				
Site Work	L.S.	1	\$115,500	\$115,500
New SPS – Building	L.S.	1	\$346,500	\$346,500
Service and Generator	L.S.	1	\$100,000	\$100,000
Wet Well	v.m.	10	\$60,000	\$600,000
Pumping System	L.S.	2	\$160,000	\$320,000
Instrumentation and Controls	L.S.	1	\$160,000	\$160,000
SUBTOTAL				3,467,500

BONDING / OVERHEAD (10%)	\$346,750
ENGINEERING AND APPROVALS (15%)	\$520,125
CONTINGENCY (25%)	\$866,875
TOTAL	5,201,250

Note: Cost Estimates have been escalated by 10% due to market condition changes since the estimates were presented in draft form. This does not change the recommended alternative. Total may not sum due to rounding.

* The reuse of existing native soil was considered where possible

** Including reinstatement area. Note that the cost estimate does not include full road reconstruction and is limited to subsurface installation and basic reinstatement.

Table 4-4 Direct Costs associated to BCLH for Alternative B.1

Direct Costs associated to BCLH				
	UNIT	QUANTITY	UNIT PRICE	TOTAL
GENERAL CONTRACT ITEMS				
Excess Soil Management and Disposal*	cu.m.	600	\$75	\$ 45,000
SANITARY SEWER				
Installation of 250mm sewer**	m.	175	\$700	\$122,500
PUMPING STATION				
Black Creek SPS and FM - Decommissioning	L.S.	1	\$115,500	\$115,500
Wet Well	v.m.	5	\$58,000	\$290,000
SUBTOTAL				\$573,000
BONDING / OVERHEAD (10%)				\$57,300
ENGINEERING AND APPROVALS (15%)				\$85,950
CONTINGENCY (25%)				\$143,250
TOTAL				\$860,000

Note: Cost Estimates have been escalated by 10% due to market condition changes since the estimates were presented in draft form. This does not change the recommended alternative. Total may not sum due to rounding.

* The reuse of existing native soil was considered where possible

** Including reinstatement area. Note that the cost estimate does not include full road reconstruction and is limited to subsurface installation and basic reinstatement.

The estimated preliminary cost associated to this alternative is approximately \$6.0 M (+/-25%).

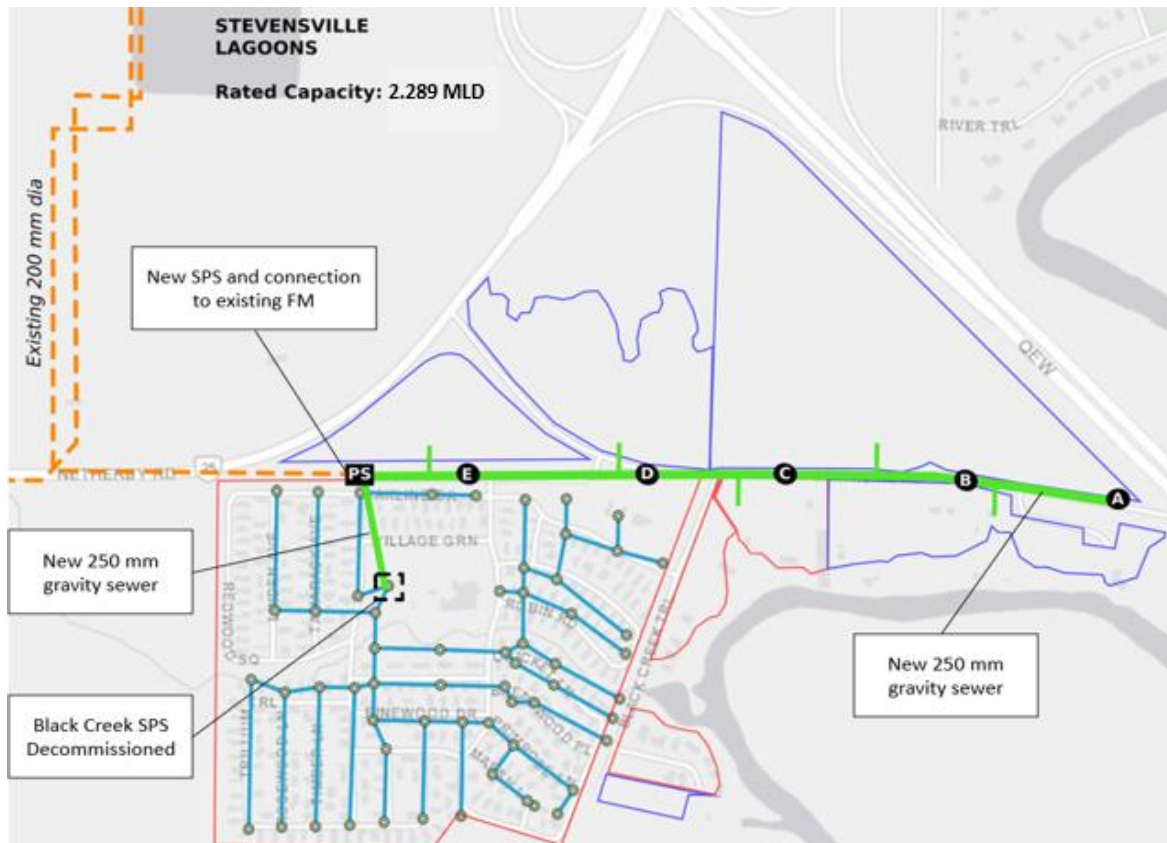


Figure 4-1 - Alternative B.1: New sanitary sewer layout

Key Alignment Features:

- 0.95 km of 250 mm diameter gravity sewer.
- 9 Maintenance holes
- Decommissioning the existing Black Creek SPS.
- New pumping station sized up to 60 L/s on the Town's property.

4.3.3 Alternative B.2: New Sanitary Sewer Servicing Future Development Lands excluding Black Creek Leisure Homes

This alternative requires the construction of a new gravity sewer along Townline Road sized to convey only wastewater coming from future development in the study area, with the BCLH development maintaining their private sanitary system. The new sewer would need to convey a total of 40 L/s under ultimate build-out. This alternative consists of:

- Installing a new sanitary sewer owned by the Town of Fort Erie along Townline Road. The total length of the new sanitary sewer would be approximately 0.65 km and it would be located within the Right-of Way. The anticipated size of the new sanitary sewer is 250 mm diameter.
- Installing a new pumping station along Townline Road as indicated in Figure 4-2. The new pumping station should be sized for a maximum capacity of 55 L/s and having a minimum of two pumps (one duty, one standby). According to the MECP guidelines, to allow the 250 mm diameter sewer to flow by gravity, the new pumping station would need to be 8-10m deep and 3m wide diameter.
- From the new pumping station, 1.35 km of a new 200 mm diameter forcemain will be constructed to deliver wastewater to the Stevensville sewage lagoons. This forcemain will run parallel to the existing 200 mm FM, as shown in the picture below. Based on preliminary studies, there appears to be adequate space to install the new forcemain within Town property.

Figure 4-3 illustrates the potential layout of this alternative. A cost breakdown for this alternative is provided below. **The estimated preliminary cost is in the range of \$5.3 M (+/-25%).**

Table 4-5 - Estimated costs for Alternative B.2: Study Area Excluding Black Creek Leisure Homes

	UNIT	QUANTITY	UNIT PRICE	TOTAL
GENERAL CONTRACT ITEMS				
Mobilization and Demobilization	L.S.	1	\$23,100	\$23,100
Precondition Survey	L.S.	1	\$3,500	\$3,500
Erosion and Sediment Control	L.S.	1	\$3,500	\$3,500
Excess Soil Management and Disposal*	cu.m.	4700	\$75	\$352,500
SANITARY SEWER				
Installation of 250mm gravity sewer**	m.	650	\$700	\$455,000
Installation of 200mm forcemain**	m.	1350	\$580	\$783,000
Maintenance Hole	ea.	5	\$11,600	\$58,000
Connection to Stevensville Lagoon	L.S.	1	\$100,000	\$100,000
PUMPING STATION				
Site Work (including chamber works at the Lagoon)	L.S.	1	\$231,000	\$231,000
New SPS – Building	L.S.	1	\$346,500	\$346,500
Service and Generator	L.S.	1	\$100,000	\$100,000
Wet Well	v.m.	10	\$60,000	\$600,000
Pumping System	L.S.	2	\$160,000	\$320,000
Instrumentation and Controls	L.S.	1	\$160,000	\$160,000
SUBTOTAL				\$3,536,100
BONDING / OVERHEAD (10%)				\$353,610
ENGINEERING AND APPROVALS (15%)				\$530,415
CONTINGENCY (25%)				\$884,025
TOTAL				\$5,304,150

Note: Cost Estimates have been escalated by 10% due to market condition changes since the estimates were presented in draft form. This does not change the recommended alternative. Total may not sum due to rounding.

* The reuse of existing native soil was considered where possible

** Including reinstatement area. Note that the cost estimate does not include full road reconstruction and is limited to subsurface installation and basic reinstatement.

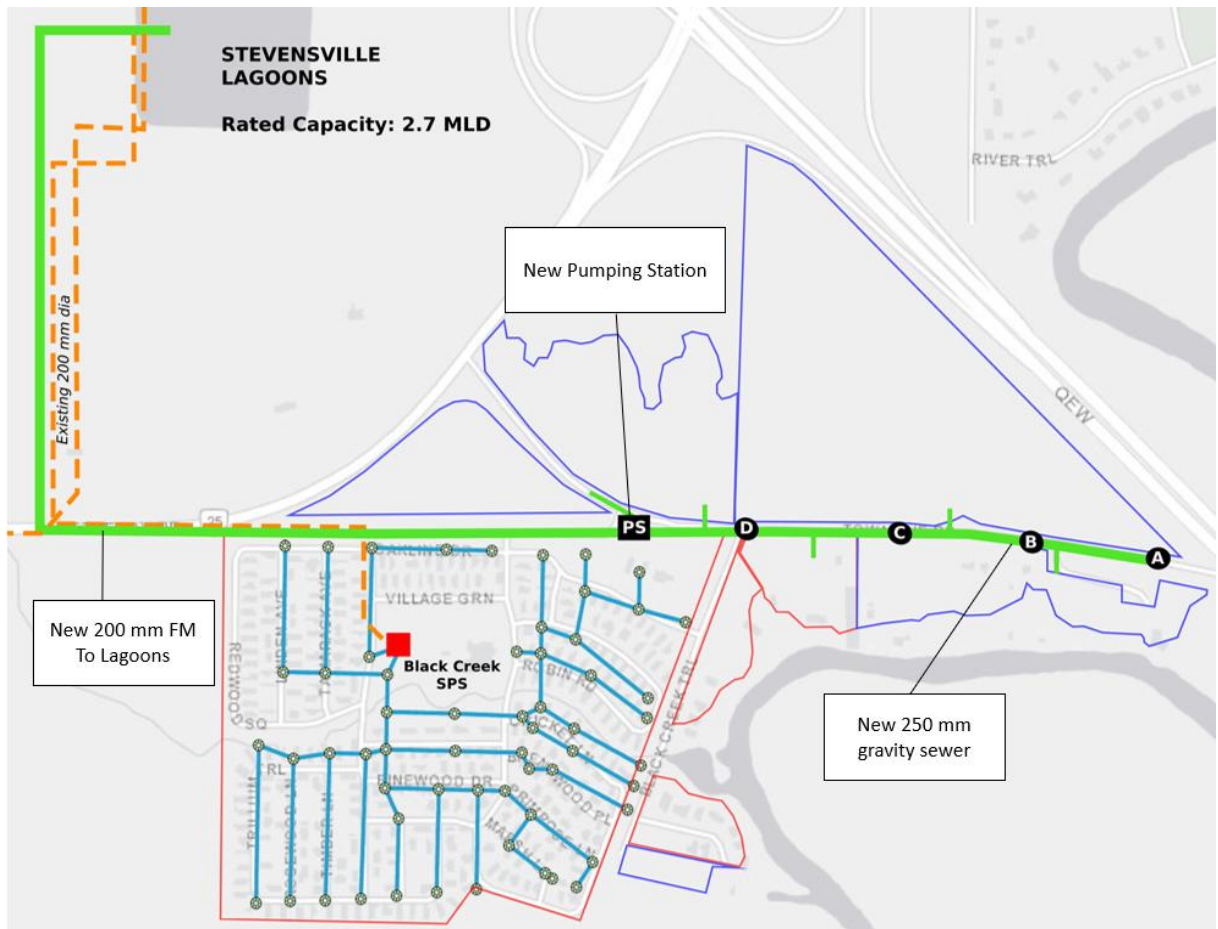


Figure 4-2 - Alternative B.2: New sanitary sewer layout

Compared to **Alternative B.2**, this alternative would result in lower capital costs, and it would allow the Town to have a new and independent sanitary sewer system which would not require an agreement with BCLH.

Key Alignment Features:

- 0.65 km of 250 mm diameter gravity sewer.
- 1.35 km of 200 mm diameter forcemain sewer.
- 5 Maintenance holes
- New pumping station sized for 60 L/s on the Town's property.

5 EVALUATION OF ALTERNATIVES

5.1 Alternative Evaluation Criteria

The evaluation of alternatives is intended to be an unbiased assessment of each alternative against the defined design criteria and the Class EA environmental components that will allow for the selection of the preferred alternative. The following is a brief explanation of each of the primary criteria:

1. **Technical** – This is a relative comparison of the technical effectiveness of each alternative in achieving the project goals. It is intended to address both feasibility and efficiency of the proposed alternatives. This criterion addresses the technical effectiveness in terms of the user experience, operational effectiveness, and general efficiency of approach.
2. **Natural Environment** – This is both a relative comparison and absolute assessment of impacts (positive and negative) of the proposed alternatives on the natural environment. Specifically, this is looking at the ecosystem impacts, sensitivity of the study area to change and other impacts including changes to geotechnical or hydrogeologic conditions. If the preferred alternative were to have significant absolute impacts that cannot be effectively mitigated that will impact the selection of the preferred alternative even if it is the least impactful of the actionable alternatives.
3. **Social and Cultural Heritage Environment**, which includes:
 - a. **Archaeological Resources** – This is both a relative comparison and absolute assessment of impacts (positive and negative) of the proposed alternatives to the archaeological sites and areas of archaeological potential.
 - b. **Built Heritage Resources and Cultural Heritage Landscapes** – This is an assessment of direct impacts to known or potential BHR/CHL (e.g., demolition, removal or alteration) or Indirect impacts (e.g., alteration/obstruction of views, vibration, and isolation).
4. **Economic Environment** – This is both a relative comparison and absolute assessment of impacts (positive and negative) of the proposed alternative associated with the economic environment. This addresses the capital/operating (lifecycle) cost of the infrastructure required for each alternative as well as other economic impacts such as loss of land development potential, lost opportunities associated with land acquired for municipal infrastructure and potential economic loss due to changes in business opportunities. Furthermore, the factor of affordability is a consideration in terms of the cost vs benefit to the community and if the return on investment is reasonable.

5.1.1 Alternative Evaluation Ranking and Weighting

The approach to determining the preferred alternative is intended to be transparent and defensible. Our approach is to score each alternative against the same parameters and then rank the alternatives relatively. The objective of this approach is to compare apples to apples. It is acknowledged that there is some level of subjectivity to this type of analysis and the explanation to support the scoring is intended to provide justification for the assessment of each parameter.

The scoring criteria that are used and examples of what will constitute each scoring situation are included in Table 5-1. Small differences between similar options are assessed by comparing them directly. For instance, if both choices are workable with only minor limitations, but one is less restricted than the other, it would receive a score of 8, while the option with slightly more constraints would be given a 7.

Table 5-1: Scoring Criteria Examples

	Score				
	0-2	3-4	5-6	7-8	9-10
Relative Impact	Critical	Significant	Potential	Minor	Negligible
Technical	Does not provide a feasible solution.	Feasible with significant restrictions	Feasible with some restrictions	Feasible with limited restrictions	Feasible with no restrictions
Natural	Definite impacts to species at risk, permanent or irreversible impacts	High potential for impacts to species at risk or natural environment, permanent/semi permanent impacts	Potential for impacts to the natural environment that may have an impact on habitat or natural features, semi-permanent or temporary	Potential for minor impacts to natural environment that can be mitigated to minimize risk.	Limited or no impacts on the natural environment
Archaeological Resources	Critical permanent negative impacts to archaeological sites and areas of archaeological potential	Significant permanent or long-term to archaeological sites and areas of archaeological potential	Potential impacts to areas of archaeological potential	Minor permanent or temporary impacts to archaeological sites and areas of archaeological potential	No impact to archaeological resources or areas of archaeological potential
Built Heritage Resources and Cultural Heritage Landscapes	Critical direct or indirect Impacts to known or potential Built Heritage Resources and Cultural Heritage Landscapes	Significant direct or indirect Impacts to known or potential Built Heritage Resources and Cultural Heritage Landscapes	Potential direct or indirect impacts to known or potential Built Heritage Resources and Cultural Heritage Landscapes	Minor direct or indirect Impacts to known or potential Built Heritage Resources and Cultural Heritage Landscapes	No impact to known or potential Built Heritage Resources and Cultural Heritage Landscapes
Economic	Unaffordable, catastrophic adverse economic impact on proponent and/or public, return on investment is beyond lifespan of infrastructure	High cost, potential for significant adverse economic impact, return on investment is a significant component of infrastructure lifespan	Relatively high cost, minor potential for adverse economic impact, return on investment is over 10 years.	Relatively low cost, potential for positive economic impact, return on investment is less than 5 years.	Lowest cost, defined positive economic impact, shortest return on investment.

5.2 Climate Change

Climate change and related extreme weather events continue to create changing weather conditions which will impact municipalities' infrastructure. The scientific community expects that the increase in temperature and severe weather events due to climate change will lead to increased intensity and frequency of future storm events.

During the development of servicing alternatives, two approaches for considering and addressing climate change were considered:

- Climate change mitigation: Reducing a project's impact on climate change.
- Climate change adaptation: Increasing the project and local ecosystem's resilience to climate change.

This study will follow the Municipal Class Environmental Assessment (MCEA) process which requires evaluation of alternative solutions to determine a preferred solution to ensure the best solution possible is selected. Climate change considerations (e.g., Low Impact Development Best Management Practices) were taken into account during the development of alternatives, where possible.

Do Nothing would have no impacts since there were no construction activities involved. The other proposed alternatives would have potential impacts, but these would be limited to the construction phase. Through the process of determining the best alternative solutions to be proposed, this study referred to existing public works and roads/transportation projects and timelines to determine implementation timelines which align with the planned wastewater and stormwater system upgrades, ultimately ensuring that system upgrade and proposed LID costs and timelines are aligned and bundled with existing proposed projects. Additionally, infrastructure will be constructed to meet the Town's and Region's design criteria which consider potential climate change issues. The construction will be scheduled to minimize the potential impacts on the environment (e.g., season, precipitation). The sewer will largely be located within the road right-of-way which minimizes the potential impacts from climate change.

Specific mitigation measures to reduce project impacts are listed in Section 6.4.

5.3 Sanitary Sewer System

5.3.1 Technical Assessment

The technical assessment of alternatives addresses the functionality of the proposed alternatives relative to the design criteria and industry standards. The main objective of the technical assessment is to determine if the alternative is feasible or, in other words, will it work? Then the focus on the efficiency of the design in terms of operational considerations (simple vs. complex), energy efficient (primarily gravity vs. primarily mechanical pumping) and does it provide any other technical advantages such as does it open up other opportunities or is it a temporary solution that meets current needs but does not provide a long-term ultimate solution.

Table 5-2 illustrates the comparison and scoring of the technical evaluation criteria in order to rank the alternatives relative to each other as part of the identification of the preferred alternative.

Table 5-2: Technical Assessment Evaluation of Alternatives

Alternative	Technical Assessment	Score
A: Do Nothing	▪ Feasible ▪ Does not allow for growth as no sanitary service is in the area for new developments. ▪ Limited available capacity at Stevensville Lagoons	4
B.1 – New Sanitary Sewer Servicing Future Development and Black Creek Leisure Homes	▪ Feasible ▪ Services entire study area ▪ New pumping station on the Town's property ▪ BCLH approval required to decommission the existing BCLH SPS ▪ Deeper pumping station to accommodate higher flow ▪ Efficient infrastructure development to maximize number of connections to a single Sanitary Pumping Station (SPS)	10

	▪ Possibility to reuse the existing FM to divert flow to Stevensville Lagoon ▪ Working with existing and active infrastructure increases risk and potential for unknown conditions during construction. ▪ Limited available capacity at Stevensville Lagoons	
B.2 – New Sanitary Sewer Servicing Future Development	▪ Feasible ▪ Services development area north of Townline Road and commercial and residential properties south of Townline Road east of BCLH (excludes BCLH). ▪ Economies of scale with connecting maximum number of properties is not achieved. ▪ New pumping station on the Town's property ▪ Smaller SPS required ▪ Independent sanitary sewer system which results in lower risk to Town due to maintenance of BCLH system as independent. ▪ BCLH is still responsible for operation and future renewal an aging asset (SPS and Forcemain) ▪ BCLH approval is not required ▪ Increases long-term risk to BCLH for system operation ▪ Two forcemains are required to convey wastewater from study area to Stevensville ▪ Lagoons which limits space in the right-of-way ▪ Limited available capacity at Stevensville Lagoons	8

From a technical perspective, the highest ranked alternative is Alternative B.1.

5.3.2 Natural Environment Assessment

The natural environmental assessment is intended to evaluate both temporary and permanent impacts on the natural environment, this may include species at risk, loss of habitat, impacts on natural features (waterways, etc.), impairment of soil, air, and water as a result of activities and changes to the natural environment as a whole.

This study may enable other independent works that may have natural environment impacts; however, they are not directly related to this study and there are other options available to either mitigate impacts associated with those works. Other works not related to this study are to be dealt with via separate environmental planning processes.

Table 5-3 illustrates the comparison and scoring of the natural environment evaluation criteria in order to rank the alternatives relative to each other as part of the identification of the preferred alternative.

Table 5-3: Natural Environment Assessment Evaluation of Alternatives

Alternative	Natural Environment Assessment	Score
A: Do Nothing	No impacts since no work is proposed.	10
B.1 – New Sanitary Sewer Servicing Future Development and Black Creek Leisure Homes	- Erosion and sediment risks during construction of linear components. Approximately 1.0 km length of area impacted. Risk of off-site erosion and sediment impacts during construction to be reduced, but not eliminated with required erosion and sediment control measures. - Potential habitat for 22 Species at Risk was identified. However, Majority of area is previously disturbed or actively occupied (road allowances). If necessary, mitigation measures will be applied and required studies will be carried out to determine/confirm if species at risk or their habitat are present. - Timing of works can be coordinated to minimize risk to breeding birds and other species.	7
B.2 – New Sanitary Sewer Servicing Future Development	- Erosion and sediment risks during construction of linear components. Approximately 1.2 km length of area impacted. Risk of off-site erosion and sediment impacts during construction to be reduced, but not eliminated with required erosion and sediment control measures. - Expanded potential sanitary service area will reduce the dependency on septic systems which can result in an improvement to natural environmental health due to lower nutrient loading on surficial groundwater. - Potential habitat for 22 Species at Risk was identified. However, Majority of area is previously disturbed or actively occupied (road allowances). If necessary, mitigation measures will be applied and required studies will be carried out to determine/confirm if species at risk or their habitat are present.	8

From a natural environmental impact perspective, the highest ranked alternative is Alternative A as there are no natural environment impacts associated with doing nothing.

5.3.3 Social/Cultural Heritage Environment Assessment

The Social and Cultural Heritage environment assessment is focused on the following key issues:

- Social – Impacts (positive or negative) on land use, enjoyment, nuisance, recreational impacts, safety, unreasonable change in conditions, etc.
- Cultural Heritage- Impacts (direct or indirect; positive or negative) on cultural heritage resources which include archaeological resources, built heritage resources and cultural heritage landscapes.

As indicated in the Stage 1 - Archaeological Assessment, there are no identified significant features associated with the proposed works and the majority of the alternatives are within currently disturbed right-of-way and existing municipal lands.

Tale 5-4 illustrates the comparison and scoring of the social/cultural heritage environment evaluation criteria in order to rank the alternatives relative to each other as part of the identification of the preferred alternative.

Table 5-4: Social/Cultural Heritage Assessment of Alternatives

Alternative	Social/Cultural Heritage Assessment	Score
A: Do Nothing	- No impacts to known archaeological sites or areas of archaeological potential - No impacts to known or potential Built Heritage Resources and Cultural Heritage Landscapes - Limiting growth potential within the area will adversely impact tax base and employment opportunities within the study area.	5

B.1 – New Sanitary Sewer Servicing Future Development and Black Creek Leisure Homes	- Enabling growth of the entire study area will have positive impacts in terms of increased tax base to share in community costs, population growth and commercial development. It will also have negative impacts in terms of traffic impacts, changes to landscape associated with development. - Do not exhibit obvious extensively disturbed conditions - No cultural heritage resources were identified within or adjacent to the study area. Therefore, there are no concerns with respect to built heritage Social/Cultural Heritage resources. - This Alternative would require the construction of a deeper wet-well to accommodate higher flow. This would increase construction risk. - Construction of a new SPS on a newly acquired property will reduce available land for development and will have localized temporary construction impacts and minor long-term impacts on adjacent landowners. - Working with existing and active infrastructure increases risk and potential for unknown conditions during construction.	9
B.2 – New Sanitary Sewer Servicing Future Development	- Enabling growth will have positive impacts in terms of increased tax base to share in community costs, population growth and commercial development. It will also have negative impacts in terms of traffic impacts, changes to landscape associated with development. Compare to Alternative B, this alternative will only promote development of the area north of Townline Road and commercial and residential properties south of Townline Road east of BCLH (excludes BCLH). - Do not exhibit obvious extensively disturbed conditions - No cultural heritage resources were identified within or adjacent to the study area. Therefore, there are no concerns with respect to built heritage Social/Cultural Heritage resources. - Construction of a new SPS on a newly acquired property will reduce available land for development and will have localized temporary construction impacts and minor long-term impacts on adjacent landowners.	7

From a social/cultural heritage impact perspective, the highest ranked alternative is Alternative B.1 as it has the least inherent social/cultural heritage negative impacts.

5.3.4 Economic Environment Assessment

The economic environmental assessment is more than simply the cost of the project. It is an assessment of the cost of the project as well as the economic impacts of proceeding (or not) with the proposed solution that meets the project objectives.

Capital cost is a significant factor in the evaluation of alternatives as is the limitation and enabling of community growth. The assessment of benefit for allowing development is based on the defined Official Plan and Zoning Allowances for existing lands and does not extend into areas that may be rezoned for development in the future.

Table 5-5 illustrates the comparison and scoring of the economic environment evaluation criteria in order to rank the alternatives relative to each other as part of the identification of the preferred alternative.

Table 5-5: Economic Environment Evaluation of Alternatives

Alternative	Economic Assessment	Score
A: Do Nothing	- Capital Cost: \$0 - Operating Cost Impact: No change from current operational cost. - Limitation on growth will have an adverse economic impact on landowners that may be considering development, reduced development will reduce Town tax revenue.	6
B.1 – New Sanitary Sewer Servicing Future Development and Black Creek Leisure Homes	- Capital Cost: \$6.0 million - Infrastructure Cost Sharing: This alternative would allow to share sanitary sewer and SPS costs with BCLH.	7

	- Deeper SPS will increase excavation costs. - Additional cost to connect BCLH and decommission existing system. - Operating Cost Impact: No significant change - Removing limitation on growth will allow for significant economic benefit in terms of tax base and economic development.	
B.2 – New Sanitary Sewer Servicing Future Development	- Capital Cost: \$5.3 million - Infrastructure Cost Sharing: Cost Sharing would not be possible - Operating Cost Impact: Low operating costs associated to the Town due to maintenance of BCLH system as independent. - Removing limitation on growth will allow for significant economic benefit in terms of tax base and economic development. - Two forcemains are required to convey wastewater from study area to Stevensville Lagoons which increases cost of underground construction in the area.	8

From an economic environment perspective, the highest ranked alternative is Alternative B.2 as it has the lowest cost of solutions that are able to fully solve the defined problem by meeting community growth objectives.

5.3.5 Alternative Evaluation Summary

Based on the evaluation from the previous sections, the alternative assessment can be summarized in Table 5-6.

Table 5-6: Alternative Evaluation Scoring and Selection Summary

	Alternative A – Do Nothing	B.1 – New Sanitary Sewer Servicing Future Development and Black Creek Leisure Homes	B.2 – New Sanitary Sewer Servicing Future Development
Technical	SCORE: 4 RANK: 3 rd	SCORE: 10 RANK: 1 st	SCORE: 8 RANK: 2 nd
Natural	SCORE: 10 RANK: 1 st	SCORE: 7 RANK: 3 rd	SCORE: 8 RANK: 2 nd
Social/Cultural Heritage	SCORE: 5 RANK: 3 rd	SCORE: 9 RANK: 1 st	SCORE: 7 RANK: 2 nd
Economic	SCORE: 6 RANK: 3 rd	SCORE: 7 RANK: 1 st	SCORE: 8 RANK: 2 nd
Final Score & Ranking	SCORE: 25 (62.5%) RANK: 3 rd	SCORE: 33 (82.5%) RANK: 1 st	SCORE: 31 (77.5%) RANK: 2 nd

Therefore, the preferred alternative is **Alternative B.1: New Sanitary Sewer Servicing Future Development and Black Creek Leisure Homes**.

5.4 Stormwater Sewer System

5.4.1 Technical Assessment

Table 5-7 illustrates the comparison and scoring of the technical evaluation according to the criteria listed in Section 5-1 in order to rank the alternatives relative to each other as part of the identification of the preferred alternative.

Table 5-7 Technical Assessment Evaluation of Alternatives - Stormwater System

Alternative	Technical Assessment	Score
A – Do Nothing	Does not address the Town requirements.	4

B – Providing a single communal SWM facility for the lands north of Townline Road	- High level of treatment achieved. - Higher amount of flow to be treated/stored. Thus, it requires lands and property acquisition reducing land available for development. - Address Town's requirements. - Dependent upon upstream and downstream drainage.	8
C – Individual Lot-Level Control and Storage	- Suitable for new development and vacant properties. - Not dependent upon upstream and downstream drainage facilities. - Address Town's requirements. - Not necessarily dependent upon upstream and downstream drainage - Does not requires land acquisition.	10

From a technical perspective, the highest ranked alternative for the Stormwater System is Alternative B - Individual Lot-Level Control and Storage.

5.4.2 Natural Environment Assessment

Table 5-8 illustrates the comparison and scoring of the natural environment evaluation criteria in order to rank the alternatives relative to each other as part of the identification of the preferred alternative.

Table 5-8 Natural Environmental Assessment - Stormwater System

Alternative	Natural Environment Assessment	Score
A – Do Nothing	No Impacts.	10
B – Providing a single communal SWM facility for the lands north of Townline Road	- Limited clearing of treed areas. - Drainage route to the communal SWM facility may be required resulting in potential impacts during construction.	8
C – Individual Lot-Level Control and Storage	- Tree removal may be required depending on development areas. - Potential impacts during construction.	8

From a natural environmental impact perspective, the highest ranked alternative is Alternative A, as there are no natural environment impacts associated with doing nothing.

5.4.3 Social/Cultural Heritage Environment Assessment

Table 5-9 illustrates the comparison and scoring of the social/cultural heritage environment evaluation criteria in order to rank the alternatives relative to each other as part of the identification of the preferred alternative.

Table 5-9 Social Environment Assessment - Stormwater System

Alternative	Social/Cultural Heritage Environment	Score
A – Do Nothing	- No impacts - Does not address Township requirements.	5
B – Providing a single communal SWM facility for the lands north of Townline Road	- Construction impacts in localized areas (mainly near currently undeveloped areas). - Drainage route to the communal SWM facility may be required, thus increasing the extent of construction impacts compared to Alternative C. - No major impacts were identified to the cultural heritage resources within or adjacent to the study area. However, mitigation measures will be taken to reduce/avoid any	7

	impacts. Therefore, there are no concerns with respect to built heritage Social/Cultural Heritage resources.	
C – Individual Lot-Level Control and Storage	- Construction impacts in localized areas (mainly near currently undeveloped areas). - No major impacts were identified to the cultural heritage resources. However, mitigation measures will be taken to reduce/avoid any impacts. Therefore, there are no concerns with respect to built heritage Social/Cultural Heritage resources.	8

From a social impact perspective, the highest ranked alternative is Alternative B – Outfall End-of-pipe treatment, as it has the least inherent social negative impacts due to the possibility of constructing SWM facilities system which will reduce the number of required facilities while allowing for planned community growth.

5.4.4 Economic Environment Assessment

Table 5-10 illustrates the comparison and scoring of the economic environment evaluation criteria in order to rank the alternatives relative to each other as part of the identification of the preferred alternative.

Table 5-10 Economic Environment Assessment - Stormwater System

Alternative	Economic Environment Assessment	Score
A – Do Nothing	- Capital Cost: \$0. - Operating Cost Impact: No change from current operational cost.	10
B – Providing a single communal SWM facility for the lands north of Townline Road	- Capital Cost covered by the Town: \$3.3 (including culvert replacement and ditch rehabilitation/realignment): 0.2M covered by the Town. - Operating Cost Impact: Highest relative operating cost due to the construction of SWM facilities to be maintained by the Town. - SMW facilities require land, thus reducing lands available for development.	9
C – Individual Lot-Level Control and Storage	- Capital Cost for lot-level control and storage: \$0.00 (privately owned by landowners). - Operating Cost Impact for lot-level control and storage: \$0.00 (privately operated by landowners). - Capital Cost for culvert replacement and ditch rehabilitation/realignment: 0.23M covered by the Town.	10

From an economic environment perspective, the highest ranked alternatives are Alternative A and Alternative C due to having the lowest cost of the various solutions. However, it must be noted that Alternative A will not address the Town's requirements for quantity and quality control.

5.4.5 Alternative Evaluation Summary

Based on the evaluation from the previous sections, the alternative assessment can be summarized in Table 5-11.

Table 5-11: Alternative Evaluation Ranking Summary - Long Sault Stormwater System

	Alternative A – Do Nothing	Alternative B – Providing a single communal SWM facility for the lands north of Townline Road	Alternative C – Individual lot-level control and storage
Technical	SCORE: 4 RANK: 3 rd	SCORE: 8 RANK: 2 nd	SCORE: 10 RANK: 1 st
Natural	SCORE: 10 RANK: 1 st	SCORE: 8 RANK: 2 nd	SCORE: 8 RANK: 2 nd
Social	SCORE: 5 RANK: 3 rd	SCORE: 7 RANK: 2 nd	SCORE: 8 RANK: 1 st
Economic	SCORE: 10 RANK: 1 st	SCORE: 9 RANK: 2 nd	SCORE: 10 RANK: 1 st
Final Score & Ranking	SCORE: 29 (72.5%) RANK: 3 rd	SCORE: 32 (80%) RANK: 2 nd	SCORE: 36 (90%) RANK: 1 st

Therefore, the preferred alternative is **Alternative C – Individual lot-level control and storage**.

6 Preferred Alternatives Description

6.1 Sanitary Sewer System

The evaluation process for the alternative solutions includes the assessment of the alternative solutions in comparison to criteria established by the Project Team. The evaluation process will include an overall review of the alternative solutions, including technical performance of each alternative solution as well as positive and negative impacts on the natural environment, social environment, economic environment, and technical parameters identified by the Project Team.

As detailed in the previous section, the preferred alternative is Alternative B.1: New Sanitary Sewer Servicing Future Development and Black Creek Leisure Homes. As the study area is mainly designated as commercial area, with some areas south of Townline Rd identified as medium and low-density development, this study is intended to avoid limiting potential extension or growth within the service area by providing adequately sized infrastructure to match current and future needs. The type, scale and location of potential upstream developments outside the forecasted period are beyond the control and scope of this study.

The design of the gravity infrastructure must avoid causing a bottleneck in the system, while the sanitary pumping station components, many of which have shorter lifecycles must be designed for the reasonable lifecycle of each component with the ability to expand to the ultimate capacity in an efficient manner.

A review of the Municipal Class EA Schedules confirms that the study components are a best fit within requirements of a Schedule B Class EA. The consultation and review process that has been undertaken complies with or exceeds the requirements of Schedule B Class EA and, therefore, the preferred alternatives can be advanced directly to implementation.

The following sections provide a more detailed description of the proposed alternative for the development of the preliminary and detailed design.

6.1.1 Gravity Sewer

The proposed gravity sewer along Townline Road to the entrance of the new SPS will be located within the Town Right-of-Way. The key information regarding the gravity sewer are as follows:

- Length – Approximately 0.95 km
- Depth – Varies, with lowest point to be approximately 10m deep due to the depth of the SPS wet well.

- Size – 250 mm at 1.50% slope (to be confirmed in preliminary design)
- Capacity - 60 L/s - 80% pipe capacity
- Standards – Design to comply with MECP Guidelines and Town of Fort Erie Subdivision Control Guidelines.

Appendix C illustrates the preliminary plan of the proposed sanitary sewer system layout.

6.1.2 Sanitary Pumping Station and Forcemain

The sanitary pumping station will be located on the Town property. The proposed pumping station configuration will be optimized as part of the preliminary design development; however, in general, the following components will be included:

- Forcemain
 - Length – Approximately 0.95 km
 - Size – 250 mm
 - Capacity - 60 L/s
 - Standards – Design to comply with MECP Guidelines, Town of Fort Erie Subdivision Control Guidelines, and the Niagara Region Design Standards.
- Pumping Station
 - The new pumping station should be sized for a maximum capacity of 60 L/s, having two pumps (one duty, one standby), receiving flow from both Townline Rd and BCLH.
 - The Wet-well will be design for ultimate build-out, being 10-15m deep and 3m wide diameter.
 - Pumping systems will be sized for ultimate build-out with modular design capacity to allow for the addition of new pumps to raise the firm capacity of the system if needed.
 - The wet-well and pumping will be designed to minimize the risk of dead zones and the associated sediment/rags build-up in the wet-well causing additional operation and maintenance costs.
 - Electrical, instrumentation and controls and mechanical equipment will be located in a building adjacent to the wet-well configured to minimize the amount of National Fire Protection Association (NFPA) rated spaces to reduce risk and cost.
 - Back-up power for the pumping station will be provided to ensure that facility operation can be maintained through both short- and long-term outages.

6.1.3 Proposed Implementation

The proposed implementation for the proposed works would be relatively straightforward once design and approvals are secured:

1. **New Pumping Station and Forcemain to Stevensville Lagoon** – The existing BCLH SPS would maintain current operations without any changes until the new system was constructed and commissioned.
2. **Gravity Sewer** – The proposed gravity sewer would be constructed concurrently with the pumping station such that the pumping station would be able to transition to wastewater operations following clean water testing and commissioning.
3. **Connection of BCLH to the New SPS:** The connection of BCLH to the new SPS will be the responsibility of Black Creek Leisure Homes. However, a reasonable approach would be to construct the upstream connection to the new SPS such that it could be diverted to the BCLH SPS during testing to provide the flexibility to the contractor to address any deficiencies without having a live sewer connection feeding the system.

4. **Decommissioning BCLH SPS and FM:** The decommissioning of the existing BCLH SPS and FM will be responsibility of Black Creek Leisure Homes.

6.2 Stormwater Management System

The preferred Stormwater Management alternative is **Alternative C – Individual lot-level control and storage**. The development of lot-level control measures will be responsibility of landowners; therefore, their design implementation is out of the scope of this study.

However, to accommodate lot-level control strategies, culvert replacement and ditch rehabilitation/realignment would need to be replaced and increased in size to accommodate a 100-year storm. It is anticipated that the flows to, and the size of, existing outfalls will not be increased; therefore, a Municipal Class EA will not be required, and the preferred alternative can be advanced directly to implementation.

6.3 Cost Recovery Mechanism

The installation of new wastewater infrastructure for the purpose of extending the service area is typically implemented by the following means:

- Option 1) Private Developers install full municipal services (water, storm, sanitary, roads) as part of their development, for which those costs are incorporated into the cost of each lot serviced and passed on to the eventual landowner.
- Option 2) The Town of Fort Erie would install new wastewater infrastructure and recover the costs through:
 - Development Charges, collected for the means to fund infrastructure projects related to new development lands. The basis for the Development Charges Act is to allow municipalities to recover the growth-related capital cost of infrastructure necessary to accommodate new growth within the Town's boundaries.
 - Under the Municipal Act (Local Improvement Charges or Part XII Charges), for which these costs are assessed to the existing benefiting property owners through a cost recovery by-law.

An important consideration in the cost recovery are the limits of the cost recovery area. If it is the Town's intent to provide additional capacity for future growth beyond the study area, then the cost of that percentage of the system should be paid by the Town and then recovered in the future from future connections. For the purpose of this study, it has been assumed that no expansion of the system is proposed and that all costs will be recovered from existing and proposed developments within the study area.

The total project cost for both sanitary and stormwater servicing is \$6.2 M.

There are three different types of stakeholders for this study as follows, with their peak flows as follows:

1. Black Creek Leisure Homes (BCLH) – 810 m³/day (peak) – 20.6% of total
2. Development Land – 2,933 m³/day (peak) – 74.6% of total
3. Existing Landowners Serviceable by the Project – 189 m³ (peak) – 4.8% of total.

The most equitable approach would be to recover the cost from BCLH in a commensurate manner to their anticipated wastewater capacity allocation (88%) with the remaining cost being recovered on a frontage basis from the remaining non-development lands.

Therefore, the following would be the cost recovery distribution for the sanitary and storm component:

- Black Creek Leisure Homes – 88% of \$1,358,562 plus \$860,000 of the direct costs associated to BCLH = \$2,055,035 (\$3,205 per equivalent unit)

- Remaining Properties – \$163,535
 - Total Frontage – 403 linear metres (LM)
 - Frontage Cost per metre - \$195,633/403 LM = \$404.53

This equates to approximately \$14,825 per existing household, average.

In general, the repayment options are often a function of the municipality's standard practice.

The following are the most commonly used methods:

1. Upfront Payment – Payment is due within 1 year of the substantial completion of the work.
2. Annual Repayment
3. Biannual or Quarterly Repayment
4. Billing Capital Charge

The repayment options for the financing of the project are somewhat a function of the Town's preference and precedent for other projects. For this project, the preferred repayment method selected by the Township has been the annual repayment method was the preferred solution in order to minimizing the magnitude of the payment requirements. Therefore, the total cost per household will be paid on an annual basis over 20 years.

6.4 Environmental Impact Mitigation Measures

As part of the Class EA process, the potential for impacts to the natural and social environment were identified for the preferred alternative. With those impacts, the preferred alternative can still proceed; however, the Class EA process intent is that any impacts that can be reasonably mitigated should be addressed in the detailed design.

Table 6-1 illustrates the anticipated impacts and associated proposed mitigation measures to be undertaken to reduce impacts to reasonable levels.

Table 6-1: Proposed Impact Mitigation Measures

Identified Impact	Description	Proposed Mitigation	Trigger Point
Traffic associated with construction	Site traffic	▪ Provide traffic routing recommendations to drivers. ▪ Modify speed limits as required.	Design and Construction
Disruption of pedestrian movements between adjacent uses	Disruption of pedestrian routes	▪ Maintain continuity of pedestrian walkway system as much as possible. ▪ Provide walkway strips to adjacent residential areas.	Design and Construction
Construction Disruption to adjacent properties	Temporary disruption during construction and/or inconvenience to users of adjacent properties and building	▪ Notify public agencies and adjacent owners of construction scheduling. ▪ Prepare emergency program to ensure quick resolution of servicing problems ▪ Consult with public agency and/or adjacent landowners regarding temporary access routes ▪ Schedule construction so as to minimize period of disruption in proximity of adjacent uses and structures ▪ Ensure access for emergency response vehicles / personnel ▪ Apply noise and vibration control measures (use quieter equipment, maintain equipment properly)	Design and Construction

Potential Habitat for Species at Risk	Noise associated with project construction and implementation.	- Use of excess soil to build a noise berm combined with enhancing the existing vegetative buffer to reduce off-site impacts. - Apply noise and vibration control measures (use quieter equipment, maintain equipment properly)	Preliminary Design
Removal of Vegetation (potential)	Removal of vegetation during storm/wastewater infrastructure conditions	- Reduce where possible the removal of existing vegetation. - If not possible, removed vegetation will be replaced with more dense species including coniferous species to reduce off-site noise and odours year-round.	Design and Construction
Breeding periods/stress on biological communities	Timing effects of construction on spawning, nesting, and breeding periods	Timing of works will be coordinated to minimize risk to breeding birds and other species.	Design and Construction
Climate Change	Potential climate change impacts	- Use of pervious pavement or reduce impervious pavement and other low impact development methodologies to manage or reduce storm water runoff and on-site flow control. - Stormwater runoff to roadside ditches - Increased capacity of sewer to accommodate additional flows - Back-up features and infrastructure for upset conditions and emergency response procedures (e.g. standby power for new SPS)	Preliminary Design

7 Public and Agency Consultation

Public consultation is an integral component of the environmental assessment process, allowing the public and various governmental agencies an opportunity to provide input into the selection of a preferred solution for the Townline Road Servicing Class Environmental Assessment.

7.1 Notice of Commencement

Upon the onset of the project a list of entities was developed and is provided in **Appendix D**. On July 21st, 2023, a Notice of Project Commencement was issued to the agency contacts and advertised on the Town's website. The Notice of Commencement have been included in **Appendix E**.

Feedback from the issuance of the Notice of Project Commencement were collected and amended to this report.

7.2 Public Information Centre No. 1

The Public Information Centre was held in person on November 2nd, 2023, from the times of 4:00pm to 7:00pm. A formal presentation was provided.

Boards presenting the project information were presented and representatives from the project team and Town staff were available to answer questions during the PIC. A total of ten (10) individuals attended the meeting. The PIC including the Q&A was recorded and is available on the Town's project website.

The attendance list, presentation materials, and comments sheets are included in **Appendix F**.

7.3 Public Information Centre No. 2

The Public Information Centre was held as a virtual meeting on April 22, 2025, from the times of 5:00pm to 8:00pm. A formal presentation was provided.

Boards presenting the project information were presented and representatives from the project team and Town staff were available to answer questions during the PIC. A total of (9) individuals attended the meeting. The PIC including the Q&A was recorded and is available on the Town's project website.

The attendance list, presentation materials, and received comments are included in **Appendix G**.

7.4 Public Stakeholder Comments

Table 7-1 below provides a summary of public consultation questions, comments and answers received to date. Refer to **Appendix H** for written correspondence received from the public.

Table 7-1 Public Stakeholder Comments and Action Taken

Stakeholder	Comment	Action
Public Commenter No. 1	A resident of the Black Creek Leisure Home expressed his interest in this study. However, as senior relying on fixed income, he expressed his concerns about the economical impacts of this project on Taxpayers	WT provided clarifications regarding the financial impacts of these projects and clarified that the cost recovery methodology alternatives presented in the PIC No. 1 were potential alternatives and there has not been a decision regarding the preferred approach to cost recovery at this time. The WT Project Manager indicated that a second PIC will be held where more information regarding the potential cost recovery options will be provided. This has been integrated in this report in Section 6.3.
Public Commenter No. 2	Three residents of the Black Creek Leisure Home expressed their interest in connecting to the new system and decommissioning the old system privately owned by Black Creek Leisure Home. The residents specified that the existing system is an old system constantly failing (e.g., pumphouse failure) resulting in recurring maintenance costs to be faced	WT reviewed these concerns and evaluated options for service connection. It was determined that the new system could accommodate connections from the Leisure Home, and provisions for decommissioning the old system were included in the recommended solution. The assessment and decisions are documented in the project file under Section 5.3.
Public Commenter No. 3	A resident expressed his preference in decommissioning the existing Black Creek Pumping Station due to the age of the facility not able to sustain future development and also expressed his preference in installing a gravity feed line from Black Creek Leisure Home to a new pumping station located outside of the Black Creek Leisure Home property.	WT reviewed these preferences and evaluated their feasibility as part of the alternative solutions assessment. The team determined that decommissioning the existing pumping station aligns with long-term servicing plans. The final recommended solution, documented in the project file, incorporates the decommissioning while implementing a pumping station location that optimizes system performance and minimizes impacts to the property. The assessment and decisions are documented in the project file under Section 5.3.
Public Commenter No. 4	A resident who was not able to attend the PIC contacted the WT by email asking for clarifications about what could be developed on the property	WT indicated that the scope of this study is to address the servicing of the properties within current zoning. Rather than existing development applications in place, we are not aware of future potential applications not indicated in our PIC boards as this is out of the scope of this project. The resident was directed to the Town Planning Department for inquiries regarding future development applications within the area

Public Commenter No. 5	A resident contacted WT Infrastructure by email asking for clarifications regarding the recovery methodology alternatives presented during the PIC and the financial impacts of this project on the existing residents	WT provided clarifications regarding the financial impacts of these projects and clarified that the cost recovery methodology alternatives presented in the PIC No. 1 were potential alternatives and there has not been a decision regarding the preferred approach to cost recovery at this time. The WT Project Manager indicated that a second PIC will be held where more information regarding the potential cost recovery options will be provided. This has been integrated in this report in Section 6.3.
Public Commenter No. 6	Concerns were expressed regarding the future wastewater demand after development and the sewage lagoon capacity.	WT clarified that the Niagara Region will be evaluating options for the Stevensville Douglastown Lagoons which may include expanding them or redirecting the wastewater to one of their other plants in the area. The assessment will occur before ultimate build-out flows are generated and that the existing and proposed development serviced cannot result in the rated capacity of the lagoons being exceeded until the lagoon rated capacity were increased or flow diverted to another facility.
Public Commenter No. 7	Concerns were raised regarding the necessity of this project and the associated financial impacts. Residents highlighted that the proposed contributions to the sewer system, even with payment plans, could impose an unmanageable financial burden, threatening their financial stability and quality of life in retirement. Many noted that the obligation to fund a project that was neither requested nor desired places them in a difficult position, with some contemplating the possibility of selling their homes due to the significant financial strain	WT provided clarifications regarding the financial impacts of this project. Explanation was provided about the advantages to replace infrastructure vs reuse/rehabilitate the existing ones, highlighting that the reuse/rehabilitation opportunities were also screened and considered not cost-effective due to significant risks, including environmental impacts and costly emergency repairs. This has been integrated in this report in Section 5.3 and Section 6.3.
Public Commenter No. 8	Concerns were expressed regarding the project costs and clarifications were requested regarding potential alternatives to reduce the project costs.	WT provided clarifications regarding the financial impacts of this project. WT provided clarifications regarding the financial impacts of this project. Explanation was provided about the advantages to replace infrastructure vs reuse/rehabilitate the existing ones, highlighting that the reuse/rehabilitation opportunities were also screened and considered not cost-effective due to significant risks, including environmental impacts and costly emergency repairs. This has been integrated in this report in Section 6.3.
Public Commenter No. 10	Clarifications were requested regarding costs reported in PIC No.1 vs costs reported in PIC No.2 boards.	WT provided clarifications regarding the presented costs and final costs have been reported in this report in Section 5.3 and Section 6.3.

7.5 Public Agency Comments

Table 7-2 below provides a summary of public consultation questions, comments and answers received to date by Public Agency. Refer to **Appendix H** for written correspondence received from the public.

Table 7-2 Public Agency Comments and Consultation

Stakeholder	Comment	Action
Ministry of the Environment, Conservation and Parks (MECP)	WT requested shared the contact lists with the MECP and requested the MECP to confirm if additional stakeholders needed to be included. The MECP recommended to extend the Indigenous community engagement to additional two Indigenous communities.	WT issued the notice of commencement and all relevant communication to all the identified stakeholders, including the Indigenous communities identified by the MECP.
Niagara Peninsula Conservation Authority (NPCA)	After receiving notice of commencement, the NPCA shared preliminary information regarding regulated features and hazards within the study area, Critical Fish Habitat, and Species at Risk presents within the study area.	WT reviewed this information and incorporated it into the alternative solutions assessment and site planning. Potential impacts to regulated areas and sensitive species were evaluated, and mitigation measures were identified to avoid or minimize effects. All findings and recommended mitigation measures are documented in the project file.
The Ministry of Natural Resources and Forestry (MNRF)	After receiving notice of commencement, the MNRF shared preliminary information regarding investigation studies to be completed in order to comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals for this EA.	WT reviewed this guidance and incorporated the required studies into the project work plan. Specific investigations were planned and conducted to ensure compliance with all applicable legislation and approvals, and all documentation and results have been recorded in the project file.

7.6 Public Indigenous Comments

Table 7-3 below provides a summary of public consultation questions, comments and answers received to date by Indigenous Community. Refer to **Appendix H** for written correspondence received from the public.

Table 7-3 Public Indigenous Comments and Consultation

Stakeholder	Comment	Action
Mississauga of the Credit First Nation (MCFN)	The MCFN requested to be informed about the project and requested by e-mail to review the stage 1 archeological assessment report.	WT sent the stage 1 archeological assessment report by e-mail. The MCFN reviewed the Stage 1 archaeological assessment report and found everything satisfactory. The correspondence is included in Appendix H – Received Correspondence.
First Nation Communities	These communities were also contacted, and no comments were received: ▪ The Métis Nation of Ontario ▪ The Six Nations of the Grand River Territory ▪ The Haudenosaunee Confederacy & Haudenosaunee Development Institute	As part of the standard Environmental Assessment consultation process, all Indigenous communities identified in the left column were contacted at the Notice of Commencement, PICs, and Final EA stages. No comments were received from these communities.

7.7 Notice of Completion

A Notice of Completion will be issued to inform the public and review agencies that the Project File is available for public review. The notice will specify a minimum 30-day review period during which individuals may review the Project File and provide comments. The Notice of Completion will be included in the final document.

8 NEXT STEPS

The following are the proposed next steps in the development of the study towards implementation:

- Upon issuance of the Notice of Completion, agencies, stakeholders, and the general public will have a thirty (30) day period to review the Project File (this report) and the work completed to date and provide comments. If anyone feels that the study requires a higher level of study or that additional conditions be proposed on the implementation of the study, they may request to the Minister of the Environment, Conservation and Parks to issue an order regarding the study. If that has not been received following the completion of the review period, then the study may proceed to implementation.
- Subject to the clearance of the Class EA review period, the preliminary design of the proposed components can be advanced to reduce the risk associated with design changes and unknowns.
- A Stage 2 archaeological assessment (AA) and any further recommended AA (e.g., Stage 3 and 4) must be undertaken at the early stage of detailed design and prior to any ground disturbing activities in order to document the actual condition of the site and to confirm that no archaeological potential are present on-site.
- The Town can use the budgetary information from the preliminary design to put this study into a design and construction capital budget for implementation within two to five years depending on the pace of growth in the upstream drainage area.

9 CLOSURE

This Project File represents the completion of the Phase 1 and 2 of the Class EA process for this study and subject to comments will allow the study to proceed to implementation.

WT Infrastructure Solutions appreciates the opportunity to work on this study, and we look forward to the opportunity to address any comments or concerns identified during the public review period.