

Prince Road Storm Sewer
Outlet - Environmental Study
Report

**Schedule 'C' Municipal
Class Environmental
Assessment**



**Prepared for:
City of Windsor
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Windsor, ON N9A 6S1**

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November 2022

Sign-off Sheet


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Introduction
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1.0 Introduction

1.1 Background

The City of Windsor (City) retained Stantec Consulting Ltd. (Stantec) to undertake a Schedule 'C' Municipal Class Environmental Assessment (Class EA) study for the proposed storm sewer outlet at McKee Creek.

The City of Windsor is located along the Lake St. Clair and Detroit River, exposing the city to several significant storm/rainfall events in recent years, which have resulted in widespread floods, increased strain on the municipal sewer system, and risks to property owners in coastal and low-lying areas. The City has received increased basement flooding reports from residents, totalling over 6,000 as a result of a rainfall event from August 27 & 28, 2017. These rain events are continuing at a greater than anticipated rate.

In November 2020, the City completed the Sewer and Coastal Flood Protection Master Plan (SMP) to understand the causes of flooding, identify and evaluate short-term and long-term solutions, complete high-level design and cost estimates for proposed infrastructure improvements, and to provide an implementation strategy for the recommended solutions. The SMP concluded the preferred solution for the Prince Road storm sewer outlet at Chappell Avenue, is to outlet to McKee Creek.

The City has three types of existing drainage systems:

- Sanitary sewers - convey domestic sewage via local service connections from residential, commercial, industrial, institutional, and other land uses to a wastewater treatment plant where it is filtered, treated and discharged. Within the City of Windsor there are two major sanitary outlets including the Lou Romano Water Reclamation Plant, and Little River Pollution Control Plant.
- Storm sewers - collect and convey rainwater to open watercourses such as the Detroit River. Rainwater enters the storm system at various sources, including catchbasins and private storm connections (drainage from foundation drains, rear yard catchbasins and roof downspouts).
- Combined sewer systems - convey stormwater runoff, sanitary sewage, and industrial wastewater in a single pipe. Under dry-weather conditions, all flows are conveyed to the downstream treatment plant. Under wet weather conditions, stormwater runoff sometimes exceeds the combined sewer's capacity, resulting in overflow to the Detroit River or other waterways.

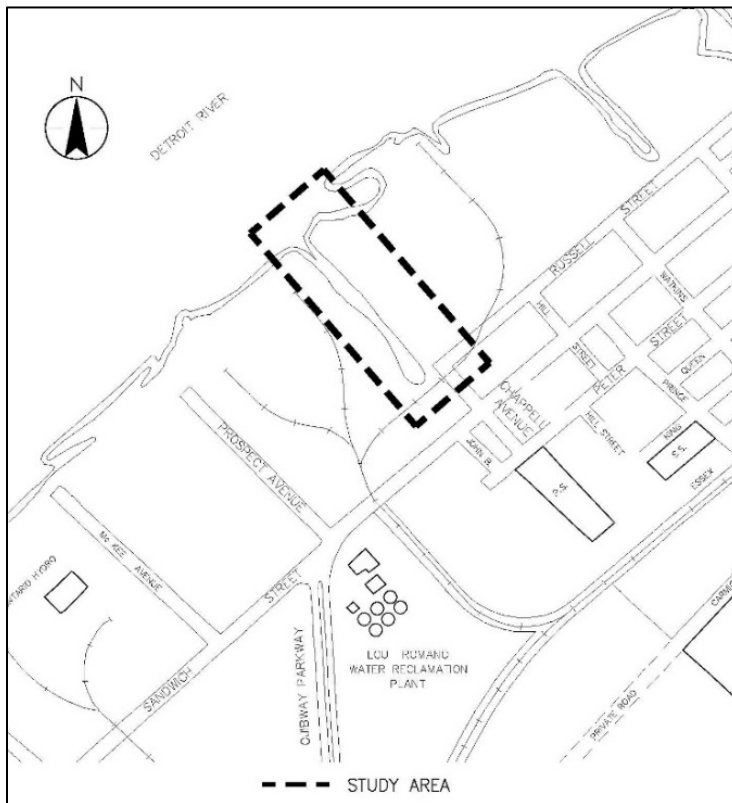
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1.2 Study Area

The study area is defined to the west by the Detroit River, to the east by the west limit of the existing storm sewer along Chappell Avenue, and to the north side of McKee Creek by lands at 3800 Street Russell and to the south side of McKee Creek lands at 4016 Sandwich Street. The approximate limits of the study area are shown in **Figure 1**.

Figure 1: Study Area Map



1.3 Study Team Organization

General direction was provided by the City with progress meetings held at key points throughout the planning process. Key members of the study team included the following individuals:

City of Windsor

- Ian Wilson, P.Eng, Engineer II

Stantec

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Municipal Class Environmental Assessment Process
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- Clarence Jubenville, P.Eng, Senior Project Manager
- Paula Hohner, MCIP, RPP, Lead Environmental Planner

2.0 Municipal Class Environmental Assessment Process

The *Environmental Assessment Act of Ontario* (EAA) provides for the protection, conservation, and management of the environment in Ontario. The EAA applies to municipalities and to activities including municipal road projects. Activities with common characteristics and common potential effects may be assessed as part of a “class” and are therefore approved subject to compliance with the pre-approved Class EA process. The Ministry of the Environment, Conservation and Parks (MECP) is responsible for administration of the EA Act.

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

The SMP completed Phases 1 & 2 of the Class EA process for all projects identified as Schedule B projects. Schedule C projects require additional public notice and/or further study, as they are identified to potentially have significant environmental effects to implement. The SMP identified the Prince Road Storm Trunk Sewers/Outfall as a Schedule C level project. Based on the conclusion of the SMP, this study will follow the requirements of a Schedule C undertaking, and will complete Phases 3 & 4 of the Class EA process.

Figure 2 illustrates the Class EA planning process and identifies the steps considered mandatory for compliance with the requirements of the EA Act. The following provides an overview of the five-phase planning process:

- Phase 1 – identify the Problem and Opportunity statement
- Phase 2 – identify and evaluation alternative solutions
- Phase 3 – identify and evaluate alternative design concepts for the preferred solution
- Phase 4 – prepare design plans and Environmental Study Report (ESR) for a minimum 30-day public review period

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Municipal Class Environmental Assessment Process
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- Phase 5 – Implement the preferred design following the end of the 30-day review period and the resolution of any Section 16 Order requests.

2.1 Class EA Documentation

The documentation for this Schedule C project consists of this ESR. The filing of the ESR for a minimum 30-day public and agency review period completes the planning and preliminary design phases of the project. A Notice of Completion was published to announce the commencement of the 30-day review period. The ESR was made available for review online:

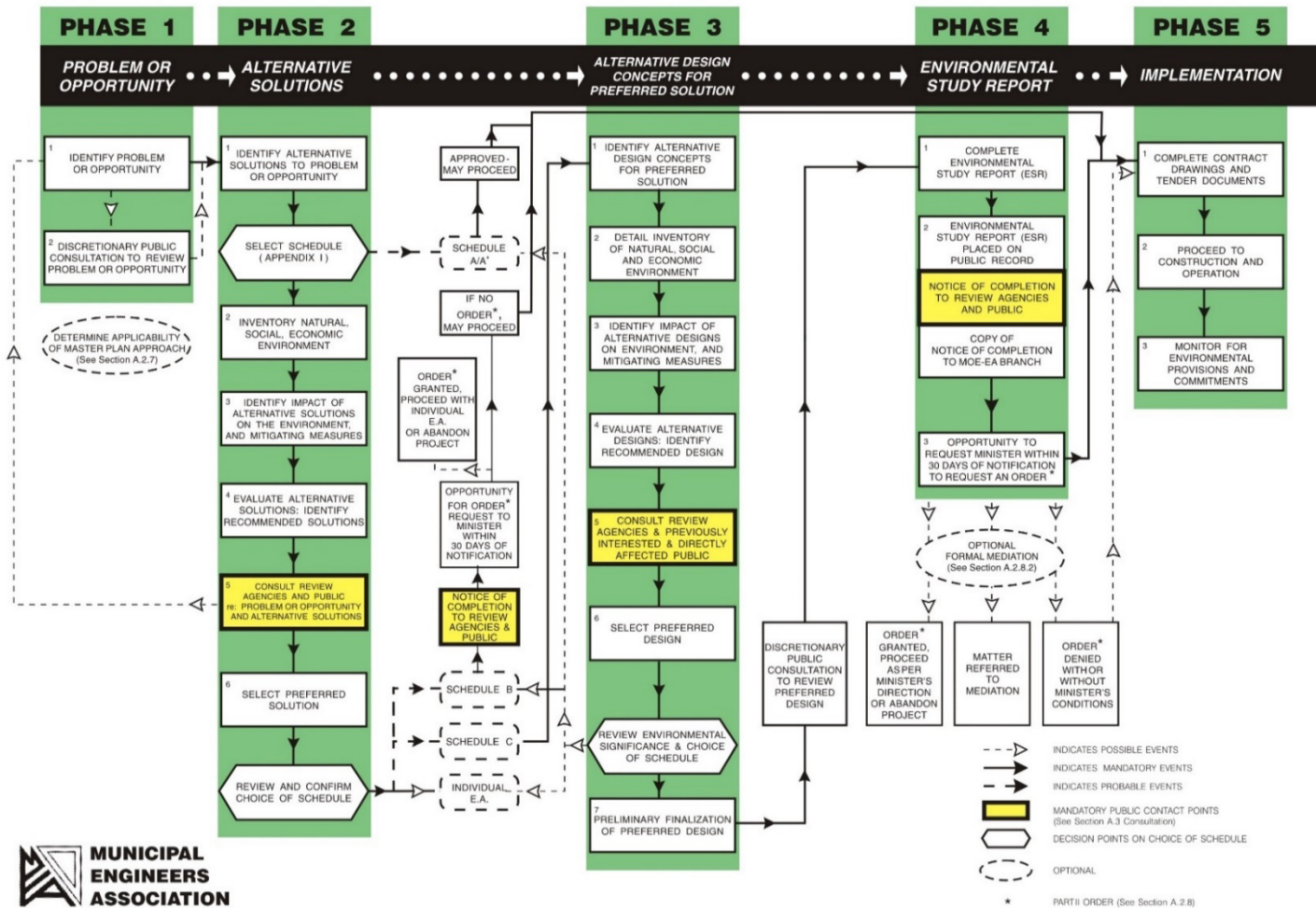
<https://www.citywindsor.ca/residents/Construction/Environmental-Assessments-Master-Plans/Pages/Prince-Road-Storm-Sewer-Outlet-Environmental-Assessment.aspx>

Any concerns regarding this study should be directed to the City during the 30-day review period.

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Municipal Class Environmental Assessment Process
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Figure 2: Municipal Class EA Planning Process



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2.2 Section 16 Order Process

Interested persons may provide written comments to the City of Windsor for a response using the following contact information:

Ian Wilson, P.Eng.
Project Engineer
City of Windsor
iwilson@citywindsor.ca
519-255-6100 ext. 6369

In addition, a request may be made to the Minister of the Environment, Conservation and Parks under Section 16 of the *Environmental Assessment Act* requiring a higher level of study (i.e., requiring an individual/comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g., require further studies), only on the grounds that the requested order may prevent, mitigate, or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. Requests on other grounds will not be considered. Requests should include the requester contact information and full name for the ministry.

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

The request should be sent in writing by mail or by email to:

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

and

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

Requests should also be sent to the City.

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2.3 Canadian Environmental Assessment Act

Under the *Canadian Environmental Assessment Act, 2012* (CEAA, 2012), a federal environmental assessment study may be required to comply with the physical activities that constitute a “designated project”, under the project list identified in the Regulations Amending the Regulations Designating Physical Activities, 2013. This project list ensures that federal environmental assessments are focused on the major projects with the greatest potential for significant adverse environmental impacts to matters of federal jurisdiction.

The Prince Road Storm Sewer Outlet EA study does not constitute a “designated project” and therefore does not require an EA under the CEAA, 2012. However, the Minister of the Environment, Conservation and Parks may order an assessment for any project not included in the project list, where there may be adverse environmental effects related to federal jurisdiction.

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3.0 Consultation

During the Master Plan process, the City maintained an enhanced level of public engagement to solicit and obtain valuable feedback, and to understand the needs of the community. The City consulted with Indigenous communities to gather understandings, perspectives and mitigation recommendations regarding the project. The City also held meetings with key agencies, technical advisory committees, and neighbouring municipalities to gather additional flooding information, and to ensure no conflicts with adjacent infrastructure as a result of the recommended solutions.

The Sewer and Coastal Flood Protection Master Plan addressed Phases 1 and 2 of the Class EA process, completing public consultation throughout the study which determined the preferred alternative solution for the Prince Road storm sewer outlet to McKee Creek. This Schedule C EA carried out Phases 3 and 4 of the study and included a Notice of Study Commencement, consultation with directly impacted property owners and stakeholders who expressed interest in the study, project materials posted on the project's website and a Notice of Study Completion.

The project team for this Class EA study developed a proactive approach to continued stakeholder communications based on:

- Informing, consulting and collaborating with the local landowners, key agencies and the public;
- Identifying and understanding stakeholders' critical issues; and,
- Providing up-to-date information on project progress and impacts.

The consultation plan developed for this project assessed the stakeholders and issues that may be involved in the project, as well as the various communication techniques to be used during outreach with the public, stakeholders and Indigenous communities.

3.1 Project Contact List

A project contact list was created which includes agencies, City of Windsor staff, emergency services, potentially interested Indigenous communities, members of the public, utility services, as well as the property owners within the project study area. The list was regularly updated to include those who expressed interest in the study. Addresses for properties within the study area were compiled and used for the mail-out of the initial Notice of Study Commencement.

A copy of the contact list is provided in **Appendix A**.

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3.2 Project Notices

Notices were sent via email to property owners within the study area, the project contact list, and Indigenous communities. Each notice was published twice in the local newspaper (Windsor Star), and posted on the City's website (<https://www.citywindsor.ca/residents/Construction/Environmental-Assessments-Master-Plans/Pages/Prince-Road-Storm-Sewer-Outlet-Environmental-Assessment.aspx>). The study notifications are provided in **Appendix A**, including the Notice of Study Commencement, Notice of Project Update and Recommended Design, and the Notice of Study Completion.

3.2.1 Notice of Project Update and Recommended Design

A Notice of Project Update and Recommended Design was issued to provide an update on the project since the Notice of Study Commencement. The update provided materials for public review on the City's website, which presented background information, alternative solutions considered, and the preferred alternative design concept. No comments were received as a result of this Notice.

3.2.2 Agency Consultation

Several ministries, agencies and authorities were contacted during project initiation and throughout the study to notify them of the project and to request information related to the study area and feedback pertaining to the study. Agency comments received are included in **Appendix A**.

<p>Provincial Agencies</p> <ul style="list-style-type: none">• Ministry of Indigenous Affairs• Ministry of Natural Resources and Forestry• Fisheries and Oceans Canada• Ministry of Transportation• Ministry of Citizenship and Multiculturalism (MCM)• Ministry of Agriculture, Food and Rural Affairs• Essex Region Conservation Authority <p>Emergency Services</p> <ul style="list-style-type: none">• Windsor Fire and Rescue Services• Windsor Police Service• Essex-Windsor Emergency Medical Services	<p>Municipal/Agency Staff</p> <ul style="list-style-type: none">• City of Windsor <p>Utilities</p> <ul style="list-style-type: none">• Hydro One• Enwin Utilities• Enbridge• Cogeco Cable• Bell Canada <p>Stakeholders</p> <ul style="list-style-type: none">• Coco Group (3800 Russell and 4016 Sandwich)• Essex Terminal Railway Company• K-Scrap Resources Ltd.• Sterling Fuels
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3.3 Essex Region Conservation Authority

One meeting with ERCA was held on July 28, 2021 to present an overview of the study and environmental scoping for this study; and to provide an overview of the findings of the field investigations, potential impacts and recommended mitigation measures. The draft ESR was circulated to ERCA for review prior to the 30-day public review period. Additional meetings with ERCA will occur during detail design, as required.

Meeting minutes are provided in **Appendix A**.

3.4 Stakeholder Meetings

Individual meetings were held to discuss specific project details with stakeholders, including:

- Coco Group
- Essex Terminal Railway Company
- K-Scrap Resources Ltd.
- Hydro One

Each stakeholder meeting was attended by the Consultant Project Manager and Environmental Planner, and City staff representatives as required. These meetings highlighted the purpose of the project, the proposed storm sewer outlet, and the potential site locations/layouts of the infrastructure and potential impacts to the stakeholder. A brief summary of each meeting is provided below.

3.4.1 Coco Group

Three meetings were held with Coco Group. The purpose of the first meeting, held on March 22, 2021, was to provide an overview of the project including background information, previous studies and the alternative designs. The purpose of the second meeting, June 16, 2021, was to discuss the design drawings of the alternative designs and the potential impacts to Coco Paving property (3800 Russell and 4016 Sandiwch). The purpose of the third meeting, held on June 29, 2021, was to review the archaeological assessment area requirements, natural heritage fieldwork scope, potential impacts to Coco Group, and the preferred design alternative. Follow-up telephone calls were made to discuss the preferred design alternative and potential impacts.

3.4.2 Essex Terminal Railway Company

One meeting was held with Essex Terminal Railway (ETR) Company on March 22, 2021. The purpose of this meeting was to provide an overview of the project including background information, previous studies and the alternative designs for consideration.

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ETR had no concerns with the recommended design alternative, and no further meetings were required.

3.4.3 K-Scrap Resources Ltd.

One meeting was held with K-Scrap Resources Ltd on April 8, 2021. The purpose of this meeting was to provide an overview of the project including background information, previous studies and the alternative designs for consideration. K-Scrap had no concerns with the recommended design alternative, and no further meetings were required.

3.4.4 Hydro One

One meeting was held with Hydro One on April 8, 2021. The purpose of this meeting was to provide an overview of the project including background information, previous studies and the alternative designs for consideration. Hydro One had no concerns with the recommended design alternative and provided guidance on drawing submission requirements during detailed design. Hydro One coordination will continue during detailed design through the submission of 90% complete detailed design drawings and Technical Review Form.

Meeting minutes are provided in **Appendix A**.

3.5 Essex Region Conservation Authority

One meeting with ERCA was held on July 28, 2021 to present an overview of the study and environmental scoping for this study; and to provide an overview of the findings of the field investigations, potential impacts and recommended mitigation measures. The draft Environmental Study Report (ESR) was circulated to ERCA for review prior to the 30-day public review period. Additional meetings with ERCA will occur during detail design, as required.

Meeting minutes are provided in **Appendix A**.

3.6 Indigenous Community Engagement

The written response received from the MECP on April 16, 2021, identified potentially interested Indigenous communities to be consulted as part of this study. These include:

- Aamjiwnaang First Nation
- Bkejwanong (Walpole Island)
- Caldwell First Nation
- Delaware Nation
- Chippewas of the Thames First Nation
- Oneida Nation of the Thames First
- Chippewas of Kettle and Stoney Point First Nation
- Munsee-Delaware Nation

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- Métis Nation of Ontario (MNO)

The first point of contact for this project was the Notice of Study Commencement, which was sent via email to the above communities on March 1, 2021. All public material was provided to the above communities to ensure that communities had sufficient information to determine consultation interests. Follow-up telephone calls and emails were made to ensure receipt of materials and to discuss any questions or concerns. No comments were received from Indigenous communities.

The Indigenous community communication log and correspondence is provided in **Appendix A**.

4.0 Problem and Opportunity

The City of Windsor developed the SMP to understand flooding issues in the City. Through the SMP, the City identified the key issues to understand the significant problems to be addressed:

- Capacity – Exceedances of flow capacity in storm, sanitary, and combined sewers due to excess rainwater entering the municipal drainage system.
- Public Health – Issues of nuisance, potential health risks, and environmental degradation from flooding conditions.
- Overland Flow – Issues of surface water directed towards habitable structures.
- Transportation Access – Issues of limiting access due to coastal flooding and stormwater ponding, impacting roads.
- Future Development Capacity – Limited sewer capacity reduces opportunities for new development.

The problems identified present the opportunity for improvements, which the City explored throughout the SMP to guide the implementation strategy for the recommended solution. The following opportunities were identified to address key issues:

- There is opportunity to make improvements to reduce the volume of excess rainwater entering the existing drainage systems, and to improve the conveyance of flows during these severe rain events.
- There is opportunity to incorporate new development servicing in the development of solutions and include design criteria and private property construction parameters for new development to mitigate risk of flooding within existing and future developments.

5.0 Policy Context

5.1 Federal Legislation

5.1.1 Fisheries Act

The Government of Canada is responsible for the management of fisheries resources in Canada through the *Fisheries Act*, administered primarily by Fisheries and Oceans Canada (DFO). The *Fisheries Act* addresses national interests in marine and fresh waters. On June 21, 2019, changes to the Act (Bill C68) received royal assent and became law, restoring lost protections and incorporating modern safeguards into the *Fisheries Act*. On August 28, 2019, provisions of the new Fisheries Act came into force including new protections for fish and fish habitat in the form of standards, codes of practice, and guidelines for projects near water.

The *Fisheries Act* includes prohibitions against harmful alteration, disruption or destruction (HADD) of fish habitat. It extends protection to all fish and fish habitat. When a HADD cannot be avoided or mitigated, a subsection 35(2) authorization with appropriate offsetting of residual adverse effects is required. Section 6 of the Act lists the factors considered by the Minister when considering the approval of an authorization, which are:

- Fisheries management objectives
- Whether there are measures and standards to avoid, mitigate or offset HADD to fish or fish habitat
- The public interest.

5.1.2 Migratory Birds Act

The *Migratory Birds Convention Act* (MBCA) protects migratory birds and their nests (S.4). Section 6 of the Migratory Bird Regulations (Consolidated Regulations of Canada (CRC), c. 1035) prohibits the disturbance, destruction or taking of a nest, egg, or nest shelter of a migratory bird. Disturbance to nests of protected species during vegetation clearing or construction is a contravention of the MBCA.

5.1.3 Species at Risk Act

The *Species at Risk Act* (SARA) identifies wildlife species considered to be at risk in Canada and designates them as threatened, endangered, extirpated or of special concern. Species at Risk (SAR) are identified and assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which is an independent

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committee of wildlife experts and scientists that makes recommendations to the federal government regarding the status of wildlife species in Canada.

The purpose of SARA is to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened.

The protection and conservation measures afforded by SARA apply to those species identified on Schedule 1 of the *Act*. Other species identified by COSEWIC as SAR that required further assessment in accordance with current assessment criteria are identified on Schedule 2 (Endangered and Threatened) and Schedule 3 (Special Concern) of the *Act*. All listed (Schedule 1) aquatic species and migratory birds in Canada are protected by SARA. Remaining listed species (plants, mammals, reptiles, amphibians) are only protected where they occur on federal lands (i.e., National Parks, First Nations Reserves).

Any activity affecting a listed species, or its critical habitat requires the prior issuance of a permit from the applicable agency, either Environment Canada or Department of DFO. Permits may only be issued for scientific research relating to the conservation of the species, where activities are required to benefit a species or to enhance its chances of survival or for incidental impacts. Efforts to avoid, reduce, or minimize impacts must first be employed and activities will not be permitted if they would jeopardize the survival or recovery of the species.

5.2 Provincial Policies and Legislation

5.2.1 Provincial Policy Statement

The Provincial Policy Statement (PPS 2020) is issued under the *Planning Act*, R.S.O. 1990, c.P.13 and supports the planning of land uses across the province. The PPS 2020 provides policy direction for the use and management of land, as well as infrastructure, while protecting the environment and resources and to ensure opportunities for employment and residential development.

The Planning Act requires that decisions made by planning authorities are consistent with policy statements, such as the PPS, which includes policies on development and land use, resources, and public health and safety. Section 2.1 of the PPS discusses natural heritage and requires that natural heritage systems are identified in certain Ecoregions. This includes Ecoregion 7E, where the Study Area is located.

According to Section 2.1.5 of the PPS, development and site alteration are not permitted in the following features:

- *Significant wetlands* in Ecoregions 5E, 6E and 7E; and

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- *Significant coastal wetlands.*

Development and site alteration shall not be permitted in the following unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions:

- *Significant woodlands in Ecoregions 6E and 7E*
- *Significant valleylands in Ecoregions 6E and 7E*
- *Significant wildlife habitat*
- *Significant areas of natural and scientific interest; and*
- *Coastal wetlands in Ecoregions 5E, 6E and 7E.*

Development and site alteration shall not be permitted the following except in accordance with provincial and federal requirements:

- *Fish habitat*
- *Habitat of endangered species and threatened species.*

Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified above unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

5.2.2 Endangered Species Act

The *Endangered Species Act* (ESA) (2007) replaces the original (1971) to provide broader protection for species at risk and their habitats, a stronger commitment to recovery of species, greater flexibility, increased fines and more effective enforcement, as well as greater accountability through government reporting requirements.

The ESA identifies wildlife species considered to be at risk in Ontario and designates them as threatened, endangered, extirpated or of special concern. Provincial species at risk are identified and assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO) which is a committee of wildlife experts and scientists, as well as those who provide Aboriginal traditional knowledge, that classify species according to their degree of risk based on the best available scientific information, community knowledge and aboriginal traditional knowledge. When COSSARO classifies a species at risk, that classification applies throughout Ontario, unless otherwise noted.

The *Endangered Species Act* protects species at risk and their habitats by prohibiting anyone from killing, harming, harassing or possessing protected species, as well as prohibiting any damage or destruction to the habitat of species identified on the Species at Risk in Ontario (SARO) list. All species on the SARO list are provided with general habitat protections under the *Endangered Species Act*, which protect areas that species

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depend on to carry out their life processes, such as reproduction, rearing, hibernation, migration, or feeding.

Any activity that may impact a protected species or its habitat requires the prior issuance of a permit from the MNDMNR. Such permits may only be issued under certain circumstances, which are limited to activities required to protect human health and safety, activities that will assist in the protection or recovery of the species, activities that will result in an overall benefit to the species or activities that may provide significant social or economic benefit without jeopardizing the survival or recovery of the species in Ontario.

Recent changes to the *Endangered Species Act* allow for specific infrastructure projects to proceed without the prior issuance of a permit. For these activities the work must be registered, and certain rules and guidelines adhered to. Consultation with the ministry is recommended prior to the works starting in order to ensure compliance with the *Endangered Species Act*.

5.2.3 Climate Change

The MECP's guide, *Consideration of Climate Change in the Environmental Assessment Process*, outlines two approaches for considering and addressing climate change in project planning, including:

- Reducing a project's impact on climate change (climate change mitigation measures)
- Increasing the project's and local ecosystem's resilience to climate change (climate change adaptation)

As part of this study, the objectives of the climate change document have been considered and incorporated into the generation and evaluation of alternatives and mitigation measures.

5.2.4 Conservation Authorities Act

The *Conservation Authorities Act* (CAA) was created with the purpose of conservation, restoration, development, and management of natural resources in watersheds in Ontario. The CAA is administered by the Ministry of Natural Resources and Forestry (MNR) and established Conservation Authorities with regulatory responsibility within their respective jurisdictions. The CAA was created in part to protect and manage water and other natural resources at the watershed level.

The Essex Region Conservation Authority (ERCA) has the responsibility to regulate activities in wetlands, watercourses, and hazard lands (e.g., area in and near rivers, streams, floodplains, wetlands, slopes, and shorelines) through the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation

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(O. Reg. 157/06). ERCA implements the regulation by issuing permits for works in or near watercourses, valleys, wetlands, or shorelines when required.

Under the *Conservation Authorities Act* of Ontario, the Authority has certain regulations whose objectives are:

- To prevent the loss of life and property due to flooding and erosion,
- To prevent pollution, and
- To conserve and enhance natural resources.

These policies apply to fill placement and removal or site grading, flood prone areas, erosion prone areas, dynamic beach areas, alteration of watercourses, and interference with wetlands.

5.2.5 Ontario Water Resources Act

The Ontario Water Resources Act (OWRA) (1990) focuses on the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long-term environmental, social and economic well-being. The OWRA is the most important law governing water quality and quantity and applies to both groundwater and surface water. The OWRA contains a number of regulations to protect water resources, as well as regulations on water-related works (i.e., water taking, sewage works, etc.).

These policies apply to a number of aspects of this EA, and the regulations will continue to be adhered to through the next stages of the study process.

5.3 Drinking Water Source Protection

The Clean Water Act (S.O. 2006, Chapter 22) protects existing and future sources of drinking water in Ontario. The Clean Water Act ensures that every Ontarian has access to safe drinking water by protecting water at its source; lakes, rivers and aquifers and seeks to reduce all threats to local drinking water sources. Ontario's Clean Water Act:

- a) Requires that local communities - through local Source Protection Committees – assess existing and potential threats to their water, and that they set out and implement the actions needed to reduce or eliminate these threats
- b) Empowers communities to take action to prevent threats from becoming significant
- c) Requires public participation on every local source protection plan – the planning process for source protection is open to anyone in the community
- d) Requires that all plans and actions are based around science.

The study area falls within the Essex Region Source Protection Area. Information provided by interactive mapping through the Drinking Water Source Protection website

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indicates that the study area is not within Well Head Protection Areas (WHPA), Intake Protection Zones (IPZ), Highly Vulnerable Aquifers (HVA) or Significant Groundwater Recharge Areas (SGRA).

5.4 Municipal Planning Policies

5.4.1 City of Windsor Official Plan

The City of Windsor Official Plan (2013) provides guidance for the physical development of the municipality, while taking into consideration important social, economic and environmental matters and goals. The Official Plan guides the location of new development, how existing and future neighbourhoods will be strengthened, how the environment will be enhanced, what municipal services (i.e., roads, watermains, sewers and parks) will be provided, and how Windsor will grow.

The Official Plan indicates the need for continued phasing-in of the separation of combined sewers, and provide rehabilitation to the existing sewerage system. The Official Plan also identifies the need for preventative measures to reduce demands on the sewerage system, such as promoting the disconnection of roof drainage systems, weeping tiles where appropriate, requiring new development be constructed with devices to assist in the prevention of potential surcharging and basement flooding, and separating road drainage from combined systems and directing road drainage to new storm sewers or storm relief sewers.

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6.0 Existing Infrastructure and Previous Studies

6.1 Existing Municipal Servicing

The City of Windsor has three types of existing drainage systems including sanitary, storm and combined sewer systems as described earlier. The study area is within a drainage area, which has undergone separation of the combined sewers through the City's ongoing separation program.

The Prince Road trunk sewer was constructed to its most current downstream location on Chappell Avenue between Sandwich Street and Russell Street.

6.1.1 Prince Road Sewer Study (2001)

In 2001, the City completed the Prince Road Sewer Study which was the guiding document for the design of the separation of the combined sanitary/storm sewer system in this particular sewershed. Street and basement flooding following severe storms was a common occurrence in the Prince Road Sewerage System Study Area, due to insufficient capacity to accommodate existing development, and being in poor condition. The study recommended construction of the Prince Road trunk sewer to its current location on Chappell Avenue between Sandwich Street and Russell Street.

The 2001 Prince Road Sewer Study also identified the capacity issues associated with the outlet at the current location. The study explored the potential to outlet the Prince Road storm sewer at Chappell Avenue to the McKee Creek.

6.2 Biological Assessment of the McKee Drain

As a result of the recommendations made within the 2001 Prince Road Sewer Study, an assessment of the existing natural environment conditions was completed in 2010 by Gerry Waldron, M.Sc. of Consulting Ecologists. In keeping with the recommendations of the Prince Road Sewer Study (2001), the natural environment investigations were conducted to assess the conditions of McKee Creek, where a new storm pump station at the final outlet is proposed.

McKee Creek is a small (approximately 1000 m) intermittent tributary of the Detroit River that drains light industrial lands and nearby municipal roadways (Waldron, 2010). The downstream reach of McKee Creek (lower 460 m) is a permanent watercourse (constructed channel) with water levels primarily influenced by water levels in the Detroit River (Waldron, 2010).

An aquatic assessment of McKee Creek, as well as areas immediately downstream in the Detroit River was completed. The study summarized the natural heritage features,

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characterized significant fish habitat, identified the presence of species at risk (SAR) within the creek, and provided mitigation and compensation recommendations.

Copies of the Natural Environment reports are provided in **Appendix B**.

6.2.1 Aquatic Species at Risk

In the 2010 study, a total of 16 species of fish were designated as threatened, endangered or of special concern in the Detroit River including associated tributaries.

Table 1: Fish Species Protected under SARA (Schedule 1)

Common Name	Fish Species	COSEWIC (Schedule 1)
Channel Darter	<i>Percina copelani</i>	Threatened
Eastern Sand Darter	<i>Ammocrypta pellucida</i>	Threatened
Lake Chubsucker	<i>Erimyzon sucetta</i>	Threatened
Northern Madtom	<i>Noturus stigmosus</i>	Endangered
Pugnose Shiner	<i>Notropis anogenus</i>	Endangered
Lake Sturgeon	<i>Acipensor fulvescens</i>	Threatened
Spotted Gar	<i>Lepidosteus oculatus</i>	Threatened

Table 2: Fish Species Protected under SAR (Schedule 1, 3 and newly listed species) Detroit River, Lake Erie and associated tributaries (Fisheries and Oceans 2007)

Common Name	Fish Species	COSEWIC (Schedule 1).
American Eel	<i>Anguilla rostrata</i>	Special Concern
Bigmouth Buffalo	<i>Ictiobus cyprinellus</i>	Special Concern
Grass Pickerel	<i>Esox americanus vermiculatus</i>	Special Concern
Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	Special Concern
Orangespotted Sunfish	<i>Lepomis humilis</i>	Special Concern
Pugnose Minnow	<i>Opsopoeodus emiliae</i>	Special Concern
Silver Chub	<i>Macrhybopsis storeriana</i>	Special Concern
Spotted Sucker	<i>Minytrema melanops</i>	Special Concern
Warmouth	<i>Lepomis gulosus</i>	Special Concern

Under the ESA 2007, an aquatic species designated by COSEWIC as an endangered or threatened species is protected and qualifies for legal protection and recovery under SARA. This essentially prohibits damaging or destroying the habitat of listed species. Fish habitat is defined as spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes (OMNR 2007, Fisheries and Oceans Canada Fact Sheet 2007).

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6.2.2 Terrestrial Environment

The 2010 study reports that a narrow band of vegetation grows along the canal banks in the lower reach of McKee Creek. This provides some shade to the canal waters and limited buffering from the adjacent industrial activities. The canal banks are composed entirely of fill with armouring of broken concrete. Most of the shoreline is dominated by thick stands of Common Reed, *Phragmites australis*. Scattered young trees of various species including the native Cottonwood, *Populus deltoides*, and several exotic species grow on the bank. Weedy meadow vegetation is found along the north side near the mouth and in the southeast corner.

6.2.2.1 Species of Conservation Concern

Species of Conservation Concern (SOCC) may be designated at the global, national, provincial, or local level. The 2010 report includes SOCC species that are provincially rare (with a Provincial S-rank of S1 to S3), listed as Special Concern (SC) on the Species at Risk in Ontario list (SARO), or terrestrial species listed on Schedule 1 of SARA but not included on the SARO list.

Provincial ranks (S-ranks) are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number of factors such as abundance, distribution, population trends and threats in Ontario and are not legal designations. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be determined. Species with provincial ranks of S1 to S3, and those tracked by the MNDMNR, are considered SOCC. Provincial S-ranks are defined as follows:

- S1: Critically imperiled; usually fewer than 5 occurrences
- S2: Imperiled; usually fewer than 20 occurrences
- S3: Vulnerable; usually fewer than 100 occurrences
- S4: Apparently secure; uncommon but not rare, usually more than 100 occurrences
- S5: Secure, common, widespread, and abundant

S-rank followed by a “?” indicates the rank is still uncertain.

The rank of Special Concern (formerly Vulnerable) is assigned by COSEWIC and the Committee on the Status of Species at Risk in Ontario (COSSARO) and is defined as any indigenous species that is particularly at risk because of low or declining numbers, occurrence at the fringe of its range or in restricted areas, or for some other reason but is not a threatened species.

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The rank of Threatened (THR) is assigned to any indigenous species of fauna or flora that is likely to become endangered in Canada if the factors affecting its vulnerability do not become reversed.

Endangered (END) Species are defined as any indigenous species of fauna or flora that, on the basis of the best available scientific evidence, is indicated to be threatened with immediate extinction throughout all or a significant portion of its Ontario range.

In this study, no terrestrial floral or faunal Species at Risk were observed. No snakes were encountered, and no other reptiles, amphibians or mammals were seen. Nearby sites, both upstream and downstream of this site are known to support populations of Eastern Foxsnake and Butler's Gartersnake. Blanding's Turtles and Queensnakes may also use the aquatic portions of the site.

Table 3: Species of Special Conservation Concern

Scientific Name	Common Name	SRANK	COSEWIC	COSSARO
<i>Elaphe gloydi</i>	Eastern Foxsnake	S3	END	THR
<i>Emydoidea blandingii</i>	Blanding's Turtle	S3	THR	THR
<i>Regina septemvittata</i>	Queen Snake	S2	THR	THR
<i>Thamnophis butleri</i>	Butler's Gartersnake	S2	THR	THR

Although none of these species were documented for the site, a precautionary approach justifies the retention or habitat suitable for these species.

6.2.3 Natural Environment Review Update (2021)

As part of this Class EA study, Stantec completed a natural heritage and species at risk (SAR) assessment in the study area to identify natural heritage and determine the potential presence of SAR and/or their habitats.

A site visit was completed on July 9, 2021, to examine the future location of the proposed storm outlet and describe the characteristics of the natural environment within a scoped field study area. The study area was scoped to an area encompassing approximately 0.39 ha around the location of the proposed outfall. The field investigation was completed to document terrestrial and aquatic natural heritage features in the scoped Study Area and confirm if SAR or SOCC identified in the background review or their habitat was present. Field investigations examined aquatic and terrestrial habitats in the Study Area.

6.2.3.1 Natural Heritage Background Data Review

There were recent (1990 to present) records of 29 rare or at-risk species that could potentially be present in the Study Area. This included one (1) bird, six (6) reptiles, two

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(2) plants, four (4) insects, eight (8) mussels and eight (8) fish. Eighteen species are listed as Threatened or Endangered under either SARA or the ESA. One SOCC (Spotted Sucker) was confirmed within McKee Creek.

A habitat assessment was completed for the 29 SAR identified in the background review. The assessment includes habitat descriptions for each species and an assessment of the likelihood that the Study Area provides habitat to support the species. The habitat assessment was completed using aerial imagery and results from the site investigation.

Results of the SAR/SOCC habitat assessment showed that there is potentially suitable habitat in the Study Area for 7 of the 29 species identified in the background review, outlined below in Table 4.

Table 4: Species at Risk and Species of Conservation that are Potentially Present in the Study Area

Common Name	Latin Name	Provincial S-rank	SARO Status	SARA Schedule 1	Source / Record Year *
Birds					
Barn Swallow	<i>Hirundo rustica</i>	S4B	THR	THR	NHIC/2016
Reptiles					
Butler's Gartersnake	<i>Thamnophis butleri</i>	S2	END	END	NHIC/2010 ORAA/2019
Eastern Foxsnake Carolinian pop'n	<i>Pantherophis gloydi</i>	S3	END	END	NHIC/ ORAA/2019
Snapping Turtle	<i>Chelydra serpentina</i>	S3	SC	SC	ORAA/2019
Insects					
Monarch	<i>Danaus plexippus</i>	S2N, S4B	SC	SC	OBA/2019
Fish and Mussels					
Eastern Pondmussel	<i>Ligumia nasuta</i>	S1	END	SC	NHIC/1992

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Common Name	Latin Name	Provincial S-rank	SARO Status	SARA Schedule 1	Source / Record Year *
Spotted Sucker	<i>Minytrema melanops</i>	S2	SC	SC	DFO Waldron/ 2010

In response to submitted information requests, MECP completed an initial SAR screening and indicated that there are known occurrences of the following SAR in the general area with potential to also occur in the Study Area:

- Eastern Foxsnake (endangered) – receives species and regulated habitat protection
- Bank Swallow (threatened) – receives species and general habitat protection
- Chimney Swift (threatened) – receives species and general habitat protection

The MECP further noted that the Study Area falls within the regulated habitat area for Eastern Foxsnake. The habitat regulation for Eastern Foxsnake (Carolinian population) protects sites used for nesting, hibernation, and communal shedding and basking, as well as areas within 1500 metres (m) of an Eastern Foxsnake (Carolinian population) that are suitable for it to carry out its life processes (e.g., foraging and thermoregulation). The regulation applies where the snake occurs in the following areas: the City of Windsor, the counties of Essex, Haldimand, Lambton, and Norfolk; the Municipality of Chatham-Kent; the geographic Township of Pelee within the County of Essex; and the Municipality of Bayham and West Elgin Township within the County of Elgin. The regulation is provided to a broad area associated with where the species is found, and is the responsibility of the proponent to carry out additional work to determine if the species was present or if suitable habitat is present.

McKee Creek was previously assessed for aquatic habitat and fish community composition by Gerry Waldron Consulting Ecologists in 2010. Waldron (2010) described McKee Creek as a small tributary of the Detroit River that is intermittent in its upper reaches, but which exhibits permanent flow in a constructed channel in its lower reaches, with water levels influenced by the water levels in the Detroit River.

Background data showed that there were 21 fish species that use habitat in McKee Creek. The documented fish community in McKee Creek includes the following species:

- Brook Silverside (*Labidesthes sicculus*)
- Bluntnose Minnow (*Pimephales notatus*)
- Emerald Shiner (*Notropis atherinoides*)

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- Mimic Shiner (*Notropis volucellus*)
- Largemouth Bass (*Microptereus salmoides*)
- Yellow Perch (*Perca flavescens*)
- Common Carp (*Cyprinus carpio*)
- Round Goby (*Neogobius melanostomus*)
- Gizzard Shad (*Dorosoma cepedianum*)
- Spotted Sucker (*Minytrema melanops*)
- Northern Pike (*Esox lucius*)
- Brown Bullhead (*Ameiurus nebulosus*)
- Black Bullhead (*Ameiurus melas*)
- Longnose Gar (*Lepisosteus osseus*)
- White Bass (*Morone chrysops*)
- Rock Bass (*Ambloplites rupestris*)
- Bluegill Sunfish (*Lepomis macrochirus*)
- Pumpkinseed Sunfish (*Lepomis gibbosus*)
- Buffalo sp. (*Ictiobus sp.*)
- White Sucker (*Catostomus commersoni*)
- Freshwater Drum (*Aplodinotus grunniens*).

Spotted Sucker, a Special Concern species, was the only SAR/SOCC species caught in McKee Creek by Waldron (2010).

The Detroit River was the only Natural Area listed in the NHIC database.

6.2.4 Field Investigations

A field investigation was completed on July 9, 2021. On the day of the assessment the weather was 19 °C, with light wind and 50% cloud cover.

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6.2.4.1 Aquatic Habitat Assessment

The east end of the McKee Creek shoreline was examined from the hydro tower eastward to the Coco Paving driveway crossing of the creek. The channel at this location was approximately 10 m wide with a 15 m bankfull width. Flow movement was imperceptible, and the habitat appeared as an extensive pool estimated at approximately 1 to 2 m deep. Substrates were not visible due to water depth, lack of clarity and floating vegetation, however they are expected to consist of soft and deep fine sediment, consisting of fine-grained silts, clays and detritus, as well as sand, with occasional cobbles and broken concrete slabs as noted by Waldron (2010).

Dense aquatic vegetation was noted in the channel and included bladderwort (*Utricularia* sp.), coontail (*Ceratophyllum demersum*) and fragrant water lily (*Nymphaea odorata*). Waldron (2010) also noted the presence of dense beds of Eurasian watermilfoil (*Myriophyllum spicatum*), wild celery or tape grass (*Vallisneria americana*), waterweed (*Elodea canadensis*), and pondweed (*Potamogeton* spp.) during detailed boat electrofisher surveys in 2010.

The quiescent conditions in this area of the channel and thick growths of aquatic vegetation can result in large diurnal fluctuations in dissolved oxygen. Low levels of dissolved oxygen were measured by Waldron (2010) and were thought to be influenced by relatively shallow depths, dense aquatic vegetation and limited mixing of waters other than during runoff events when periodic flow contributions arrive from upstream reaches of the creek (Waldron 2010).

The majority of the channel has an open canopy cover; however, some overhead cover is provided along the shore margins by overhanging phragmites. An approximate 10 m wide band of riparian vegetation surrounding the creek channel is dominated by dense phragmites with herbaceous species intermixed. The shrub layer consists of scattered staghorn sumac, box elder, autumn olive and sandbar willow. A few individual cottonwood trees are also present along the channel.

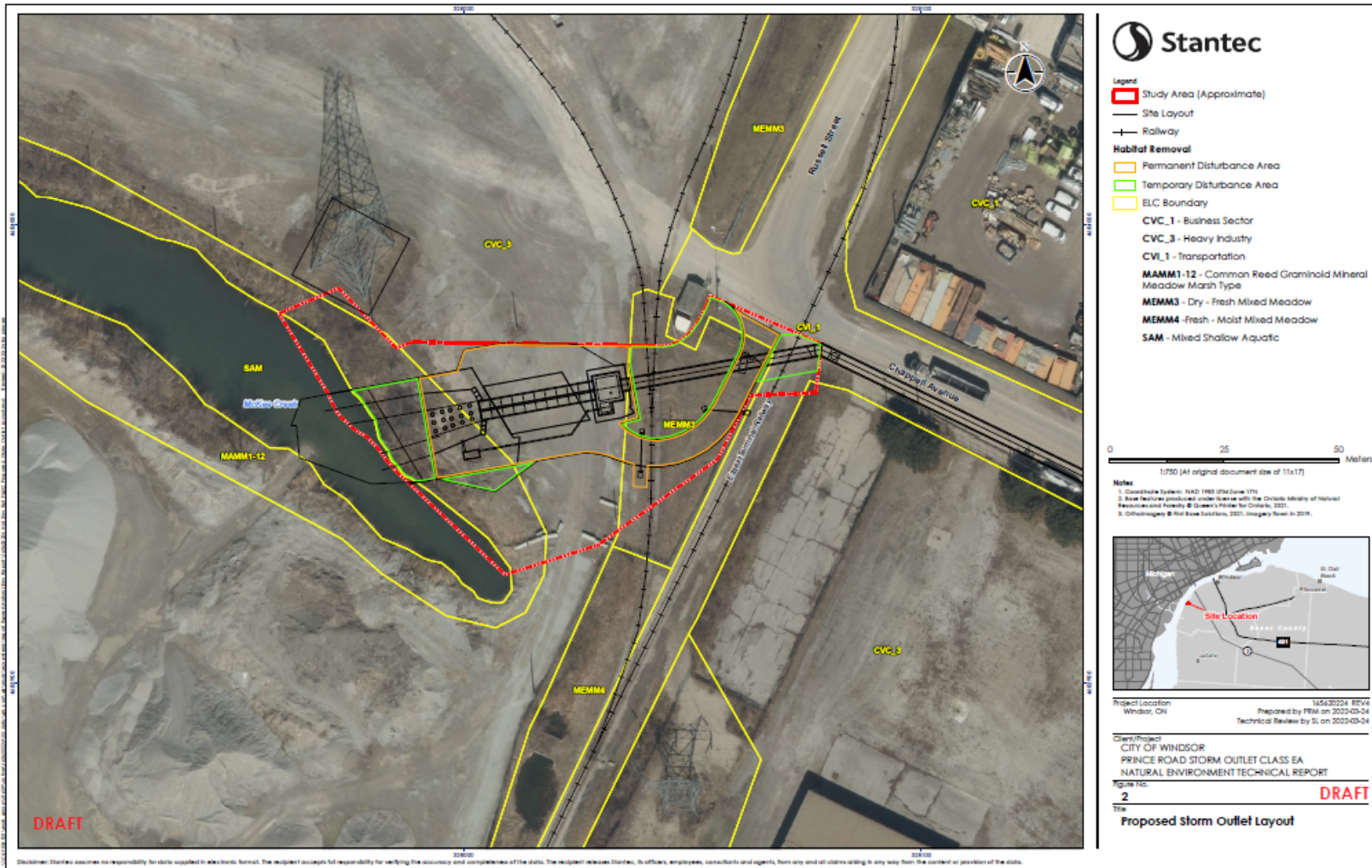
6.2.4.2 Terrestrial Habitat Assessment

Much of the Study Area is developed as heavy industrial associated with Coco Paving operations. The limited natural area in this scoped area of investigation is primarily associated with the riparian band of McKee Creek. ELC communities observed in the Study Area are shown in **Exhibit 3**.

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Figure 3: Ecological Land Classifications



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Heavy industry (CVC_3), transportation (CVI_1) and business sector (CVC_1) classifications did not provide natural habitat and no plant SAR or rare plants were observed in these ELC communities.

Natural or semi-natural habitat within the Study Area included the following ELC communities:

Mixed Shallow Aquatic (SAM): This community comprises the McKee Creek channel. The vegetation community is dominated by the following species: bladderwort, hornwort (*Ceratophyllum* sp.), fragrant water-lily (*Nymphaea odorata*), and duckweed (*Lemna* sp.). Green Heron and Wood Duck were observed foraging in this community and likely take refuge in the adjacent MAMM1-12 community. No plant SOCC or SAR were observed in this community. **Common Reed Graminoid Mineral Meadow Marsh Type (MAMM1-12):** This community surrounds McKee Creek. The vegetation community is dominated by European reed (*Phragmites australis australis*), and to a lesser extent staghorn sumac (*Rhus typhina*), sandbar willow (*Salix interior*), field thistle (*Cirsium arvense*) and common wormwood (*Artemisia vulgaris*). Portions of this area are highly disturbed and primarily composed of exotic and invasive species. No plant SOCC or SAR were observed in this community.

Dry-Fresh Mixed Meadow Ecosite (MEMM3): This vegetation community flanks the east side of the Coco Paving internal driveway and surrounds the Essex Terminal Rail (ETR) spur line. The community is maintained by mowing and is dominated by the following species: Kentucky bluegrass (*Poa pratensis*), garden bird's-foot trefoil (*Lotus corniculatus*) and European Reed. No plant SOCC or SAR were observed in this community. Monarch and Barn Swallow were observed foraging in this area.

Fresh-Moist Mixed Meadow Ecosite (MEMM4): This community is located to the east side of the Coco Paving internal driveway and surrounds the ETR spur line. The vegetation community is dominated by European reed and to a lesser extent, goldenrod (*Solidago* spp.). The area is also disturbed by mowing along the Coco Paving driveway on the west side of the fenceline associated with the ETR spur line. No SOCC or SAR plants were observed in this community. Monarch was observed foraging in this area.

6.2.4.3 Incidental Wildlife Survey

Incidental wildlife observations included Green Heron (*Butorides virescens*), Wood Duck (*Aix sponsa*), Red-winged Blackbird (*Agelaius phoeniceus*), American Goldfinch (*Spinus tristis*), American Robin (*Turdus migratorius*), Eastern Kingbird (*Tyrannus tyrannus*), European Starling (*Sturnus vulgaris*), Song Sparrow (*Melospiza melodia*), Barn Swallow and Green Frog (*Lithobates clamitans*). Other than Barn Swallow (discussed in Section 2.2.2.4), none of these species are considered SOCC or SAR.

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6.2.4.4 Species at Risk

During the site investigation, efforts were made to search for SAR and SOCC species that were identified as potentially occurring in the area based on the background information review.

Neither Bank Swallow nor Chimney Swift, or their habitats were observed in the Study Area.

The incidental wildlife survey identified one SOCC and one SAR within the Study Area, the Monarch and Barn Swallow, respectively.

Monarchs (3 individuals) were observed foraging in the MEMM3 community to the east of the Coco Paving Access Road where it crosses McKee Creek. Monarch is listed as Special Concern under the ESA and SARA. Monarch caterpillars are dependent on milkweed plant species for survival as milkweed is the only source of food for the caterpillars. No extensive areas of milkweed were observed in the area.

Barn Swallow (3 individuals) was observed flying in the area, likely foraging on insects. No nesting areas are available in the scoped Study Area, however nesting opportunities may be available in structures in the surrounding area. Barn Swallow is listed as Threatened under the ESA and SARA.

Potential foraging habitat for Eastern Foxsnake and Butler's Gartersnake was noted in the area associated with the McKee Creek riparian area, however no reptiles were observed in the area. No habitat structures that could potentially provide hibernacula for these species were observed in the scoped investigation area.

7.0 Alternative Solutions

The SMP identified short and long-term solutions to understand and mitigate the widespread floods throughout the City. Short-term source control alternatives were determined and presented as solutions for improvements that can be implemented easily with low capital costs. These solutions consist of measures that can reduce the amount of water going into the City's drainage systems, including partnering with homeowners to protect against the impacts of flooding.

As long-term infrastructure improvements will require significant funding and time to implement, it was necessary that the City take advantage of opportunities to implement short-term solutions to begin to relieve the City's system and provide protection to private properties. A list of the short-term solutions identified can be found in the SMP. Long-term solutions to mitigate the risk of flooding are comprised of four levels of improvements: source control; increase the conveyance and storage capacity; increase downstream capacity; and/or, protect the coastline from flooding.

7.1 Central Sewershed – Overall Basement Flooding Risk Reduction Strategy

The Central Sewershed – Overall Basement Flooding Risk Reduction Strategy consists of combined sewers, which present high risk for basement flooding. Several studies have been completed to provide a strategy for the separation of the combined systems, which have been partly implemented to date. The separation of combined sewers and construction of storm sewer infrastructure is required to accommodate re-directed drainage and should be completed in conjunction with sewer and road rehabilitation projects. Over time, overflow volumes and flows will gradually be reduced in the sanitary/combined sewer system as improvements are constructed. The following alternatives were considered for the Central Sewershed – Overall Basement Flooding Risk Reduction Strategy:

- Complete Enhanced Sewer Separation of Combined Sewer and Dual Manhole Systems
- Continued Soft Separation – “Do Nothing”

The Complete Enhanced Sewer Separation of Combined Sewer and Dual Manhole Systems is the preferred alternative, as the Continued Soft Separation – “Do Nothing” alternative does not meet the basement flood risk mitigation objective.

7.2 Prince Road Trunk Storm Sewer Outfall at Chappell Avenue and College Avenue Storm Sewer

The Prince Road Trunk Storm Sewer Outfall at Chappell Avenue (STM-C1) and College Avenue Storm Sewer (STM-C9) was assessed for improvements. The alternative solutions considered were “Do Nothing” (maintain status quo with regular maintenance and operations of existing system), and “New Outlet and Dewatering Pump Station”.

The New Outlet and Dewatering Pumping Station (**Figure 4**) alternative involves the construction of a new outlet for the existing separated storm system serving the Prince Road drainage areas, via installation of approximately 200 m of new storm sewer (STM-C1) west of the intersection of Chappell Avenue and Sandwich Street, to a new outfall to McKee Creek. This outlet will provide a level of service for the full enhanced separation of this drainage area. A dewatering pump station will be required to drawdown the storm system after a rain event, due to the elevation of the new storm sewer being below lake levels. In addition to this outlet, construction of approximately 400 m of new storm sewers along College Avenue is proposed.

The SMP recommended a New Outlet and Dewatering Pump Station for the existing separated storm system serving the Prince Road drainage area. This would include the installation of approximately 140 m of new storm sewer west of the intersection of Chappell Avenue and Sandwich Street, to a new outfall to McKee Creek coupled with a dewatering pump station.

8.0 Alternative Design Concepts

Design alternatives for this project involve site layouts and property footprint requirements to accommodate:

- Outlet Chamber and Pump Station
- Locations of culverts
- Dispersion channel
- Access requirements both during and post construction
- Property acquisition requirements

Four alternative design concepts were developed for the location and design of the outlet and associated pumping station at McKee Creek.

8.1 Design Concept Option 1 – Outlet Close to Hydro Easement

The existing 2400 mm dia. concrete storm sewer to be extended westerly with a new 2700 mm dia. concrete storm sewer along Chappell Avenue, across the Essex Terminal Rail (ETR) spur line and along 3800 Russell (Coco Paving) property to a new outlet chamber and pumping station.

From the outlet structure, a twinned gravity sewer (2 – 1800 mm x 1200 mm concrete box sewers) will outlet to a dispersion channel and ultimately to the existing McKee Creek. During severe storm events, flows may also pass through emergency overflow openings in the top of the outlet chamber overland to the dispersion channel. The sewer system will be dewatered with the pumping station discharging flows through a water quality unit and ultimately to the dispersion channel.

An access road with drainage culverts across the properties would be required to access the infrastructure.

It is anticipated the pumping station would require a simple fee property acquisition on the 3800 Russell (Coco Paving) property with the remainder of the infrastructure (storm sewer, box culvert, dispersion channel, etc.) subject to an easement. For the proposed storm sewer crossing the ETR property it is anticipated an easement would be required. The City's existing agreement(s) with ETR may support these measures.

To facilitate construction a temporary easement would be required across the ETR property, 3800 Russell property and the 3800 Russell property subject to a Hydro One easement, north and south of the proposed property acquisition.

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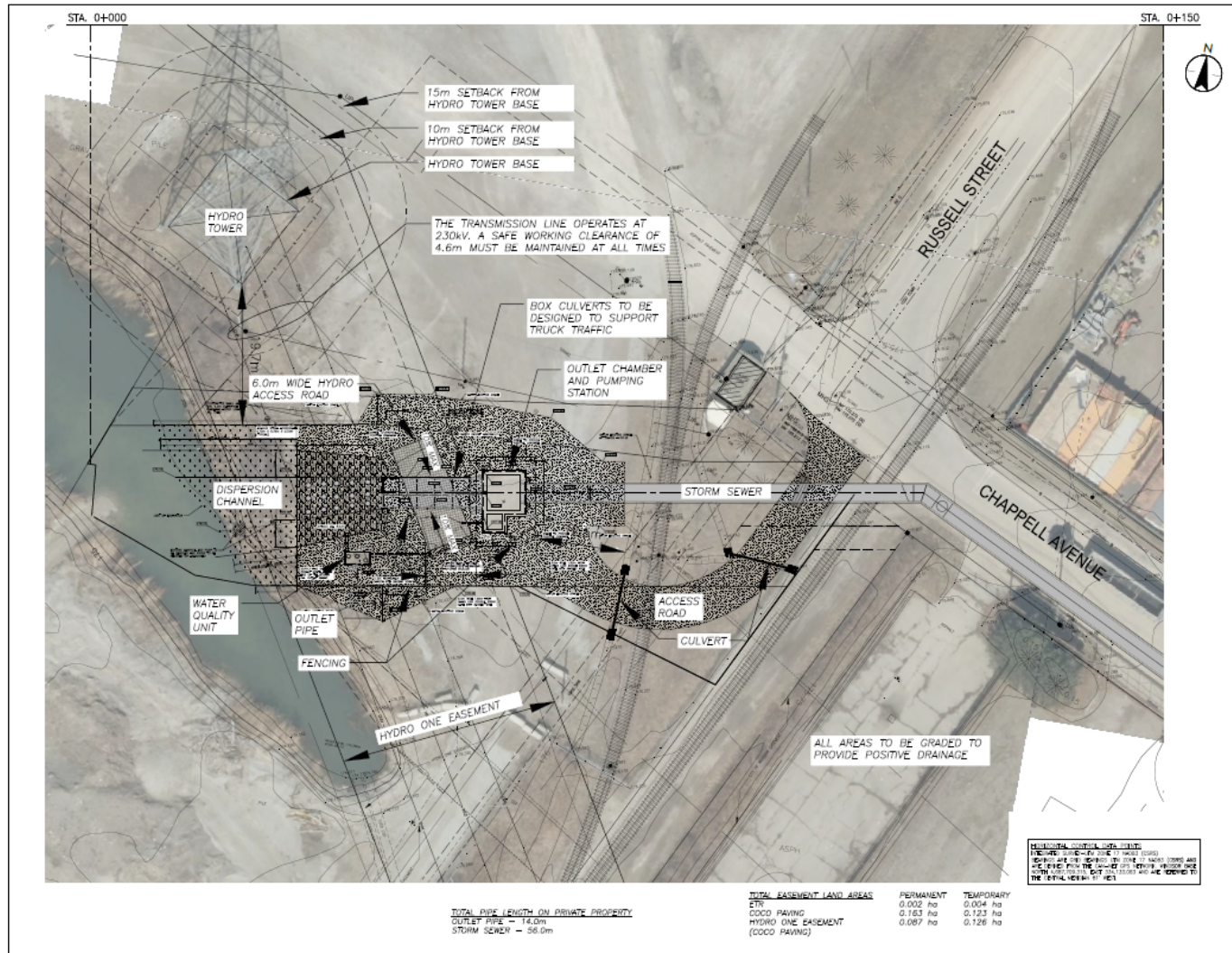
Access for the pumping station infrastructure would be from the 3800 Russell property just west of the ETR property from Chappell Avenue/Russell Street intersection. A lockable gate would be required at this location. Fencing is also proposed around the outlet chamber/ pumping station and around the dispersion channel.

In this option, the outlet chamber and pumping station is located as close to the Hydro One easement as possible to still maintain access to Hydro One along their easement.

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Figure 4: Option 1 – Outlet Close to Hydro Easement



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8.2 Design Concept Option 2 - Outlet Chamber Close to Private Rail

The existing 2400 mm dia. concrete storm sewer to be extended westerly with a new 2700 mm dia. concrete storm sewer along Chappell Ave, across ETR and along the 3800 Russell (Coco Paving) property to a new outlet chamber and pumping station.

From the outlet structure, a twinned gravity sewer (2 – 1800 mm x 1200 mm concrete box sewers) will outlet to a dispersion channel and ultimately to the existing McKee Creek. During severe storm events, flows may also pass through emergency overflow openings in the top of the outlet chamber overland to the dispersion channel. The sewer system will be dewatered with the pumping station discharging flows through a water quality unit and ultimately to the dispersion channel.

An access road with drainage culverts across the properties would be required to access the infrastructure.

It is anticipated the pumping station would require a simple fee property acquisition on the 3800 Russell (Coco Paving) property with the remainder of the infrastructure (storm sewer, box culvert, dispersion channel, etc.) subject to an easement. For the proposed storm sewer crossing the ETR property it is anticipated an easement would be required. The City's existing agreement(s) with ETR may support these measures.

To facilitate construction a temporary easement would be required across the ETR property, 3800 Russell property and the 3800 Russell property subject to a Hydro One easement, north and south of the proposed property acquisition.

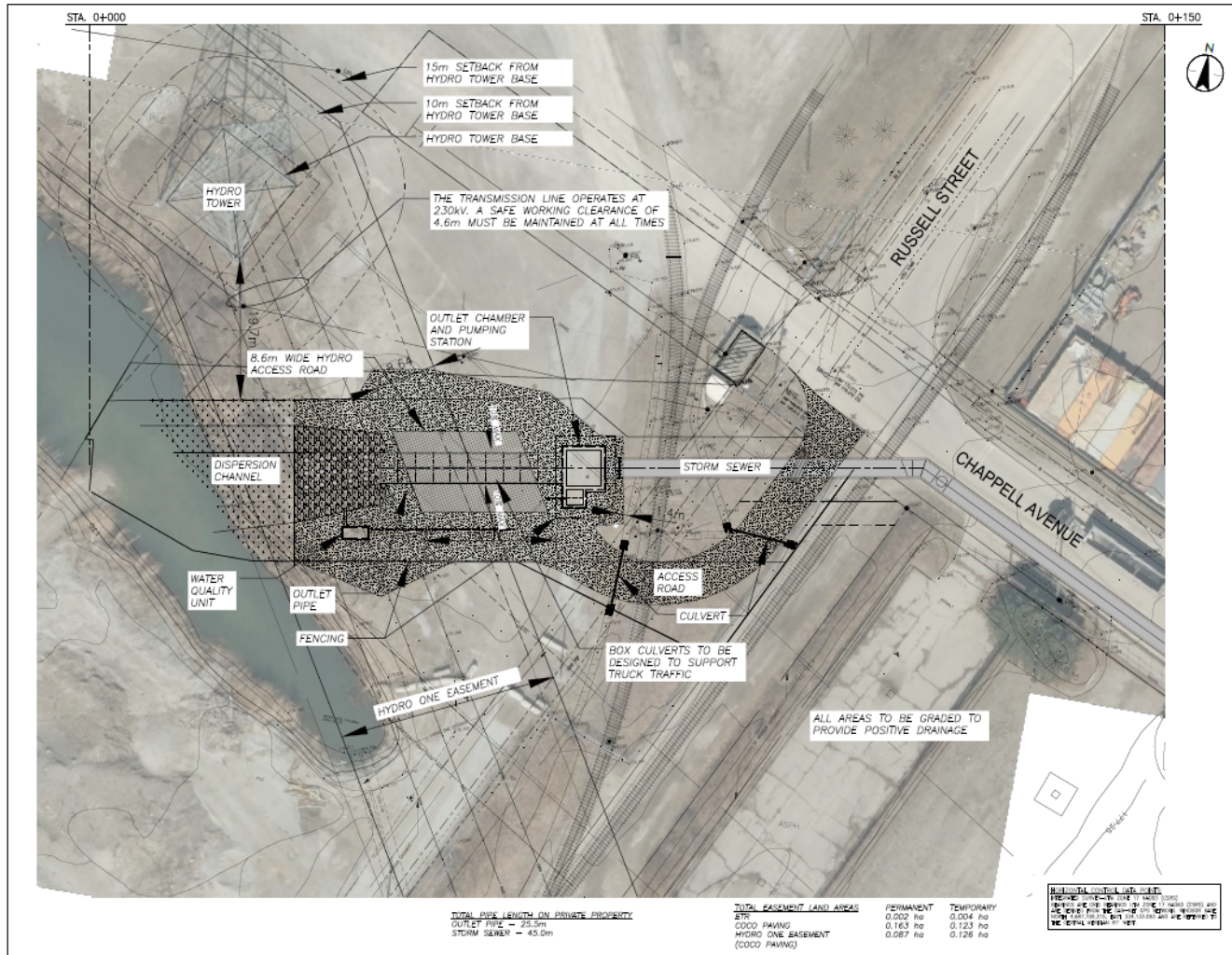
Access for the pumping station infrastructure would be from the 3800 Russell property just west of the ETR property from Chappell Avenue/Russell Street intersection. A lockable gate would be required at this location. Fencing is also proposed around the outlet chamber / pumping station and around the dispersion channel.

In this option, the outlet chamber and pumping station is located west of and as close as possible to the private rail.

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Figure 5: Option 2 – Outlet Chamber Close to Private Rail



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8.3 Design Concept Option 3 – Outlet Chamber Close to Existing Office Building

The existing 2400 mm dia. concrete storm sewer to be extended westerly with a new 2700 mm dia. concrete storm sewer along Chappell Ave, across ETR (along Chappell Ave) and along the 3800 Russell (Coco Paving) property to a new outlet chamber and pumping station.

From the outlet structure, a twinned gravity sewer (2 – 1800 mm x 1200 mm concrete box sewers) will outlet to a dispersion channel and ultimately to the existing McKee Creek. During severe storm events, flows may also pass through emergency overflow openings in the top of the outlet chamber overland to the dispersion channel. The sewer system will be dewatered with the pumping station discharging flows through a water quality unit and ultimately to the dispersion channel.

An access road with drainage culverts across the properties would be required to access the infrastructure.

It is anticipated the pumping station would require a simple fee property acquisition on the 3800 Russell (Coco Paving) property with the remainder of the infrastructure (storm sewer, box culvert, dispersion channel, etc.) subject to an easement. For the proposed storm sewer crossing the ETR property it is anticipated an easement would be required. The City's existing agreement(s) with ETR may support these measures.

To facilitate construction a temporary easement would be required across the ETR property, 3800 Russell property and the 3800 Russell property subject to a Hydro One easement, north and south of the proposed property acquisition.

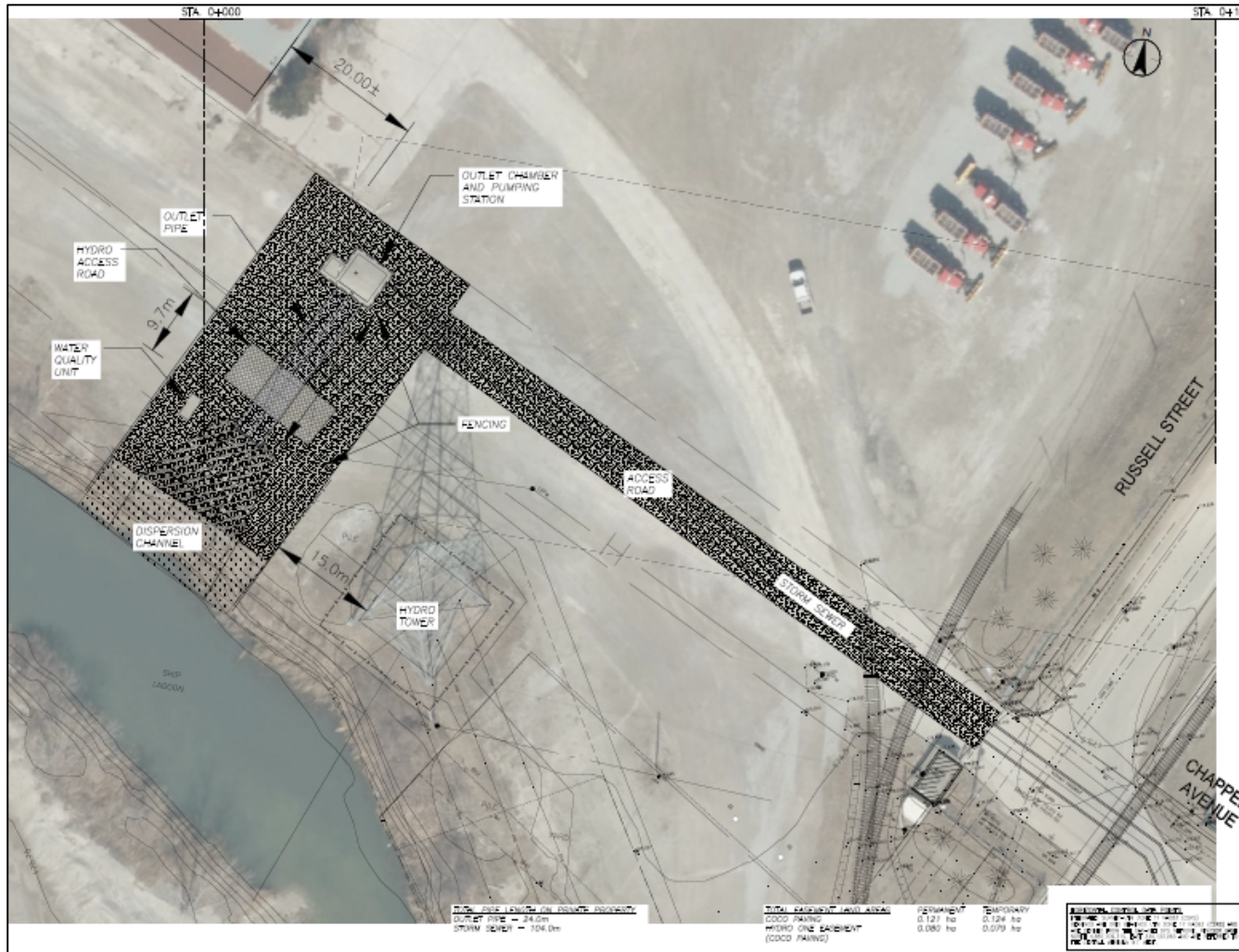
Access for the pumping station infrastructure would be from the 3800 Russell property current entrance. Fencing is also proposed around the outlet chamber / pumping station and around the dispersion channel.

In this option, the outlet chamber and pumping station is located northwest of the existing hydro tower close to the existing building.

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Figure 6: Option 3 – Outlet Chamber Close to Existing Office Building



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8.4 Design Concept Option 4 – Outlet Chamber Close to Roadway

The existing 2400 mm dia. concrete storm sewer to be extended westerly with a 2700 mm dia. sewer along Chappell Ave., across ETR and along 3800 Russell (Coco Paving) property to a new outlet chamber and pumping station located between ETR and the private railway spur line at the Coco Paving property.

From the outlet structure, three gravity sewers (3 – 1800 mm x 1200 mm concrete box sewers) will outlet to a dispersion channel and ultimately to the existing McKee Creek. The sewer system will be dewatered with the pumping station discharging flows through a water quality unit and ultimately to one of the 1800 mm x 1200 mm concrete box sewers.

An access road with drainage culverts across the properties would be required to access the infrastructure.

It is anticipated the pumping station would require a simple fee property acquisition on the 3800 Russell (Coco Paving) property with the remainder of the infrastructure (storm sewer, box culvert, dispersion channel, etc.) subject to an easement. For the proposed storm sewer crossing the ETR property it is anticipated an easement would be required. The City's existing agreement(s) with ETR may support these measures.

To facilitate construction a temporary easement would be required across the ETR property, 3800 Russell property and the 3800 Russell property subject to a Hydro One easement, north and south of the proposed property acquisition.

Access for the pumping station infrastructure would be from the 3800 Russell property just west of the ETR property from Chappell Avenue/Russell Street intersection. A lockable gate would be required at this location. Fencing is also proposed around the outlet chamber / pumping station and around the dispersion channel.

With this option, the outlet chamber would have to be larger than Options 1 or 2 to accommodate a third box sewer outlet to the McKee Creek.

This option is similar to the other options but accommodates extra flow underground and has minimal impacts to the Coco Paving operations.

8.5 Evaluation of Alternative Design Concepts

To facilitate the assessment of the alternative design concepts, the evaluation factors and criteria outlined in **Table 5** were developed by members of the project team.

Table 5: Evaluation Factors and Criteria

Factors	Criteria
Technical Considerations	<ul style="list-style-type: none"> • 3800 Russell and 4016 Sandwich (Coco Paving) Operations/Access • Road Access • Rail Access • Hydro Access (Hydro One) • Ease of Maintenance • Impacts to Property/Footprint Requirements • Storm Sewer Capacity • Dispersion Channel Location • Culvert Location • Cost
Environmental Considerations	<ul style="list-style-type: none"> • Impacts to Water Quality and Aquatic Habitat • Impacts to Wildlife and/or Species at Risk (SAR) • Impacts to Vegetation • Archaeological Resources

Through consultation with potentially impacted property owners and stakeholders, the project team evaluated the alternatives to screen unsuitable concepts based on temporary and permanent impacts associated with each alternative. The detailed evaluation of the Alternative Design Concepts is outlined in **Table 6**.

8.6 Preliminary Screening of Alternatives

Prior to completing the evaluation of Alternative Design Concepts, the project team determined Option 3 to be an unsuitable concept. Option 3 was presented to the property owner, who expressed concerns for the impacts to existing operations. Therefore, Option 3 was screened out, and excluded from the evaluation of Alternative Design Concepts.

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Table 6: Evaluation of Alternative Design Concepts

Factors & Criteria	Alternative Design Option 1 (outlet chamber close to hydro easement)	Alternative Design Option 2 (outlet chamber close to private rail)	Alternative Design Option 4 (outlet chamber close to Chappell Ave)
Technical Considerations			
3800 Russell (Coco) Property Access	<ul style="list-style-type: none"> City will have separate entrance from 3800 Russell's main entrance, therefore no impact to operations (during and post construction) Chamber may impact access to north and south properties 	<ul style="list-style-type: none"> City will have separate entrance from 3800 Russell's main entrance, therefore no impact to operations (during and post construction) Pushes chamber closer to railway to avoid impacting access to north and south properties 	<ul style="list-style-type: none"> During and post construction, minimal impacts to 3800 Russell's operations are anticipated Access for the pumping station would be from 3800 Russell lands just west of the ETR property from Chappell Ave / Russell St.
Road Access	<ul style="list-style-type: none"> Potential to leave at least one lane open during construction to allow access 	<ul style="list-style-type: none"> Potential to leave at least one lane open during construction to allow access 	<ul style="list-style-type: none"> Potential to leave at least one lane open during construction to allow access
Rail Access	<ul style="list-style-type: none"> Temporary closure of rail line during construction for 1-2 weeks Requires open cut across rail lines 	<ul style="list-style-type: none"> Temporary closure of rail line during construction for 1-2 weeks Requires open cut across rail lines 	<ul style="list-style-type: none"> Temporary closure of rail line during construction for 1-2 weeks Requires open cut across rail lines
Hydro Access	<ul style="list-style-type: none"> Access impacted temporarily during construction Permanently reduced access due to dispersion channel (shown on plan) 	<ul style="list-style-type: none"> Access impacted temporarily during construction Permanently reduced access due to dispersion channel (shown on plan) 	<ul style="list-style-type: none"> Access impacted temporarily during construction Permanently reduced access due to dispersion channel (shown on plan)
Ease of Maintenance	<ul style="list-style-type: none"> Separate entrance allows for more convenient access for maintenance 	<ul style="list-style-type: none"> Separate entrance allows for more convenient access for maintenance 	<ul style="list-style-type: none"> Separate entrance allows for more convenient access for maintenance
Impacts to Property/ Footprint Requirements	<ul style="list-style-type: none"> Minor difference in overall footprint to Option 2 Requires 14.0 m of outlet pipe on private property Requires 56.0 m of storm sewer on private property <p>Property Impacted: ETR: Property required (0.002ha), Temporary for Construction (0.004ha) Coco Paving: Property required (0.159ha), Temporary for Construction (0.123ha) Hydro One: Property required (0.074ha), Temporary for Construction (0.130ha)</p>	<ul style="list-style-type: none"> Minor difference in overall footprint to Option 1 Requires 25.5 m of outlet pipe on private property Requires 45.0 m of storm sewer on private property <p>Property Impacted: ETR: Property required (0.002ha), Temporary for Construction (0.004ha) Coco Paving: Property required (0.163ha), Temporary for Construction (0.123ha) Hydro One: Property required (0.074ha), Temporary for Construction (0.130ha)</p>	<ul style="list-style-type: none"> The outlet chamber would have to be larger than Options 1 or 2 to accommodate a third box sewer outlet to the McKee Creek Requires 54.0m of outlet pipe on private property Requires 13.0m of storm sewer on private property <p>Property Impacted: ETR: Property required (0.002ha), Temporary for Construction(0.004ha) Coco Paving: Property required (0.162ha), Temporary for Construction (0.119ha)</p>

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Factors & Criteria	Alternative Design Option 1 (outlet chamber close to hydro easement)	Alternative Design Option 2 (outlet chamber close to private rail)	Alternative Design Option 4 (outlet chamber close to Chappell Ave)
			Hydro One: Property required (0.087ha), Temporary for Construction (0.126ha)
Dispersion Channel Location	<ul style="list-style-type: none"> Dispersion channel located south of Hydro tower Located within the <1m channel depth, inland of McKee Creek Directs/disperses flow of water towards the Detroit River during wet/rain events 	<ul style="list-style-type: none"> Dispersion channel located south of Hydro tower Located within the <1m channel depth, inland of McKee Creek Directs/disperses flow of water towards the Detroit River during wet/rain events 	<ul style="list-style-type: none"> Dispersion channel located south of Hydro tower Located within the <1m channel depth, inland of McKee Creek Directs/disperses flow of water towards the Detroit River during wet/rain events
Culvert Locations	<ul style="list-style-type: none"> Two culverts required along access road, on north and south side of railway tracks 	<ul style="list-style-type: none"> Two culverts required along access road, on north and south side of railway tracks 	<ul style="list-style-type: none"> Two culverts required along access road, on north and south side of railway tracks
Cost	<ul style="list-style-type: none"> Estimated total cost is approximately \$7.27M 	<ul style="list-style-type: none"> Estimated total cost is approximately \$7.32M 	<ul style="list-style-type: none"> Estimated total cost is approximately \$8.44M
Environmental Considerations			
Impacts to Water Quality and Aquatic Habitat	<ul style="list-style-type: none"> Location of dispersion channel can provide increased aeration and mixing throughout McKee Creek to improve water quality in the immediate vicinity 16 species of fish have been designated as threatened, endangered or of special concern in the Detroit River including associated tributaries Species observed to be more abundant further inland of McKee Creek, within heavily vegetated areas – Options 1, 2 & 4 dispersion channels have greater potential to disturb fish habitat Option 1, 2 & 4 require permanent removal of vegetation within McKee Creek McKee Creek serves as both a foraging and spawning habitat for many of the fish species 	<ul style="list-style-type: none"> Location of dispersion channel can provide increased aeration and mixing throughout McKee Creek to improve water quality in the immediate vicinity 16 species of fish have been designated as threatened, endangered or of special concern in the Detroit River including associated tributaries Species observed to be more abundant further inland of McKee Creek, within heavily vegetated areas – Options 1, 2 & 4 dispersion channels have greater potential to disturb fish habitat Option 1, 2 & 4 require permanent removal of vegetation within McKee Creek McKee Creek serves as both a foraging and spawning habitat for many of the fish species 	<ul style="list-style-type: none"> Location of dispersion channel can provide increased aeration and mixing throughout McKee Creek to improve water quality in the immediate vicinity 16 species of fish have been designated as threatened, endangered or of special concern in the Detroit River including associated tributaries Species observed to be more abundant further inland of McKee Creek, within heavily vegetated areas – Options 1, 2 & 4 dispersion channels have potential to disturb fish habitat Option 1, 2 & 4 require greater amount of permanent removal of vegetation within McKee Creek McKee Creek serves as both a foraging and spawning habitat for many of the fish species
Impacts to Wildlife and/or Species at Risk (SAR)	<ul style="list-style-type: none"> Culverts provide safe crossing for animals under roadway Nearby sites upstream and downstream support populations of 4 SAR, and will need to be considered during construction 	<ul style="list-style-type: none"> Culverts provide safe crossing for animals under roadway Nearby sites upstream and downstream support populations of 4 SAR, and will need to be considered during construction 	<ul style="list-style-type: none"> Culverts provide safe crossing for animals under roadway Nearby sites upstream and downstream support populations of 4 SAR, and will need to be considered during construction

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Factors & Criteria	Alternative Design Option 1 (outlet chamber close to hydro easement)	Alternative Design Option 2 (outlet chamber close to private rail)	Alternative Design Option 4 (outlet chamber close to Chappell Ave)
			need to be considered during construction
Vegetation	<ul style="list-style-type: none"> Narrow band of vegetation along the canal banks in the lower area of McKee Creek, providing shade and buffering from adjacent industrial activities Permanent vegetation removal along the canal banks to support dispersion channels – similar removal for all options anticipated No terrestrial floral or faunal SAR observed 	<ul style="list-style-type: none"> Narrow band of vegetation along the canal banks in the lower area of McKee Creek, providing shade and buffering from adjacent industrial activities Permanent vegetation removal along the canal banks to support dispersion channels – similar removal for all options anticipated No terrestrial floral or faunal SAR observed 	<ul style="list-style-type: none"> Narrow band of vegetation along the canal banks in the lower area of McKee Creek, providing shade and buffering from adjacent industrial activities Permanent vegetation removal along the canal banks to support dispersion channels – similar removal for all options anticipated No terrestrial floral or faunal SAR observed
Archaeological Resources	<ul style="list-style-type: none"> Highly disturbed lands therefore low potential for archaeological finds; however, will be assessed and confirmed during detailed design and upon access to property 	<ul style="list-style-type: none"> Highly disturbed lands therefore low potential for archaeological finds; however, will be assessed and confirmed during detailed design and upon access to property 	<ul style="list-style-type: none"> Highly disturbed lands therefore low potential for archaeological finds; however, will be assessed and confirmed during detailed design and upon access to property

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9.0 Preferred Alternative Design Concept

Based on the detailed evaluation of Alternative Design Concepts and comments received from key stakeholders (Coco Paving, ETR, and Hydro One), Alternative Design Option 4 (Outlet Chamber Close to Chappell Ave.) was the preliminary recommended site layout for the construction of the Prince Road Storm Sewer outlet. Once construction cost estimates were established, it was determined that the cost difference between Options 1, 2 and 4 could not justify Option 4 as the preferred option. In addition, Option 2 compared to Option 1 results in fewer access impacts to the north and south private properties, as this design pushes the chamber closer to the private rail. Therefore, Option 2 minimizes both temporary and permanent impacts to private property owners. As a result, the project team selected Option 2 as the preferred option.

The project involves the construction of a 2700 mm dia. storm sewer by open cut construction from the existing 2400 mm dia. storm sewer along Chappell Ave across the ETR Railway to a proposed pumping station. The proposed pumping station is anticipated to be constructed using a cofferdam for support. The proposed pumping station is located just west of the privately owned rail spur line. Two box sewers are proposed to be constructed by open cut and will outlet to a dispersion channel and ultimately to the existing McKee Creek. During severe storm events, flows may also pass through emergency overflow openings in the top of the outlet chamber overland to the dispersion channel.

9.1 Preliminary Cost Estimate

The capital costs associated with the construction is estimated to be approximately \$7,319,600.

Table 7: Estimated Capital Costs

Capital Cost	Estimate (\$)
Construction	\$5,510,000
Contingency (10%)	\$551,000
Engineering (14%)	\$848,600
Geotechnical	\$160,000
Legal/Miscellaneous	\$250,000
Total Estimated Cost	\$7,319,600

9.2 Property Requirements

For the completion of this project, it is anticipated the pumping station would require a simple fee property acquisition on the 3800 Russell (Coco Paving) property with the remainder of the infrastructure subject to an easement for City access and usage. For

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the proposed storm sewer crossing the ETR property it is anticipated an easement would be required.

Land acquisition and easements for this study are planned for 2023, following this EA study.

9.3 Utilities (Hydro One)

Hydro One coordination will continue during detailed design through the submission of 90% complete detailed design drawings and Technical Review Form.

9.4 Geotechnical

A Geotechnical Design Report was prepared by Golder Associates Ltd. dated May 2010. The purpose of the work was to explore the subsurface soil and groundwater conditions at the site and to provide geotechnical engineering recommendations for the design of the proposed works. A supplementary geotechnical investigation was carried out by Golder Associates Ltd. in April 2011 for the proposed project, prompted by changes to the design alignment location and depth of construction. Copies of these reports are provided in **Appendix C**.

An updated geotechnical investigation will be completed during detailed design and will include at least 3 boreholes to analyze the soil composition and groundwater levels. Additional boreholes should be conducted if deemed necessary by the geotechnical consultant. The first borehole should be located along the alignment of the proposed 2700 mm dia. storm sewer and should extend approximately 9 m deep. The second borehole should be located at the location of the proposed pumping station and should extend approximately 20 m deep. The third borehole should be located along the alignment of the proposed box sewers and should extend approximately 6 m deep. The shear strength and bearing capacity of the soils should be determined.

The geotechnical consultant shall also make recommendations regarding open cut excavations, cofferdam construction in close proximity to rail lines, pipe bedding, trench backfill at road and at railway, protection of structures and utilities, road structure, construction of chamber / pumping station, and instrumentation / monitoring. Any additional geotechnical analysis should also be undertaken as needed to properly recommend the above items.

9.5 Staging and Traffic Management

Traffic management plans, including staging plans will be prepared during the detailed design stage. The City will continue to engage with property owners as required regarding potential for short-term road closures and detours per standard construction practices.

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9.6 Implementation Timeframe and Schedule

Construction of the new Prince Road Storm Sewer Outlet and associated roadworks is planned for Summer 2023, pending funding, approvals as well as coordination with other projects. Approvals for construction will need to be applied for and obtained closer to the construction date. At the time of construction, updated environmental investigations may be required for species as outlined later in this report.

10.0 Environmental Impacts and Proposed Mitigation

The potential impacts to natural features that might reasonably be expected to occur as a result of the proposed construction are identified and discussed in this section. Both direct and indirect impacts associated with the project are considered and appropriate mitigation measures recommended. An assessment of overall environmental impacts is also provided based on the implementation of appropriate mitigation, restoration, and enhancement measures to improve the overall integrity of the natural system in the area.

10.1 Fish and Fish Habitat

There is no in-water work in McKee Creek associated with the construction of the Project. The 13.5 m wide dispersion channel will be constructed using a 300 mm layer of rip rap on a geotextile base, with the placement of 0.75 m diameter (approximately) armour stones on the rip rap layer to provide energy dissipation of outlet flows. The portion of the dispersion channel containing the armour stones will terminate approximately 11 m from the edge of McKee Creek.

The remainder of the area between the dispersion channel and the edge of McKee Creek will be graded to create a level flow path and topped with rip rap on geotextile. The banks of the dispersion channel will be topsoiled and stabilized with a vegetation blanket and using an appropriate native seed mix. It is expected that water levels in the dispersion channel will be dictated by water levels in McKee Creek, which are dictated by those of the Detroit River, and that some backwatering will occur from McKee Creek into the dispersion channel.

With the incorporation of a water quality unit into the storm sewer treatment train, the quality of discharge water to McKee Creek will improve, which is a positive effect.

No impacts to any SOCC or SAR fish are anticipated given the lack of in-water work and the overall improvement to the quality of storm discharge that is proposed.

To protect aquatic environments and associated fish communities, grading immediately adjacent to McKee Creek should be avoided between March 15 and July 15. While no in-water work is planned, this timing window provides preventative measures in case a severe precipitation event occurs during construction with the potential to deliver sediment-laden runoff to McKee Creek.

Development of a sediment and erosion control plan is recommended to isolate the work area and deter sediment transport towards McKee Creek.

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10.2 Terrestrial Environment

Most of the construction associated with the project will be underground through areas that are already highly disturbed by existing transportation and heavy industry infrastructure. Approximately 293 m² of the MEMM3 community will be removed by construction with an additional 423 m² of temporary disturbance from construction. In the area of proposed construction, this vegetation community is weedy and highly disturbed by regular maintenance (i.e., cutting) and therefore provides very limited ecological value.

The hard components (headwall, rip rap and armour stone apron) of the dispersion channel construction will encroach into the MAMM1-12 community flanking McKee Creek, and vegetation removal will be required up to the edge of McKee Creek to provide a level, barrier-free flow pathway for treated storm discharge to outlet to the creek. It is predicted that approximately 220 m² of the MAMM1-12 will be removed by construction, with an additional 281 m² of temporary disturbance from construction of the outlet dispersion channel. Permanent vegetation removal associated with the hardened dispersion channel includes the outer fringe of MAMM1-12, which is frequently maintained by cutting. The unmanicured portion of this unit is dominated by Phragmites, with some shrub growth. Phragmites is a non-native invasive species, and its removal is a positive impact.

Clearing of any vegetation within the MAMM1-12 community should not be completed during the breeding bird season. Breeding birds and their nests are protected under the Migratory Bird Convention Act, 1994 (MBCA). Environment and Climate Change Canada identify nesting zones and associated nesting periods. The Project is within the C1 nesting zone, which has a regional nesting period from late March to late August (ECCC 2018). Major vegetation removals should be planned outside of the breeding bird window (e.g., late fall, winter).

If clearing is proposed during the breeding bird nesting window or two weeks prior to or after the nesting period, a bird nest sweep in small areas and easy to survey habitat by a qualified professional is recommended to comply with the MBCA. Once an area has been surveyed and determined to not have nesting breeding birds, the vegetation can be cleared. A bird nest sweep is valid for seven (7) days and if vegetation is not cleared within that time, another nest sweep is required.

10.3 Species At Risk

The primary areas of impact associated with the construction of the pumping station chamber, outfall pipes and dispersion channel are in the Coco Paving driveway and the maintained portion of MEMM3. A portion of the MAMM1-12 will be disturbed during construction and replaced with a layer of rip rap in the bottom of the dispersion channel.

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Potential foraging habitat for Eastern Foxsnake, as well as Butler's Gartersnake may be present in the McKee Creek riparian area, however no snakes were observed in the area during the site investigation. In Essex County, habitat for the Eastern Foxsnake is described as unforested, early successional (old field, prairie, marsh) habitat, hedgerows bordering farm fields and riparian zones along drainage canals (COSEWIC 2008). Butler's Gartersnake habitat is described as open prairie-like areas with dense grasses, along drainage swales, and seasonally dry marshes (COSEWIC 2010). Butler's Gartersnake are often found in abandoned sites in urban areas and old fields that have become overgrown with shrubs and saplings (COSEWIC 2010). No habitat structures that could potentially provide hibernacula for these species were observed in the Study Area.

The dense vegetation in the riparian zone of McKee Creek provides habitat that meets the requirements of Eastern Foxsnake and Butler's Gartersnake, as described by COSEWIC. Potential habitat adjacent to McKee Creek will be removed to allow for grading of a positive draining flow path and changed to a rip rap dispersion channel with vegetated banks. The rock structure may encourage use by snakes because it will provide areas for hiding and basking. Typical prey items for these snakes may also use the rock area for hiding and would be hunted by these snake species.

The following mitigation is recommended to reduce the likelihood of impacts to Butler's Gartersnake and Eastern Foxsnake:

- Snake exclusion fencing around the entire area proposed for construction and access. The exclusion fence should follow guidance provided in Species at Risk Branch Best Practices Technical Note. Reptile and Amphibian Exclusion Fencing. (MNR 2013). Geotextile fencing with nylon mesh lining must not be used for any reptile exclusion and/or erosion/sediment control fencing due to the risk of injury/mortality of SAR snakes.
- Complete a snake search prior to and during vegetation clearing, including inspection of machinery for snakes. If snakes are encountered in the work area, they should be allowed to leave the area on their own.
- Provide education and awareness training on snake SAR to all persons working on the site.

Further consultation with MECP will determine if permits are needed for the construction of the preferred alternative. This process has been initiated through the preparation of an Information Gathering Form (IGF).

10.4 Archaeological Resources

A Stage 1 archaeological assessment was conducted to determine the potential for archaeological resources within the study area, including approximately 0.37 hectares. The Stage 1 archaeological assessment resulted in the determination that the entire

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study area retains low to no archaeological potential due to extensive land disturbance. In accordance with Section 1.3.2 and Section 7.7.4 of the MCM's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), Stage 2 archaeological assessment is not required for the study area.

A copy of the Stage 1 archaeological assessment and acceptance letter are included in **Appendix D**.

10.5 Climate Change

This project is part of numerous city-wide solution measures directed at reducing flood risks including developing resiliency for severe storm events often associated with the impacts of climate change.

10.6 Soil Management and Excess Materials

Approximately 4,800 m³ of excess soil is anticipated to be removed from the site. An Excess Materials Management Plan (EMMP) will be required during detailed design. The EMMP will be prepared to determine suitable management protocols for excess materials that may be generated at the site during construction in accordance with Ontario Regulation 406/19. Soil excavated will need to be managed within the Study Area and/or disposed off-site as part of the work program. The following must be completed in accordance with O.Reg 406/19:

- An Assessment of Past Users (APU) must be completed.
- A Sampling and Analysis Plan (SAP) must be completed.
- A Soil Characterization Report (SCR) must be completed.
- An Excess Soil Destination Assessment Report (ESDAR) must be completed.

11.0 Project Implementation

As part of the Class EA process, measures should be identified to offset potential environmental impacts of the proposed undertaking. These measures have been identified based on the scope of work undertaken for this study in relation to the inventory of environmental conditions and should be consulted and updated during preliminary and detailed design based on updated site-specific information.

The study recommendations were developed to minimize negative impacts to the natural environment and significant features identified within the study area; however, during nearly any construction project the potential exists for some environmental impacts. Best Management Practices with respect to design and construction should be employed to minimize the potential for short-term and long-term impacts, as well as direct and indirect impacts of projects associated with the study recommendations. The measures identified below should be consulted and updating during design and construction to reflect site-specific information, and to develop necessary monitoring programs to review impacts predicted and commitments made.

Table 8: Mitigation and Enhancement Measures

Potential Impact	Mitigation
Air Quality	<ul style="list-style-type: none"> • During construction, vehicles/machinery and equipment will be good in repair, equipped with emission controls, as applicable, properly maintained and operated within regulatory requirements. • A minimal number of machines operating in one area shall be considered during construction activities. • Water and non-chloride dust suppressants will be applied during construction to protect air quality associated with dust.
Disturbance from Noise/Dust/Vibration	<ul style="list-style-type: none"> • Standard noise mitigation measures shall be installed on construction equipment and equipment will be properly maintained. • Construction equipment shall be turned off when not in use (i.e., a no idling policy). • Construction activities will be completed in accordance with the City's Noise By-Law. • Instances where adherence to the local bylaws is not possible and mitigation is not feasible, an exemption should be obtained from the City, prior to construction. • Best management practices to mitigate any air quality impacts caused by dust should be applied during construction.
Utilities	<ul style="list-style-type: none"> • The City will continue to engage with utilities during detailed design. • The design will attempt to minimize disruption to existing services to residential and commercial users before and during construction.
Property	<ul style="list-style-type: none"> • The City will continue to engage with the affected property owner during detailed design.

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Potential Impact	Mitigation
	<ul style="list-style-type: none"> • Permission-to-enter onto private properties will be required to perform construction.
Traffic Management and Access	<ul style="list-style-type: none"> • Traffic management plans, including staging plans will be prepared during the detailed design stage. • The City will continue to engage with property owners as required regarding potential for short-term road closures and detours per standard construction practices.
Trees/Vegetation	<ul style="list-style-type: none"> • Work will involve the use of construction barrier/sediment fencing to delineate work areas until areas are revegetated. • All disturbed areas will be revegetated using suitable seed following construction. • Tree removal will be avoided during the breeding bird window (April 1 to August 31). • An avian biologist will be retained to complete comprehensive breeding bird surveys if vegetation clearing is required during the breeding bird window.
Groundwater	<ul style="list-style-type: none"> • A hydrogeological investigation will be required to determine the extent of dewatering during construction of the pump stations and conveyance system, and to support application for an Environmental Activity and Sector Registry (EASR) or Permit to Take Water (PTTW). • The impact to any nearby wells may need to be considered as part of these investigations to assess remedial actions, if any. • A water quality monitoring program is required for the discharge to McKee Creek.

12.0 Permits and Approvals

In addition to the EA requirement as satisfied by the completion of this Class EA, implementation of the recommendations identified in this report are subject to the requirements of the *Environmental Protection Act* and *Water Resources Act*. The MECP administer the EPA and requires a formal application to obtain an Environmental Compliance Approval (ECA) for the construction and operation of municipal sewage works that will be required to include the firm capacity, pumping and wet well configuration, and standby power and emergency operational strategy.

12.1 Fisheries Act

The Fisheries Act includes prohibitions against harmful alteration, disruption, or destruction (HADD) of fish habitat. It extends protection to all fish and fish habitat. When a HADD cannot be avoided or mitigated, a subsection 35(2) authorization with appropriate offsetting of residual adverse effects is required.

A completed Information Gathering Form (IGF) for the Prince Road Storm Outlet project was submitted to MECP on November 12, 2021. MECP was previously contacted by Stantec with an Information Request (IR) for this project on February 23, 2021. A response to the IR was provided by Kathryn Markham, Management Biologist, of MECP on June 14, 2021, indicating the study area falls within regulated habitat for Eastern Foxsnake, which receives species and regulated habitat protection. As a result, an Information Gathering Form (IGF) has been submitted to MECP (SAROntario@ontario.ca) on November 12, 2021. At the time of report preparation, a response had not been received from MECP.

12.2 Fish and Wildlife Conservation Act

If in-water work involving isolation techniques require relocation of fish, turtles or other wildlife, a Wildlife Scientific Collectors Authorization may be required from the MNMNMRF under the *Fish and Wildlife Conservation Act*.

12.3 Conservation Authority Regulated Area

Under O.Reg157/06 a permit is required for development or interference with wetlands and alterations to shorelines and watercourses. This may include the planned work within regulated areas associated with McKee Cree. A permit application package will need to be prepared and submitted to ERCA that includes the following information:

- Maps and photographs showing the location of project work relative to regulated features.

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- Environmental mitigation measures for sediment and erosion control, re-vegetation and seeding.
- Other site-specific data as required.

Consultation with ERCA is recommended to confirm complete permit application requirements.

12.4 Ontario Water Resources Act

A Permit to Take Water (PTTW) may be required if construction dewatering of groundwater is required as part of the project. A PTTW under the Ontario Water Resources Act is required for any water takings that exceed 50,000 L/day, except for certain water taking activities that have been prescribed by the Water Taking Regulation O. Reg 63/16.

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13.0 Closing

This Environmental Study Report has been prepared following the Municipal Class EA study process for Schedule C projects. It outlines the process which the City has undertaken to address the problems identified, and the preferred solution and design alternative to be implanted.

The Class EA study process has involved consultation with directly affected members of the public, Indigenous communities, and review agencies to ensure that they were aware of the project and their concerns have been addressed. The filing of this report represents the conclusion of Phase 1 through Phase 4 of the Class EA planning process as outlined in the MCEA document. Provided that no requests to the Minister of the Environment, Conservation and Parks under Section 16 of the *Environmental Assessment Act* requiring a higher level of study (i.e., requiring an individual/comprehensive EA approval before being able to proceed) are received, the City may proceed with implementation (Phase 5) 30 days following the public review period.