FINAL

JUNCTION STREET WASTEWATER PUMPING STATION AND FORCEMAIN

Schedule B Municipal Class Environmental Assessment Study

Project File

B&V PROJECT NO. 193577

PREPARED FOR

The Regional Municipality of Halton

13 JUNE 2018

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Executive Summary

The Junction Street Wastewater Pumping Station (WWPS) is located on the north side of Lakeshore Road just west of Rambo Creek at 2137 Lakeshore Road in Burlington. Wastewater from this pumping station is pumped through a single wastewater forcemain to a trunk sewer that drains westward to the Skyway Wastewater Treatment Plant. The station services a catchment area bounded by Guelph Line to the east, Waterfront Trail to the north, Brock Avenue to the west, and Lake Ontario to the south. The existing Junction Street WWPS structure and forcemain were originally built in 1915. The WWPS was last upgraded in 1988, and sections of the forcemain were replaced in 1975 and 2011.

Halton Region's 2011 Water and Wastewater Master Plan identified the need to increase the rated capacity at Junction Street WWPS to service expected flows until 2031; the station required an increase in rated capacity from 135 L/s to 144 L/s.

In 2016, a condition assessment was undertaken at Junction St. WWPS to identify upgrades needed at the station to service future flows, as well as to comply with all applicable regulatory codes and standards, health and safety requirements, and Halton Region's latest design standards. The condition assessment concluded that replacing the station was recommended over refurbishments, and that a Municipal Class Environmental Assessment (MCEA) was required prior to proceeding with implementation.

Introduction

A Municipal Class Environmental Assessment (MCEA) was conducted in accordance with Schedule B of the Municipal Engineers' Association Class Environmental Assessment document (2000, as amended in 2007, 2011, and 2015) to establish a preferred alternative solution that satisfies the following key objectives:

1. Ensure the Junction Street WWPS and forcemain has sufficient capacity to service 2031 projected peak flows;
2. Address the risk to the forcemain due to age, unknown condition, and the current lack of redundancy;
3. Bring the WWPS and forcemain into compliance with Halton Region's Water and Wastewater Facility Design Manual (Halton Region, 2012) and Water and Wastewater Linear Design Manual (Halton Region, 2015); and
4. Address improvements identified by Halton operations staff as documented and recommended in the 2016 Condition Assessment by Environmental Infrastructure Solutions Inc. (EIS) and observed by Black & Veatch during recent site visits.

The problem and opportunity statement established for this MCEA Study is as follows:

> **"To consider a wide range of WWPS and collection system upgrade alternatives in order to determine the most appropriate wastewater pumping station design concept and preferred wastewater forcemain alternative to maintain the station in a state of good repair and meet future flow demands to 2031."**

The Study Area was established by considering areas that have the potential to be impacted by this project. As such, the Study Area was established to include the Junction Street WWPS, streets which

may be considered for installation or upgrades of the forcemain from the WWPS to the trunk sewer and areas that may be impacted by construction activities around the WWPS. As such, the Study Area is bound generally by Elizabeth Street to the west, Seneca Avenue to the east, Caroline Street to the north, and Lake Ontario to the south. The Study Area for the MCEA is displayed in the following figure.

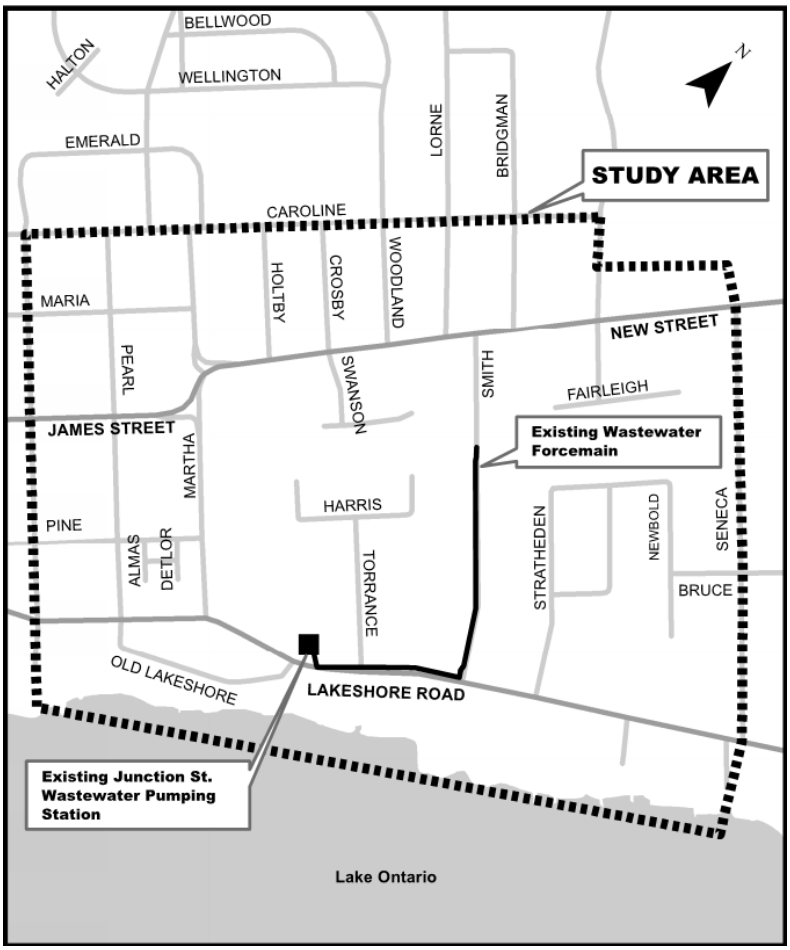

Figure ES-1: Map of Study Area

Alternative Solutions

Several alternative solutions were identified to meet the objectives of the MCEA, as follows:

Alternative PS-1: Status Quo (Do Nothing)
Alternative PS-2: Divert Flows to Gravity Sewer
Alternative PS-3: Upgrade Existing WWPS
Alternative PS-4: Replace Existing WWPS

The forcemain conveyance route alternatives considered were:

Alternative FM-1: Do Nothing
Alternative FM-2: Add Forcemain Redundancy – Two New Forcemains
Alternative FM-3: Add Forcemain Redundancy – Reuse of Existing Forcemain and One New Forcemain

Alternatives FM-2 and FM-3 also included the following sub-alternatives related to potential routes for new forcemains:

RT-A. Smith Avenue
RT-B. Martha Street
RT-C. Pearl Street and Lakeshore Road
RT-D. Pearl Street and Old Lakeshore Road
RT-E. Torrance Street

The forcemain sub-alternative routes are shown in the following figure:

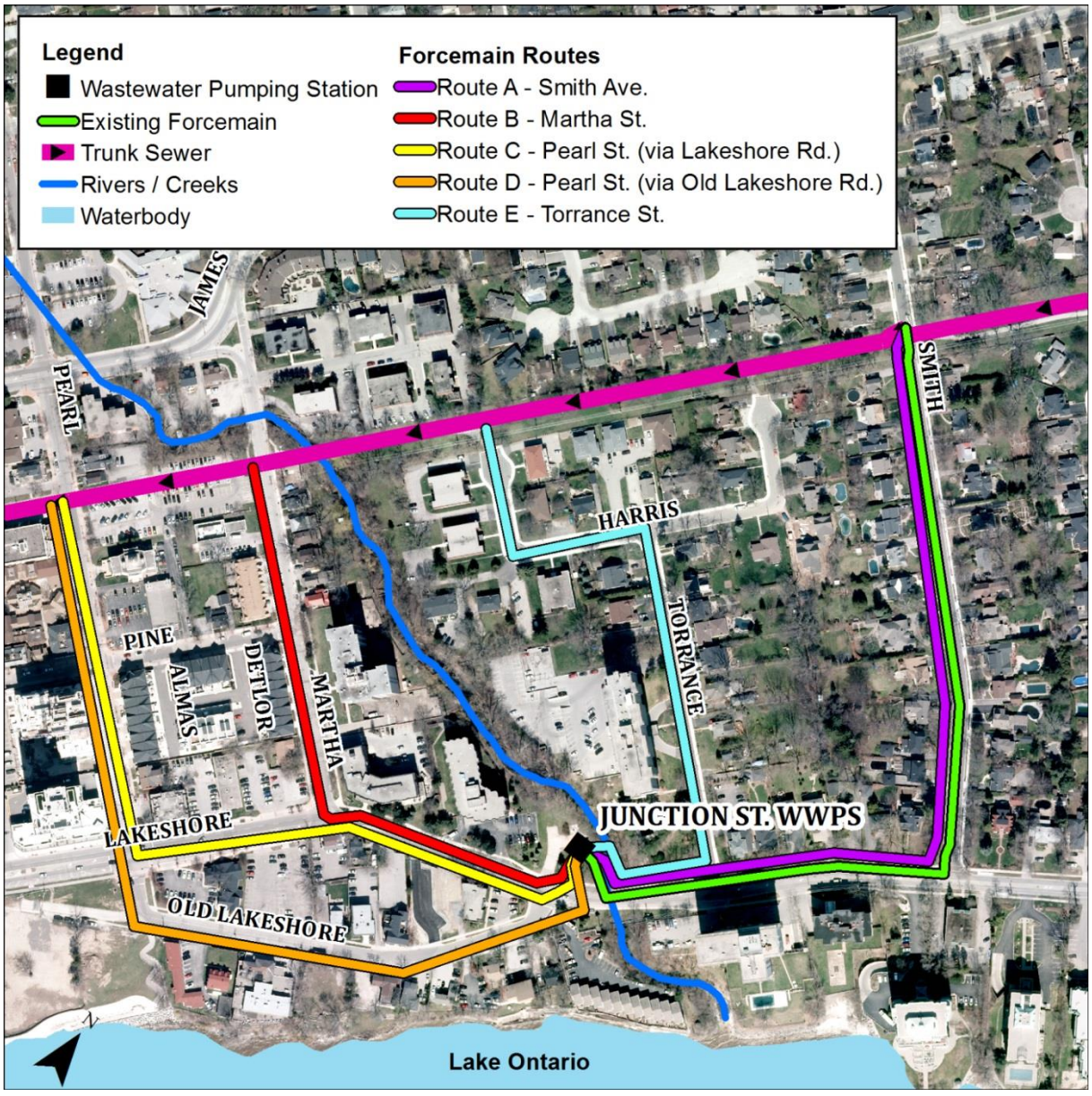

Figure ES-2: Forcemain Route Alternatives

Each alternative solution described above was developed with sufficient detail so as to clearly define potential social, natural environment, technical, legal/jurisdictional, and economic impacts.

Following an evaluation of the alternatives and consultation with review agencies, members of the public, and the City of Burlington, Alternative PS-4 – Construction of a New WWPS on the Existing Site with FM-2, Twin Forcemains along Martha Street (Route B) is recommended as the preferred alternative solution.

Preferred Solution

The preferred alternative solution consists of:

- Construction of a new WWPS on the existing site;
- Construction of two new forcemains along Martha street to provide system backup and operational flexibility; and,
- Retention of the existing WWPS heritage building for electrical and control equipment, as well as a standby generator if space allows.

The preferred alternative solution is displayed in the following figure.

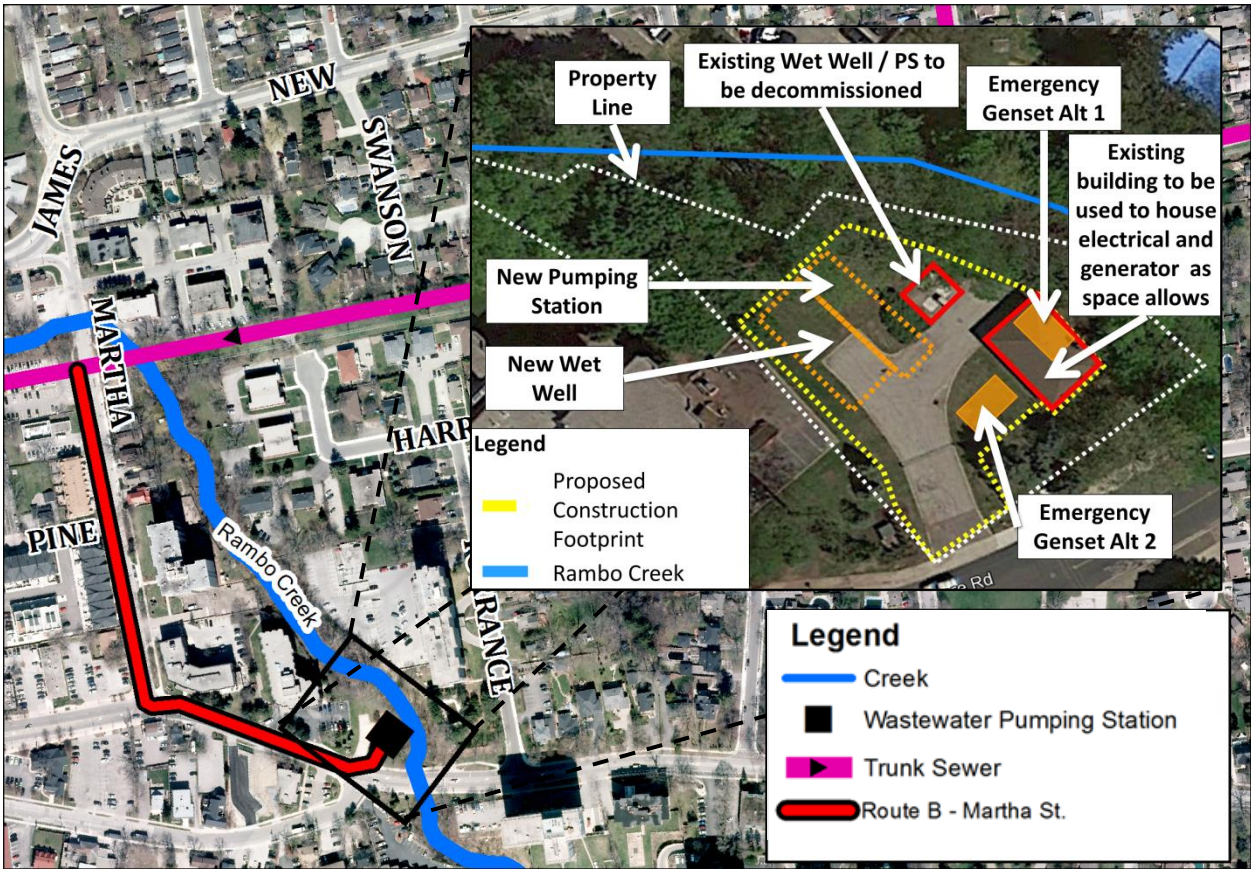

Figure ES-3: Preferred WWPS and Forcemain Route Solution

The main advantages associated with the preferred alternative solution are as follows:

- Satisfies the Problem and Opportunity Statement established for this project;
- Meets requirements in Halton Region's Water and Wastewater Facility Design Manual (Halton Region, 2012) and Water and Wastewater Linear Design Manual (Halton Region, 2015)
- Provides increased resiliency and operational reliability; and,

- Shorter implementation timeline and lower construction cost compared to Alternative 3 – Upgrade Existing WWPS.

Additional studies will be required following completion of this MCEA Study, including completion of:

- A Stage 2 Archeological Assessment;
- An Air Quality and Noise Impact Assessment for a required standby generator;
- A Subsurface Utility Investigation; and,
- Heritage Impact Assessment (HIA) for the existing WWPS building

Mitigation measures to be implemented during construction and operation of the WWPS are as follows:

- Communicate traffic impacts due to construction to local residents and the City of Burlington in advance;
- Temporary site fencing will be in place during construction and disturbances such as noise, vibration and dust will be managed;
- Access to residences / pedestrian traffic will be maintained during construction;
- Provision for noise and odour control systems as part of WWPS design;
- WWPS layout and location will be designed to minimize impact to trees;
- A PIC will be held prior to construction to present the design and obtain public input; and,
- The architectural style will be determined at detailed design.

Based on a high-level cost estimate (referred to as a Class 'D' cost estimate), the capital cost for construction of both the WWPS and associated forcemain is estimated to be $9.15M, and construction is anticipated to start in 2028.

Consultation

The Notice of Commencement was first issued on November 16, 2017, and the Public Information Centre was held on June 28, 2017. Over the duration of the MCEA process, feedback was received from interested stakeholders including immediate residents, local businesses and organizations, review agencies, Conservation Halton, the City of Burlington, and Indigenous Communities.

Feedback was also received from an Internal Technical Advisory Committee consisting of internal Halton Region staff from a number of divisions/sections, as well as an External Technical Advisory Committee consisting of representatives from the Ministry of Environment and Climate Change, Burlington Downtown Business Association, Conservation Halton, and the City of Burlington.

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Acronyms and Glossary of Terms

ACRONYM/TERM	DEFINITION
Alternative Solution	A possible approach to fulfilling the goal and objective of the study based on an evaluation of a long list of options using the Status Quo (Do Nothing) alternative as a baseline.
Bedrock	A layer of consolidated rock underlying the ground surface.
Boring	The act or process of making or enlarging a hole (in the ground).
CEAA	Canadian Environmental Assessment Act
Municipal Class Environmental Assessment	A streamlined process to produce an Environmental Assessment where the applicable projects are of routine nature with predictable and manageable environmental effects. It is approved under the Environmental Assessment Act for a class or group of undertakings.
Class 'D' Cost Estimate	An estimate prepared using a unit cost analysis format (such as cost per m^2 or other measurement unit) based upon a comprehensive list of project requirements (i.e. scope) and assumptions; the Class D estimate is a high-level "order-of-magnitude" estimate used at the conceptual design stage
Condition Assessment	An assessment of the condition of a facility, in this case, Junction St. WWPS. Analysis can include various engineering disciplines (e.g. hydraulics, structural, mechanical, electrical).
Construction Cost	One-time expense incurred on the purchase of construction and equipment.
Status Quo (Do Nothing) Alternative	An alternative that is typically included in the evaluation of alternatives that identifies the implications of doing nothing to address the problem or opportunity that has been identified.
Drywell	Often an underground pit in a pumping station separated from the wet well where pumps and ancillary equipment are installed. Sewage is fed to the pumps from the wet well to the drywell using fully-enclosed, pressurized suction piping. The drywell concept is used to permit safe and unhindered staff access to facilitate equipment maintenance.
Effluent	A discharge of liquid waste.
EL	Ground elevation
Environment	As defined in the Ontario Environmental Assessment Act, means: Air, land or water, plant and animal life, including human life, the social, economic and cultural conditions that influence the life of humans or a community, any building, structure, machine or other device or thing made by humans, any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities, or any part of, or combination of, the foregoing and the interrelationships between any two or more of them, in or of Ontario.

ACRONYM/TERM	DEFINITION
Environmental Assessment (EA)	A study which assesses the potential environmental effects (positive or negative) of a proposal. Key components include consultation with government agencies and the public; consideration and evaluation of alternatives; and, the management of potential environmental effects.
Environmental Assessment Act	A provincial statute that sets out a planning and decision-making process to evaluate the potential environmental effects of a proposed undertaking. Proponents wishing to proceed with an undertaking must document their planning and decision-making process and submit the results from their environmental assessment to the Minister for approval.
Environmental Effect	The effect that a proposed undertaking or its alternatives has or could potentially have on the environment, either positive or negative, direct or indirect, short- or long-term.
Evaluation Criteria	Criteria applied to evaluate the short-listed Alternative Solutions and identify the Preferred Solution(s).
Excavations	Also referred to as a "dig," the removal of earth for construction below ground level.
Flood plain	A defined area that is exposed to varying levels of flood risk.
Geotechnical Investigation	Study of the engineering behaviour of earth materials such as soil properties, rock characteristics, natural slopes, earthworks and foundations, etc.
HDD	Horizontal Directional Drilling
Health & Safety Regulations	Refers to Ontario's Occupational Health & Safety Act (OHSA) enforced by the Ministry of Labour.
Horizontal Directional Drilling	A technique used to construct pipelines without breaking the ground surface.
Hydraulics	The branch of science concerned with the conveyance of liquids through pipes and channels, especially as a source of mechanical force or control.
Impact	The social scientist's evaluation of the degree of positive or negative change the socio-economic effect has caused.
Lifecycle Cost	The lifecycle cost includes the construction cost as well as the operation, maintenance, and depreciation costs over the duration of the project and estimated operational life of the facility.
L/s	Litres per Second; Measurement of flow (flow rate)
Microtunnelling	A technique used to construct small diameter tunnels without breaking the ground surface.
Mitigating Measures	Actions taken to reduce negative effects
MNRF	Ministry of Natural Resources and Forestry.
MOECC	Ministry of the Environment and Climate Change.

ACRONYM/TERM	DEFINITION
Municipal Class Environmental Assessment (MCEA)	A process was developed and maintained by the Municipal Engineers Association in Ontario to simplify the process for municipalities to comply with the Environmental Assessment Act of Ontario. The MCEA product sets out the process that municipalities follow while planning most sewer, water, road, and transit projects. The Municipal Engineers Association amended the MCEA in 2007.
NPV	Net present value
O & M	Operation and Maintenance
OPC	Opinion of Probable Cost
Open-Cut Construction	Method of constructing a sewer by digging an open trench, laying the pipe, and backfilling the excavation.
Phase 2	A step within the Municipal Class Environmental Assessment process whereby Alternative Solutions are identified to address the problem or opportunity by taking into consideration the existing environment, and establish the Preferred Solution taking into account public and review agency input.
Preferred Solution	After evaluation of the alternative methods, the preferred alternative can be identified.
Project	A specific activity planned and implemented in accordance with the Class EA (may also be referred to as the undertaking.)
Public and Agency Consultation	A two-way communications process between the proponent and affected or interested stakeholders that provides opportunities for information exchange, and for those consulted, to influence decision-making. Consultation early in and throughout the process is a key feature of environmental assessment planning.
Pump	A device used to move fluid by mechanical actions.
Pumping Station	A facility that contains equipment used to pump materials such as sewage from one location to another.
SCADA	Supervisory Control and Data Acquisition--a type of industrial control system. Industrial control systems are computer-controlled systems that monitor and control industrial processes.
Schedule B	Project generally includes improvements and minor expansions to existing facilities with potential for some adverse environmental impacts. The proponent is required to proceed through a screening process including consultation with those who may be affected.
Sewage	The liquid waste products of domestic, industrial, agricultural and manufacturing activities directed to the sanitary sewer system.
Small boring unit	A technique used to construct small diameter tunnels without breaking the ground surface.
Stakeholder	A person, group or organization that has an interest or concern in, or may be impacted by, the outcome of a project.

ACRONYM/TERM	DEFINITION
Study Area	The area within which activities associated with the undertaking will occur and where potential environmental effects will be studied.
VFD	Variable Frequency Drives
Wastewater	See Sewage.
Wastewater Treatment Plant	A plant that contains processes to remove contaminants from wastewater and household sewage. It includes physical, chemical and biological processes to remove physical, chemical and biological contaminants.
Wet well	Often an underground pit in a pumping station where sewage is stored and fed to pumps.
WWPS	Wastewater Pumping Station

1 Introduction

1.1 BACKGROUND

The Junction Street WWPS is one of eight WWPS's that service the ten kilometre wide Burlington East drainage area. Wastewater is directed to a trunk sewer that drains westward to the Skyway Wastewater Treatment Plant (WWTP).

Figure 1-1: Trunk Sewer to Skyway WWTP and Junction WWPS Location

The Junction Street WWPS is located on the north side of Lakeshore Road just west of Rambo Creek at 2137 Lakeshore Road in Burlington. The station services a catchment area bounded by Guelph Line to the east, Waterfront Trail to the north, Brock Avenue to the west, and Lake Ontario to the south. The existing WWPS structure was originally built in 1915 and was last upgraded in 1988. The WWPS property is owned and maintained by Halton Region. An exterior view of the Junction Street WWPS is provided below in Figure 1-2.

Figure 1-2: Junction St. WWPS

The Junction Street WWPS has an embedded wet well with two submersible sewage pumps and a firm rated capacity of 135 L/s (MOECC, 2015). The forcemain is 570 m long, 300 mm diameter.

Halton Region's 2011 Master Plan identified the need for an increase in rated capacity at Junction Street WWPS to meet 2031 projected flows; the station required an increase in rated capacity from 135 L/s to 144 L/s. A condition assessment study, undertaken in 2016, had also shown that replacement or expansion of the WWPS may be preferred over upgrades to the WWPS within the existing structure. The condition assessment also identified the opportunity to provide forcemain redundancy in order to comply with Halton Region's latest linear design standards (Halton Region, 2015).

1.2 PREVIOUS RELEVANT STUDIES

1.2.1 Sustainable Halton Water and Wastewater Master Plan (AECOM, 2011)

Halton Region completed a Water and Wastewater Master Plan (AECOM, 2011) which describes water and wastewater servicing strategies to support growth throughout the Region. The 2011 Master Plan identified the need for an increase in rated capacity at the Junction Street WWPS to meet 2031 projected flows.

1.2.2 Wastewater Pumping Station Master Plan

A Wastewater Pumping Station Master Plan (R. V. Anderson Associates Limited, 2012) was completed to review wastewater collection servicing in Oakville and Burlington on a trunk sewershed basis. The study was divided into four drainage areas: Oakville Southwest, Oakville Southeast, Burlington West, and Burlington East. Junction Street (#33) WWPS was included in the Burlington East drainage area.

The following high-level alternative solutions were evaluated for each drainage area:

1. Status Quo (Do Nothing);
2. Partial Deep Gravity Sewer / Tunnel (Eliminate some WWPS's); and,
3. Deep Gravity Sewer / Tunnel (Eliminate all WWPS's).

Each alternative was evaluated against economic, environmental, social, and operations/technical criteria. For the Burlington East drainage area, the preferred solution was identified to be Alternative 2 as it presented the most preferential benefit to cost. The servicing strategy included capital projects to upgrade one WWPS (Elizabeth Gardens, #31) and decommission five WWPS's. Two WWPS's, including Junction Street (#33), were recommended to be retained for the overall servicing strategy.

1.2.3 Condition Assessment and Scoping of Upgrade Alternatives for Junction Street WWPS

A condition assessment was recently completed to identify upgrades needed for the Junction Street WWPS and forcemain to service demands to 2031 and be in compliance with all applicable regulatory codes and standards, health and safety requirements, and Halton Region's latest design standards (Environmental Infrastructure Solutions Inc., 2016).

The Condition Assessment Study considered two upgrade alternatives for the Junction Street WWPS:

1. Refurbish the existing station and construct new twin forcemains to meet 2031 projected flows and all applicable regulatory codes and standards as well as health and safety requirements; and,
2. Replace the existing WWPS with a new Style 4 WWPS per Halton Region's latest design standards at the current location and construct new twin forcemains.

Alternative 2 was identified to be the preferred option for the Junction Street WWPS; however, a Municipal Class Environmental Assessment (MCEA) Study was noted to be required prior to proceeding with implementation.

1.3 SCOPE OF CURRENT MCEA STUDY

To satisfy the requirements and recommendations noted in the previous studies above, the Regional Municipality of Halton (the Region or Halton Region) retained Black & Veatch to undertake a MCEA Study for the Junction Street Wastewater Pumping Station (WWPS) and Forcemain. This Study was carried out in accordance with Schedule 'B' of the *Municipal Class Environmental Assessment* document (October 2000, amended 2007, 2011, and 2015). Schedule B projects are defined as having the potential for some adverse environmental effects and the

proponent is required to undertake a screening process involving mandatory contact with directly affected public and relevant review agencies to ensure all are aware of the project and have the opportunity to provide input and feedback.

1.4 STUDY OBJECTIVES

This MCEA Study was completed to meet the following key objectives:

1. Ensure the Junction Street WWPS and forcemain has sufficient capacity to service 2031 projected peak flows;
2. Address the risk of forcemain failure due to age, unknown condition, and the current lack of redundancy;
3. Bring the WWPS and forcemain into compliance with Halton Region's Water and Wastewater Facility Design Manual (Halton Region, 2012) and Water and Wastewater Linear Design Manual (Halton Region, 2015); and
4. Address improvements identified as documented and recommended in the 2016 Condition Assessment by Environmental Infrastructure Solutions Inc. (EIS) and observed by Black & Veatch during recent site visits.

1.5 STUDY AREA

The Study Area was established by considering areas that have the potential to be impacted by this project. As such, the Study Area was established to include the Junction Street WWPS, streets which may be considered for installation or upgrades of the forcemain from the WWPS to the trunk sewer and areas that may be impacted by construction activities around the WWPS. As such, the Study Area is bound generally by Elizabeth Street to the west, Seneca Avenue to the east, Caroline Street to the north, and Lake Ontario to the south, as shown in Figure 1-3.

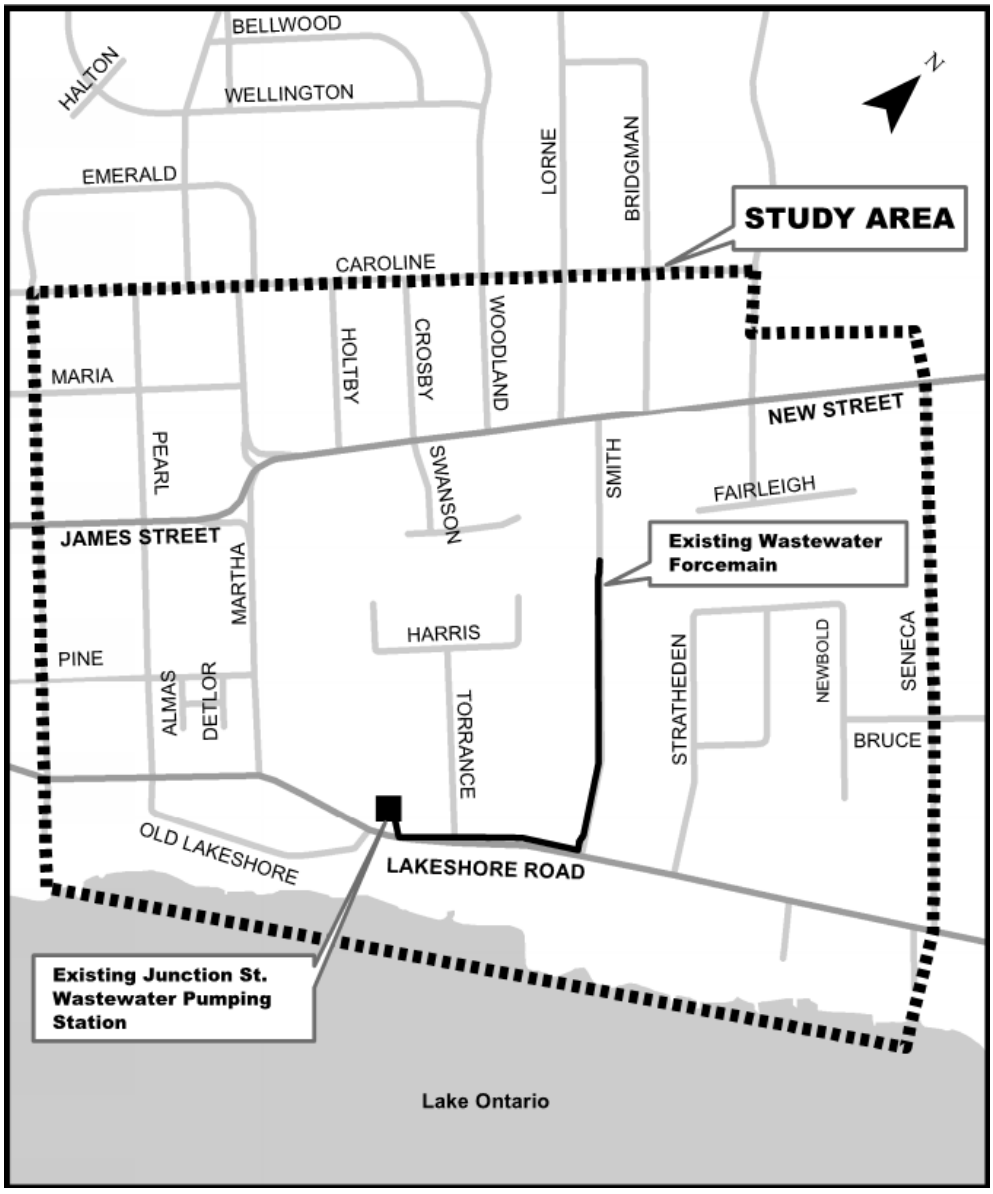

Figure 1-3: Junction Street WWPS MCEA Study Area

1.6 PROBLEM/OPPORTUNITY STATEMENT

Phase 1 of the MCEA Process involves the identification and description of the problem or opportunity. In general, projects are undertaken to address identified problems or deficiencies, or because of an opportunity that had been previously defined. Often, these problems or opportunities have been described in an earlier study or review.

In the case of Junction St. WWPS, the 2011 Master Plan identified the need for an increase in rated capacity to meet 2031 projected flows. A recent condition assessment study has also shown that replacement or expansion of the WWPS may be preferred over upgrades to the WWPS within the existing structure. There is also the opportunity to provide forcemain redundancy in order to comply with Halton Region's latest linear design standards (Halton Region, 2015).

The Problem Statement for this EA is as follows:

> **"To consider a wide range of WWPS and collection system upgrade alternatives in order to determine the most appropriate wastewater pumping station design concept and preferred wastewater forcemain alternative to maintain the station in a state of good repair and meet future flow demands to 2031."**

2 Environmental Assessment Process

In Ontario, a project may trigger the need for a federal and/or provincial Environmental Assessment as per the *Canadian Environmental Assessment Act (CEAA), 2012*, or the *Ontario Environmental Assessment Act, 1990*. Each is discussed in the sections below, along with a description of the relevance to this undertaking.

2.1 CANADIAN ENVIRONMENTAL ASSESSMENT ACT

The need for a study to be conducted under the CEAA can be triggered by municipal-level projects if the following requirements are met:

- Provision of federal funding
- Requirement for federal land
- Requirement for federal approval (e.g. Fisheries Act, or any other applicable federal Acts)

Because the Junction Street WWPS is located on property owned by the Halton Region, the associated sewers and forcemains are within easements and no federal funding or approvals are required, this project is not anticipated to trigger the need to comply with the CEAA.

2.2 MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (MCEA)

Under the *Ontario Environmental Assessment Act*, complex projects that have the potential to cause adverse environmental impacts, minimal or significant, with major public interest, must prepare a MCEA to be approved by the Ministry of the Environment and Climate Change (MOECC). The MCEA is conducted in accordance with the requirements in the Municipal Engineers' Association (MEA) Class EA Document (amended 2015).

An MCEA is a streamlined planning process to produce an environmental assessment where the applicable projects are of routine nature with predictable and manageable environmental effects and is one that includes municipal road, water, and sewer projects. Projects can vary in their environmental impacts and are categorized in schedules, as shown below in Table 2-1.

Table 2-1: Description of the Class of Undertakings

SCHEDULE	DESCRIPTION
Schedule A	■ Pre-approved projects as the environmental impacts are minimal (e.g. normal or emergency operational and maintenance activities).
Schedule A+	■ Pre-approved projects that must advise public prior to implementation.

SCHEDULE	DESCRIPTION
Schedule B	■ Potential for adverse environmental impacts. ■ Proponent is required to proceed with a screening process involving mandatory consultation with those affected (e.g. public, review agencies). ■ Projects generally include minor expansions and improvements to existing facilities.
Schedule C	■ Potential for significant adverse environmental impacts ■ Proponent is required to proceed with a full MCEA planning and documentation process as outlined in the MCEA. The Environmental Study Report (ESR) must be prepared and filed for review by the public and review agencies. ■ Projects generally include major expansions to existing facilities or the construction of new facilities

2.3 CONFIRMATION OF PROJECT SCHEDULE

The 2011 Sustainable Halton Water and Wastewater Master Plan (AECOM, 2011) identified that the Junction Street WWPS may require additional rated capacity to meet 2031 projected flows. The Region had originally planned for the upgrades to be confined to the existing building footprint, which would require a Schedule A+ MCEA.

However, the Technical Memorandum (TM) for the Scoping of Upgrade Alternatives to Junction Street Wastewater Pumping Station (Environmental Infrastructure Solutions Inc., 2016) suggested that construction works at the WWPS would be required to increase capacity. The report recommended construction of a replacement pumping station to service 2031 projected flows. Replacing the pumping station with one of higher capacity would trigger a Schedule B MCEA, as excerpted from the MEA MCEA document, below:

> *Construct new pumping station or increase pumping station capacity by adding or replacing equipment and appurtenances, where new equipment is located in a new building or structure.* (Municipal Engineers Association, 2015)

Works associated with the forcemain replacement (discussed in Sections 1.2 and 1.3) have also been considered under this Schedule B MCEA undertaking.

2.4 MCEA PLANNING PROCESS

The full MCEA Planning Process involves five phases. However, as this project is following a Schedule B process, only Phases 1, 2 and 5 are required. Phases 3 and 4 are only required for Schedule C projects. These phases are described below in Table 2-2 and illustrated in Figure 2-1.

Table 2-2: Five Phase MCEA Planning Process, MEA

PHASE	DESCRIPTION
Phase 1	■ Identify the problem (deficiency) or opportunity and create a long list of options for addressing them.

PHASE	DESCRIPTION
Phase 2	■ Review the long list of options taking into account existing environment factors such as natural, social and economic environment, agriculture, technical, cost, etc. ■ Create a short list of Alternative Solutions. ■ Present the Alternative Solutions to the public and various agencies through a Public Information Centre to determine the Preferred Solution. ■ The Project File is reviewed by agencies (MOECC etc.) ■ The Project File is placed on "public record" for a 30-day review period.
Phase 3	■ Once the Preferred Solution is determined, the alternative methods to this solution are examined. Based on the existing environment and public and agency review, the environment effects and mitigation measures to reduce these effects are evaluated.
Phase 4	■ The findings in Phase 1, 2 & 3, as well as the conceptual design of the preferred alternative method are documented in an Environmental Study Report (ESR). The ESR is placed on "public record" for a 30-day review period.
Phase 5	■ The completion of the Design phase and construction of the project is undertaken in Phase 5.

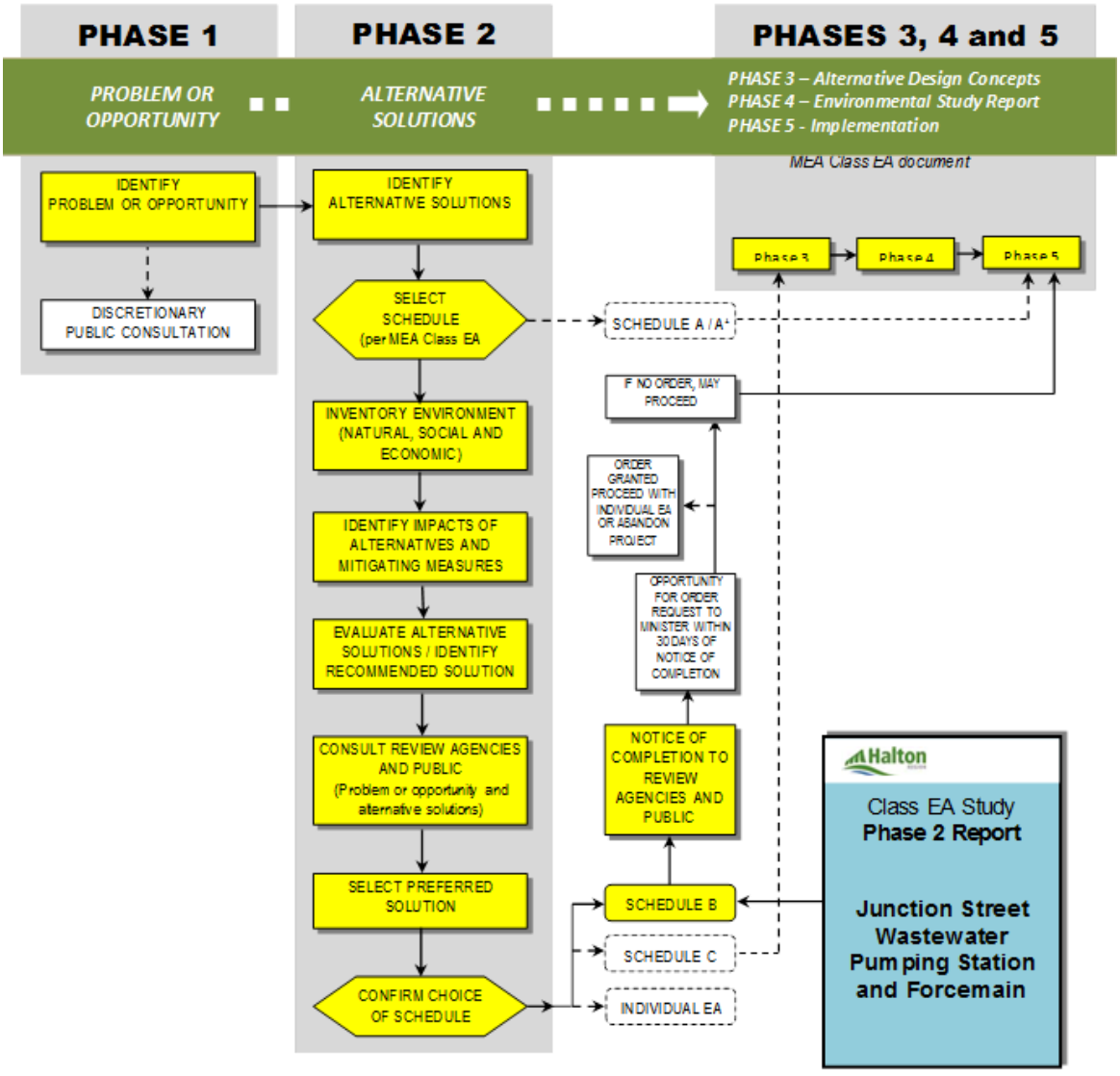

Figure 2-1: MEA MCEA Flow Chart

2.5 OVERVIEW OF PUBLIC, INDIGENOUS COMMUNITIES, AND AGENCY CONSULTATION

Schedule B projects require a minimum of two points of contact for stakeholder consultation: the Public Information Centre (PIC) and the Notice of Completion (Municipal Engineers Association, 2015). However, there is also an optional point of contact made in many EAs; the Notice of Commencement. These points of contact are described in greater detail in the following paragraphs.

The first point of contact (optional) is the Notice of Commencement, which takes place in Phase 1 of the MCEA process. The Notice of Commencement informs stakeholders, including the public, Indigenous Communities, and review agencies, of the undertaking and provides contact information for submission of comments.

The second point of contact (required) is the Public Information Centre (PIC), which takes place in Phase 2 of the planning process. The purpose of the PIC is to present the problem or opportunity, Alternative Solutions to the problem, general inventory of the natural social and economic environments, and the evaluation process. The Recommended Solution is also presented at the PIC.

Stakeholders are invited to review issues, provide input to the identification of the problem, as well as the development of Alternative Solutions, and assist in the selection of a Preferred Solution.

The final point of contact (required) is the Notice of Completion. This Notice informs stakeholders that the MCEA process has been completed and that the Project File has been placed on the public record for review. The Notice also explains the process to request a Part II Order, should concerns remain after contacting the project team for resolution.

The project Communication and Consultation Plan as well as specific consultation activities that were undertaken for this MCEA are discussed in Section 5.

3 Existing Conditions Inventory

3.1 SOCIAL AND CULTURAL ENVIRONMENT

3.1.1 Archeological Potential

A Stage 1 Archaeological Assessment (AA) of the study area and proposed construction footprints was undertaken by Archeoworks Inc. As defined by the Ministry of Tourism, Culture, and Sport (MTCS) (2011), the objectives of the AA are as follows:

- To provide information about the property's geography, history, previous archaeological fieldwork and current land condition;
- To evaluate in detail the property's archaeological potential, which will support recommendations for Stage 2 survey for all or parts of the property; and
- To recommend appropriate strategies for the Stage 2 survey.

The study identified areas with disturbed conditions, where archaeological potential had been removed. These disturbed areas were recommended to be exempt from Stage 2 AA investigations. Other areas within the proposed construction locations that were recommended to be exempt from Stage 2 AA included "Permanently Wet" areas (i.e. the area covered by Rambo Creek), and areas with steeply sloping terrain.

The remaining areas within the proposed construction footprints were identified as retaining archaeological potential. It was recommended that the areas retaining archeological potential within the construction footprint of the preferred WWPS and forcemain alternative be subject to a Stage 2 AA employing a shovel test pit archaeological survey at five-metre transects to be completed at detailed design. A copy of the Stage 1 Archaeological Assessment can be found in Appendix C.

3.1.2 Cultural Heritage

The existing control building (Figure 1-2) was originally built in 1915 and is listed as a non-designated property under the City of Burlington's Municipal Register of Cultural Heritage Resources. Listing on this register does not preclude modifications to the building.

A Cultural Heritage Resource Assessment was completed by ASI Archaeological & Cultural Heritage Services. The assessment found that the EA study area has an urban land use history dating back to the early nineteenth century, and 14 cultural heritage resources are located within or adjacent to the study area. Further information on mitigation measures related to this assessment can be found in Section 6.2.1.2 and the assessment report (Appendix D).

3.1.3 Lakeshore Road

Lakeshore Road is an arterial road running approximately parallel to the Lake Ontario shoreline. Near the Junction WWPS, Lakeshore Road has one lane in each direction plus one turning lane and is used by transit (bus). A sidewalk is located on both sides of Lakeshore Road from Torrance Street west to Old Lakeshore Road and on the north side only past Old Lakeshore Road. Disruptions on the Junction WWPS site due to operational emergencies or scheduled construction may impact traffic and pedestrians on Lakeshore Road.

3.1.4 Land Use

The Junction WWPS is located in an area along Lakeshore Road that is highly urbanized with a mix of low, medium and high density housing. There are also a number of businesses located nearby. Land use within the study area is shown in Figure 3-1.

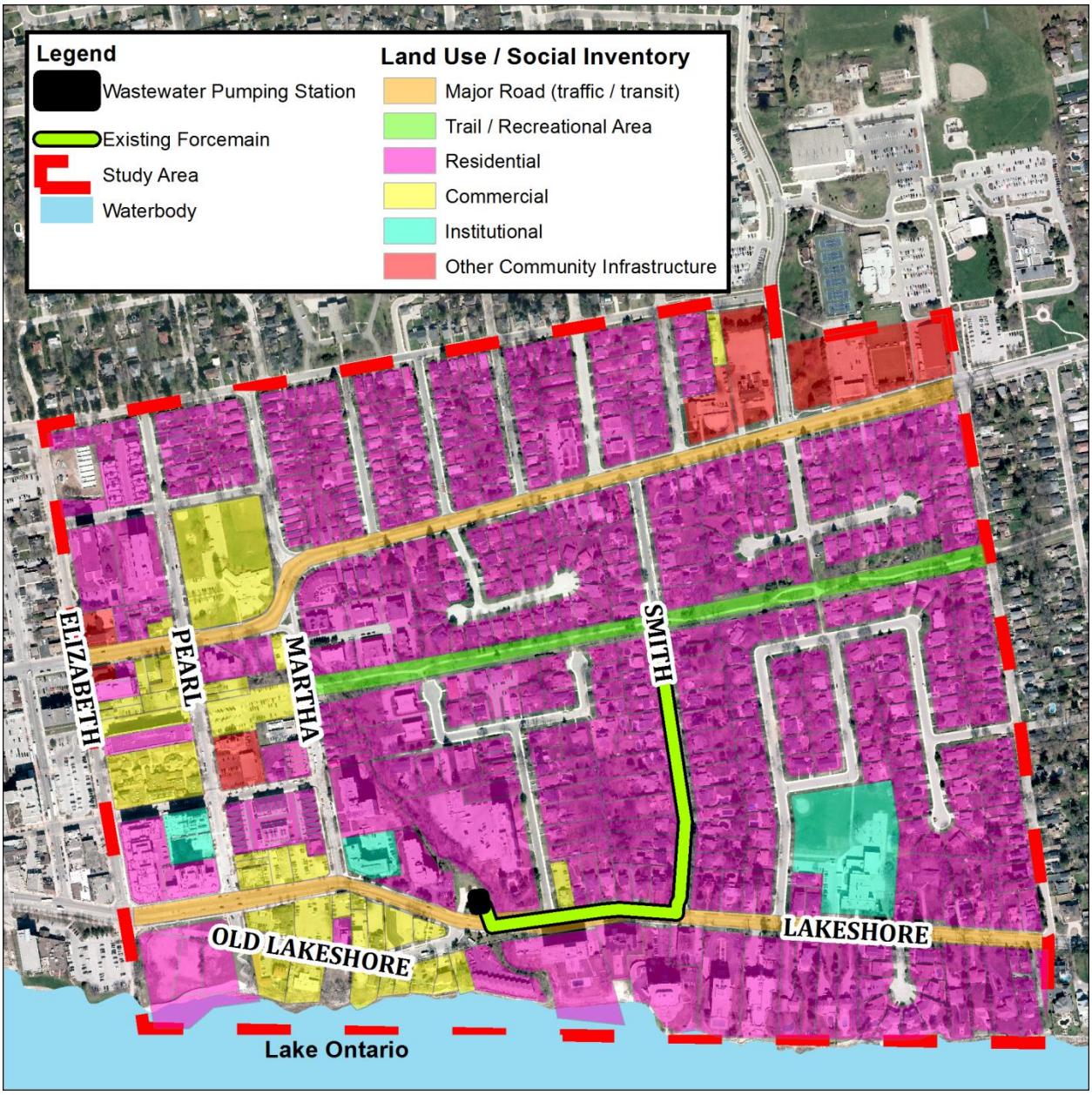

Figure 3-1: Land Use and Social Inventory within the Study Area

3.2 NATURAL ENVIRONMENT

3.2.1 Rambo Creek

The existing Junction WWPS is located adjacent to Rambo Creek. The creek is not regulated by Conservation Halton and is under the jurisdiction of the City of Burlington. Natural heritage conditions for Rambo Creek are discussed further in Section 3.2.2.

3.2.2 Natural Heritage

Natural heritage existing conditions within the Junction Street WWPS Study Area were determined through desktop study and field assessment, documented in the Natural Sciences Report (LGL

Limited, 2017). The areas of highest natural heritage sensitivity include Rambo Creek and its riparian area and the Lake Ontario shoreline. However, the Study Area is highly urbanized.

The existing WWPS is setback from the Lake Ontario shoreline with medium and high density residential land use and Lakeshore Road buffering the site from the lake. The WWPS Site is located directly adjacent to the Rambo Creek and its wooded riparian area. The creek as it occurs within the study area represents habitat for warm water fish species. Generally, the shoreline of Lake Ontario is considered sensitive from a natural heritage perspective for the reason that it provides a number of ecological services. For example, the site is located within Important Bird and Biodiversity Area ON022 (Bird Studies Canada/Nature Canada). As well, the creek and shoreline of Lake Ontario are identified to provide habitat for aquatic SAR (American Eel).

The field study conducted in spring 2017 included a survey of the vegetation and vegetation communities, wildlife and wildlife habitat, and aquatic habitat found in the study area.

Specific to the project site, one vegetation community was identified: a semi-natural forest community (FOD7-3) situated around the riparian floodplain of Rambo Creek. The remaining areas include manicured or anthropogenic community types and amenity features. A total of 25 plant species were inventoried within the FOD7-3 vegetation community; all of the species found are considered either locally common or introduced within Halton Region – no federally or provincially listed plant species at risk were documented within the study area.

A total of 12 wildlife species were documented within the study area, all of which were bird species. The majority of the species observed are considered secure and common to the community types found on site. One of the species observed is considered area sensitive – the White-breasted Nuthatch. Another species observed, the Chimney Swift, is currently listed as a Threatened species both provincially and federally. No active nesting was detected for this species. The vegetation community FOD7-3 also has the potential for bat maternal roosting. There is also potential that if bats are using the trees for roosting, some may be species that are afforded protection under the Endangered Species Act (2007), such as Little Brown Myotis (*Myotis lucifugus).*

Rambo Creek's aquatic habitat includes a mix of riffle/run/pool with instream substrates dominated by boulder/coble and gravel in the section upstream of the Lakeshore Road Bridge and increasingly sandy downstream. Portions of the stream are reinforced with gabion riprap, boulder and concrete; however, areas of bank erosion persist outside of those hardened portions. Exposed bars of cobble and deposition of fine sediments were noted during the survey.

Additional details are included in the Natural Science Report in Appendix E.

3.3 TECHNICAL ENVIRONMENT

3.3.1 Condition Assessment and Site Visit

A condition assessment of the site works, inlet sewer, overflow and forcemain piping, process mechanical equipment, architectural and structural elements, ventilation systems, heating equipment, plumbing, fire protection, electrical and control equipment was recently carried out at the Junction Street WWPS (Environmental Infrastructure Solutions Inc., 2016).

This condition assessment highlighted the overall state of the assets and identified the upgrade needs at the pump station in order to meet 2031 projected flows and compliance with the latest applicable regulatory codes and standards, health and safety requirements, and Halton Region's latest design standards. It should be noted that the 2016 EIS Condition Assessment was based on a 2031 peak flow of 150 L/s which has subsequently been revised by Halton Region to 138 L/s, discussed further in Section 4.1. It is not anticipated that this change in the future flow estimate will affect the findings of this condition assessment.

A site visit was conducted by the Project Team (Halton Region and Black & Veatch staff) on September 26, 2016, allowing a visual inspection of the facilities and validation of some of the aspects recorded in the 2016 EIS Condition Assessment report. Feedback from staff responsible for operations and maintenance (O&M) was also gathered during the Project Team's site visit.

The two pumps were submersed during the site visit undertaken for the 2016 EIS Condition Assessment and the site visit undertaken by the Project Team, therefore the physical condition of the pumps has not been observed. However, the current pump configuration is one standby and one duty, which does not comply with Halton Region's latest design standards. It was noted in the 2016 EIS Condition Assessment report that the pump guiderails, valves and ductile iron fittings are rusted and require replacement.

A capacity study, conducted as part of the 2016 EIS Condition Assessment, found that the firm capacity of the pumps is 124 L/s, which is lower than the rated capacity of 135 L/s (MOECC, 2015) but higher than the estimated peak flow of 112 L/s at the time the capacity study was undertaken. Further analysis related to WWPS capacity can be found in Section 4.1.3.

During the Project Team site visit, it was noted that there is screening buildup on the bar screen which requires manual removal daily. The buildup of material on the screen is shown in Figure 3-2. As noted in the 2016 EIS Condition Assessment, removal of screenings is a challenge as the wet well is considered confined space.

Figure 3-2: Bar screen with a buildup of material

As explained in Section 4.1.2, the capacity of the wet well is equivalent to approximately 5 minutes of storage time during current peak flows (106 L/s), and less for projected future flows. This wet well capacity is much less than the minimum one hour required as noted in the Halton Water and Wastewater Facility Design Manual (Halton Region, 2012). The EIS condition assessment did note, however, that the current available wet well capacity does meet the MOECC guideline requirement for a 10 minute pump cycle volume.

The EIS condition assessment noted that no major structural issues were observed for the control building. However, the following aged items would need to be replaced: roof shingles, acoustic/fire protection interior wall insulation, painting of interior wooden roof panels, rusted doors, frames and hardware and exterior window veneers. The aging of these items was seen and confirmed by the Project Team.

Building services for the existing structure include ventilation, heating, plumbing and fire protection systems. These services were installed in 1988 and are near or have surpassed their useful life. The EIS condition assessment noted that the existing ventilation system for the wet well is in poor condition and that the facility does not have an odour control facility. The interior of the building, including the pump control equipment and emergency generator are shown in Figure 3-3.

Figure 3-3: Interior of the Control Building

The EIS condition assessment observed that the existing electrical and control equipment has reached the end of its useful life and would require upgrades for the projected 2031 flows. It has been recommended these items, including the existing 65 kW generator, pump MCCs, motors and lighting be replaced.

There is currently an outdoor 150 kVA transformer, as shown in Figure 3-4. This transformer will be undersized for pumps installed to handle the projected 2031 flows.

Figure 3-4: Existing 150 kVA Transformer

The 2016 EIS Condition Assessment noted that the 300 mm emergency overflow pipe from the wet well to Rambo Creek has a capacity of 103 L/s. It follows that the overflow is undersized for both

peak existing (106 L/s) and peak projected 2031 (138 L/s) flows. A photo (see Figure 3-5) was taken of the emergency overflow pipe discharge point to Rambo Creek and shows the pipe partially filled with materials from the creek bed.

Figure 3-5: Junction Street WWPS overflow pipe discharge pipe at Rambo Creek

The 2016 EIS Condition Assessment found that the existing 450 mm concrete inlet sewer has sufficient capacity for the projected 2031 flows but that the condition of the sewer is unknown.

The 300 mm diameter forcemain from the WWPS to the trunk sewer on the Waterfront Trail was determined to have an estimated capacity of 247 L/s according to the EIS condition assessment. This is sufficient to handle 2031 projected flows (138 L/s). However, this WWPS was constructed prior to implementation of Halton Region's current WWPS design standards (Halton Region, 2012) that require a second forcemain for operational flexibility and redundancy. As such, there is a potential risk of operational vulnerability attributed to having a single forcemain and limited storage volume.

The section of forcemain along Smith Avenue was replaced in 2011 and the section along Lakeshore Road was constructed in 1915. According to as-built drawings, the section of the forcemain running underneath Rambo Creek was replaced in 1975, when the current Rambo Creek culvert was constructed. The 2016 EIS Condition Assessment recommended the forcemain section along Lakeshore Road from the station to Smith Avenue be replaced due to old age (Environmental Infrastructure Solutions Inc., 2016). A schematic of the existing forcemain is shown in Figure 3-7.

3.3.2 Junction Street WWPS Catchment Area

The Junction Street WWPS services a southern portion (primarily residential) of the City of Burlington, as shown in Figure 3-6. The catchment area is highly urbanized with a mix of low, medium and high density housing and was designated in the 2011 Sustainable Halton Water and Wastewater Master Plan (AECOM, 2011) for further growth through intensification.

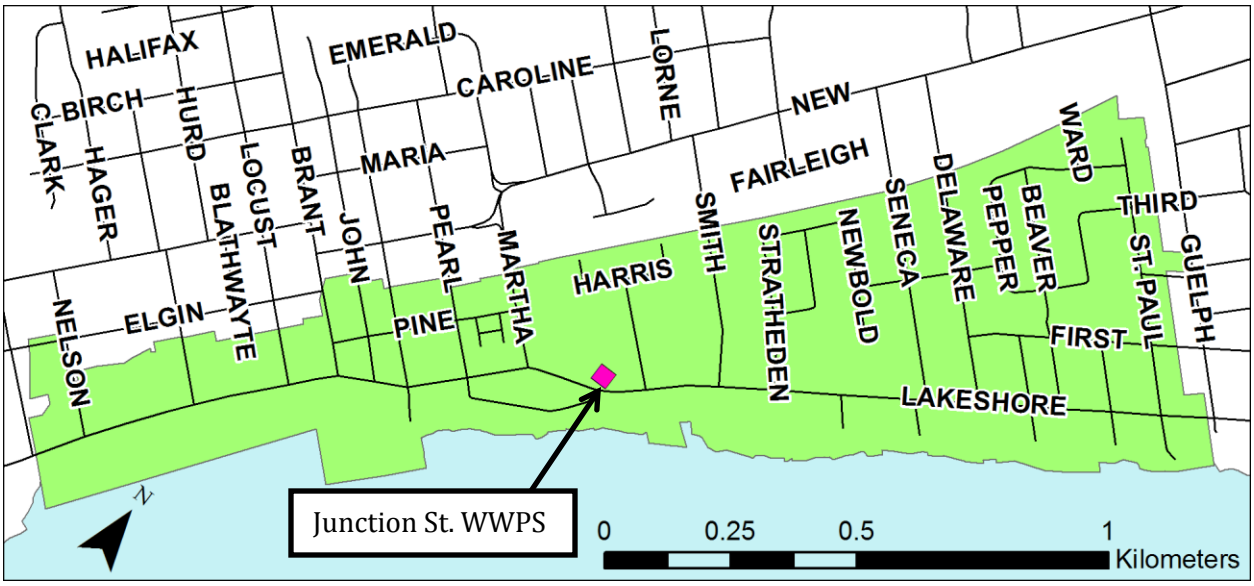

Figure 3-6: Junction Street WWPS Catchment (shaded area)

Flows are received at the Junction Street WWPS through a 450 mm diameter gravity sewer. From the WWPS, the collected wastewater is pumped via a 300 mm diameter forcemain into an 1800 mm diameter gravity trunk sewer at the intersection of Smith Avenue and the Waterfront Trail. The trunk sewer drains in a westerly direction, with flows terminating at the Skyway WWTP. Figure 3-7 provides an overview of the pumping station, forcemain, and nearby trunk sewer.

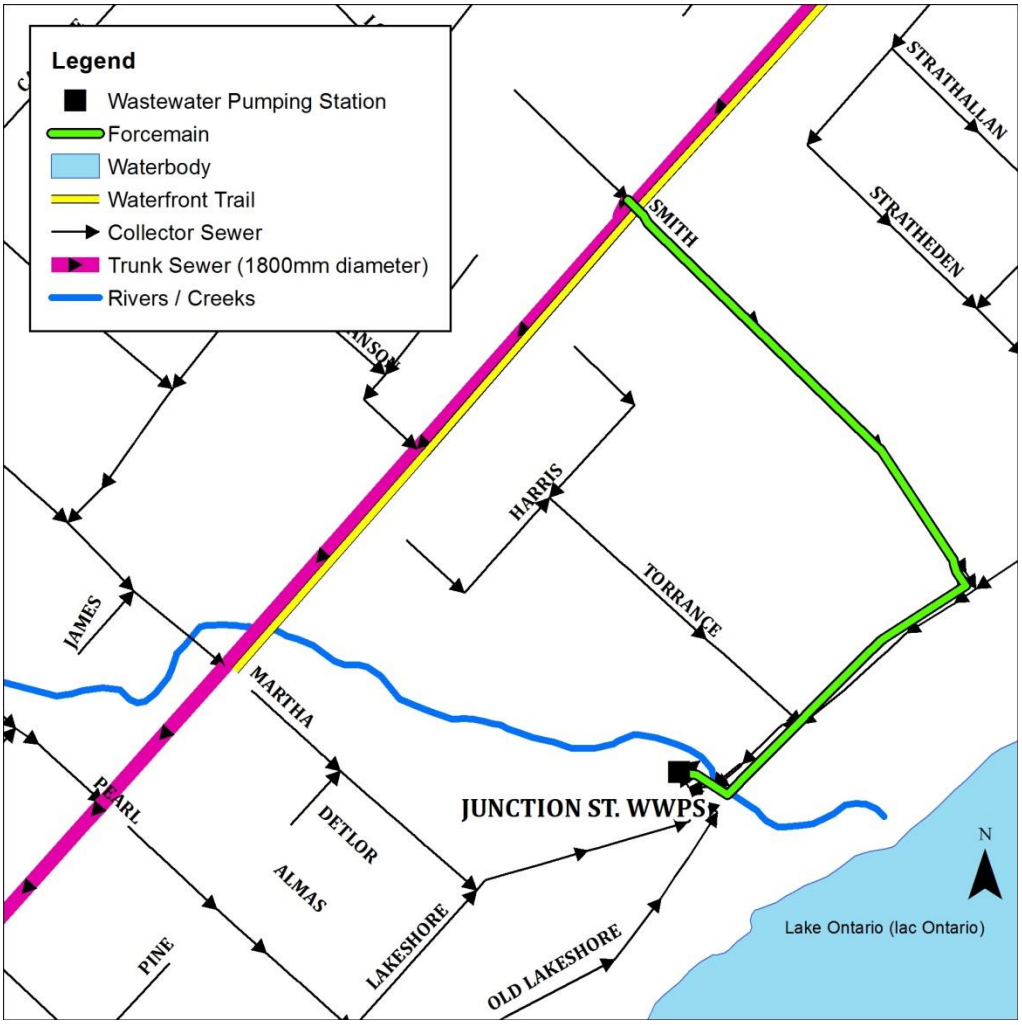

Figure 3-7: Junction Street WWPS and Forcemain

4 Alternative Solutions Development and Evaluation

4.1 DESIGN BASIS

This section describes the design standards and basis of design that were used to develop the alternative solutions.

4.1.1 Design Standards

The following design standards were referenced to develop the Alternative Solutions:

- Water and Wastewater Facilities Design Manual (Halton Region, 2012)
- Water and Wastewater Linear Design Manual (Halton Region, 2015)
- Design Guidelines for Sewage Works (MOECC, 2008)

4.1.2 Current Capacity and Historical Performance

The Junction Street WWPS has a firm rated capacity of 135 L/s (MOECC, 2015). The working volume of the wet well is approximately 30 cubic metres (Environmental Infrastructure Solutions Inc., 2016). This volume is equivalent to approximately 3.7 minutes of storage at the 135 L/s rated capacity.

The existing hourly peak flow is 106 L/s, as estimated by Halton Region.

Monthly historical average and maximum day flows from 2009 to 2015 are shown on Figure 4-1.

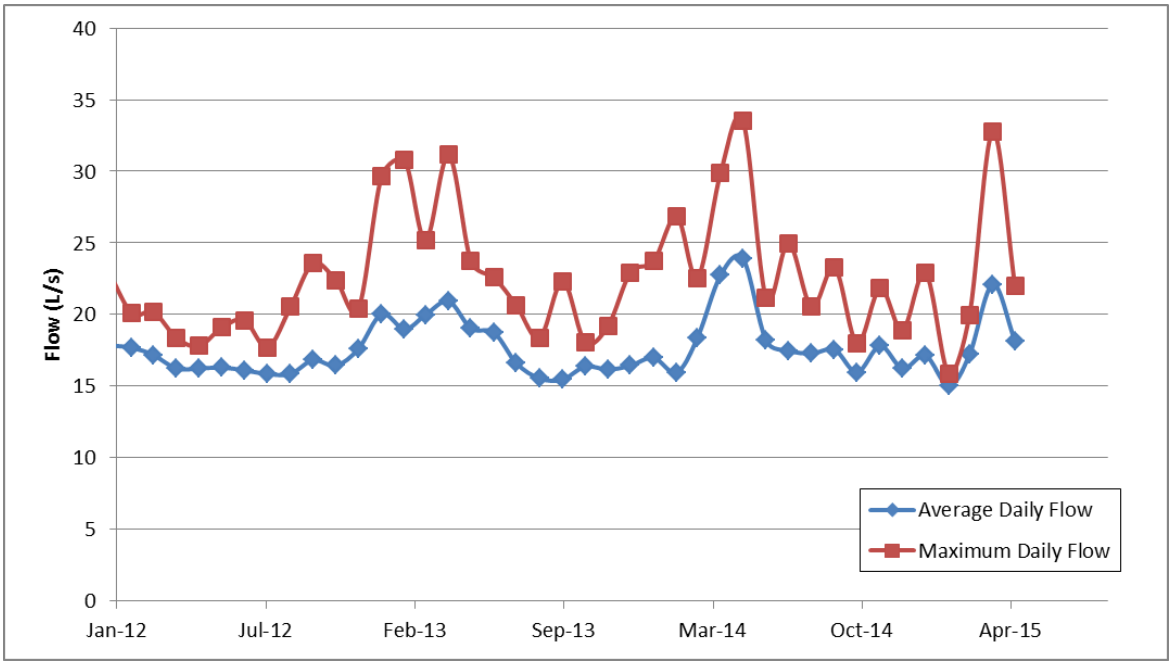

Figure 4-1: Historical Average and Maximum Daily Flows (2009 to 2015) by Month to the Junction WWPS

4.1.3 Future Capacity

The 2011 Sustainable Halton Water and Wastewater Master Plan (AECOM, 2011) projected 2031 flows to the Junction Street WWPS to be 144 L/s. However, in 2017, the Region re-evaluated the 2031 projected peak flow using updated wastewater design criteria and more recent historical flow information. The revised 2031 flow projection was calculated by the Region using the following methodology:

2031 Projected Flow = Existing Hourly Peak Flow + Increase in Peak Flow due to Growth

For purposes of this MCEA, it was assumed that all inflow and infiltration (I/I) was accounted for in the existing hourly peak flow rate, and no additional I/I allowance was provided.

The increase to peak flow due to growth was calculated by multiplying the projected residential or employment equivalent population by the respective unit flow rates to obtain an average day flow. The equivalent populations and unit flow rates are summarized in Table 4-1. The Harmon Peaking Factor, calculated to be 3.34 for the increase in population, was applied to the average day flow increase to determine the increase in hourly peak flow to the station.

Table 4-1: Increase in Average Day and Hourly Peak Flow to 2031

TYPE	INCREASE IN EQUIVALENT POPULATION TO 2031	UNIT FLOW RATE (L/CAP/DAY)	AVERAGE FLOW (L/S)
Residential	3,024	210	7.3
Industrial	93	140	0.2
Commercial	1,291	110	1.6
Institutional	182	230	0.5
Total Increase in Average Day Flow			**9.6**
Total Increase in Hourly Peak Flow to 2031 using Calculated Harmon Peaking Factor of 3.34			**32.1**

Therefore, the revised 2031 projected peak flow to the station was determined to be approximately 138 L/s (Existing peak flow of 106 L/s and an additional 32 L/s due to growth). The current rated capacity of 135 L/s needs to be increased to satisfy the Region's projected 2031 requirements.

The following table is provided for reference and provides a comparison of the capacity requirements and measures from different sources referenced throughout the project.

Table 4-2 Comparison of Capacity Requirements from Different Sources

CAPACITY REQUIREMENT / MEASURE	FLOW	SOURCE
2011 Master Plan 2031 Capacity Requirement	144 L/s	Halton Region – calculated
Estimated Peak Flow at Time of EIS Report (2016)	112 L/s	EIS report – unknown whether flow was measured or calculated
2017 Existing Peak Flow	106 L/s	Halton Region – measured
2017 Revised 2031 Capacity Requirement	138 L/s	Halton Region – calculated
Current Firm Capacity of Pumps	124 L/s	EIS pump tests – measured
Current Rated Capacity	135 L/s	MOECC – Amended Environmental Compliance Approval for the Sewage Collection System servicing the Burlington-Skyway Wastewater Treatment Plant (2015)

4.2 DESCRIPTION OF ALTERNATIVE SOLUTIONS

The WWPS alternatives considered were:

Alternative PS-1: Status Quo (Do Nothing)
Alternative PS-2: Divert Flows to Gravity Sewer
Alternative PS-3: Upgrade Existing WWPS

Alternative PS-4: Replace Existing WWPS

In all cases, the existing WWPS superstructure would be retained.

The conveyance route alternatives considered were:

Alternative FM-1: Do Nothing
Alternative FM-2: Add Forcemain Redundancy – Two New Forcemains
Alternative FM-3: Add Forcemain Redundancy – Reuse of Existing Forcemain and One New Forcemain

All alternatives, including sub-alternatives and forcemain routes, are discussed further in the sections below.

4.2.1 WWPS and Overall Alternatives

4.2.1.1 Alternative PS-1: Do Nothing (Status Quo)

This Alternative is required under the MEA MCEA Process as a baseline with which to compare all other Alternatives. In this case, the Do Nothing Alternative encompasses maintaining status quo operation of the existing Junction Street WWPS and existing single forcemain. The WWPS would continue to be maintained, including replacement of aging equipment, but would not be rerated for higher capacity.

4.2.1.2 Alternative PS-2: Divert Flows to Gravity Sewer

This Alternative generally encompasses reducing or eliminating the catchment area that drains to the WWPS and constructing a new gravity sewer to convey flows to the existing trunk sewer.

4.2.1.2.1 Alternative PS-2A: Divert All Flows to Gravity Sewer and Decommission WWPS

Alternative PS-2A involves diverting all flows in the existing Junction WWPS catchment area to a new gravity sewer which then discharges to the existing trunk sewer.

4.2.1.2.2 Alternative PS-2B: Divert Portion of Flows to Gravity Sewer and Decrease Capacity of WWPS

Alternative 2B involves dividing the existing catchment area such that a portion would continue to drain to the WWPS and the remainder would drain to a new gravity sewer. The new gravity sewer would then connect to the existing trunk sewer. The catchment area division and sewer route are shown in Figure 4-2 below.

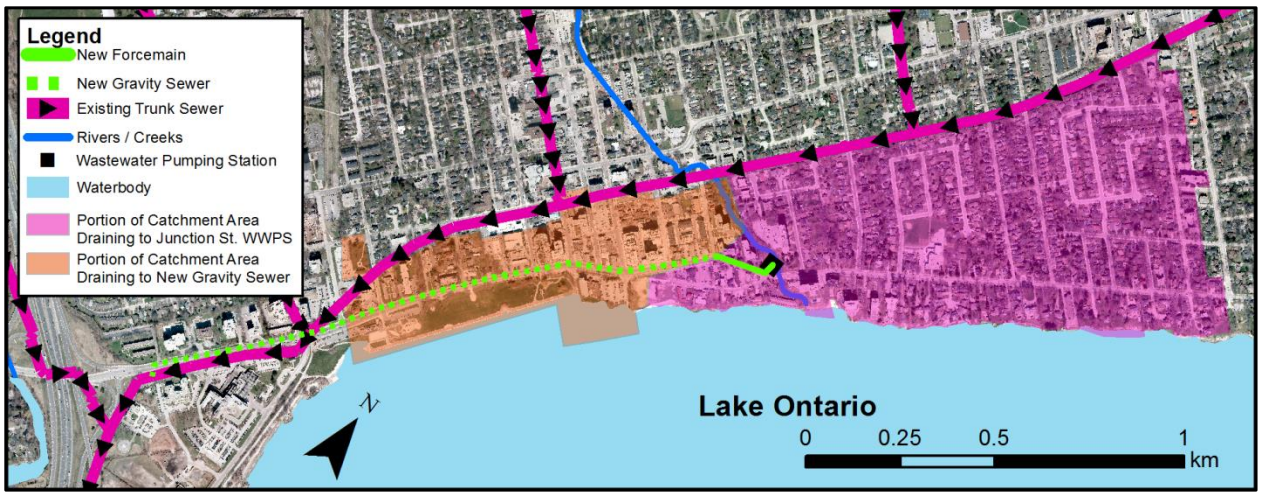

Figure 4-2: Alternative 2B Catchment Area Division and Gravity Sewer Route

The existing WWPS would be refurbished to pump a smaller volume from the reduced catchment area. The required peak flow capacity (including I/I allowance) would be approximately 52 L/s, contrasting with the existing rated capacity of 135 L/s (MOECC, 2015). The reduced capacity would trigger a Type 3 pumping station design (Halton Region, 2012); however, any changes to the capacity of the station at later design stages would trigger a Type 4 design, which is required for stations with capacities greater than 53 L/s.

Type 3 design features the following components, at a minimum:

- Submersible pumping station
- Separate building for controls, MCC, standby generator, etc.
- Basement or vault to house valves (not confined space)
- Minimum 1 hour peak flow wet well storage capacity
- Minimum three pumps (one each lead, lag, and standby)
- Permanent standby generator sized for all connected loads

This alternative would involve upgrading the existing Junction WWPS to meet the above guidelines and replacing the pumps and other equipment with ones of suitable capacity. A new forcemain would also be required and would discharge to a new gravity sewer.

The new gravity sewer would start at Martha Street. Due to hydraulic requirements, the gravity sewer would be routed along Lakeshore Road/North Shore Boulevard and connect to the trunk sewer between Maple Avenue and the Queen Elizabeth Way (QEW), for a length of approximately 1.3 km long.

The sewer would be sized for the total capacity of both parts of the former Junction Street WWPS catchment area with a peak flow of approximately 138 L/s.

4.2.1.3 Alternative PS-3: Upgrade Existing WWPS

Alternative PS-3 includes upgrading the existing WWPS to meet the Halton Water and Wastewater Facility Design Manual (Halton Region, 2012) requirements for Type 4 wastewater pumping stations. A Type 4 design would feature the following components, at a minimum:

- Dry/wet well pumping station layout
- Superstructure above dry well to house controls, MCC, standby generator, etc.
- Split wet well
- Minimum 1 hour peak flow wet well storage capacity
- Minimum four pumps (three duty and one standby) located in dry pit
- Permanent standby generator sized for all connected loads

Components of Alternative PS-3 are shown schematically in Figure 4-3.

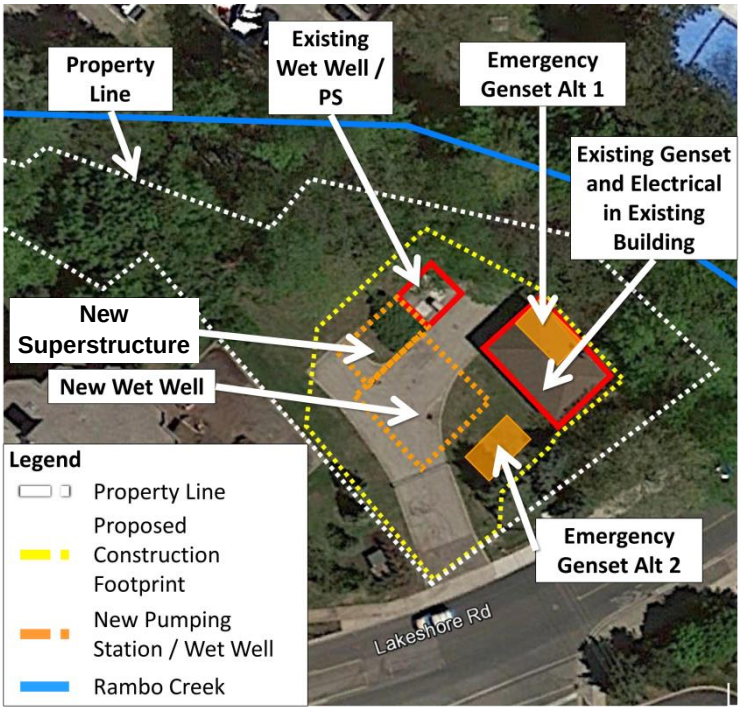

Figure 4-3: Alternative PS-3: Upgrade Existing WWPS

4.2.1.4 Alternative PS-4: Replace Existing WWPS

Alternative PS-4 involves replacing the existing WWPS with a new WWPS located on the same site. The existing superstructure would be repurposed. As with Alternative PS-3, a Type 4 wastewater pumping station design would be required.

Components of Alternative PS-4 are shown schematically in Figure 4-4.

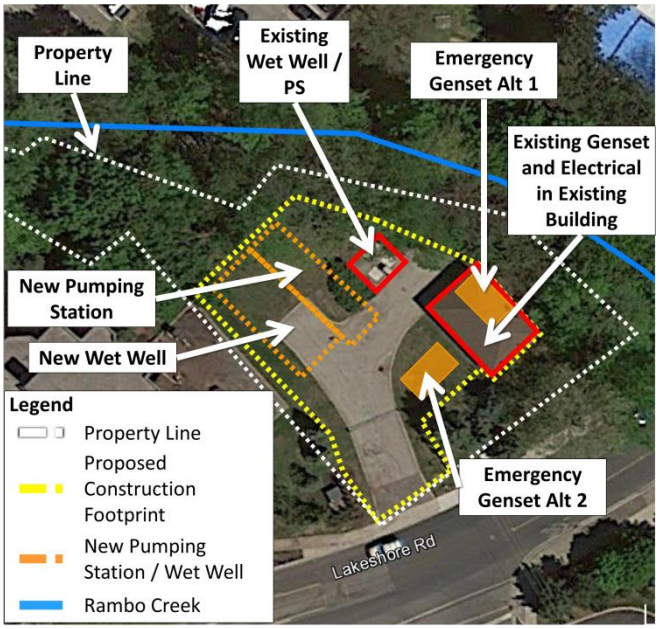

Figure 4-4: Alternative PS-4: Replace Existing WWPS

4.2.2 Forcemain Alternatives and Route Options

Forcemain redundancy was required to address the Problem Statement. Three main alternatives were considered:

Alternative FM-1: Do Nothing
Alternative FM-2: Add Forcemain Redundancy – Two New Forcemains
Alternative FM-3: Add Forcemain Redundancy – Reuse of Existing Forcemain and One New Forcemain

Each is discussed in the sections below. Alternatives FM-2 and FM-3 also included routes as sub-alternatives:

RT-A. Smith Avenue
RT-B. Martha Street
RT-C. Pearl Street and Lakeshore Road
RT-D. Pearl Street and Old Lakeshore Road
RT-E. Torrance Street

The route options are shown on Figure 4-5 below.

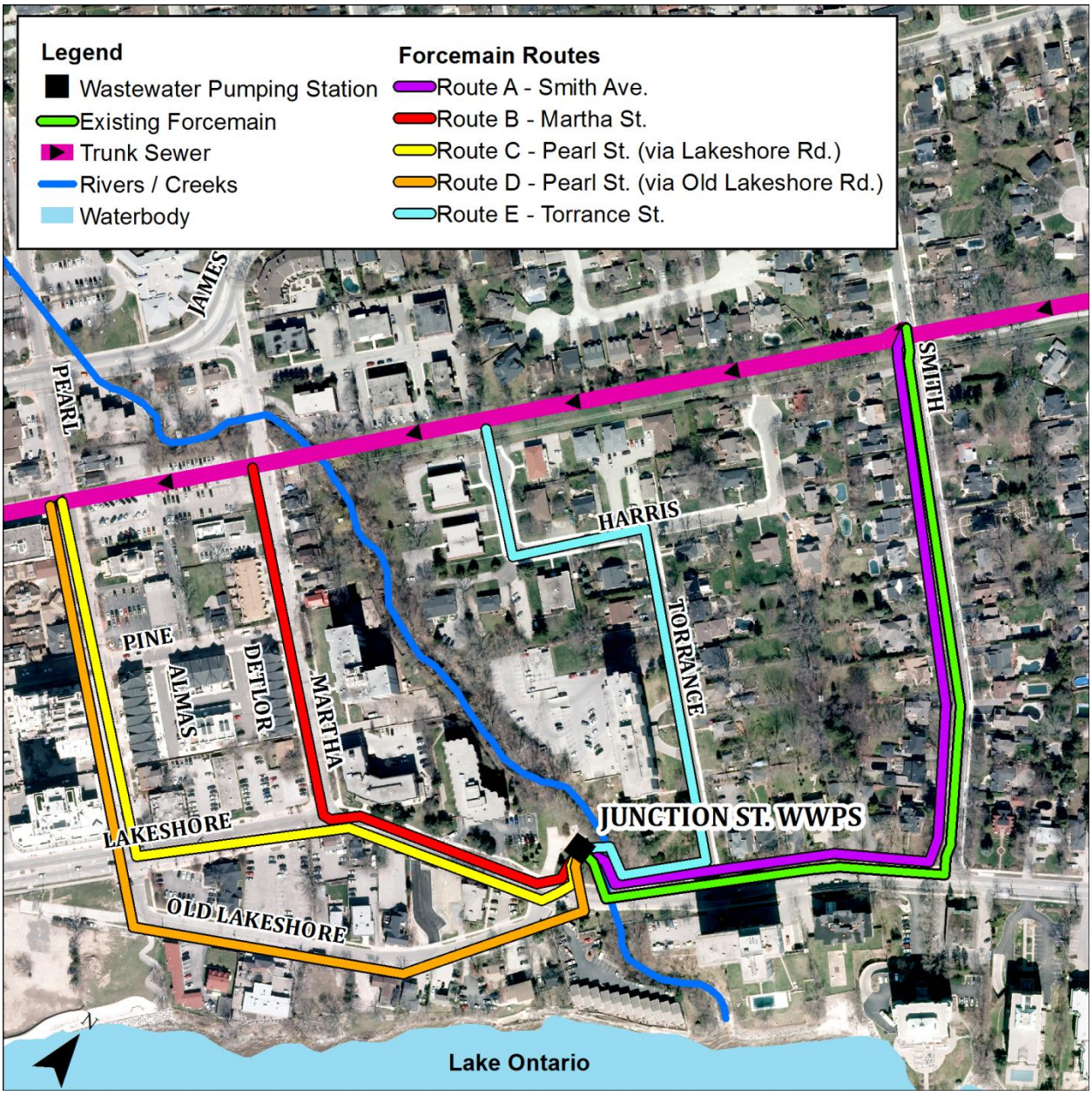

Figure 4-5: Map of Forcemain Route Options

4.2.2.1 Alternative FM-1: Do Nothing

The existing single forcemain does not meet the requirements of the Region's design standards as it has no redundancy. Therefore, this Alternative does not address the Problem Statement. Additionally, while the existing forcemain has sufficient capacity to convey flows to 2031, a portion of it was constructed in 1915 and requires replacement or rehabilitation for continued long-term use, as discussed in Section 3.3.1.

4.2.2.2 Alternative FM-2: Add Forcemain Redundancy – Two New Forcemains

All forcemain route alternatives include construction of two new forcemains along a shared route. Five route options were identified:

RT-A. Twin Forcemains along Smith Avenue
RT-B. Twin Forcemains along Martha Street
RT-C. Twin Forcemains along Pearl Street and Lakeshore Road
RT-D. Twin Forcemains along Pearl Street and Old Lakeshore Road
RT-E. Twin Forcemains along Torrance Street

4.2.2.3 Alternative FM-3: Add Forcemain Redundancy – Reuse of Existing and One New Forcemain

Alternative 3 includes reuse and rehabilitation or partial replacement of the existing forcemain along with construction of a new second forcemain. This alternative considers keeping the existing forcemain that runs along Lakeshore Road and Smith Avenue, and the addition a new forcemain along one of the routes outlined below and shown in Figure 4-5.

RT-A. Smith Avenue
RT-B. Martha Street
RT-C. Pearl Street and Lakeshore Road
RT-D. Pearl Street and Old Lakeshore Road
RT-E. Torrance Street

4.3 EVALUATION OF ALTERNATIVE SOLUTIONS

4.3.1 Evaluation Methodology

The alternatives were evaluated comparatively against each other to establish relative impacts. The evaluation was conducted in three main steps:

1. Evaluate WWPS Alternative Solutions
2. Evaluate forcemain alternatives and route options
3. Identify recommended overall solution, including forcemain alternative and route

4.3.1.1 Screening Process

Screening was conducted to determine, at a high level, whether alternatives are technically feasible and if costs or other potential impacts (such as social or natural environment) would be prohibitive to proceeding with implementation of the project. The screening process was completed on a case-by-case basis for each alternative solution or forcemain route option, and not comparative.

Any alternatives that were screened out did not proceed to the detailed evaluation.

4.3.1.2 Detailed Evaluation

The detailed evaluation was completed on alternatives or route options that were considered potentially feasible following the screening process. The evaluation was conducted in a qualitative manner; all alternatives or route options were compared against a set of evaluation criteria, described in Section 4.3.2, to determine relative impacts associated with each alternative or route option.

Each alternative or route option was then rated using a colour scheme, summarized below:

- **Red**: most potential impacts or least potential benefit
- **Yellow**: moderate potential impacts or benefit
- **Green**: least potential impacts or most potential benefit

Following completion of the detailed evaluation process, the overall recommended solution (including forcemain route) was identified.

4.3.2 Evaluation Criteria

The evaluation criteria used to determine the recommended solution are summarized in the table below.

Table 4-3: Evaluation Criteria

CATEGORY	EVALUATION CRITERIA
Social	Disruption to community activities and features
	Local Surcharging
	Air/odour/noise impacts
	Cultural and Heritage impacts
	Archaeological impacts
	Transit disruptions
	Aesthetic impacts
Natural Environment	Impacts to Surface Water / Aquatic Habitat
	Impact to Regional NHS key features
	Impact to regulated areas (e.g. flood plains, erosion hazards)
	Impact to vegetation and vegetation communities
	Impact to wildlife and wildlife habitat
	Impact to species at risk
	Contribution to climate change
Technical	O&M issues and feasibility
	Constructability issues
	Implementation / Construction timeframe
	Halton Region Design Criteria
	Resiliency to climate change
	Impact on nearby utilities
Legal/Jurisdictional	Property disposition or disruption (land use)
	Planning permit requirements
Economic	Capital Costs (land acquisition and construction)
	O&M Costs
	Lifecycle Costs

4.3.3 Evaluation of WWPS Alternative Solutions

4.3.3.1 WWPS Screening

Screening of the Alternative solutions is provided in the table below.

Table 4-4: Screening of Alternative Solutions

ALTERNATIVE	COMMENTS ON FEASIBILITY	INCLUDED WITH DETAILED EVALUATION
PS-1: Do Nothing (Status Quo)	This alternative must be included with the detailed evaluation as it represents the Status Quo and is a baseline for comparison of other alternatives. Therefore, it cannot be screened out.	Yes
PS-2A: Divert All Flows to Gravity Sewer and Decommission WWPS	This alternative was screened out due to unfavourable soil conditions along Lakeshore Road and due to potential significant social (traffic) impacts during construction and high expected costs.	No
PS-2B: Divert Portion of Flows to Gravity Sewer and Decrease Capacity of WWPS	This alternative has potential for significant social and economic impacts associated with construction of a 1.3 km long sewer along Lakeshore Road as well as the need to upgrade the existing Junction WWPS. Therefore, it is not a viable alternative as the social and economic costs far outweigh the benefits.	No
PS-3: Upgrade Existing WWPS	This alternative presents a potentially feasible solution and should be included in the detailed evaluation.	Yes
PS-4: Construct New WWPS on Existing Site	This alternative presents a potentially feasible solution and should be included in the detailed evaluation.	Yes

Therefore, Alternatives 2A and 2B were excluded from the Detailed Evaluation.

4.3.3.2 WWPS Detailed Evaluation

The detailed evaluation of alternative solutions (carried forward in the evaluation process) is included in Table 4-5.

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Table 4-5: Detailed Evaluation of WWPS Alternative Solutions

	WWPS Alternatives					
	Alt 1 - Do Nothing		Alt 3 - Upgrade on Site		Alt 4 - New on Site	
Social	High	An increasing number of service visits would be required as components reach end of design life. Service visits may result in increased noise, odour and potential wastewater service disruption for nearby residents. If emergency works are required, Lakeshore Road may need to be fully or partially shut down. Failure could occur at any time.	Moderate	Construction period would be longer than new station alternative as work on existing PS can't start until new PS online. Some disruption to pedestrians and traffic near site entrance due to construction activities and contractor parking.	Low	Some disruption to pedestrians and traffic near site entrance due to construction activities and contractor parking. Stage 2 Archeological Assessment will be required.
Natural Environment	Moderate	Risk of emergency overflows expected to increase if no additional capacity to the system is provided, therefore a higher risk of negative impact to the water quality of Rambo Creek is expected.	Low	The conceptual construction footprint occupies approximately 846m^2. Construction limits are within disturbed areas (paved, manicured lawn), with some potential to impact edge of the forest community found around the riparian floodplain of Rambo Creek, at the east end of the construction footprint.	Moderate	The conceptual construction footprint occupies approximately 848m^2. Construction limits may extend beyond disturbed areas (paved, manicured lawn) into forest community found around the riparian floodplain of Rambo Creek, both at the north and east ends of the construction footprint.
Technical	High	Station has existing O&M difficulties and does not meet several of the current Halton Water and Wastewater Facility Design Manual (Halton Region, 2012) requirements.	Moderate	Constructability issues may arise as modifications to turn existing wet well into new dry well will take place in a very small footprint; implementation timeframe will be longer as phased construction will be necessary. New station will be designed to reduce O&M issues; alternative will meet the Halton Water and Wastewater Facility Design Manual (Halton Region, 2012) requirements.	Low	New station will be designed to reduce O&M issues; alternative will meet the requirements in the Halton Water and Wastewater Facility Design Manual (Halton Region, 2012)
Legal / Jurisdictional	Low	Property is owned by Halton Region, and no additional planning permits are required	Low	Property is owned by Halton Region, and no additional planning permits are required	Low	Property is owned by Halton Region, and no additional planning permits are required
Economic	$2.4M capital cost		$6.5M capital cost		$6.4M capital cost	
OVERALL	(3) Least Preferred		(2) Moderately Preferred		(1) Most Preferred	

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As part of the detailed evaluation, a cost estimate was prepared. All costs are at a Class 'D' conceptual level and provide for a planning level of accuracy based on best available information and assumptions at the time of this study.

Table 4-6 presents the costs estimated for the alternatives included in the detailed evaluation.

Table 4-6: Estimated Costs of WWPS Alternatives

ALTERNATIVES	CAPITAL COST ($ MILLION)	WHOLE LIFE COST (30-YR LIFECYCLE) ($ MILLION)	NET PRESENT VALUE ($ MILLION)	ANNUAL OPERATING COST ($)
PS-1: Do Nothing	2.4*	5.6	4.1	110,000
PS-3: Upgrade Existing WWPS	6.5	10.4	8.9	110,000
PS-4: Replace Existing WWPS	6.4	10.1	8.6	110,000

*Note that to continue to operate the pumping station, without upgrading or replacing the station, repairs are required. This is included in the cost estimate as a capital cost, and is based on the cost estimate prepared by Environmental Infrastructure Solutions Inc., in the "Scoping of Upgrade Alternatives for Junction Street Wastewater Pumping Station" technical memorandum (Environmental Infrastructure Solutions Inc., 2016).

4.3.3.3 Summary of WWPS Evaluation

A summary of the WWPS Evaluation results is shown in Table 4-7.

Table 4-7: Summary of WWPS Alternative Solution Evaluation

CRITERIA	ALT. PS- 1: DO NOTHING	ALT. PS-3: UPGRADE EXISTING JUNCTION WWPS	ALT. PS-4: CONSTRUCT NEW WWPS ON EXISTING SITE
Social	🔴	🟡	🟢
Natural	🟡	🟢	🟡
Technical	🔴	🟡	🟢
Legal / Jurisdictional	🟢	🟢	🟢
Economic	🟢	🟡	🟡
Overall	🔴	🟡	🟢

🟢 **Lowest Potential Impact, Most Desirable**

🟡 **Moderate Potential Impact, Neutral**

🔴 **Highest Potential Impact, Least Desirable**

4.3.4 Evaluation of Forcemain Alternatives and Route Options

4.3.4.1 Overall Forcemain Solution Evaluation

As described in Section 0, the forcemain alternatives considered include:

Alternative FM-1: Do Nothing
Alternative FM-2: Add Forcemain Redundancy – Two New Forcemains
Alternative FM-3: Add Forcemain Redundancy – Reuse of Existing Forcemain and One New Forcemain

Screening of the alternatives is provided in the table below.

Table 4-8: Screening of Forcemain Alternatives

ALTERNATIVE	COMMENTS ON FEASIBILITY	PROCEED WITH DETAILED ROUTE EVALUATION
FM-1: Do Nothing	This alternative must be included with the detailed evaluation as it represents the Status Quo. Therefore, it cannot be screened out.	Yes
FM-2: Add Forcemain Redundancy – Two New Forcemains	This alternative, including route options, presents a potentially feasible solution and should be included in the detailed evaluation.	Yes
FM-3: Add Forcemain Redundancy – Reuse of Existing and One New Forcemain	This alternative involves high potential social and economic impacts associated with construction of a new forcemain as well as construction to rehabilitate or replace a portion of the existing forcemain along Lakeshore Rd. Therefore, it is not a viable alternative as the social and economic costs far outweigh the benefits.	No

Therefore, detailed route evaluations were conducted for alternatives FM-1 and FM-2.

4.3.4.2 Forcemain Detailed Route Evaluation

The detailed evaluation of the forcemain routes is provided in Table 4-9.

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Table 4-9: Detailed Evaluation of Forcemain Routes

	Forcemain Alternatives											
	FM-1 Do Nothing		FM-2A - Twin via Smith Ave.		FM-2B - Twin via Martha St.		FM-2C - Twin via Pearl St. (via Lakeshore)		FM-2D - Twin via Pearl St. (via Old Lakeshore)		FM-2E - Twin via Torrance St.	
Social	High	Do nothing increases the risk of forcemain failure. This increases the risk of emergency bypassing or other emergency works requiring Lakeshore Road to be fully or partially shut down. Failure could occur any time, day or night.	High	Relatively long construction length along Lakeshore Road which would cause traffic and transit disruptions; Construction along Smith Ave. would cause some disruption; Construction pits for Rambo Creek crossing would possibly create additional disruption	Moderate	Relatively short construction length along Lakeshore Rd with possible detour of Old Lakeshore Rd.; construction along Martha St. which is wider than nearby streets.	High	Relatively long construction length along Lakeshore Road which would cause traffic and transit disruptions; possible detour of Old Lakeshore; construction along Pearl, which is wider than nearby streets but is a busy commercial area.	Moderate	Construction along Old Lakeshore with possible detour along Lakeshore Rd.; construction along Pearl, which is wider than nearby streets.	Moderate	Very short construction length along Lakeshore Rd.; Construction along Torrance St. and Harris St. would cause some disruption. Construction pits for Rambo Creek crossing would possibly create additional disruption.
Natural Environment	High	Risk of emergency overflows expected to increase if no additional forcemain redundancy is provided, therefore a higher risk of negative impact to Rambo Creek water quality is expected.	High	Impacts to the creek are mitigated through the use of trenchless construction methods. Route is well treed; therefore the potential for impacts to city/privately owned trees is identified. The level of impact associated with this alternative is similar to Alternative FM-2E; however this alignment is much longer therefore the potential for impacts to city/privately owned trees is increased compared to that alignment. Although the impacts of all alternatives are relatively minor, this alternative is the least preferred from the perspective of natural environment.	Low	Impacts to city/privately owned trees. This alignment avoids the need to install the forcemain across Rambo Creek and associated fish habitat. Although the impacts of all alternatives are relatively minor, this is among the preferred alternatives from an environmental perspective.	Low	Impacts to city/privately owned trees. This alignment avoids the need to install the forcemain across Rambo Creek and associated fish habitat. Although the impacts of all alternatives are relatively minor, this is among the preferred alternatives from an environmental perspective.	Low	Impacts to city/privately owned trees. This alignment avoids the need to install the forcemain across Rambo Creek and associated fish habitat. Although the impacts of all alternatives are relatively minor, this is among the preferred alternatives from an environmental perspective.	Moderate	Impacts to the creek are mitigated through the use of trenchless construction methods. Route is well treed (similar to Alternative FM-2A); however this alignment is much shorter therefore the potential for impacts to city/privately owned trees is reduced compared to that alignment. This alternative is less preferred than Alternatives FM-2B, FM-2C, and FM-2D, but more preferred than Alternative FM-2A.
Technical	High	Lack of redundancy means existing forcemain cannot be inspected or rehabilitated without bypassing the pumping station; a forcemain break may lead to a significant unplanned O&M effort; lack of redundancy does not meet Halton Region's design criteria	High	Construction across Rambo Creek may create constructability issue; longer total construction length than alternatives FM-2B, FM-2C and FM-2E.	Low	No construction crossing Rambo Creek; shortest route likely to have the fewest constructability issues.	Moderate	No construction crossing Rambo Creek; longer construction footprint than Alternatives FM-2B and FM-2E.	Moderate	No construction crossing Rambo Creek; longest construction footprint.	Moderate	Construction across Rambo Creek may create constructability issue; shorter construction footprint than Alternatives FM-2A, FM-2C, and FM-2D.
Legal / Jurisdictional	Low	No changes in property ownership, no additional planning permits required	Low	No changes in property ownership, no additional planning permits required	Low	No changes in property ownership, no additional planning permits required	Low	No changes in property ownership, no additional planning permits required	Low	No changes in property ownership, no additional planning permits required	Low	No changes in property ownership, no additional planning permits required

	Forcemain Alternatives											
	FM-1 Do Nothing		**FM-2A - Twin via Smith Ave.**		**FM-2B - Twin via Martha St.**		**FM-2C - Twin via Pearl St. (via Lakeshore)**		**FM-2D - Twin via Pearl St. (via Old Lakeshore)**		**FM-2E - Twin via Torrance St.**	
Economic	Low	$0 Capital Cost. However, maintenance costs are expected to increase as the older section of the existing forcemain along Lakeshore Rd. deteriorates and breaks; replacement or rehabilitation of the section would likely be required within the short or medium term.	High	$4.6M Capital Cost Cost includes installation of twin forcemains, 580m each, installed via Horizontal Directional Drilling (HDD). Also includes cost of 60m Rambo Creek crossing (jack and bore)	Low	$2.8M Capital Cost Cost includes installation of twin forcemains, 430m each, installed via Horizontal Directional Drilling (HDD).	Moderate	$3.5M Capital Cost Cost includes installation of twin forcemains, 545m each, installed via Horizontal Directional Drilling (HDD).	Moderate	$3.7M Capital Cost Cost includes installation of twin forcemains, 590m each, installed via Horizontal Directional Drilling (HDD).	Moderate	$4.2M Capital Cost Cost includes installation of twin forcemains, 490m each, installed via Horizontal Directional Drilling (HDD). Also includes cost of 60m Rambo Creek crossing (jack and bore).
OVERALL	(6) Least Preferred		(5) Less Preferred		(1) Most Preferred		(4) Moderately Preferred		(3) Moderately Preferred		(2) Moderately Preferred	

As part of the detailed evaluation, a cost estimate was prepared. All costs are at a Class 'D' conceptual level and provide for a planning level of accuracy based on best available information and assumptions at the time of this study.

Table 4-10 presents the costs estimated for the alternatives included in the detailed evaluation. It should be noted that Lifecycle and Net Present Value (NPV) of forcemain route costs for all alternatives except FM-1: Do Nothing are estimated to be equal to the capital cost of construction, as maintenance and operational costs associated with a new forcemain are expected to be minimal.

While the capital cost for FM-1: Do Nothing is $0, maintenance costs are expected increase as the older section of the existing forcemain along Lakeshore Rd. deteriorates and breaks; replacement or rehabilitation of the section would likely be required within the short to medium term and is assumed in the lifecycle and NPV cost estimates.

Table 4-10: Estimated Cost of Forcemain Alternatives / Routes

ALTERNATIVE/ROUTE	CAPITAL COST ($ MILLION)	WHOLE LIFE COST (30-YR LIFECYCLE) ($ MILLION)	NET PRESENT VALUE ($ MILLION)
FM-1: Do Nothing Route: Continued Use of Existing Forcemain	0.0	0.4	0.2
FM-2: Add Redundancy – Two New Forcemains Route A: Smith Ave.	4.6	4.6	4.6
FM-2: Add Redundancy – Two New Forcemains Route B: Martha St.	2.8	2.8	2.8
FM-2: Add Redundancy – Two New Forcemains Route C: Pearl St. (via Lakeshore Rd.)	3.5	3.5	3.5
FM-2: Add Redundancy – Two New Forcemains Route D: Pearl St. (via Old Lakeshore Rd.)	3.7	3.7	3.7
FM-2: Add Redundancy – Two New Forcemains Route E: Torrance St.	4.2	4.2	4.2

Costs for the forcemain alternatives/routes differ primarily due to the lengths of pipe required and, for those routes which it applies, the additional cost required to cross Rambo Creek. For all the route options considered, the following should be noted:

- HDD construction for twin forcemains was assumed at a rate of $3200/m. This unit rate includes shafts; and,

- In the case of FM-1: Do Nothing, open cut construction was assumed for the replacement of the existing forcemain along Lakeshore Road.

4.3.4.3 Summary of Forcemain Solution and Route Evaluation

A summary of the detailed forcemain route evaluation is shown in Table 4-11.

Table 4-11: Detailed Forcemain Route Evaluation Summary

CRITERIA	FM-1: DO NOTHING	FM-2: ADD FORCEMAIN REDUNDNACY – TWO NEW FORCEMAINS				
	Continued Use of Existing Forcemain	Route A: Smith Ave.	Route B: Martha St.	Route C: Pearl St. (via Lakeshore Rd.)	Route D: Pearl St. (via Old lakeshore Rd.)	Route E: Torrance St.
Social	🔴	🔴	🟡	🔴	🟡	🟡
Natural	🔴	🔴	🟢	🟢	🟢	🟡
Technical	🔴	🔴	🟢	🟡	🟡	🟡
Legal / Jurisdictional	🟢	🟢	🟢	🟢	🟢	🟢
Economic	🟢	🔴	🟢	🟡	🟡	🟡
Overall	🔴	🔴	🟢	🟡	🟡	🟡

🟢 **Lowest Potential Impact, Most Desirable** 🟡 **Moderate Potential Impact, Neutral** 🔴 **Highest Potential Impact, Least Desirable**

4.3.5 Recommended Solution for WWPS and Forcemain Route

Following evaluation of the alternative solutions and forcemain routes, the recommended solution was identified to be Alternative 4 – Construction of a New WWPS on the Existing Site with Twin Forcemains along Martha Street (Route B). The Recommended Solution is shown below in Figure 4-6 and Figure 4-7.

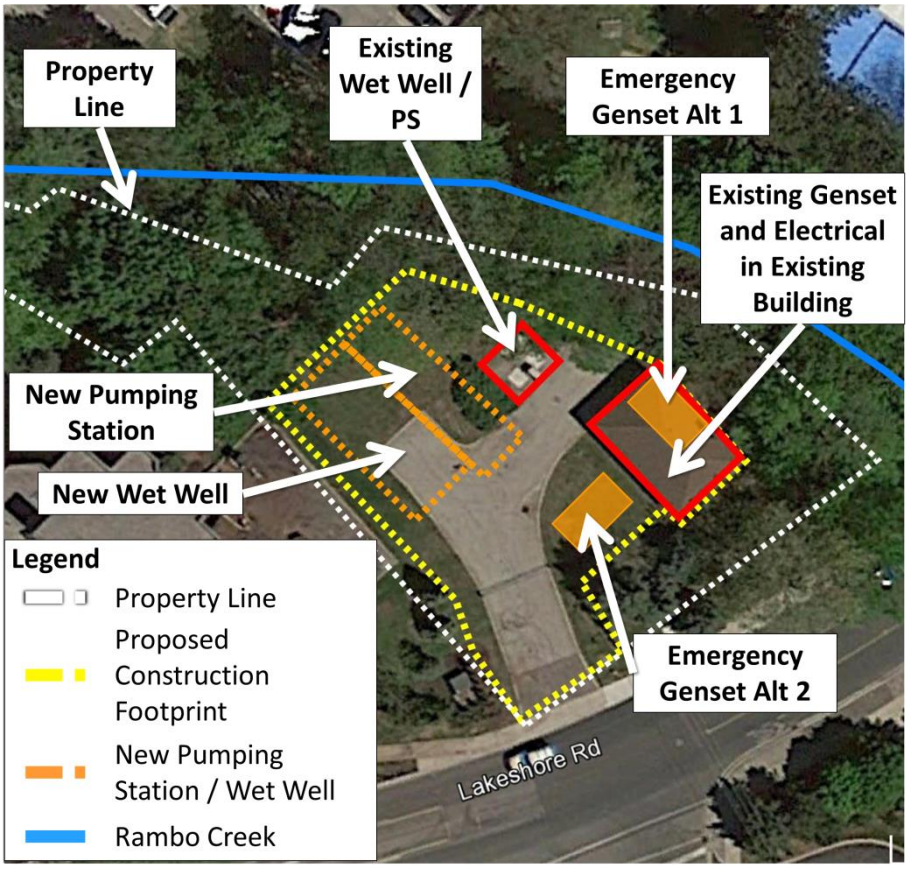

Figure 4-6: Recommended WWPS Site Layout

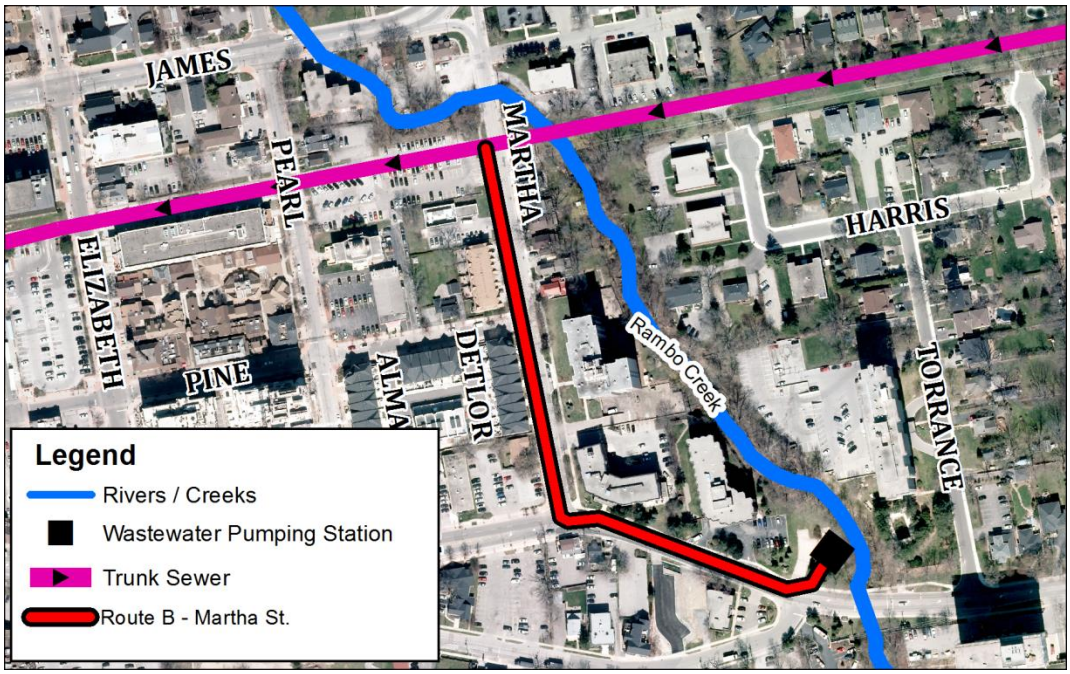

Figure 4-7: Recommended Twin Forcemain Route along Martha Street

5 Stakeholder Consultation

The following key stakeholder groups were targeted for engagement in the communication and consultation program:

1. **Immediate residents** who live in the vicinity of the Junction Street WWPS and along sewer routes defined by the study area shown in Figure 1-3.

2. **Local businesses and organizations**, including the Burlington Downtown Business Improvements Areas, in the immediate area may have some concerns regarding customer traffic and access for the businesses along lakeshore Road.

3. **Review agencies** including the MOECC and City of Burlington are being consulted through the External Technical Advisory Committee to discuss protection of the environment during the construction and subsequent operation of the WWPS and forcemain.

4. **Conservation Halton** to confirm works are not within Regulation Limit lands regulated by Conservation Halton.

5. The **City of Burlington** as their input will be critical to development of the servicing strategy proposed in the MCEA.

6. **Indigenous Communities** that potentially have interests in the area.

A list of all stakeholders was generated at the commencement of the project and was updated throughout the duration of the project to ensure all stakeholders and interested parties were consulted.

The sections below document key points of contact in the MCEA process. A Communications Tracking Log of all communications with the public, government agencies and relevant stakeholders has also been maintained and is presented in Section 5.8.

5.1 STAKEHOLDER COMMUNICATION AND CONSULTATION PLAN

A Communication and Consultation Plan (CCP) was prepared to facilitate open discussion with potential stakeholders, including the public, indigenous community groups, and agencies, throughout the MCEA process. A copy of the CCP is included in Appendix A.

5.2 INDIGENOUS COMMUNITIES CONSULTATION

Consultation with Indigenous Communities for MCEAs is guided by the Government of Ontario. To comply with these requirements, the Aboriginal and Treaty Rights Information System (ATRIS) was used to identify Indigenous Communities, including First Nation and Metis communities, located within the vicinity of the study area that may potentially be impacted by the project. Based on the results of the ATRIS search, the Notice of Study Commencement was sent to the following communities:

- Alderville First Nation
- Anishinabek Nation
- Association of Iroquois and Allied Indians
- Chippewas of Georgina Island
- Chippewas of Kettle and Stony Point
- Chippewas of Nawash First Nation

- Chippewas of the Thames First Nation
- Credit River Metis Council
- Curve Lake First Nation
- Haudenosaunee Confederacy
- Haudenosaunee Confederacy Chiefs Council
- Hiawatha First Nation
- Huron-Wendat Nation
- Kawartha-Nishnawbe First Nation of Burleigh Falls
- Metis Nation of Ontario
- Mississaugas of Scugog Island
- Mississaugas of the New Credit First Nations (MNCFN)
- Six Nations of the Grand River

Halton Region then sent a letter to the Ministry of Indigenous Relations and Reconciliation (MIRR) (Ontario), the Ministry of the Environment and Climate Change (MOECC) (Ontario), and Indigenous and Northern Affairs Canada (INAC) requesting a review of the initial list of indigenous groups identified through ATRIS.

The MOECC responded and provided guidance on the groups they identified as potentially interested in the study which included the MNCFN and the Six Nations of the Grand River; based on the guidance from the MOECC only the MNCFN and Six Nations of the Grand River received all Notices throughout the study.

While not on the MOECC guidance list, the Haudenosaunee Confederacy Chiefs Council was also contacted by the Region and received all Notices throughout the study.

All documents related to correspondence with Indigenous Communities including requests to be notified and Regional commitments related to future project works have been included in Appendix B.

5.3 NOTICE OF COMMENCEMENT

The Notice of Commencement was first issued on November 17, 2016. The Notice was published in the November 17 and 25, 2016 editions of the *Burlington Post* and on the Halton Region website as of November 17, 2016. Hardcopies of the Notice were also mailed to agencies, stakeholders, and residents on November 17, 2016.

Six (6) comments were received in response to the Notice of Commencement.

A copy of the Notice, mailing list, and responses are included in Appendix B. Comments and responses are also summarized in Section 5.8.

5.4 INTERNAL TECHNICAL ADVISORY COMMITTEE MEETINGS

An Internal Technical Advisory Committee (InTAC) was formed consisting of key Halton Region staff in addition to those in the core Project Team. Divisions/sections represented on the InTAC include:

- Water and Wastewater Planning
- Pump Station Operations
- Wastewater Collection

- Realty Services
- Infrastructure Planning & Policy
- Engineering & Construction
- Infrastructure & Systems Improvement
- Legislative & Planning Services (Development)

5.4.1 InTAC Meeting 1

A meeting was held with the InTAC on November 25, 2016 to discuss the problem statement and study area background. Discussion also covered preliminary alternatives and evaluation criteria which will be documented in Progress Report 2.

The main outcomes of the InTAC discussion were as follows:

- the future peak flows to the WWPS were revised based on updated flow monitoring information and population projections available to Halton Region
- the history of basement flooding in the area was investigated and it was confirmed that there were no basement flooding issues related to the Junction Street WWPS
- resiliency to climate change will be considered in the alternative solutions

The full meeting minutes are provided in Appendix B.3.

5.4.2 InTAC Meeting 2

A second InTAC meeting was held on March 31, 2017 to present and discuss the alternative solutions, evaluation process, and preliminary recommended solution. The InTAC team generally agreed with the recommended solution for the WWPS and forcemain.

A copy of the full meeting minutes is provided in Appendix B.3.

5.5 EXTERNAL TECHNICAL ADVISORY COMMITTEE MEETINGS

An External Technical Advisory Committee (ExTAC) was formed consisting of representatives from the MOECC, Burlington Downtown Business Association, Conservation Halton and the City of Burlington.

5.5.1 ExTAC Meeting 1

A meeting was held with the ExTAC on January 25, 2017 to discuss the problem statement and study area background. Discussion also covered the preliminary alternatives and evaluation criteria.

The main outcomes of the ExTAC discussion were as follows:

- Junction WWPS is listed on the Municipal Register as a non-designated heritage property. This requires that 60 days' notice be given to council if demolition is planned for the building.

- The City of Burlington is currently conducting a study to review the floodplain surrounding Rambo Creek and will share the results of this study with the Region when available. This may impact the grading requirements and/or elevation of structures at the WWPS.
- Halton Region will verify the planning assumptions used to size the WWPS with the City of Burlington Planning Department during preliminary design.
- Rambo Creek is not currently regulated by Conservation Halton. The City of Burlington currently has jurisdiction over improvements/maintenance of the Creek.
- The full meeting minutes and list of attendees is provided in Appendix B.4.

Additional correspondence has also taken place with Conservation Halton, who confirmed the Junction Street WWPS and associated forcemains are not currently located, or expected to be as a result of this project, in a Conservation Halton Flood Plain or Regulation Limit. This correspondence can be found in Appendix B.6.

5.6 PUBLIC INFORMATION CENTRE

The Notice of Public Information Centre (PIC) was first issued on June 5, 2017 and was published in the *Burlington Post* on June 8 and June 22, 2017 newspapers and posted on the Halton Region website. Members of the ExTAC were also notified of the Public Information Centre (PIC) and were invited to review the information presented, and provide input on the recommended solution.

The Public Information Centre was held on June 28, 2017 at the Burlington Performing Arts Centre from 6:00 to 8:00 pm. Members of the Region and consultant project team were present to answer any questions and to guide attendees through the presentation material. Fourteen (14) people attended the PIC, of which thirteen (13) signed in. Attendees included a representative from the City of Burlington, the local City Councillor (Ward 2) and local residents.

Stakeholder comments from the PIC included:

- Questions about the impact of forcemain construction on local residents (traffic disruptions)
- Concern that the WWPS site was of historic interest, and that construction might damage historic artifacts
- Questions regarding the size of the new structure and changes to the existing WWPS building

A copy of the PIC presentation materials, sign-in sheets, and comment sheets are included in Appendix B.9.

5.7 NOTICE OF COMPLETION

The Notice of Completion will be issued following completion of the Project File. The purpose of the Notice of Completion is to inform stakeholders that the Project File is available for review and comment within the 30-day review period. The Notice also informs stakeholders of the right to request a Part II Order from the Minister of the Environment and Climate Change within the 30-day review period.

5.8 COMMUNICATIONS TRACKING LOG

Copies of all correspondence received from the public, indigenous communities, and agency stakeholders are included in Appendix B, along with a copy of the Communications Tracking Log in Appendix B.2.

6 Preferred Alternative Solution

6.1 DESCRIPTION OF PREFERRED ALTERNATIVE SOLUTION

Based on the evaluation presented in Section 4.3 and following consultation with the public, indigenous communities, and agency stakeholders, the preferred alternative solution was identified to be Alternative 4 – Construction of a New WWPS on the Existing Site with Twin Forcemains along Martha Street (Route B).

The preferred alternative solution consists of:

- Construction of a new WWPS on the existing site;
- Construction of two new forcemains along Martha street to provide system backup and operational flexibility;
- Retention of the existing WWPS heritage building for electrical and control equipment, as well as a standby generator if space allows; and,
- Total capital cost is estimated at $9.15M.

The preferred alternative solution is shown below in Figure 6-1.

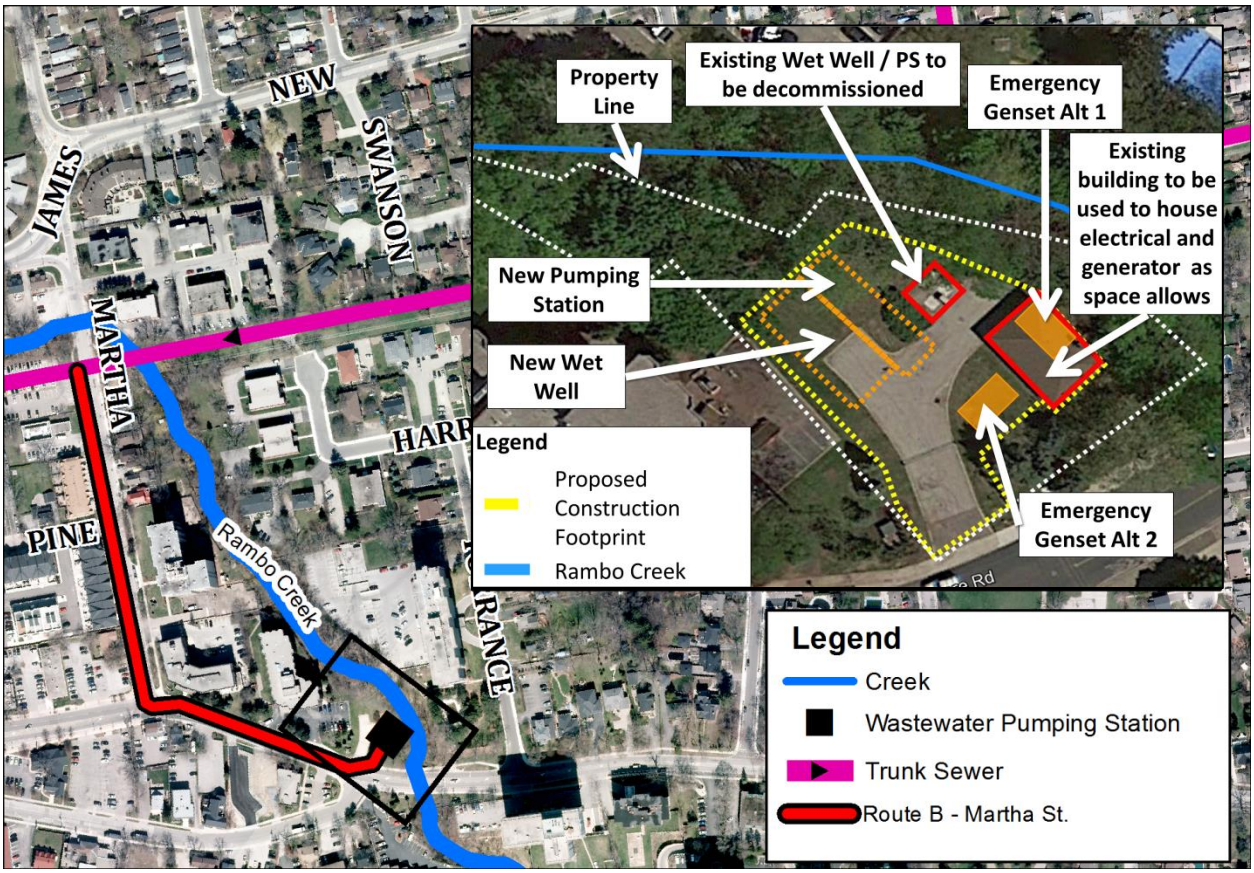

Figure 6-1: Preferred WWPS Site Layout

The main advantages of Alternative 4 are as follows:

- Satisfies the Problem and Opportunity Statement established for this project
- Meets requirements in the Halton Water and Wastewater Facility Design Manual (Halton Region, 2012) and Water and Wastewater Linear Design Manual (Halton Region, 2015)
- Reduced number of emergency repairs and resolution of O&M difficulties at the WWPS
- Provides increased resiliency in the event of an emergency and to changing flow conditions
- Shorter implementation timeline and lower construction cost than Alternative 3 – Upgrade Existing WWPS

6.1.1 Cost Estimate

A Class 'D' cost estimate for the preferred solution is presented in Table 6-1, Table 6-2 and Table 6-3. It should be noted that the Order-of-Magnitude cost estimates shown in the tables below have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, final project scope, implementation schedule and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific financial decisions to help ensure proper project evaluation and adequate funding.

An allowance of 15% of the construction cost was included for engineering design and contract administration of the preferred solution. Also, an allowance of 10% of the sum of engineering and construction costs was included for the Region's internal administration costs. A contingency of 35% of the project cost was also added to account for costs that cannot be foreseen at this time, including, for example, costs related to geotechnical conditions, utility relocations, further archeological studies, etc.

Table 6-1: Preferred Solution Pumping Station Cost Estimate

CATEGORY	ESTIMATE
General Requirements, Demolition and Sitework	$ 1,000,000
Process Mechanical	$ 500,000
Building Mechanical	$ 200,000
Electrical and I&C	$ 500,000
Structural / Architectural	$ 1,500,000
Construction Subtotal	$ 3,700,000
Engineering Design and Contract Administration (15%)	$ 560,000
Engineering and Construction Subtotal	$ 4,260,000
Halton Internal Costs (10%)	$ 430,000
Project Cost Subtotal	$ 4,700,000
Overall Project Contingency (35%)	$ 1,650,000
Pumping Station Capital Cost Estimate	**$ 6,350,000**

Table 6-2: Preferred Solution Forcemain Cost Estimate

CATEGORY	ESTIMATE
Twin Forcemain Construction (430m x $3200/m)	$ 1,400,000
Appurtenances (MHs, valve boxes)	$ 100,000
Miscellaneous (traffic management, soil removal, etc.)	$ 200,000
Forcemain Construction Subtotal	$ 1,700,000
Engineering Design and Contract Administration (15%)	$ 200,000
Forcemain Construction Subtotal	$ 1,900,000
Halton Internal Costs (10%)	$ 200,000
Project Cost Subtotal	$ 2,100,000
Overall Project Contingency (35%)	$ 700,000
Forcemain Capital Cost Estimate	**$ 2,800,000**

Table 6-3: Overall Preferred Solution Cost Estimate

CATEGORY	ESTIMATE
Pumping Station Capital Cost Estimate	$ 6,350,000
Forcemain Capital Cost Estimate	$ 2,800,000
Total Capital Cost Estimate	**$ 9,150,000**

6.2 POTENTIAL IMPACTS AND MITIGATION MEASURES

Potential impacts to the community and environment as a result of constructing the preferred solution must be avoided whenever possible. In situations where these impacts cannot be avoided, measures will have to be taken to either minimize or offset these impacts.

6.2.1 Social Environment

6.2.1.1 Archaeological Impact

As described in Section 3.1.1, a Stage 1 Archeological Assessment was undertaken by Archeoworks Inc. A copy of this assessment can be found in Appendix C.

Archeoworks found that the location of the preferred alternative for the WWPS has retained archeological potential. Therefore, before construction begins, the site of the new WWPS will be subject to a Stage 2 Archeological Assessment (AA), employing a shovel test pit archeological survey at five-metre transects.

The Stage 2 AA will occur at the beginning of detailed design to allow time for mitigation measures to be employed before construction, if necessary. As discussed in Section 5.2, Mississauga's of the New Credit River First Nations (MNCFN) will be consulted prior to the Stage 2 AA to ensure their representatives are on site. MNCFN and Curve Lake First Nation, will be sent copies of the Stage 2 AA findings.

6.2.1.2 Cultural Heritage Impact

A Cultural Heritage Resource Assessment was completed by ASI Archaeological & Cultural Heritage Services. The purpose of the assessment was to create an inventory of cultural heritage resources located within the study area, to identify impacts to these cultural resources, and propose appropriate mitigation measures. The assessment methodology included background historical research (consultation of primary and secondary source research and historical mapping), and consultation of federal, provincial, and municipal databases and/or agencies to create a cultural heritage inventory for the study area. A copy of the assessment is provided in Appendix D.

The assessment found that the EA study area has an urban land use history dating back to the early nineteenth century, and 13 cultural heritage resources are located within or adjacent to the recommended solution and WWPS property:

- Six residential properties
- Four commercial / former residential properties

- One recreational multiuse pathway
- One public utility building

There was also found to be one inactive property, which was a residence, now demolished.

All 13 cultural heritage resources identified within the study area were assessed using the existing development plans. The preliminary impact assessment concluded the following:

- There are no direct physical impacts anticipated to any of the identified resources (i.e. alteration or demolition).

Actions to be taken to mitigate impacts on cultural heritage resources are as follows:

1. Staging and construction activities should be suitably planned and undertaken to avoid impacts to identified cultural heritage resources.
2. BHR 6 (the existing pumping station building at 2137 Lakeshore Road) is expected to be impacted through alteration to the setting. A resource specific Heritage Impact Assessment (HIA) should be completed for this resource at the detailed design stage.
3. The draft MCEA project file has been sent to the City of Burlington's Heritage Planning Office. The final MCEA project file, including the Cultural Heritage Resource Assessment Report, will be submitted to the City of Burlington's Heritage Planning Office and the Ministry of Tourism, Culture and Sport for review.

In addition to the above mitigation measures, the completed HIA will be circulated to the City of Burlington for review.

6.2.1.3 Air Quality and Noise Impact

Air quality and noise impacts of the preferred solution will be evaluated during preliminary design, and mitigation measures (if necessary) will be incorporated into the detailed design of the station.

6.2.1.4 Designated Substances Survey

In December 2016, Safetech Environmental Limited (SEL) performed a designated substances and hazardous materials assessment within Junction Street WWPS. The objective of the assessment was to determine the presence, location, condition and quantities of designated substances and other hazardous materials within the WWPS that may be disturbed in the event of renovations or demolition, so appropriate control measures can be implemented to protect workers during these activities. Findings and recommendations were provided for asbestos, lead, mercury, silica, and other designated substances. Further information can be found in the Designated Substances and Hazardous Materials Assessment report, located in Appendix F.

6.2.2 Technical Impacts

6.2.2.1 Sub-Surface Utility Investigation and Utility Coordination

A sub-surface utility investigation will take place in preliminary design, and mitigation measures for any potential impacts will be developed at that time.

Following the Sub-Surface Utility Investigation, Burlington Hydro and other utilities will be consulted at the detailed design stage for coordination purposes, if identified to be located near proposed infrastructure.

6.2.2.2 City of Burlington Coordination

There are plans for construction of high-rise developments on Martha Street between Lakeshore Road and New Street. The resulting development-related road reconstructions and utility installations may impact the proposed forcemain design. To mitigate challenges, the City of Burlington Capital Works Department and Transportation Department will be consulted at the detailed design stage to ensure an appropriate level of coordination between proposed activities.

6.2.2.3 Construction Scheduling

During detailed design, scheduling of construction projects in the vicinity of the proposed works will be coordinated with other Halton Region and City of Burlington projects, when possible.

6.2.3 Natural Environment

The project team evaluated each of the alternatives for the WWPS and forcemain alignment against a wide variety of criteria (social, natural environment, technical, legal/jurisdictional, and economic) to determine the forcemain alignment utilizing Martha Street (Route B) and replacement of the WWPS (Alternative PS-4) as the most preferred. The preferred solution avoids the need for a forcemain crossing of Rambo Creek, minimizes impact to street/residential trees by utilizing the road rights of way of a highly urbanized street in the downtown core, and proposes a new WWPS to make use of the existing infrastructure including the existing WWPS, paved driveway and manicured lawn. Impacts to natural environment associated with the preferred alternative relate to the proximity of the WWPS to Rambo Creek (fish habitat and candidate habitat for American Eel), and encroachment into the edge of the deciduous forest (candidate significant woodland, candidate significant wildlife habitat for Bat Maternity Roosting (including SAR bats), and breeding bird habitat). Limits of construction currently lie within 7m of the creek through an area with limited vegetative cover.

The following are considered potential constraints related to natural features for the project based on the existing conditions of the project area determined through background review, field investigation, and consultation with MNRF and Region staff:

- Key Features found in the project area to support the NHS:
  - Candidate Significant Habitat of Endangered and Threatened Species (SAR bats, American Eel)
  - Potential Significant Woodland (For purpose of the study, treated as candidate significant woodland)
  - Candidate Significant Wildlife Habitat (Bat Maternal Roosting)
- Fish Habitat
- Tree Resources

LGL has provided mitigation recommendations to protect natural heritage features. These recommendations are summarized in Sections 6.2.3.1 and 0 below. With respect to forcemain construction, no operational impacts are identified as infrastructure will remain below grade and is not anticipated to impact natural heritage. Impacts due to the forcemain construction are considered temporary. For the replacement of the WWPS, both construction and operational impacts are anticipated. Where impacts cannot be fully mitigated, residual impacts are identified

along with compensatory measures.

6.2.3.1 General Mitigation Measures

Construction related impacts will first be mitigated by minimizing the extent of disturbance wherever possible through coordination of all project related planning, including design, staging and scheduling. Mitigation related to staging of construction includes prioritizing project components in such a way that disturbance within the same construction area would be minimized (i.e. coordination of all disturbance activities in a manner that reduces the impact at these locations). The extent of construction related activity will be effectively isolated and secured from adjacent natural lands through the installation of erosion and sediment control measures to mitigate the potential for silt and sediment entry into surface water features and adjacent lands. To some extent, the isolation of the work area will also discourage the entry of wildlife into the work zone thereby minimizing incidental encounter and the risk of incidental mortality during construction.

6.2.3.2 Impacts, Mitigation and Monitoring Recommendations for Preferred Alternative

Table 6-4 provides a summary of the mitigation recommendations specific to the various natural environment components at the project site.

Table 6-4: Natural Environment Impacts, Mitigation and Monitoring Recommendations

IMPACT	MITIGATION	CONSTRUCTION MONITORING	RESIDUAL IMPACTS IDENTIFIED	COMPENSATION MEASURES
Soil contamination by oils, gasoline, grease and other materials from construction equipment, materials storage and handling.	Ensure machinery is maintained free of fluid leaks. Locate site maintenance, vehicle washing and refuelling stations where contaminants are handled at least 30 m away from natural features and give consideration to locating these types of facilities outside of the floodplain. Vehicle refuelling and maintenance should be done on spill collection pads. Develop a spill response plan and train staff on associated procedures. Maintain emergency spill kits on site. Control potential soil contamination from spills in accordance with Federal/ Provincial Regulations and Municipal Bylaws and through industry best management practices Dispose of any chemical waste materials generated from construction activities through authorized and approved off-site vendors.	Conduct daily inspections of construction equipment for leaks/spills. Implement contingency measures in the event of a spill. <u>Contingency Measures:</u> In the event of a spill, immediately stop all work until the spill is cleaned up; Notify MOECC's Spills Action Centre of any leaks or spills; Assess and remediate affected soils and water by using spill kit kept on site; and, Monitor daily to ensure proper clean-up is completed.	None identified.	None identified.
Vegetation Removal (excluding trees)	Re-vegetate and restore disturbed areas immediately after construction to return to pre-construction condition. Restoration plans for naturally vegetated areas (FOD7-3) should include the use of native plant species in order to improve vegetation quality of the area. Use fencing to demark construction zone to avoid accidental intrusion into natural features.	Provide construction monitoring on site by an independent environmental monitor to ensure that demarcation fencing is in place prior to construction and functioning effectively.	None identified.	None identified.
General Tree Removal (street/residential/ privately owned trees)	Complete a tree inventory (ISA Certified Arborist) and tree protection plan to comply with municipal and/or regional by-laws. Tree protection fencing should comply with municipal and regional by-laws.	Provide construction monitoring on site by an independent environmental monitor to ensure that tree protection fencing is in place prior to construction and functioning effectively.	None identified.	None identified.
Tree Removal/ Pruning within Candidate Significant Woodland (FOD7-3)	Minimize vegetation clearing, if required, along the forest edge to the extent possible through development of a tree preservation plan. Use fencing to demark construction zone and tree protection fencing to avoid accidental damage to trees. Care should be taken when removing and disposing of Ash trees. Consult the Canadian Food Inspection Agency and Halton Region for the appropriate protocol for their disposal. Stake dripline of FOD7-3 during detailed design in consultation with Halton Region and refine design where possible to further avoid the feature. Where impacts are limited to tree pruning, works will be completed under the supervision of an Arborist or Forester and tree health monitored post-construction. Where tree removal is proposed, the Region's Tree Canopy Replacement Policy on Regionally Owned Lands will be implemented with subsequent post-construction monitoring.	Provide construction monitoring on site by an independent environmental monitor to ensure that demarcation fencing and tree protection fencing is in place prior to construction and functioning effectively.	Tree removal in the candidate significant woodland represents a relatively minor permanent loss of FOD7-3 along the feature's edge, in an area that currently has little to no understory.	Where edge restoration or tree replacement is required a monitoring plan will be developed in consultation with Region staff to include care and maintenance of plantings, and replacement of any dead stock. Compensation measures will follow the Region's Tree Canopy Replacement Policy on Regionally Owned Lands. Consideration to enhancing the understorey is recommended as part of compensation.
Accidental damage to adjacent vegetation communities and associated wildlife habitat due to unintentional vehicle intrusions.	Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental damage to candidate significant wildlife habitat. Damaged tree roots should be cut clean as soon as possible and exposed roots covered in approved topsoil. This work to be carried out under supervision of an Arborist or Forester.	Provide construction monitoring on site by an independent environmental monitor to ensure that demarcation fencing is in place and functioning effectively.	None identified.	None identified.
Disturbance to woodland functioning as habitat for local and resident wildlife (non-SWH function).	Perform vegetation clearing outside of the breeding bird season (generally mid-April to end of July) and outside of sensitive timing windows for Bat Maternity Roosting (as confirmed by MNRF). If clearing is to occur during the sensitive nesting periods, nest searches must be conducted by a qualified biologist prior to the start of construction activities.	Have an environmental monitor available in the event of animal-construction conflicts.	None identified.	None identified.
Alteration to surface water drainage.	Minimize changes in land contours and natural drainage; maintain timing and quantity of flows. Any grading of lands adjacent to natural features should match existing grades at the identified set-back, or buffer from the features. Avoid the movement of heavy machinery on areas with sensitive slopes.	Provide construction monitoring on site by an independent environmental monitor to monitor for impacts to drainage.	None identified.	None identified.

IMPACT	MITIGATION	CONSTRUCTION MONITORING	RESIDUAL IMPACTS IDENTIFIED	COMPENSATION MEASURES
Impairment of water quality and/or physical damage to available habitat in the watercourse resulting from overland transport of sediment-laden runoff from the construction area.	Heavy equipment will avoid creek and its banks. Locate all construction storage, staging, and refuelling areas at least 30m away from all watercourses. Divert excess stormwater away from aquatic habitat and provide quality and quantity treatment. Intercept sediment laden drainage as close to the source as possible. Provide construction monitoring on site by an independent environmental monitor to ensure that erosion and sediment controls are working effectively. An erosion and sediment control contingency site specific plan should be developed that details the erosion and sediment control (ESC) plans and responsibilities to ensure that construction activities are adequately contained with ESC measures (such as erosion blankets, erosion control fencing, straw bales, siltation bags, etc.). The contractor should have supplemental ESC materials available on site that can be utilized should additional ESC measures be warranted. Maintain all sediment and erosion control measures until disturbed areas have been replanted and stabilized. Re-vegetate disturbed areas to pre-construction conditions as soon as possible after construction activities are complete.	Provide construction monitoring on site by an independent environmental monitor to ensure that ESC measures are in place and functioning effectively. Temporarily suspend work if excessive flow of sediment discharge occurs until additional mitigation measures are in place.	None identified.	None identified.
Alteration/loss of riparian vegetation resulting in stream bank instability and erosion.	It is recommended that the limits along this edge be refined to match the distance of the existing WWPS and paved access and/or achieve a setback of 10 m from the creek's top of bank where possible. Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental intrusion into riparian edges.	Provide construction monitoring on site by an independent environmental monitor to ensure that demarcation fencing and ESC measures are in place and functioning effectively.	None identified.	None identified.
Water contamination by oils, gasoline, grease and other materials from construction equipment, materials storage and handling.	Ensure machinery is maintained free of fluid leaks. Locate site maintenance, vehicle washing and refuelling stations where contaminants are handled should be at least 30 m away from water bodies. Vehicle refuelling and maintenance should be done on spill collection pads. Store any stockpiled materials at least 30 m away from a water body to prevent deleterious substances from inadvertently discharging to the environment. Develop a spill response plan and train staff on associated procedures. Maintain emergency spill kits on site. Control soil/water contamination through best management practices. Dispose of any chemical waste materials generated from construction activities through authorized and approved off-site vendors.	Conduct daily inspections of construction equipment for leaks/spills. Implement contingency measures in the event of a spill. <u>Contingency Measures:</u> In the event of a spill, immediately stop all work until the spill is cleaned up. Notify MOECC's Spills Action Centre of any leaks or spills. Assess and remediate affected soils and water by using spill kit kept on site. Monitor daily to ensure proper clean-up is completed.	None identified.	None identified.
Sediment entrainment into adjacent areas functioning as habitat for local and resident wildlife (non-SWH function).	Stabilize exposed soils to prevent sediment entrainment, and restore disturbed areas with native and non-invasive vegetation after construction.	Periodic inspection and maintenance of erosion and sediment control fencing structures will be included as part of the Sediment and Erosion Control Plan for the site.	None identified.	None identified.
Entrapment of wildlife using the adjacent creek.	Ensure the construction area is delineated by fencing (such as silt fencing installed for erosion and sediment control) that can serve to exclude wildlife from entering the work area. Ensure that an environmental monitor is available in the event that wildlife is encountered in the work zone in order to safely document, handle and remove wildlife at risk of conflict with construction activities.	Periodic inspection and maintenance of erosion and sediment control fencing structures recommended as part of the environmental monitoring to ensure protection of water quality in the nearby creek should include inspection of any additional fencing installed for this purpose.	None identified.	None identified.

6.3 MONITORING AND COMMITMENTS

6.3.1 Design Phase

To ensure that impacts are minimized, the following should be conducted during the design, prior to proceeding to construction:

- Stage 2 Archaeological Assessment
- Heritage Impact Assessment (HIA) for the existing WWPS building
- A Subsurface Utility Investigation
- Air quality and noise impact assessment
- Department of Fisheries and Oceans (DFO) Projects Near Water Self-Assessment

6.3.2 Construction Phase

To ensure that impacts are minimized, the following actions will be taken during the construction phase of the project:

- Communicate traffic impacts due to construction to local residents and the City of Burlington in advance;
- Temporary site fencing will be in place during construction and disturbances such as noise, vibration and dust will be managed;
- Access to residences / pedestrian traffic will be maintained during construction;
- Provision for noise and odour control systems as part of WWPS design;
- WWPS layout and location will be designed to minimize impact to trees;
- A PIC will be held prior to construction to present the design and obtain public input; and,
- The architectural style will be determined at detailed design.

6.4 PERMITS AND APPROVALS

6.4.1 Ministry of Environment and Climate Change

The following approvals will be required form the Ministry of Environment and Climate Change (MOECC) prior to construction:

Environmental Compliance Approval Amendment

The Junction WWPS is documented in the system-wide Environmental Compliance Approval (ECA) for the Skyway Drainage System. An ECA Amendment will be required for the proposed works, and applied for during the detailed design.

A new ECA may also be required for the standby generator.

Permit To Take Water

A Permit To Take Water (PTTW) may be required for dewatering activities during construction, depending on geotechnical and hydrogeological conditions. Need for a PTTW should be determined during detailed design.

6.4.2 Conservation Halton

The Preferred Solution construction limits fall outside of Conservation Halton (CH) jurisdiction. Therefore, there are no permitting requirements for CH.

6.4.3 City of Burlington

A Building Permit and Site Alteration Permit may be required from the City of Burlington prior to construction at the Junction WWPS site.

6.4.4 Utilities

Additional approvals or permits may be required from utility companies, such as hydro or telecommunications, if their infrastructure may be affected during construction activities. Utility permit requirements must be confirmed during the design phase, prior to construction.

7 Implementation Schedule

Following completion of the MCEA, it is expected that the project will proceed to design and in 2026 and construction in 2028. The schedule is summarized in the table below.

Table 7-1 Implementation Schedule

TASK	ESTIMATED TIMING
Start Detailed Design	2026
Start Construction	2028

8 Conclusions and Recommendations

This Project File Report documents the Schedule B MCEA Process for the Junction Street Wastewater Pumping Station (WWPS). A Solution was required to meet the following objectives:

1. Ensure the Junction Street WWPS and forcemain has sufficient capacity to service 2031 projected peak flows;
2. Address the risk of forcemain failure due to age, unknown condition, and the current lack of redundancy;
3. Bring the WWPS and forcemain into compliance with Halton Region's Water and Wastewater Facility Design Manual (Halton Region, 2012) and Water and Wastewater Linear Design Manual (Halton Region, 2015); and
4. Address improvements as documented and recommended in the 2016 Condition Assessment by Environmental Infrastructure Solutions Inc. (EIS) and observed by Black & Veatch during recent site visits

All WWPS and conveyance alternatives were evaluated against social, natural environment, technical, legal/jurisdictional, and economic evaluation criteria. Through the evaluation process and following consultation with interested stakeholders, the Preferred Solution was identified to be:

- Construction of a new WWPS on the existing site
- Construction of two new forcemains along Martha Street to provide system backup and operational flexibility
- Retention of the existing WWPS heritage building for electrical and control equipment, as well as a standby generator if space allows

Additional study will be required following completion of this MCEA, including completion of:

- Stage 2 Archeological Assessment
- Air Quality and Noise Impact Assessment for standby generator
- Subsurface Utility Investigation
- Heritage Impact Assessment (HIA) for the existing WWPS building

Several mitigation measures were identified in the report, including those related to the natural environment (Appendix E) and construction related social impacts.

Moreover, during construction, the following actions will be taken:

- Communicate traffic impacts due to construction to local residents and the City of Burlington in advance;
- Temporary site fencing will be in place during construction and disturbances such as noise, vibration and dust will be managed;
- Access to residences / pedestrian traffic will be maintained during construction;
- Provision for noise and odour control systems as part of WWPS design;
- WWPS layout and location will be designed to minimize impact to trees;
- A PIC will be held prior to construction to present the design and obtain public input; and,
- The architectural style will be determined at detailed design.

The capital cost for construction of both the WWPS and forcemain is estimated to be $9.15M, and construction is expected to start in 2028.

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