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**Safari Road  
Schedule 'B' Municipal  
Class Environmental Assessment**

Project File Report

Final

April 15, 2026

Prepared for:



**R.V. Anderson Associates Limited**  
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**RVA 247372**

April 10, 2026

City of Hamilton  
Public Works Department  
71 Main Street West  
Hamilton ON L8P 4V2

**Attention: John Kukalis, C.E.T.**  
**Project Manager – Capital Infrastructure Planning**

Dear Mr. Kukalis:

Re: Safari Road Schedule 'B' Municipal Class Environmental Assessment Final Project File Report

Please find enclosed the final of the Project File Report for City of Hamilton's Safari Road Schedule 'B' Class Environmental Assessment, completed by R.V. Anderson Associates Limited.

If you have any questions, please do not hesitate to contact the undersigned by email or at 905-685-5049 ext. 4211.

Yours very truly,

**R.V. ANDERSON ASSOCIATES LIMITED**

Mila Khatri, MES, ENV SP  
Environmental Planner, Transportation

Andrew McGregor  
Senior Planner / Project Manager

Encls.: Draft Project File Report



# **Safari Road Schedule 'B' Municipal Class Environmental Assessment**

Project File Report

**Final**

City of Hamilton



In Association With:



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**RVA 247372**

**April 15, 2026**

# SAFARI ROAD SCHEDULE 'B' MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

## PROJECT FILE REPORT

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## EXECUTIVE SUMMARY

The City of Hamilton (City) retained R.V. Anderson Associates Limited (RVA) to complete a Schedule 'B' Municipal Class Environmental Assessment (EA) and Preliminary Design to primarily address flooding and drainage challenges and implement other road improvements along Safari Road between Kirkwall Road and Valens Road in the City of Hamilton. The road is currently closed to through traffic due to flooding, but access to private properties remains open. In addition to road drainage issues, abutting properties also experienced flooding. The City is currently undertaking a Municipal Drain Study which aims to develop a solution to address the non-right-of-way (ROW) issues through works covered by the Drainage Act (1990). It should be noted that this process does not address the ROW challenges, municipal infrastructure, or future conditions. The Municipal Drain Study has identified significant public interest and a desire to explore all possible solutions to protect properties and support the area biodiversity.

The purpose of this Schedule 'B' Municipal Class EA Study is to complete Phases 1 and 2 of the MCEA process for drainage improvements within the Study Area and to identify road improvements. Following the selection of the preferred solution for Safari Road, preliminary designs for the roadway and drainage improvements were prepared. In addition to addressing flooding issues within the public ROW along Safari Road, the Study also considered traffic and safety operational improvements, improvements to AT facilities, and future truck load requirements.

This Project File Report (PFR) documents the results of the Class EA process pertaining to the identification, evaluation and recommendation of the preferred solution to improve Safari Road.

### Phase 1 – Problem and Opportunity Statement

The Problem and Opportunity Statement for this Study is summarized as follows:

*Situated within a low-lying area with wetlands on either side, Safari Road is subject to historical flooding that has required road closures to maintain public safety. The road is currently closed to through traffic. Improvements to the Safari Road corridor are therefore required to address:*

- *Drainage and flooding within the right-of-way, including culvert crossings;*
- *Active transportation (pedestrian and cyclist safety);*
- *Upgrades to the road base to accommodate full truck loads; and*

- *Enhanced road safety, operations, and connectivity for vehicles, residents, and cyclists, to support the goals within the Transportation Master Plan.*

## **Phase 2 – Alternative Solutions**

Alternative solutions to address flooding, drainage, and road improvements consisted of the following options:

- Alternative 1 – Do Nothing
- Alternative 2 – Close the Road
- Alternative 3 – Raise the Road

Based on the comparative evaluation that was undertaken using criteria representing the broad definition of the environment as described in the EA Act and feedback from the public and agencies, the preferred solution was Alternative 3 – Raise the Road.

## **Impacts, Mitigation and Monitoring**

The key impacts associated with the implementation of the proposed solution and general mitigation required have been identified. In addition to the mitigation measures identified in the report, additional work will be required to be completed prior to construction. During detailed design, findings from the Class EA will be confirmed through additional investigations, planning, and consultation with the key interested parties and technical agencies.

## **Preliminary Construction Timing and Cost Estimates**

Construction timelines to implement the preferred solution will be determined based on capital budget and subject to Council approval.

The preliminary cost estimate to complete the reconstruction of Safari Road (including variance, utility relocation, and property acquisition) is \$8,095,938.

## 1.0 INTRODUCTION

### 1.1 Background

R.V. Anderson Associates Limited (RVA) was retained by the City of Hamilton (City) to complete a Schedule 'B' Municipal Class Environmental Assessment (MCEA) for Safari Road (the "Study"). The main objective of this Study was to evaluate alternatives to address the flooding/drainage challenges and other concerns raised by the local community along the stretch of Safari Road from Kirkwall Road to Valens Road. This Study will compliment the ongoing work being undertaken under the Municipal Drainage Act (here forth known as the Municipal Drain Study).

### 1.2 Study Area

The Study Area includes Safari Road from Kirkwall Road to Valens Road, within the City of Hamilton. Safari Road is a 2-lane rural road with no active transportation (AT) facilities and no on-street parking and is designated as a full-time commercial truck route. The road is surrounded by agricultural land and low-density residential areas. Between Kirkwall Road and Valens Road, Safari Road is situated in a low-lying area with wetlands on either side of the road, with significant natural features (watercourses) and terrestrial Species at Risk (SAR). The Study Area is shown in Figure 1.1.

The road is currently closed to through traffic due to flooding, but access to private properties remains open. In addition to road drainage issues, abutting properties also experienced flooding. The City is currently undertaking a Municipal Drain Study which aims to develop a solution to address the non-right-of-way (ROW) issues through works covered by the Drainage Act (1990). It should be noted that this process does not address the ROW challenges, municipal infrastructure, or future conditions. The Municipal Drain Study has identified significant public interest and a desire to explore all possible solutions to protect properties and support the area biodiversity.

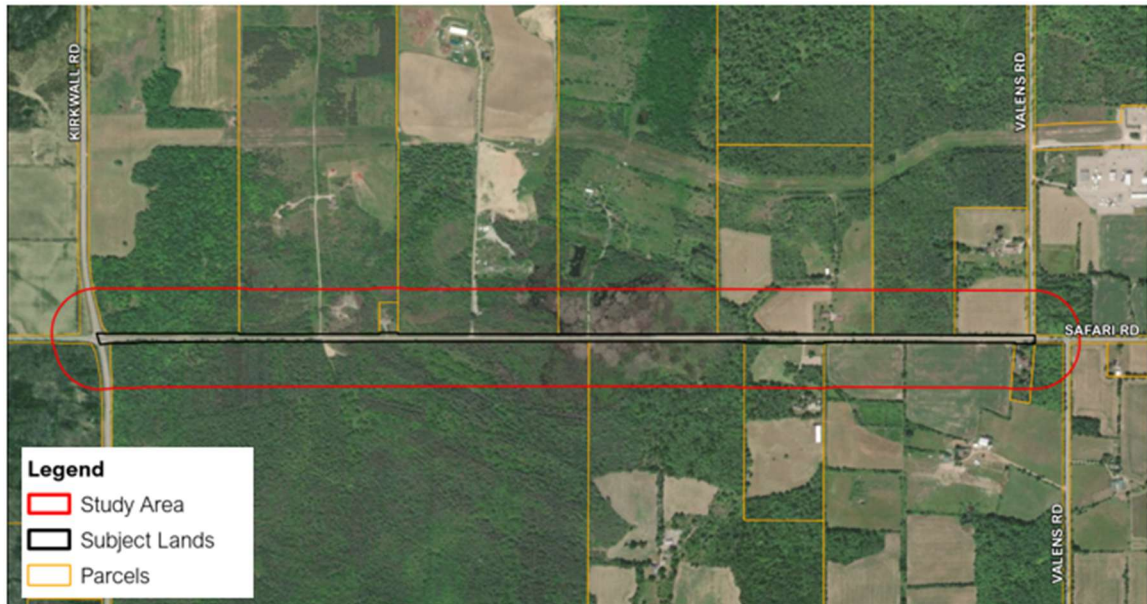


Figure 1.1 Study Area

### 1.3 Study Objectives

The purpose of this Schedule 'B' Municipal Class EA Study is to complete Phases 1 and 2 of the MCEA process for drainage improvements within the Study Area and to identify road improvements. Following the selection of the preferred solution for Safari Road, preliminary designs for the roadway and drainage improvements were prepared. In addition to addressing flooding issues within the public ROW along Safari Road, the Study also considered traffic and safety operational improvements, improvements to AT facilities, and future truck load requirements.

### 1.4 Study Organization

The Class EA Study was carried out by a consulting team led by RVA on behalf of the City of Hamilton. The project team is outlined below:

City of Hamilton

- Infrastructure Renewal Section, Engineering Services Division – Project Management

Consulting Team:

- R.V. Anderson Associates Limited – Lead Consultant, Planning, Stormwater Management, Drainage/Hydrologic, Natural Heritage, Transportation, and Engineering

- Archaeological Services Inc. (ASI) – Archaeological Assessment
- SLR - Fluvial Geomorphic and Hydrogeological/Groundwater

### 1.5 Study Schedule and Key Dates

The EA Study was initiated in August 2024. Key dates throughout the Study includes:

Table 1.1 Study Schedule

EA Stage	Date
Notice of Study Commencement and Public Information Centre (PIC) #1	August 21, 2024
Notice of PIC # 2	August 27, 2025
Notice of Study Completion	Forthcoming

### 1.6 Municipal Class Environmental Assessment Process

This Study was initiated in accordance with the requirements of MCEA Schedule ‘B’, which is an approved process under the Environmental Assessment Act. Figure 1.2 illustrates the framework for the Class EA process which is a legislated planning process comprising of up to 5 phases with mandatory points of public contact. The focus of the framework is a comprehensive and transparent decision-making process.

The Class EA is broken down into phases, as follows:

- Phase 1 – Identify problem or opportunity;
- Phase 2 – Identify alternative solutions, evaluate, and select the preferred solution;
- Phase 3 – Identify alternative design concepts, evaluate, and select the preferred design concepts;
- Phase 4 – Complete the Environmental Study Report (ESR) and place it on the public record; and
- Phase 5 – Project implementation, which is to undertake the contract drawings and tender documents for the project and proceed to construction and operation of the project.

This Schedule ‘B’ study requires the completion of Phases 1 and 2 of the MCEA process, with the final deliverable comprising the documentation of the planning process as provided in this Project File Report (PFR). The Project will then proceed to Phase 5.

### EXHIBIT A.2. MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

NOTE: This flow chart is to be read in conjunction with Part A of the MCEA

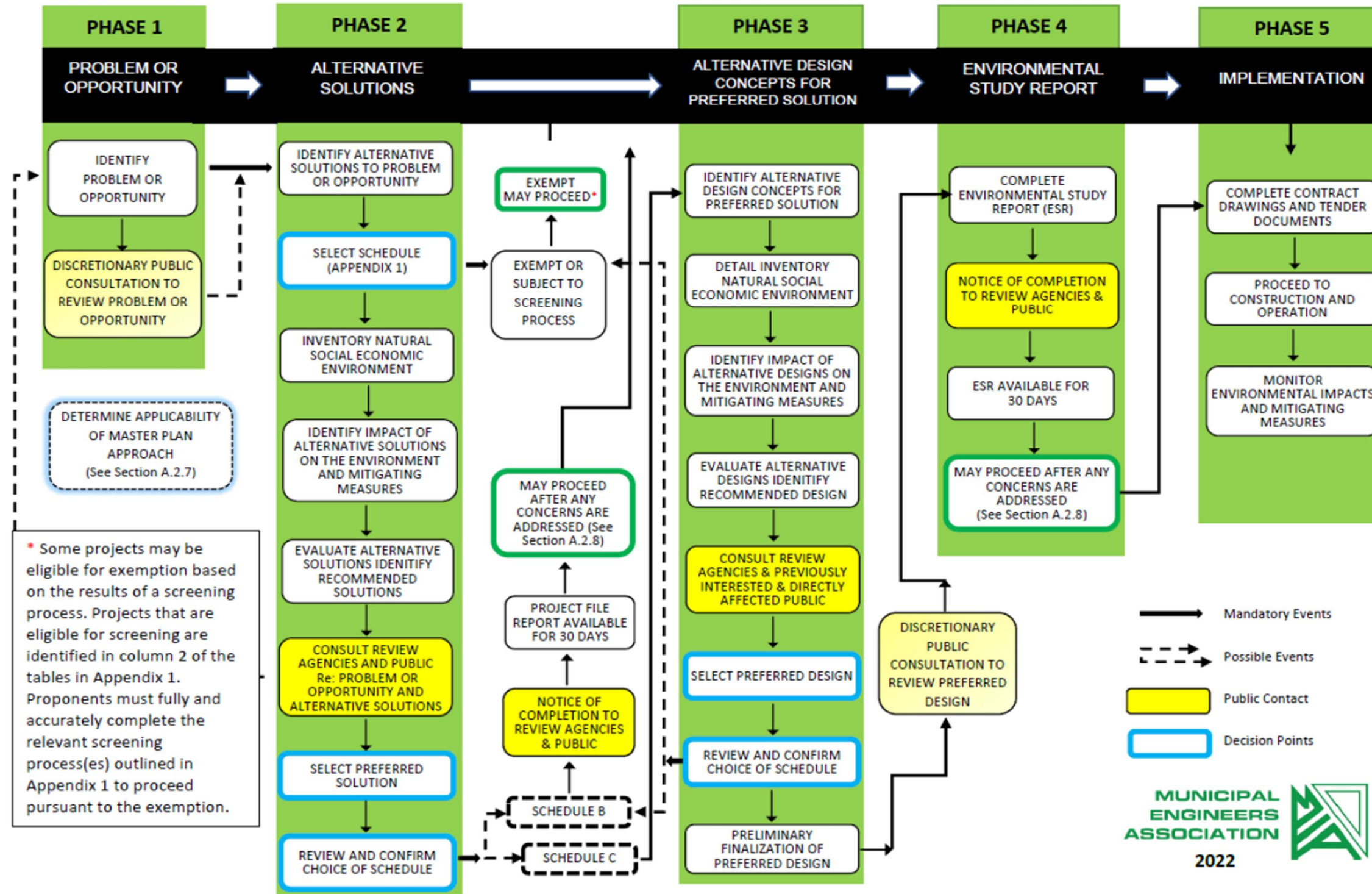


Figure 1.2 Municipal Class Environmental Assessment Process (Municipal Engineers Association, 2022)

### 1.6.1 30-Day Public Review and Section 16 Order Requests

At the conclusion of a project, the proponent must post a Notice of Study Completion, which begins the 30-calendar day public review period. During this time, anyone can submit comments related to the Study A Section 16 Order request can also be made at this time. Following the completion of the 30-calendar day public review period, the proponent must wait a minimum of 30 days to comply with Ministry requirements if no Section 16 Order request is made. All comments and concerns should be sent directly to Project Manager at the City of Hamilton.

The Minister of the Environment, Conservation and Parks (MECP) has the authority and discretion to make an Order under Section 16 of the Environmental Assessment Act. A request may be made to the Ministry of the Environment, Conservation and Parks for an Order 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. This will ensure that the ministry is able to efficiently begin reviewing the request.

Prior to requesting a Section 16(6) Order, the proponent should first try to resolve any concerns directly through the Class EA process. The Minister must consider the factors set out in Section 16(5) of the Environmental Assessment Act. If a Section 16 Order request is made, the project proponent cannot proceed with the project until the Minister makes a decision on the request. If the Minister makes a Section 16 Order, the proponent may only proceed with the project if they follow the conditions in the Order.

How to make a request: To submit a Section 16(6) Order request, the following information must be provided to ensure that the ministry is able to efficiently begin reviewing the request:

- Name, address and email address;
- Project name;
- Proponent name;
- What kind of Order is being requested i.e., a request for additional conditions or a request for an individual environmental assessment;
- Details about the concerns about potential adverse impacts on constitutionally protected Aboriginal or treaty rights and how the proposed Order may prevent,

mitigate potential adverse impacts on Aboriginal and treaty rights, and any information in support of the statements in the request;

- Whether the concerned party belongs to, represents or has spoken with an Indigenous Nation whose constitutionally protected Aboriginal or treaty rights may be adversely impacted by the proposed project;
- Whether the concerned party has raised their concerns with the proponent, the proponent's response (if any) and why the concerns could not be resolved with the proponent; and
- Any other information to support the request.

Section 16 Order requests are made to the Minister of the Environment, Conservation and Parks and the Director of Environmental Assessment Branch. The request may be submitted by mail, email, or hand delivered to the Minister:

Minister of the Environment, Conservation and Park  
Ministry of Environment, Conservation and Parks  
777 Bay Street, 5th Floor  
Toronto ON M7A 2J3  
[minister.mecp@ontario.ca](mailto: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](mailto:EABDirector@ontario.ca)

Requests should also be sent to City of Hamilton by mail or by e-mail.

For more information and specific instruction and details on the process, please visit:  
<https://www.ontario.ca/page/class-environmental-assessments-section-16-order>

## 1.7 Policy and Planning

### 1.7.1 Provincial Planning Documents

#### 1.7.1.1 PROVINCIAL PLANNING STATEMENT (2024)

The Provincial Planning Statement (PPS) (2024) prepared by the Ministry of Municipal Affairs and Housing (MMAH), provides policy foundation for regulating development and

land use planning in the province. Both provincial and local land use planning decisions build on the PPS and its relevant policies. The PPS helps achieve the provincial goal of meeting the needs of a fast-growing province while enhancing the quality of life for all Ontarians.

The recommended solution described in this PFR aligns with policies outlined in Section 3.2 (Transportation Systems) of the PPS by providing safe modes of transportation, facilitating the movement of people and goods, and addressing project needs. The recommended solution provides greater connectivity within the multimodal transportation system within the City of Hamilton and improving the safety of the ROW.

The natural environment assessment was completed as part of this Study and aligns specifically with policies contained in Section 4.1 (Natural Heritage) of the PPS which is directed at protection and management of natural heritage systems and features.

#### 1.7.1.2 GREENBELT PLAN (2017)

The Greenbelt Plan (2017) sets out policies to protect agricultural lands, water resources and natural areas in Ontario's Greater Golden Horseshow region.

The Study Area falls within the Greenbelt Area, specifically the Protected Countryside area. As per the Greenbelt Plan, lands identified as Protected Countryside are intended to enhance the spatial extent of agriculturally and environmentally protected lands. The Protected Countryside is made up of an Agricultural System, a Natural System, and settlement areas.

### 1.7.2 Local Planning Documents and Policies

#### 1.7.2.1 CITY WIDE TRANSPORTATION MASTER PLAN (2018)

The City of Hamilton's Transportation Master Plan (TMP) (2018) sets out a long-term strategic planning framework to guide the City's transportation priorities and policy directions through the next 20 years. The TMP helps address transportation challenges that growth imposes and helps re-think the function of streets to be more inclusive of other modes, transitioning to a Complete Streets approach.

The TMP recommends rural roads to have paved shoulders where cycling is prevalent and/or where paved shoulders could benefit farm vehicles.

### 1.7.2.2 TRUCK ROUTE MASTER PLAN (2010, UPDATED 2022)

The City of Hamilton Truck Route Master Plan (TRMP) (2010) provides a comprehensive, consolidated update to the existing truck route network. The TRMP also provides recommendations for future action, policies for truck route signage, and a methodology for dealing with truck route network issues in the future.

Within the TRMP (2010), Safari Road is designated as a Full Time Truck Route. The TRMP Update (2022) identifies Safari Road requiring operational improvements between Highway 6 to Highway 8. Some issues identified include noise, safety, speeding, and engine braking.

### 1.7.2.3 RURAL HAMILTON OFFICIAL PLAN (2012)

The Rural Hamilton Official Plan (2012) provides guidance and direction to the land in the rural area of the City. It provides management of its communities, land use change and physical development over the next 30 years. Schedule C-1 – Future ROW Dedications recommends that Safari Road be widened to 26.213m from Highway 6 to Highway 8 and classifies it as an arterial road.

### 1.7.2.4 COMPLETE STREETS DESIGN GUIDELINES (2022)

The Complete Streets Design Guidelines (2022) provides a set of consistent guidelines and tools to inform the design, implementation, maintenance, and monitoring of streets across the City. It encourages designs that better balance considerations for the different transportation modes that share streets, focus on enhancing road safety, and address transportation requirements and placemaking functions of surrounding areas.

Complete Streets are defined as roadways that are planned and designed to balance the needs of all road users. The goal of Complete Streets is to allow people to get around safely no matter their age, ability or how they choose to move. The preferred design concept in this Study follows the Rural Road typology. This typology was incorporated into the alternative design concepts.

Rural Roads are located outside Hamilton's urban area, primarily in agricultural and natural areas. Their primary function is motor vehicle and goods movement. They may also serve slow-moving agricultural vehicles, people cycling for recreation or to travel to other communities, and in some cases may feature transit service.



Figure 1.3 Complete Streets Design Guidelines for Rural Roads

1.7.2.5 CYCLING MASTER PLAN (2009, UPDATED 2018)

The City’s Cycling Master Plan (2009, updated 2018), is intended to guide the development and operation of its cycling infrastructure for the next 20 years. The City’s vision is to have a transportation system that offers a choice of integrated travel modes, emphasizing active transportation such as walking or cycling, public transit, and carpooling. The Cycling Master Plan (2009) recommends paved shoulders on Safari Road.

1.7.2.6 MUNICIPAL DRAIN STUDY (ONGOING)

The City is completing a study under Section 4 (Petition) of the Drainage Act (1990) to identify and implement drainage improvements on private properties along Safari Road (outside of the ROW). This study was initiated due to concerns with water blockages, channel, culverts, and landform restrictions. Other concerns include safety, flooding, and previously required road closures. Preliminary recommendations from this study include:

- Restoration of natural flows along the existing natural watercourse feature;
- Replace or lower private culverts along the watercourse’s flow path; and,
- Obtain legislative control of the drainage culverts and natural watercourse, providing the ability to complete future maintenance and maintain drainage.

Although the Municipal Drain Study is being completed separately from the Safari Road Class EA Study, the findings of each study will be shared so that recommendations compliment each other.

## 2.0 PROBLEM AND OPPORTUNITY STATEMENT

Per Phase 1 requirements of the MCEA process, a Problem and Opportunity Statement was prepared to identify in detail the various problems and opportunities to be addressed by the Study. In essence, the Problem and Opportunity Statement outlines the need and justification for the overall project and establishes the general parameters, or scope, of the Study.

The Problem and Opportunity Statement for this Study is summarized as follows:

*Situated within a low-lying area with wetlands on either side, Safari Road is subject to historical flooding that has required road closures to maintain public safety. The road is currently closed to through traffic. Improvements to the Safari Road corridor are therefore required to address:*

- *Drainage and flooding within the right-of-way, including culvert crossings;*
- *Active transportation (pedestrian and cyclist safety);*
- *Upgrades to the road base to accommodate full truck loads; and*
- *Enhanced road safety, operations, and connectivity for vehicles, residents, and cyclists, to support the goals within the Transportation Master Plan.*

## 3.0 Existing Conditions

To adequately evaluate the identified alternative solutions, a thorough understanding of the existing conditions within the Study Area is required. As such, various technical studies were undertaken to assess the existing conditions of the Study Area, including a traffic impact study, natural heritage assessment, Stage 1 archaeological assessment (AA), cultural heritage review, hydraulic and stormwater management assessment, hydrogeological & groundwater assessment, and a fluvial geomorphic assessment. The findings of these studies were incorporated into the evaluation of alternative solutions as described in Section 4.4 Evaluation of Alternative Solutions below.

### 3.1 Transportation

A Traffic Impact Study was completed to assess the potential permanent closure (i.e., closed to through traffic), or re-opening of Safari Road between Kirkwall Road and Valens Road. The below sections summarize the results. The complete Traffic Impact Study is provided in **Appendix 1**.

### **3.1.1 Roadways**

Due to prolonged flooding, a section of Safari Road, between Kirkwall Road and Valens Road, has been closed for almost five (5) years. With this closure, a detour has been put in place directing traffic to Regional Road 97, via Brock Road and Kirkwall Road, which is primarily for truck traffic, see Figure 3.3.1 below.

As per the City's Official Plan Schedule 'C' – Rural Function Road Classification, Safari Road and Kirkwall Road are classified as arterial roadways. Arterial roads are intended to serve as critical transportation links, designed to carry higher volumes of traffic between major destinations. Valens Road is classified as a collector roadway. Collector roadways are links between local and higher-order arterial roadways. All Study Area roadways are 2 lanes (1 travel lane per direction) with a rural cross-section and with posted speed limits varying from 50km/h to 80km/h.

### **3.1.2 Active Transportation**

The Study Area roadway, in addition to the surrounding road network, is within the City's designated rural area with no sidewalks or dedicated cycling facilities within the Study Area. However, Safari Road and Kirkwall Road are planned to have paved shoulders (currently, paved shoulders are not provided), as identified in the City's TMP.

### **3.1.3 Truck Routes**

The City's Truck Route Master Plan (TRMP) identifies the following roadways, within and in proximity to the Study Area, as truck routes: Safari Road, Kirkwall Road, Regional Road 97, Westover Road, and Brock Road. The purpose of these truck routes is to improve the efficiency of goods movement, improve the quality of life by reducing truck traffic through residential areas and ensure truck traffic safety, as these roads have wider travel lanes, paved shoulders and are better maintained.

Safari Road is a reduced-load road from March 1st to April 30<sup>th</sup>, thereby requiring structural upgrades to operate as a year-round truck route.

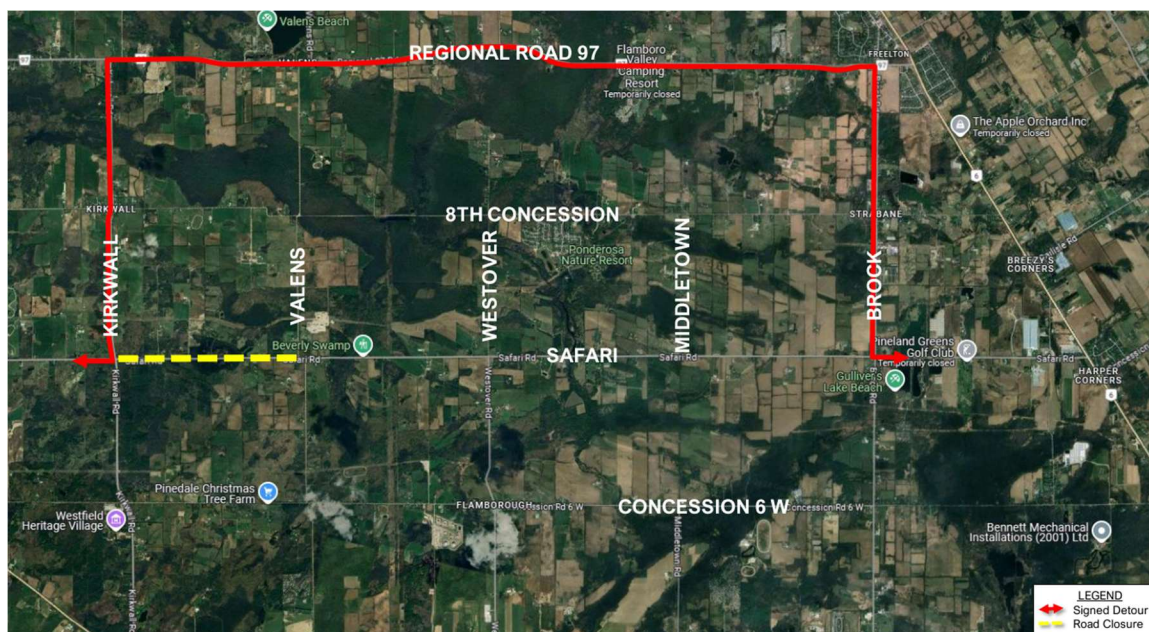


Figure 3.3.1 Current Signed Detour Route

### 3.1.4 Transit

Since Safari Road is in a rural area, there are no transit services along the corridor. As per the City's TMP, there are no foreseeable plans to provide transit within the vicinity of Safari Road.

### 3.1.5 Existing Traffic Conditions

Due to prolonged flooding, the subject section of Safari Road, between Kirkwall Road and Valens Road, has been closed for almost five (5) years. With this closure, a detour has been put in place directing traffic to Regional Road 97, via Brock Road and Kirkwall Road, which is primarily for truck traffic. The surrounding road network also provides parallel routes around the closed section of Safari Road, such as 8th Concession Road and Concession Road 6 West, via Valens Road, Westover Road or Middletown Road, etc.

The signed detour route appears to be suitable for truck traffic, which is to be expected, as Brock Road, Regional Road 97 and Kirkwall Road are all designated truck routes. Alternative detour routes within the vicinity of Safari Road (e.g., 8th Concession, Concession Road 6 W, Valens Road, Middletown Road, etc.) have narrow lane widths and do not appear to be suitable for truck traffic; however, alternative parallel routes can be used for auto traffic, and they are suggested routes using GPS mapping software.

During weekday morning and afternoon peak hours, RVA conducted site observations throughout the study area on Thursday, October 31st, 2024. These site visits were intended

to collect observational data on general transportation context, including areas with operational constraints, if any, and other qualitative findings that may be of use to the study. Based on these observations, traffic volumes at study area intersections were observed to be nominal, with no prevailing operational concerns (e.g., notable queues or delays were not observed or experienced during field observations).

### 3.1.5.1 INTERSECTIONS

The Safari/Kirkwall intersection is 4-legged all-way stop controlled intersection with auxiliary right-turn lanes for the eastbound and southbound approaches, and an auxiliary left-turn lane for the northbound approach. The westbound approach at this location consists of a single lane that accommodates all movements.

The Safari/Valens intersection is offset with stop control on the northbound and southbound approaches on Valens Road and free flow movement along Safari Road. All approaches are single lane at this intersection.

## 3.1.6 Future Traffic Conditions

### 3.1.6.1 FUTURE TRAFFIC VOLUMES

Safari Road is projected to carry volumes of approximately 35 veh/h to 58 veh/h per direction (i.e. a total of 93 veh/h two-way), during the peak AM commuter hour, between Kirkwall Road and Valens Road, for the 2031 horizon year. The projected two-way volumes along the subject section of Safari Road are approximately 260 veh/h and 510 veh/h during the peak AM commuter hour, of which 200 veh/h and 372 veh/h are in the peak direction, for the 2041 and 2051 horizon years, respectively. These volumes are well within the practical capacity for Safari Road.

### 3.1.6.2 PROJECTED DETOUR TRAFFIC

The roads that make up the current signed detour route including Brock Road, Regional Road 97, and Kirkwall Road (see Figure 3.3.1), have projected future traffic volumes that would bring the corridor to near or over capacity for a rural arterial roadway. Therefore, if Safari Road is permanently closed, detouring traffic from Safari Road towards Regional Road 97 has the potential to over saturate the current signed detour route. However, distributing volumes between area collector roadways (e.g., 8th Concession, Concession 6 West and Concession 5 West), in addition to Regional Road 97, the area road network can potentially support the permanent closure of Safari Road, between Kirkwall Road and Valens Road.

Nonetheless, with additional traffic volumes on rural collector roadways, such as 8th Concession and Concession 6 W, significant companion improvements would be recommended to improve safety on these roads. This would entail full scale reconstruction to expand the road to provide wider travel lanes (e.g., 3.25 - 3.5 m) and paved shoulders (e.g., 1.5 – 2.0 m). Further, additional traffic volumes may warrant the need for additional intersection control (e.g., all-way stop control, traffic signal control, roundabouts, etc.).

Additionally, if Safari Road is permanently closed, paved shoulders along Concession Road 6 West will be required to restore continuity for east-west cycling routes. Finally, structural upgrades to a number of existing watercourse crossings will need to be advanced earlier than anticipated in light of the increased heavy vehicle traffic.

### 3.1.6.3 PROJECTED RE-OPENING OF SAFARI ROAD

If Safari Road is reopened to through traffic, the projected traffic volumes along Safari Road are well within the practical capacity of a 2-lane rural arterial road for the 2031, 2041, and 2051 horizon years. Reopening Safari Road would also provide a more direct east-west truck route that would reduce travel times and in turn, reduce truck traffic on Brock Road, Regional Road 97 and Kirkwall Road. The parallel routes, 8th Concession and Concession 6 W, would also experience less traffic with Safari Road reopened, as it is a more direct route between Highway 6 and Kirkwall Road.

## 3.2 Natural Environment

A Natural Heritage Assessment Report was completed as part of the Class EA Study to identify and evaluate existing Natural Heritage Features within the Study Area, assess impacts and net effects of the proposed works to these features, and provide environmental management recommendations to be carried forward and refined in detailed design. The information in the following sections summarize the natural environment existing conditions for the Study Area. The complete Natural Heritage Assessment Report is provided in **Appendix 2**.

### 3.2.1 Physical Setting

#### 3.2.1.1 PHYSIOGRAPHY AND SOILS

The Study Area is within the Flamborough Plain physiographic region, an area characterized by shallow soil over cream-buff dolomite of the Guelph Formation, with occasional drumlins, and ancient beach bars and sand/gravel ridges associated with glacial Lake Whittlesey. Glacial striae are visible in some areas where the dolomite bedrock is exposed, indicating

the direction of ice movement. The entire landscape, outside of the drumlins, have been identified as “known Karst”, due to the presence of the underlying dolomite.

The dominant soil type is the Farmington series, which is a stoney, well-drain loam soil only 30 cm deep over the dolomite bedrock. This includes most of the landscape bordering Safari Road beyond the low-lying areas associated with the Rockton-Sheffield Wetland Complex, which contains minor organic deposits over bedrock or glacial till. A Drumlin overlaps the central portion of the Study Area within the Hyde Tract and extends just north of Safari Road. Guelph Loam, a well-drained stone-poor sandy to silty sand textured till, is dominant within this feature, with some glaciolacustrine deposits of sand, gravel, and minor silt and clay within the north tip that extends across Safari Road through the Hyde Tract parking lot. A former sand and gravel pit is also located within private lands on the north side of Safari Road opposite the Hyde Tract Parking lot. The drumlin is bordered along its south and west sides by a raised shoreline and beach gravel bar which were deposited by glacial Lake Whittlesey.

### 3.2.1.2 SUBWATERSHED

The Study Area is located within the Fairchild Creek subwatershed, in the east central portion of the Grand River watershed. Fairchild Creek flows southwest from Puslinch Township and then southeast before joining the Grand River near the Village of Onandaga. Within the Fairchild Creek subwatershed there are four (4) distinct physiographic regions, including the Horseshoe moraines, Flamborough plain, Norfolk sand plain, and the Haldimand clay plain, and there are two (2) areas of natural scientific interest.

### 3.2.1.3 TOPOGRAPHY AND DRAINAGE

The Study Area is part of the Fairchild Creek subwatershed and includes the headwaters of two (2) watercourses, with the watershed divide being located within the center of the Study Area. Local topography consists of gentle slopes with complex topography.

In the east, a component of the Sheffield Rockton Wetland Complex, north of the Study Area, forms the headwaters of Barlow Creek, which flows south/southeast out of the Study Area, then continues to head southward. Though the watercourse is not within the Study Area, the eastern half of the Study Area is within the Barlow Creek watershed. In the western part of the Study Area, the central wetland drains north of Safari Road to the west, before heading south and becoming a defined channel south of Safari Road. Both watercourses eventually converge southwest of the Study Area.

### 3.2.2 Designated Natural Areas

No provincially designated parks, conservation areas, reserves, or Areas of Natural or Scientific Interest were identified in the Study Area. Components of a Provincially Significant Wetland (PSW), the Sheffield-Rockton Wetland Complex are included in the Study Area. Treed and wetland areas within and beyond the Study Area are considered Environmentally Significant Areas within the City of Hamilton. The following sections examine the designated natural areas and features found in the Study Area, see Figure 3.2 below for a visual overview.

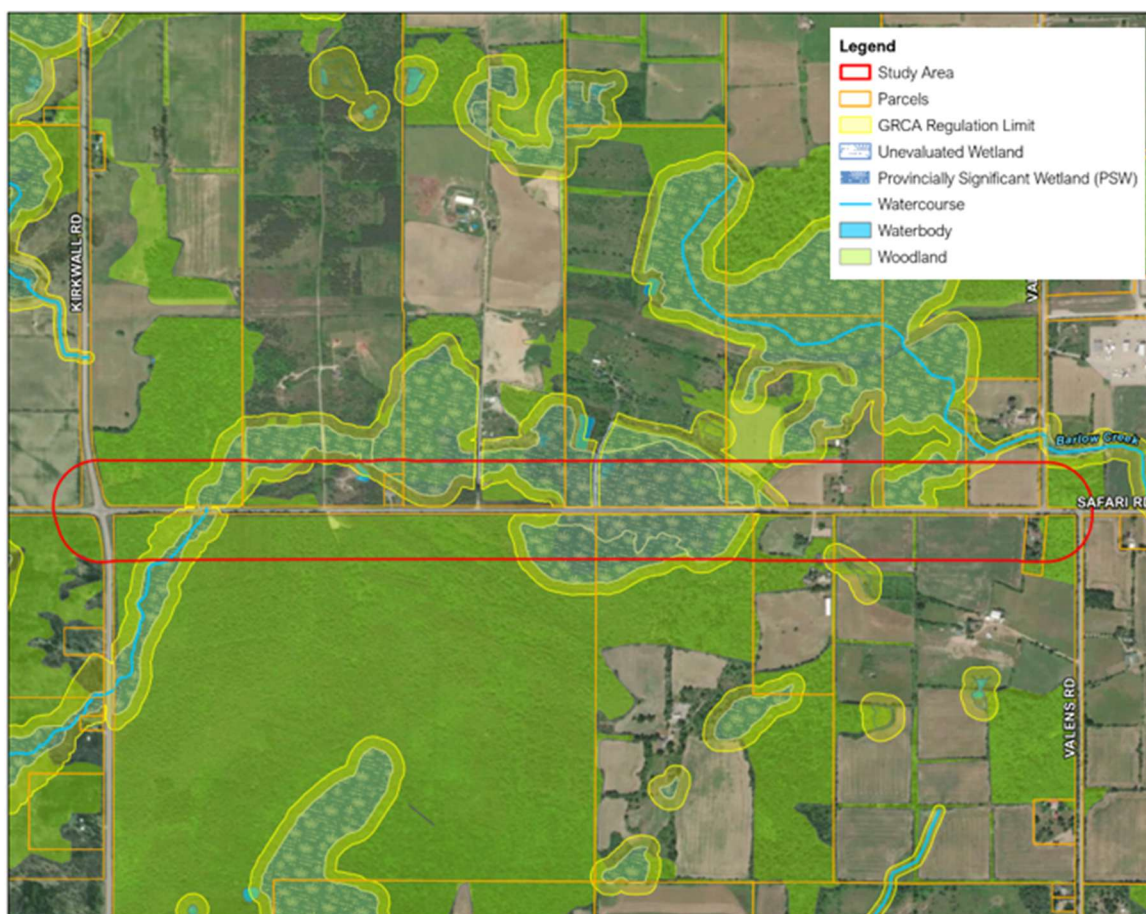


Figure 3.2 Natural Heritage Features Overview

#### 3.2.2.1 PROVINCIALLY SIGNIFICANT WETLANDS

The wetlands within the Study Area are part of the Sheffield – Rockton Wetland Complex, a Provincially Significant Wetland (PSW). Based on this most recent mapping of wetland vegetation communities within the Study Area, most communities are swamps, with marsh communities occurring centrally within the Study Area bordering either side of Safari Road.

The wetland extends westward, north of the Study Area before flowing south under Safari Road near Kirkwall Road as an unnamed headwater tributary of Fairchild Creek.

Several differences were observed during the review of wetland data from 1977 to 2012. The conclusion was that differences across successive PSW mapping updates likely reflect ecological succession related to vegetation maturation and hydrological changes over time.

### 3.2.2.2 ENVIRONMENTALLY SIGNIFICANT AREAS

There are two (2) Environmentally Significant Areas (ESA) within the Study Area – 1) the Hyde/Rockton/Beverly Complex; and 2) the Savage Tract.

The Hyde/Rockton/Beverly Complex overlaps the western half of the Study Area and includes the Sheffield-Rockton PSW Complex and Hyde Tract, as well as woodlands on private land to the north of Safari Road. The ESA extends southwest of the Study Area where it includes the Beverly Sparrow Field Tract and Rockton Tracts. The landcover within the ESA includes extensive coniferous plantation interspersed with deciduous forest, as well as deciduous swamp and marsh wetland types. North of the Study Area it includes treed alvar along the east side of Kirkwall Road.

The second ESA, the Savage Tract, is located within and north of the eastern half of Study Area, northwest of the Valens Road and Safari Road intersection. It contains hardwood swamp of the Sheffield-Rockton PSW Complex, and well as treed alvar.

Surrounding the Study Area are two (2) other recognized ESAs – 1) the Beverly Swamp Complex; and 2) the Rockton Airfield West.

### 3.2.2.3 REGULATED AREAS

The Study Area is located within the Grand River Conservation Authority (GRCA) and O. Reg. 41/24 (Prohibited Activities), under Section 28 of the Conservation Authorities Act, applies to the drainage features and wetlands within the Study Area. Under this regulation, any development, site alteration, construction, or placement of fill within the regulated area requires a permit from GRCA, as does interference with a wetland or any alteration to an existing watercourse channel.

### 3.2.3 Vegetation

The Study Area is in a rural landscape comprised of agricultural lands, rural residential properties and natural/successional areas including wetlands, deciduous forest, cultural thicket, and conifer plantations. The field investigations within the Study Area identified 23 different natural or successional Ecological Land Classifications (ELC) vegetation

community types, including meadow, wetland, thicket, coniferous plantation, and deciduous forest. For properties where investigation access was not granted, communities were determined through ortho-image interpretation and inference based on vegetation observed from the road.

Coniferous Cultural Plantations were common throughout the southwestern half of the Study Area and extend southward through the Hyde Tract, as well as several smaller areas within the eastern half of the Study Area. These plantations were extensive throughout the southwestern quarter of the Study Area but plantations closer to the Sheffield-Rockton Wetland Complex have declined significantly over the past decade due to rising water levels and subsequent dieback of the tree canopy. Several Hedgerows were observed, primarily in the eastern half of the study area along the Safari Road and between adjacent farm fields and parallel to the roadway.

Mineral Cultural Meadow was uncommon within the Study Area, occurring only around the Hyde Tract Parking Lot, within private lands on the north side of Safari Road, and roadside areas along Kirkwall and Safari Road. Mineral Cultural Thicket was rare, occurring within only one small area in the eastern half of the Study Area. Many standing dead Ash are visible within this community, which likely would have been assessed as a Mineral Cultural Woodland prior to Ash die-off, presumably from Emerald Ash Borer. Mineral Cultural Woodland were present within the central portion of the Study Area.

Wetland communities occurred through the PSW and included Mineral Deciduous Swamp, specifically Swamp Maple Mineral Deciduous Swamp, were Marsh Mermaidweed, a rare species within the City of Hamilton, was observed as the dominant species. Mineral Shallow Marsh, specifically Cattail Mineral Shallow Marsh, was the dominant wetland type within the deeper areas of the wetland complex, specifically bordering both sides of Safari Road. Mineral Thicket Swamp was present within the PSW, particularly south of Safari Road and exhibits significant canopy decline, presumably due to recent hydrologic changes and Emerald Ash Borer.

The rest of the Study Area was comprised of Agricultural lands, including soy, corn, and other crops, and rural Residential properties with lawns and landscape trees.

### 3.2.3.1 FLORA

A total of 329 species were recorded within the Study Area during the field investigations in 2024 and 2025, including 230 native species (70%), and 99 introduced species. 18 species that are considered rare and uncommon within the City of Hamilton were observed,

however none of these species are considered conservation concern within Ontario or Canada.

Out of the 17 rare or uncommon species listed in the background data reviewed, eight (8) uncommon species were observed during field investigations: Eastern Red Cedar, Foxglove Beardtongue, Chinquapin Oak, Handsome Sedge, Pale Sedge, Ten-rayed Sunflower, Fragrant Sumac, and Prickly Ash. Black Ash was not observed during the flora inventory or tree survey. Ash dieback due to Emerald Ash Borer was observed during the tree surveys, and most Green Ash and White Ash were survived by seedlings and stump resprouts from small trees less than 15 cm Diameter at Breast Height (DBH).

### 3.2.3.2 INVASIVE SPECIES

A total of 33 species considered invasive in Ontario were observed during the field investigations. Notable invasive species that were common included Autumn Olive, Glossy Buckthorn, Scots Pine, and Common Buckthorn. Invasive species were observed in all the vegetation communities surveyed with permission to enter.

### 3.2.4 Tree Inventory

A total of 1392 trees were inventoried within and up to 20m outside the Safari Road ROW within the Study Area. The most abundant species observed were Sugar Maple, White Pine, Freeman Maple, American Basswood, Norway Spruce, and White Spruce. No SAR or species considered uncommon or rare within the City of Hamilton were observed, other than Red Pine, which were planted.

The most heavily treed area, which also had the largest trees, was the west end of the Study Area within the Mineral Mixed Forests, Mineral Deciduous Forests, and Coniferous Cultural Plantations. The central portion of the Study Area had the lowest canopy cover due to high water level and recent dieback of the plantations; however, most of the dead trees remain standing. The eastern end of the Study Area primarily contained smaller trees within roadside hedgerows.

Most trees inventoried (81%) were less than 20cm DBH, with few (1.7%) greater than 50cm DBH. The largest diameter trees observed were generally roadside along the west end of Safari Road and included Black Maple, Sugar Maple, Freeman Maple, Bitternut Hickory, Black Walnut, Norway Spruce and Bur Oak.

Most of the trees surveyed were in good condition (77%). Deciduous trees were generally in good condition (69%) whereas coniferous trees were more variable, due to the maturity and decline of the Coniferous Cultural Plantations and associated regeneration of younger

deciduous trees. Roughly half of the trees surveyed (51%) had no observable defects. The most common defects observed included dead branches, stem wounds, girdling roots, and many trees within the plantations were crowded.

### **3.2.5 Terrestrial/Amphibious Wildlife**

#### **3.2.5.1 BREEDING BIRDS**

The Study Area contains terrestrial and aquatic communities and habitats that have the potential to support a variety of bird life. Several SAR birds were detected as displaying evidence of breeding within the Study Area including multiple territories of Least Bitterns, a territorial male Bobolink and Chimney Swifts, all of which are threatened species. A single male Prothonotary Warbler was also detected as displaying evidence of breeding which is an endangered species.

Several other Species of Conservation Concern (SoCC) were observed within the Study Area including Barn Swallows, Eastern Wood-Pewees, territorial Wood Thrush, Rusty Blackbirds, American Coot, Common Gallinules, and Purple Martins. The remainder of birds recorded during surveys are common and secure in the province.

#### **3.2.5.2 REPTILES AND AMPHIBIANS**

Most of the reptile and amphibian records for the Study Area and vicinity include commonly encountered species that would be expected based on the habitat in the area. The Blandings Turtle, a threatened and provincially protected at-risk species, was noted to be nearby within the wetland complex but has not been confirmed in the Study Area. Two (2) Special Concern Species – the Snapping Turtle and Eastern Ribbonsnake, are observed frequently by citizen scientists and therefore are presumed to occur within the Study Area.

#### **3.2.5.3 MAMMALS**

SAR Bats (Endangered) including Little Brown Myotis, Northern Myotis, Silver-haired Bat, Northern Hoary Bat, Eastern Red Bat, Eastern Small-footed Myotis and Tri-colored Bat were noted as occurring in the Study Area during background review. Forested areas within the Study Area, particularly woodlands with dead or hollow large trees (DBH >25cm) are particularly attractive for bat species as they seek out refuge here. As bats change roosts often, it is not possible to determine which trees on a landscape provide protected habitat without further study.

Evidence of seven (7) additional mammal species was recorded during 2024 and 2025 field investigations which include Coyote, Eastern Gray Squirrel, Eastern Chipmunk, Muskrat,

Red Squirrel, Striped Skunk, and White-tailed Deer. All the recorded species are deemed “Secure” in the province.

#### 3.2.5.4 INSECTS/OTHER INVERTEBRATES

The habitat types within the Study Area are suitable to support many insect species, including rare butterfly and Odonate (dragonfly and damselfly) species. As insects are not commonly surveyed for and can have short periods of detection (adult stage), it is possible that other species of provincial interest may utilize habitat within or adjacent to the Study Area. No notable invertebrates were observed during field investigations.

#### 3.2.6 Significant Wildlife Habitat

Candidate wildlife habitat was identified for the following categories: Raptor Wintering Area, Amphibian Breeding Habitat (Woodland), Bat Maternity Colonies, Amphibian Breeding Habitat (Wetland), Turtle Nesting Areas, Reptile Hibernaculum, Deer Yarding Areas, Deer Winter Congregation Areas, Woodland Raptor Nesting Habitat, and Terrestrial Crayfish. Most of these habitats are associated with the Sheffield-Rockton PSW in the central section of the Study Area. Turtle Wintering Area, Woodland Area Sensitive Bird Breeding Habitat, Marsh Breeding Bird Habitat, breeding habitat for Eastern Wood-Pewee (Special Concern), Wood Thrush (Special Concern), and Common Gallinule (S3B) were confirmed within the Study Area.

##### 3.2.6.1 CONFIRMED HABITATS WITHIN STUDY AREA

Fish and wildlife habitats that have been confirmed within the Study Area consist of:

- Coolwater Fish Habitat (Tributary of Fairchild Creek and Wetland);
- Turtle Wintering Areas;
- Woodland Area-Sensitive Bird Breeding Habitat;
- Marsh Breeding Bird Habitat; and,
- Habitat for Special Concern and Rare Wildlife Species (Eastern Wood-Pewee, Wood Thrush and Common Gallinule).

##### 3.2.6.2 CANDIDATE HABITATS WITHIN STUDY AREA

Candidate significant wildlife habitats with potential to occur within the Study Area (i.e., were not confirmed, but could not be ruled out following field investigations) consist of:

- Raptor Wintering Area;

- Reptile Hibernaculum;
- Deer Yarding Areas;
- Deer Winter Congregation Areas;
- Woodland Raptor Nesting Habitat;
- Turtle Nesting Habitat;
- Amphibian Breeding Habitat (Woodlands);
- Amphibian Breeding Habitat (Wetlands);
- Terrestrial Crayfish;
- Bat Maternity Colonies; and,
- Habitat for Special Concern and Rare Wildlife Species (Monarch).

### 3.2.7 Aquatic Habitat and Communities

#### 3.2.7.1 AQUATIC HABITAT

An overview of the aquatic habitats within the Study Area is shown in Figure 3.3 below.

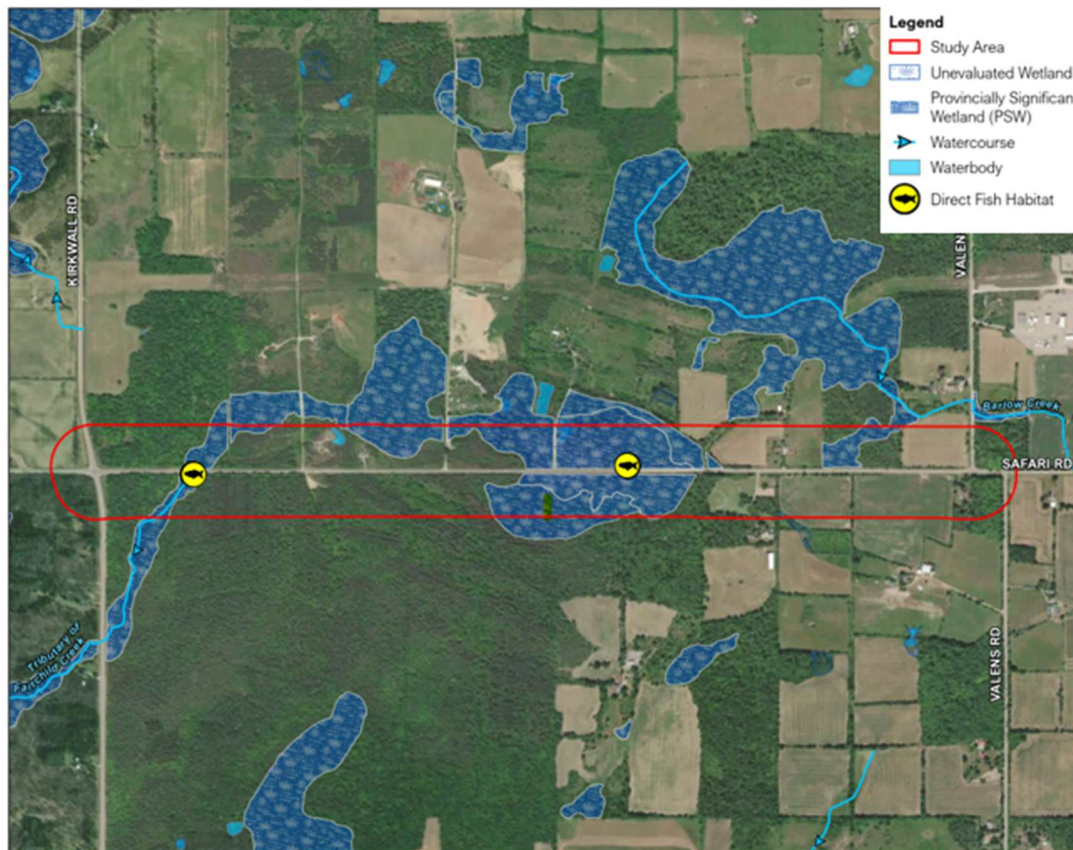


Figure 3.3 Overview of Aquatic Habitats in the Study Area

### **Tributary of Fairchild Creek**

The headwaters of Fairchild Creek originate in the Rockton-Sheffield PSW that conveys water from north of Safari Road to the west. The wetland constricts into a tributary approximately 280m east of Kirkwall Road, where it is conveyed south under Safari Road through a triple-barrel corrugated plastic pipe culvert. Downstream of the crossing, the watercourse continues in a southwesterly direction.

North (upstream) of the roadway the landscape exhibits a flat morphology that is hydraulically connected to an adjacent treed swamp where the substrate was dominated by detritus, silt and sand. The area was almost completely shaded by the surrounding swamp, contributing to cooler water temperatures and potentially improving thermal refuge for aquatic species. In addition, organic debris, were present and provided instream cover for fish.

South of the roadway, a defined channel was observed within the downstream reach as flows exited the corrugated steel pipes (CSP). The morphology remained flat, with substrate primarily composed of silt, sand, and gravel. The channel extended for approximately 50m before widening into a flooded area and then narrowing again as it continued southwest off site. Compared to the upstream reach, the downstream reach had a more open canopy and greater light penetration. Flow appeared stagnant at the time of observation. Organic debris was present, offering instream cover and habitat diversity.

Several groundwater indicators were observed within the Fairchild Creek tributary at this location. Watercress observed upstream of the road and iron staining observed downstream are both indicators of groundwater upwellings.

### **Upstream wetland – Sheffield – Rockton wetland complex (PSW)**

Approximately 1.5km east of the Kirkwall and Safari Road intersection, ongoing drainage issues has resulted in overtopping of the roadway by the adjacent wetland. This flooding has created a hydraulic connection between the wetland areas that were previously divided by the roadway and supports fish and fish habitat.

The surrounding wetland provides cover and structural diversity. In contrast, the flooded roadway is exposed, with no canopy cover or shade. An asphalt surface forms the substrate in this area, though aquatic vegetation such as pondweed is present, along with speedwell observed to be growing in pavement cracks. Several construction barrels that had fallen over in the flooded roadway appeared to be providing instream cover, with fish observed to be congregating around and within them.

Water quality parameters in the flooded roadway are generally comparable to those recorded at the downstream crossing, except for water temperature. Temperatures within the flooded roadway reached 20°C, while downstream measurements were below 15°C. The elevated temperature in the flooded roadway is consistent with its open exposure and dark asphalt substrate, likely contributing to localized warming.

### 3.2.7.2 FISH COMMUNITY

A review of background information did not identify any existing fish records for the onsite watercourse and upstream wetland; however, fish records were provided by the GRCA for the downstream branch of Fairchild Creek, located outside of the Study Area. To address this data gap, fish community sampling via electrofishing was undertaken in May of 2025. Field investigations revealed differences in the fish communities between the watercourse crossing and the flooded roadway, as well as between the on-site watercourse and downstream branch of Fairchild Creek, outside of the Study Area.

#### Tributary of Fairchild Creek

Three (3) coolwater fish species were collected by RVA within the tributary of Fairchild Creek at the Safari Road crossing, including Brook Stickleback, Central Mudminnow, and Northern Redbelly Dace. Results indicate this reach of the tributary is considered to support a cool water thermal regime. While sampling occurred in the spring, and water temperatures may reflect cooler seasonal conditions, the presence of cool water fish species and evidence of groundwater inputs supports this cool water classification. Fish records from GRCA in the downstream Fairchild Creek, indicated a diverse coolwater fish community comprised of baitfish, sunfish, suckers, and sportfish, including Northern Pike.

#### Upstream Wetland – Sheffield – Rockton Wetland Complex (PSW)

In the flooded portion of the roadway east of the Tributary of Fairchild Creek, Fathead Minnow, a warmwater fish species was recorded. Males in spawning colours and gravid females were observed, confirming reproductive habitat. Additionally, young-of-the-year Leuciscidae (species unknown) were observed at this location, indicating this area functions as spawning and nursing/rearing habitat for native minnows. Water temperatures at this location were notably higher than those recorded within the tributary of Fairchild Creek at the Safari Road crossing, consistent with conditions that support warmwater fish species.

#### Potential Barriers to Fish Passage

A potential barrier to fish passage was identified less than 4km downstream of the Safari Road crossing, where the watercourse appears to be piped underground for approximately 170m beneath an airfield associated with a local gliding club. While this feature has not

been confirmed in the field, the length of the underground section may deter fish passage and, depending on the structure design, could represent a physical or hydraulic barrier to upstream fish movement.

Two (2) migratory fish species, Northern Pike and White Sucker, are documented in the downstream branch of Fairchild Creek, but were not observed within the Study Area. Their absence may reflect this potential barrier, the possibility that spring sampling did not coincide with migration periods, or the limited scope of the spring sampling, which provides only a snapshot of fish use within the site.

### **3.2.8 Ecological Linkages**

The identified Linkages from the City's Natural Heritage System map in the Rural Hamilton Official Plan do not appear to correspond to landscape features, but rather a conceptual connection, drawn as a line-oriented southeast to northwest, through both natural and maintained/cultivated areas. As the roadway is currently closed to through traffic, the ecological linkage here is intact, with wildlife free to cross the road between like habitats, with few passing vehicles posing occasional barriers. This is true for woodland species as well as wetland as the section of road currently barricaded off to any vehicle access is prone to flooding, which bridges the hydraulic gap, connecting the marsh habitat. The wetted connection across the road also provides linkage and access to fish species that inhabit the marsh.

### **3.2.9 Species at Risk**

A variety of floral and faunal species of local and provincial interest have been recorded in the vicinity of the Study Area. A full list of SAR identified in the background sources with potential to be found in the Study Area, discussion on their habitat preferences, and probability of occurrence as determined following field investigations and assessment is presented in the full report available in **Appendix 2**.

## **3.3 Source Water Protection**

A review of GRCA's source water mapping indicates that there are no Wellhead Protection Areas, Significant Grounwater Recharge Areas, or Intake Protection Zones within or around the Study Area.

## 3.4 Cultural Heritage Environment

A Stage 1 Archaeological Assessment and a cultural heritage review was completed and as part of the Class EA Study, the following subsections summary the results of both.

### 3.4.1 Archaeological Resources

A Stage 1 Archaeological Assessment under Project Information Form number (PIF) P383-0465-2024 was complete on November 26, 2024. Stage 1 AA consists of a review of geographic, land use and historical information for the property and the relevant surrounding area and contacting MCM to find out whether or not there are any known archaeological sites on or near the property. Its purpose is to identify areas of archaeological potential and further archaeological assessment (e.g., Stage 2-4) as necessary.

The Stage 1 background research determined there are no previously registered archaeological sites located within 1km of the Study Area. The property inspection determined that parts of the Study Area exhibit archaeological potential and will require a Stage 2 archaeological assessment by test pit and pedestrian survey at 5m intervals. Stage 2 is required prior to any proposed construction activities on these lands.

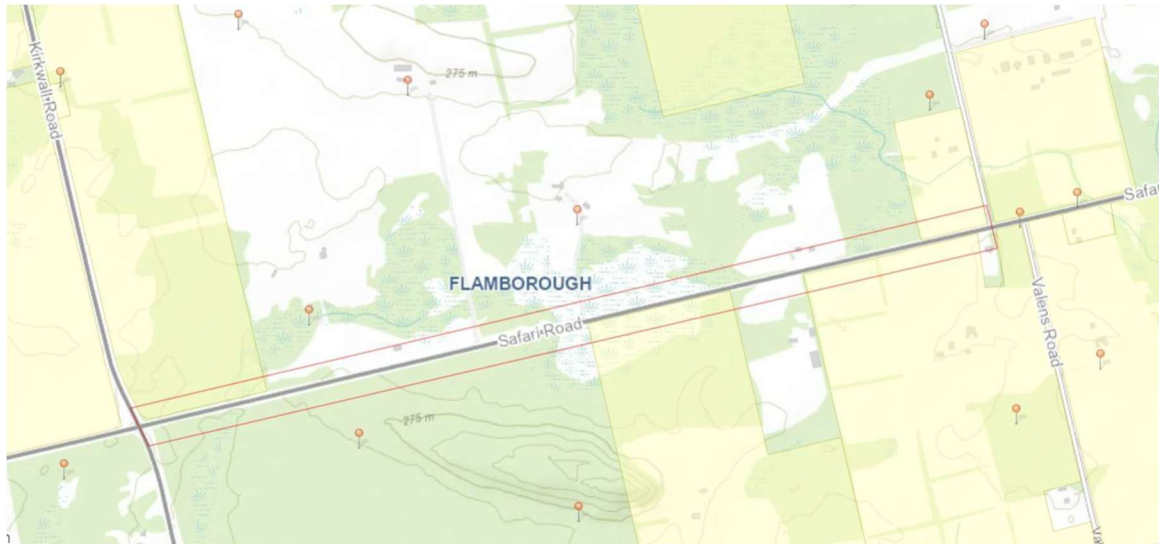
The remainder of the Project Area does not retain archaeological potential on account of deep and extensive land disturbance and low and wet conditions. These lands do not require further archaeological assessment.

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

The complete Stage 1 AA report is provided in **Appendix 3**.

### 3.4.2 Built Heritage Resources and Cultural Heritage Landscapes

A cultural heritage review was completed by the City in November 2025 to identify known or potential cultural heritage resources within the Study Area. There are four (4) properties adjacent to the Study Area (Figure 3.4) that were identified to potentially have cultural heritage interest of value (CHVI) as identified through the City's Inventory of Heritage Properties.



**Figure 3.4 Cultural Heritage Inventoried Properties (highlighted Yellow)**

1492-1500 Kirkwall Road – This property fronts onto Kirkwall Road with all major features associated with the historic farmhouse are concentrated around the farmhouse itself. While the property abuts Safari Road at the west end of the Study Area no historic landscape features are present. A standard wire mesh farm fence with wood and rebar posts was present, however, this fence does not appear to be of historic value and is not considered a cultural heritage landscape feature.

1688 Safari Road – The structure on this property was not visible from the ROW and is located approximately 500m off of Safari Road. No cultural heritage landscape features of interest were found along the property line.

1359 Valens Road – This is a one-storey farmhouse that fronts onto Valens Road with all major features associated with the historic farmhouse are concentrated around the farmhouse itself. While the property abuts Safari Road at the east end of the Study Area, no historic landscape features are present.

1267 Valens Road – This is a two-storey farmhouse that fronts on to Valens Road, with all major features associated with the historic farmhouse concentrated around the farmhouse itself. The structure abuts Safari Road at the southeast end of the Study Area. One (1) cultural heritage landscape feature of note was present adjacent to the property line. Located on the northeast edge of the farm property stands a stone cairn Figure 3.5, demarcating the edge of the farmer's field, and could possibly be a remnant feature from the early settlement.



Figure 3.5 Close up of Stone Landscape Feature at 1267 Valens Road

The full Cultural Heritage Memorandum is provided in **Appendix 4**.

### 3.5 Drainage & Stormwater Management

A Stormwater Management Report was completed to evaluate alternatives and to address the flooding/drainage challenges of the Study Area. The following summarizes the existing stormwater and drainage conditions, while the full Stormwater Management Report can be found in **Appendix 5**.

There are two (2) watercourse crossings of Safari Road, each conveyed through an existing culvert within the Study Area. In addition, an equalization culvert is located in the wetland between the two (2) watercourse crossings. All existing culverts within the project study limits are corrugated steel pipes (CSP) and are recommended to be replaced as part of any reconstruction of Safari Road.

The watercourse that forms the Municipal Drain Study crosses four (4) private accesses on the north side of the road. These private accesses form the recommendations of the ongoing Municipal Drain Study and are in varying states of operation (functional to collapsed) or do not exist. The Municipal Drain Study is being completed to address safety, flooding and road closures by proposing drainage improvements through the private properties including some channel cleaning and the replacement, and/or addition of private culverts. The recommendations of this EA Study has been completed considering that the Municipal Drain as recommended has been implemented. Table 3.1 below lists the existing culvert information and Figure 3.6 shows drainage area plans.

Table 3.1 Existing Road Crossing Structures

CULV ID	Location	Size	Material	Cumulative Drainage Area
		(mm)		(ha)
CULV-1	Safari Road – culvert crossing at eastern project limit	600	CSP	56.21
CULV-2	North of Safari Road – crosses private driveway	500	CSP	77.47
CULV-3	North of Safari Road – crosses private driveway	600 (collapsed)	CSP	133.18
CULV-4	North of Safari Road – crosses private driveway	Existing blast rock – no culvert		173.28
CULV-5	North of Safari Road – crosses private driveway	Bridge (limited opening)		183.98
CULV-6	Safari Road – culvert crossing at western project limit	3 x 600	HDPE	189.64
CULV-7	Kirkwall Road – culvert crossing	3000 x 1200	Concrete	223.19
CULV-8	Safari Road – wetland equalization culvert	600	CSP	31.85

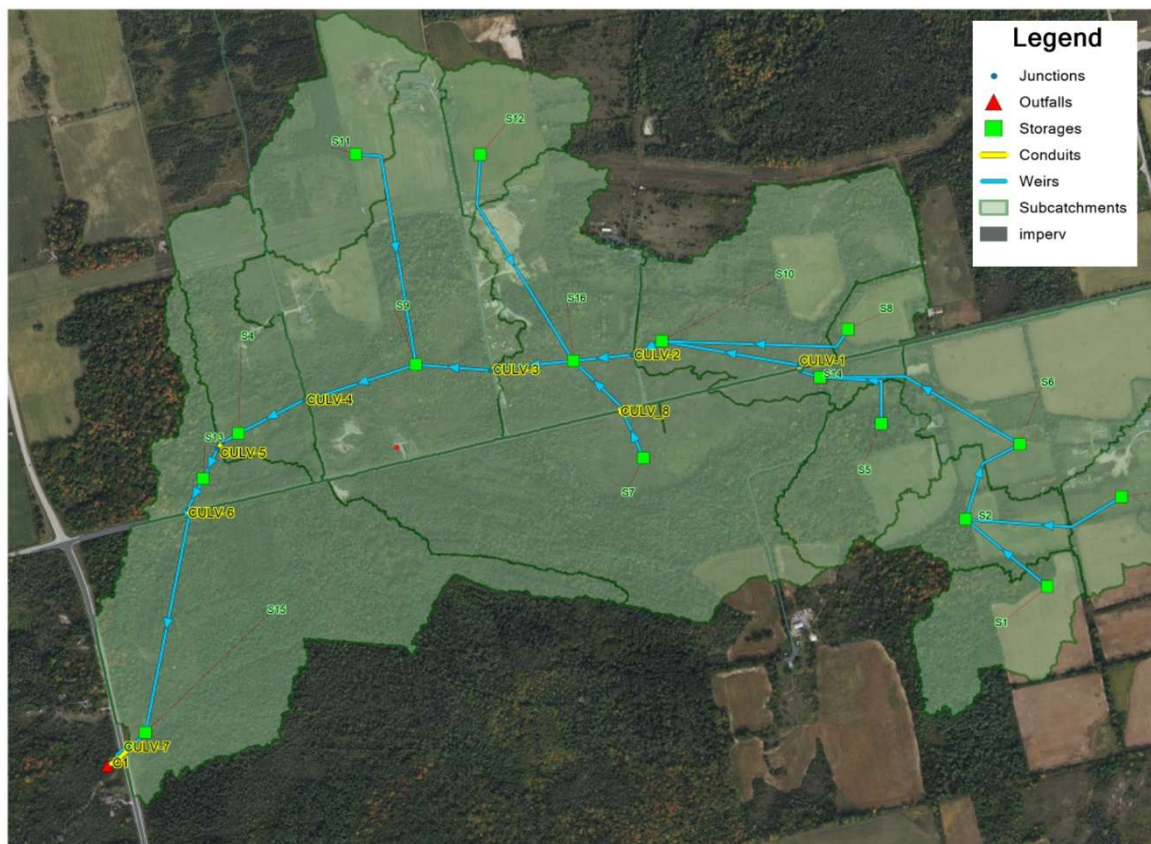


Figure 3.6 Drainage Area Plans

### 3.5.1 Existing Hydrology and Hydraulic Conditions

Field observations indicate that Safari Road experiences seasonal flooding due to the seasonal accumulation of water with little functional outlet through private property. A Google Earth image dated April 2023 shows overtopping and inundation of Safari Road in the vicinity of Culvert 8. The road is not known to flood during single storm events as was observed through the single event PCSWMM model, developed for the Municipal Drain Study, which did not simulate overtopping at Culvert 8, even under the 100-year design event.

This discrepancy suggested that, although the model was appropriate for purposes of designing the Municipal Drain and associated private culverts it was not able represent the existing conditions of the culverts along Safari Road for this EA Study. Additionally, the seasonal flooding was considered to result from a combination of:

- Saturated soil conditions during spring thaw
- Backwater effects from the collapsed Culvert 3 downstream of Culvert 8, resulting in an excess ponding in the depression/wetland areas abutting Safari Road.

Given these factors, a continuous simulation approach was adopted to better capture the temporal variability in infiltration and storage, which are critical to replicating spring flooding.

#### 3.5.1.1 MODEL SETUP

The Municipal Drain Study model used the Alternative Runoff Method, which is suitable only for single-event simulations. To conduct continuous simulation, a new model was developed. Modified Green-Ampt was used, which allows for time-varying soil moisture and infiltration capacity. The updated PCSWMM model provides a more accurate representation of runoff storage and flooding behaviour within the Study Area.

#### 3.5.1.2 QUASI-CALIBRATION

To confirm that the model reflects existing conditions, a quasi-calibration was performed. The model demonstrated that, under existing conditions:

- The local ponding areas provide sufficient storage and infiltration capacity to attenuate surface runoff from regular rainfall events. As a result, all culverts in the Study Area, except Culvert 3 and Culvert 8, did not experience surcharge.
- Culvert 3 and Culvert 8 surcharged between March to May, coinciding with the period of lowest infiltration rates.

- Culvert 3 lacked adequate conveyance capacity due to being filled in, which contributed to upstream water accumulation.
- Culvert 8 overtopped in April, consistent with the field observations. The overtopping of Safari Road is a combination of backwater effect from the filled-in Culvert 3 and continued water buildup in the adjacent ponding areas. As the water levels rose, this eventually exceeded the road elevation, resulting in surface flooding.

### 3.5.1.3 HYDRAULIC ANALYSIS SUMMARY

The hydraulic modeling indicates that Safari Road is vulnerable to flooding for even minor events and improvements are required if the road is to remain safe from its intended use as an arterial

## 3.6 Hydrogeological & Groundwater Assessment

A Water Well Assessment for Safari Road was completed to inventory existing water well records within 500m of the Study Area and collect data on existing water users to create a baseline data set to mitigate/manage risk.

Based on the review of the MECP Water Well Records (WWR), 17 WWRs exist within 500m of the Study Area. Of these wells, 10 are for domestic use, 3 are for livestock/domestic use, 3 have unknown usage, and 1 is for commercial use. The well depths range from 7.9m to 48.8m below ground surface (mbgs) with an average depth of 23.0mbgs. Water levels in the wells range from 1.2mbgs to 20.4mbgs, with an average of 5.7mbgs.

A door-to-door water well survey was conducted to determine the condition of wells within the Study Area, septic conditions, and obtain baseline groundwater levels and raw groundwater chemistry data. From this door-to-door survey, 4 wells were identified in close proximity to Safari Road, with 3 having associated MECP Water Well Records, and 1 being identified during the door-to-door survey. These wells obtain potable groundwater from the bedrock aquifer, which typically relies on regional groundwater flow and offsite recharge. These wells are also isolated from the surface with a 6m steel well casing and are not likely to be impacted by surface works. As the proposed works along Safari Road do not include significant groundwater dewatering or changes to permeability, no impact to nearby groundwater wells is anticipated.

The complete Water Well Assessment report is provided in **Appendix 6**.

## 3.7 Fluvial Geomorphology Assessment

A Fluvial Geomorphology Assessment was completed to support the potential crossing replacement or its modifications to better convey flow beneath Safari Road and improve drainage of the road surface. The complete Fluvial Geomorphology Assessment Report is provided in **Appendix 7**.

### 3.7.1 Channel at the Existing Crossing on Safari Road

The existing crossing on Safari Road is located 280m east of Kirkwall Road and comprises 3 parallel CSP culverts perpendicular to Safari Road (Figure 3.7). The watercourse north of Safari Road is oriented northeast-southwest and drains an area of wetland associated with the Beverly Swamp. The downstream section of the channel is approximately 590m long and flows southwestward, ultimately crossing beneath Kirkwall Road through a concrete box culvert. The channel immediately upstream of the Safari Road culverts has a poorly defined irregular meandering planform, situated in a low-lying forested area. The primary flow path is aligned with the culvert; however, supplemental drainage channels associated with the wetland were observed in the forested area.

The channel has a low gradient with a mixture of silt, organic matter, and matted vegetation along its bed. Such characteristics are typical of a wetland channel. Herbaceous vegetation lines the channel banks and roadside ditch (perpendicular to the channel). It is anticipated that the upstream wetland has the capacity to attenuate high flows and reduce the erosive energy during flood events. The culverts are in stable condition, not blocked by sediment or vegetation, and currently pose no impediment to fish passage.

The channel becomes more well-defined downstream of the culverts. It has a similar irregularly meandering planform, and aerial imagery reveals multiple drainage paths in the vicinity of the channel associated with the wetland.



Figure 3.7 Safari Road Crossing and Downstream Channel

## 3.8 Socio-Economic Environment

### 3.8.1 Land Use

As previously mentioned, the Study Area is designated as Protected Countryside within the Greenbelt Plan (2017). Per the Rural Hamilton Official Plan (2012), the Study Area lands adjacent to the Safari Road ROW is designated as Agriculture on the north side and Rural and Open Space on the south side.

Along the north side of Safari Road is a mix of agricultural properties with residential dwellings as well as a Provincially Significant Wetland Complex. On the south side is a

hiking area in the Open Space known as Hyde Tract and further agricultural properties with residential dwellings on them.

### 3.9 Servicing, Utilities, and Facilities

#### 3.9.1 Watermains and Wastewater

There are no watermains or sanitary sewers within the Study Area.

#### 3.9.2 Third-Party Utilities

Table 3.2 describes the existing third-party utility infrastructure within the Study Area.

Table 3.2 Existing Utility Infrastructure

Utility Company	Existing Infrastructure Within Study Area
Bell	Overhead Bell infrastructure including 7 poles on the north side of Safari Road at the east end of the Study Area
Hydro One	19 poles on the north side of Safari Road at the west end 20 poles on the south side of Safari Road at the east end

## 4.0 ALTERNATIVE SOLUTIONS

Under Phase 2 of the Class EA process, all reasonable solutions to address the problem and opportunity are identified and described, including the “Do Nothing” alternative. After general inventories of the technical, natural, social, cultural, and economic environments are prepared and potential environmental impacts are determined for each alternative, the net positive and negative effects are identified, and the alternatives are evaluated resulting in a recommended solution. The recommended solution is then presented to the public (Public Information Centre #2), Indigenous Nations, key interested parties, and government review agencies to solicit input into the selection of the preferred solution.

### 4.1 Evaluation Criteria

The project team considered criteria that represents the broad definition of the environment, as described in the Environmental Assessment Act, to comparatively evaluate the alternative solutions. The general evaluation criteria used in evaluating the alternative solutions and design concepts are outlined in Table 4.1.

Table 4.1 Evaluation Criteria for Alternative Solutions

Evaluation Criteria Category	Criteria Weighting	Description of Evaluation Criteria
Technical	40%	Does the alternative adequately address the technical requirements of the project (public safety, truck route and active transportation requirements, drainage and stormwater management, flooding, etc.)
Socio-Economic Environment	15%	How will the alternative impact adjacent land use? Does it impact properties and access?
Natural Environment	25%	What impacts will the alternative have on the local natural environment (wetlands, wildlife & wildlife habitats, vegetation, watershed connectivity, etc.)?
Cultural Heritage Resources	10%	How does the alternative affect archaeological, cultural heritage resources or Indigenous Nations?
Costs	10%	What is the cost associated with each alternative (capital, operations and maintenance, utility relocation, property acquisition)?

## 4.2 Ranking and Methodology

Each alternative was ranked using a set of sub-criteria for each criteria category described above. Alternatives were given points ranging between 0 (least desirable) to 4 (most desirable) for each sub-criteria. A percentage score was awarded for each criteria category, and a weighting was applied as identified in Table 4.1 above. The total score for each alternative is a sum of the weighted percentages of each criteria category.

## 4.3 Safari Road Alternative Solutions

Alternative solutions developed to address the Problem and Opportunity Statement are described below.

### 4.3.1 Alternative 1 – Do Nothing

The Do Nothing alternative means no improvements are made to Safari Road. The road would remain subject to frequent flooding, with deteriorating road conditions, resulting in continued safety issues. Due to frequent flooding, Safari Road would continue to be closed, impacting residents and access to properties, emergency services, and postal services.

This alternative would also not address active transportation and truck route requirements. This alternative is required to be evaluated to serve as a baseline comparison for other alternatives.

#### 4.3.2 Alternative 2 – Close the Road

This alternative would involve permanently closing Safari Road, as shown in Figure 4.1 and Figure 4.2, to allow the area to naturalize. Closing the road would require implementing two (2) cul-de-sacs at the eastern and western edges of the wetland complex. To implement this alternative, road safety and active transportation improvements would be required on detour routes such as wider travel lanes, paved shoulders, etc. Trucks would also continue to use the current signed longer detour route. This closure would impact both east-west truck and cycle routes and create a network condition that is contrary to the approved City TMP. It will also impact immediately adjacent landowners in two ways. Those that occupy dwellings will lose the convenience and safety of a through road and others will lose access to their property entirely. This alternative also requires full buyout four (4) properties, resulting in the highest capital costs.



Figure 4.1 Alternative 2 - Western Half of Study Area

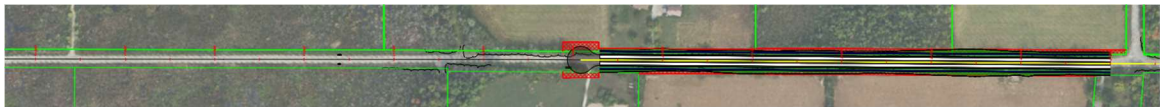


Figure 4.2 Alternative 2 - Eastern Half of Study Area

#### 4.3.3 Alternative 3 – Raise the Road

This alternative involves raising the road profile to meet current applicable flood resiliency criteria. In this case, the Ministry of Transportation's Highway Drainage Design Standards were used, which require the road to remain stable under a 25-year storm event with a 1m freeboard. Freeboard is the space required between the height of the maximum water elevation (in the 25-year storm event) and the height of the road shoulder. Additionally, a retaining wall would be implemented at the ROW limits in the wetland area and flat bottom ditches outside of the wetland, as shown in Figure 4.3 and Figure 4.4 below. This alternative addresses the flooding and safety concerns, poor road conditions, and reopens the corridor for through traffic. This alternative also allows for full truck loads year-round. Reopening of the corridor will restore access for residential properties, emergencies and postal services.

This alternative requires some modifications to property accesses and would require property acquisition from seven (7) properties (approximately 11,415m<sup>2</sup> required). This alternative has moderate construction costs in comparison to the other alternatives considered.

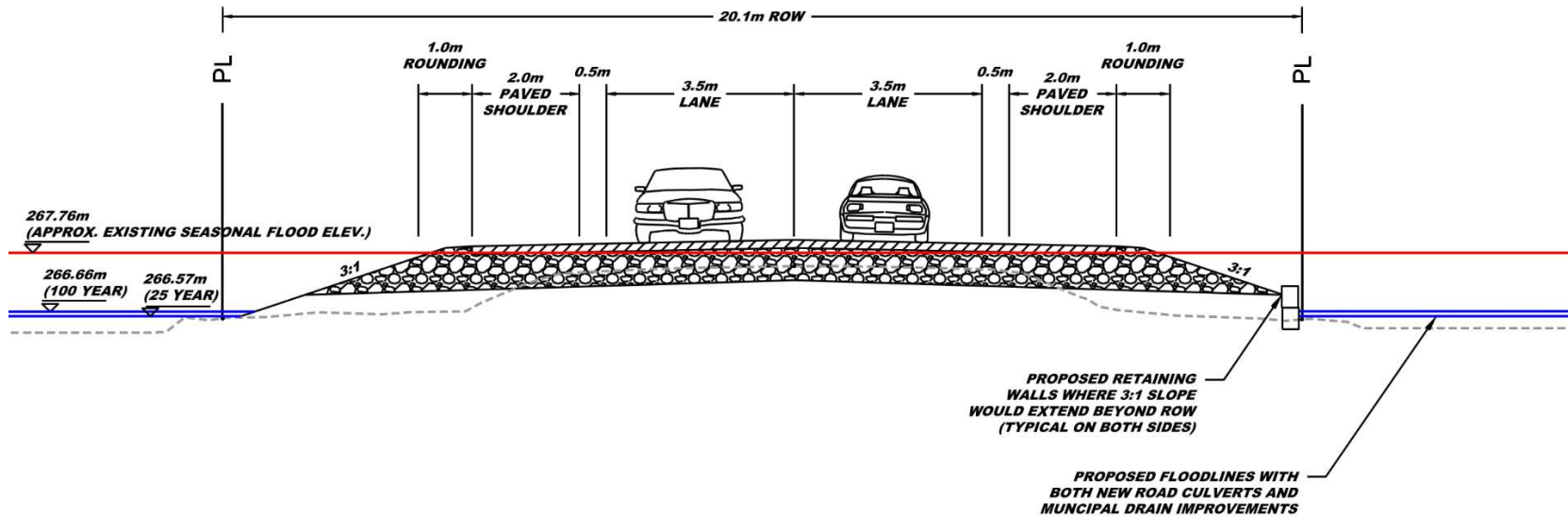


Figure 4.3 Alternative 3 - Within Wetland Area

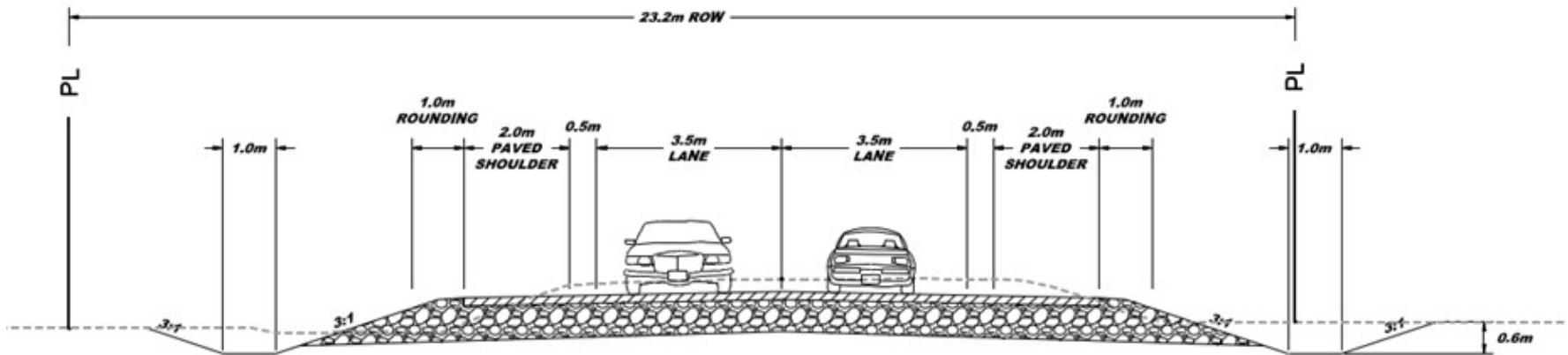


Figure 4.4 Alternative 3 - Outside Wetland Area

## 4.4 Evaluation of Alternative Solutions

Table 4.1 summarizes the evaluation of alternative solutions identified above. The detailed evaluation is provided in **Appendix 8**.

Table 4.2 Evaluation of Alternative Solutions

EVALUATION CRITERIA	1. Do Nothing		2. Close the Road		3. Raise the Road	
<b>TECHNICAL</b>	25.0%	Does not address road structure concerns, safety, and truck route and active transportation requirements. Drainage and flooding not addressed.	55.0%	Road safety and active transportation improvements required on detour routes and longer signed detour truck route. Flooding is not addressed, but impacts are reduced as the flooded section would be removed.	100.0%	Road structure and flooding issues addressed. All safety concerns addressed. Road network capacity and cycling connectivity improved with 2m paved shoulder and 0.5m buffer.
<b>SOCIO-ECONOMIC ENVIRONMENT</b>	50.0%	Property access is remains restricted, impacting services to the area. No property acquisition required.	12.5%	Longer response times for emergency vehicles due to detours. Requires full buyout of 4 properties.	62.5%	Access for emergency and postal services is restored. Residential property access requires modifications. Some property encroachment required, impacting 6 properties (11,460m <sup>2</sup> )
<b>NATURAL ENVIRONMENT</b>	75%	Some risk of fish, aquatic wildlife being injured on flooded road. No additional/new negative impacts to wetland or climate change.	100%	No risk of fish, aquatic wildlife being injured on flooded road. No negative impact to climate change and provides opportunity for additional natural habitat to establish.	69%	Short-term impacts to/loss of fish habitat and disturbance to wildlife from construction. Long-term impacts include exposure to potential contamination from road activity/water quality impact. The retaining wall and wildlife passages with fencing will mitigate risk to wildlife mortality
<b>ARCHAEOLOGICAL AND CULTURAL BUILT HERITAGE</b>	100.0%	No impacts to areas with archaeological potential. No impacts to cultural heritage resources.	100.0%	Impacts to areas with archaeological potential to be confirmed through Stage 2. No impacts to cultural heritage resources.	100.0%	Impacts to areas with archaeological potential to be confirmed through Stage 2. No impacts to cultural heritage resources.
<b>COST</b>	75.0%	No construction, property acquisition or utility relocation costs. Increased operations and maintenance cost due to deteriorating road structure	50.0%	Low to moderate capital cost to construct cul-de-sac, including road widening for the circle and realignment of drainage infrastructure. Alternative routes would require improvements, resulting in a significant increase in future/companion construction costs. Full buyout of 4 properties. No operations or maintenance costs.	56.3%	Significant capital cost for road works as well as, cost for road widening and utility relocation. Slight increase in operations and maintenance cost.
<b>Total Points</b>	<b>41.00</b>		<b>44.00</b>		<b>53.00</b>	
<b>Total Weighted Score</b>	<b>53.8%</b>		<b>63.9%</b>		<b>82.2%</b>	
<b>RANK</b>	<b>3</b>		<b>2</b>		<b>1</b>	
<b>EVALUATION SUMMARY</b>	<b>Not Recommended</b>		<b>Not Recommended</b>		<b>Recommended</b>	

## 4.5 Preferred Solution

The preferred solution is to reopen and raise Safari Road (Alternative 3 – Raise the Road). This alternative best address the problem and opportunities while minimizing effects on the surrounding environment.

## 5.0 DESCRIPTION OF THE PREFERRED SOLUTION

The preferred solution described above was presented to review agencies and the public at PIC # 2 to obtain further comments and input prior to confirmation. Following confirmation, 30% preliminary design for the preferred solution was completed. The below sections describe the design criteria, considerations, and the refined preliminary design that will be carried forward into detail design.

### 5.1 Design Criteria

This section describes the key design criteria used to develop the preliminary design.

#### 5.1.1 Stormwater Management Criteria and Objectives

##### 5.1.1.1 CULVERT CROSSINGS

The preferred solution described above was presented to review agencies and the public at PIC # 2 to obtain further comments and input prior to confirmation. Following confirmation, 30% preliminary design for the preferred solution was completed. The below sections describe the design criteria, considerations, and the refined preliminary design that will be carried forward into detail design:

- 25-year design storm for culvert crossings.
- 100-year major system design storm.
- Freeboard Design Criteria: 1.0m from top of hydraulic grade line to edge of traveled lane.

##### 5.1.1.2 WATER QUANTITY AND FLOOD CONTROL

The objective of the stormwater management plan for Safari Road is to:

- Ensure no increased risk of flooding to downstream and upstream properties and/or infrastructure.
- Prevent flooding of the road under all storm events up to and including a 100-year storm.
- Control post-development peak flows to pre-development levels or better for 2, 5, 10, 25, 50, and 100-year storm events to the maximum extent possible.

### 5.1.1.3 WATER QUALITY

Water quality targets were selected to provide as much protection as possible for the receiving watercourse. As the wetland abuts the road in the current condition and provides significant habitat to various species, including SAR, no control can be completed in the wetland portion within the Study Area as space does not permit it. Outside the wetland limits, a maximum extents possible approach was taken to achieve as much quality control as possible.

### 5.1.2 Road Design Criteria

Transportation Association of Canada (TAC) standards were referenced to develop the road design criteria for sight stopping distances, road classifications, horizontal and vertical alignments, turning radii, and grading. The detailed breakdown of the road design criteria is provided in **Appendix 9-1**.

## 5.2 Roadway and Active Transportation

Reopening Safari Road will redistribute traffic within the overall area road network, particularly from parallel routes, and will result in reduced truck traffic along the current signed detour route that is Brock Road, Regional Road 97 and Kirkwall Road. From a road safety perspective, and given there are limited east-west cycling routes available around the Study Area, it is recommended that paved shoulders be implemented along Safari Road.

The proposed roadway design for the preferred solution includes raising the road up to 0.6m and a 3:1 slope with 2m paved shoulders to accommodate pedestrians and cyclists. The design of the roadway within the wetland area versus the area beyond the wetland differ slightly. Within the wetland area, a retaining wall approximately 750m in length and up to a maximum of 0.4m in height, will be implemented to minimize impacts on the surrounding wetland, maintain roadway stability, and reduce the overall footprint of the embankment. Outside the wetland area, the retaining wall is not required and a 3:1 slope will be maintained. See the typical cross-sections in Figure 5.1 and Figure 5.2 below. The preliminary design drawings are provided in **Appendix 9-2**.

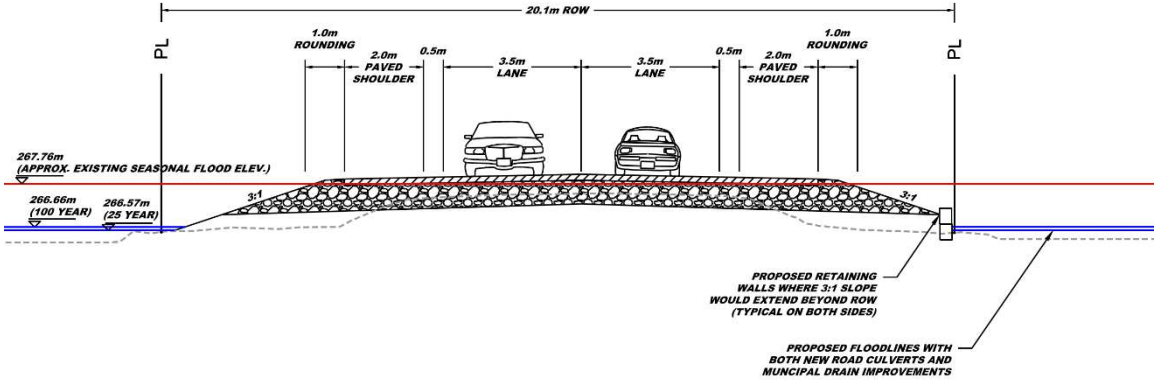


Figure 5.1 Cross-Section of Roadway Within the Wetland Area

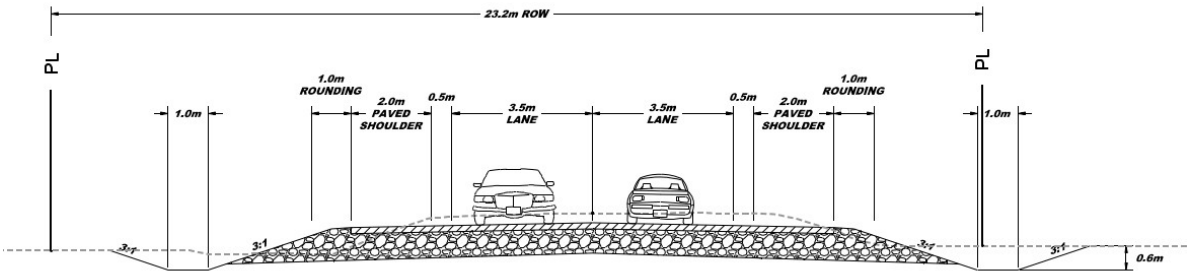


Figure 5.2 Cross-Section of Roadway Outside the Wetland Area

### 5.3 Road Base and Geotechnical Considerations

As Safari Road has been identified as a half-load road from March 1<sup>st</sup> to April 30<sup>th</sup>, the road base will be upgraded during construction to withstand full truck loads throughout the year.

A comprehensive geotechnical investigation during detailed design should be undertaken and focus on identifying the existing subgrade conditions and the extents of where additional subgrade stabilization will be required. Groundwater monitoring, through the installation of standpipes or piezometers, should also be done to capture high-water levels and evaluate whether drainage improvements or underdrain systems are required.

It is anticipated that the reconstruction of Safari Road may begin with the over-excavation of the existing roadway to a depth sufficient to remove all saturated and unstable subgrade materials, which could contribute to ongoing pavement structure failure. The unsuitable subgrade material should then be stripped out until a firm, competent base is reached. The over-excavated areas should then be rebuilt using appropriate granular fill materials placed in controlled lifts and compacted to restore adequate support. Additional subsurface stabilization measures, such as the installation of geogrids or geotextiles should be incorporated to improve load distribution, minimize future settlement, and reduce moisture-

related issues. With the stabilized platform in place, the standard road structure, including granular base and asphalt layers, can then be constructed on top to provide a durable, long-term pavement section.

### **5.3.1 Retaining Wall Considerations**

The proposed retaining wall within the wetland area is anticipated to be approximately 0.4m high and 750m in length. For this size retaining wall, several materials can be considered such as a cast-in-place concrete wall or armour stone. Retaining walls materials and its geotechnical considerations will be determined during detailed design.

## **5.4 Drainage and Stormwater Management**

### **5.4.1 Design of Proposed Features**

To improve stormwater conveyance and management, 1m wide flat-bottomed swales are proposed within the Study Area outside the wetland portion, as shown in Figure 5.2 above. These are proposed as enhanced swales to slow conveyance and promote infiltration. At this stage in the design, infiltration has not been quantified. Through the wetland area, the raised platform of the road does not permit the use of swales and runoff will sheet flow from the road to the wetland as it does in the existing condition.

New road crossing culverts have been designed at the western (CULV-6) and eastern (CULV- 1) limits of the Study Area where the watercourse crosses the road and a new culvert has been designed in the wetland portion, see Figure 3.6 and **Appendix 9-2** for preliminary design drawings. Through the wetland, a concrete box culvert (CULV-8) is embedded 0.3m below the permanent water elevation in the wetland, set by the elevation of the downstream private culvert (CULV-3) crossing proposed in the Municipal Drain Study. This culvert provides passage for fish and other aquatic species as well as flows from the wetland south of Safari Road. Additionally, four (4) eco passages are recommended through the wetland but are set higher than the permanent water elevation.

### **5.4.2 Proposed Stormwater Management Conditions**

Under the proposed conditions, it is recommended that the culvert CULV-1, CULV-6 and CULV-8 be replaced as detailed below in Table 5.1 as part of the Safari Road improvements. CULV-2 through CULV-5 are private culverts and are anticipated to be addressed through the Municipal Drain Study. CULV-7 is the existing culvert on Kirkwall Road and is outside the Study Area and not proposed to change.

Table 5.1 Proposed Conditions Road Crossing Culverts

Culvert ID	Size	Material	Length	Culvert Invert		Culvert Slope
	(mm)			U/S	D/S	
<b>CULV-1</b>	600	HDPE	12.33	266.83	266.71	0.97
<b>CULV-2</b>	600	HDPE	9.50	266.58	266.53	0.52
<b>CULV-3</b>	600	HDPE	11.20	266.35	266.28	0.62
<b>CULV-4</b>	600	HDPE	10.63	265.51	265.44	0.65
<b>CULV-5</b>	3x600	HDPE	17.03	264.75	264.73	0.11
<b>CULV-6</b>	3x600	HDPE	14.50	264.45	264.4	0.34
<b>CULV-8</b>	1200x2400	Concrete	20.1	266.38	266.3	0.39

The complete Stormwater Management Report contains further details on existing and proposed elevations and is provided in **Appendix 5**.

## 5.5 Safari Road Culvert Crossing Recommendations

The identified watercourse crossing Safari Road via CULV-6 (see Figure 3.6 and Figure 3.7 for reference) is geomorphologically stable, and the existing crossing is currently in good condition. The proposed works along Safari Road may necessitate the need for replacement of the existing crossing along the corridor.

Fluvial geomorphological considerations must be incorporated into the design of any proposed replacement watercourse crossing structures. This requirement is based on the recognition that structures that are poorly sited, misaligned relative to the channel, or undersized hydraulically, geomorphologically or ecologically may compromise the natural form and function of the watercourse and the aquatic habitat it supports.

The following sections outline considerations and recommendations for the siting, sizing, and orientation of the crossing structure at Safari Road. Approximately 590m downstream of the Safari Road crossing, the channel crosses Kirkwall Road through a concrete box culvert that has a span of approximately 3.5m and is 1m high. The channel conditions at this crossing are similar to the conditions at Safari Road. As such, the Kirkwall Road crossing is a suitable reference for the design considerations of Safari Road.

Detailed recommendations are provided in the complete Fluvial Geomorphology Assessment Report in **Appendix 7**.

### 5.5.1 Crossing Siting and Sizing

As the proposed works recommend replacing the existing culvert crossing (CULV-6), no changes to the crossing location are anticipated, however, several crossing width scenarios were considered including:

- Single span of the bankfull width (4m)
- Single span according to the reference crossing width at Kirkwall Road (3.5m)
- Three (3) culverts spanning the bankfull width (1.3m x 3 = 4m)
- Single span sized to 3 times the bankfull width (4m x 3 = 12m)

Three (3) 600mm diameter HDPE culverts are required to meet freeboard requirements for the 25-year design storm event for CULV-6. However, the Fluvial Geomorphology Assessment Report (**Appendix 7**) indicates that a minimum width of 4.0 m is more appropriate for this location. The specific sizing, configuration, and orientation of the new culvert will be refined during the detailed design to meet the hydraulic, geomorphologic, and any fishery requirements.

### 5.5.2 Crossing Materials

The replaced culvert should be either a CSP Arch culvert, or an open-footed or embedded box culvert with a defined low-flow channel along its entire length to maintain geomorphological processes and facilitate fish passage.

### 5.5.3 Crossing Orientation

The existing culverts are aligned perpendicularly to Safari Road as opposed to along the natural trend, or axis, of the watercourse. As such, the existing orientation reduces the intended (designed) hydraulic capacity during flood conditions, and therefore, it is recommended that consideration be given to reorienting the culverts along the natural axis of the channel corridor. Prioritizing alignment of the culverts with the watercourse as opposed to perpendicularly to the road would improve hydraulic performance during floods, allow for a more natural form and function of the channel in the immediate vicinity of the crossing, and reduce risks to road infrastructure and the need for excessive erosion protection.

Practically, the channel itself would be shortened slightly, allowing the creek to enter the crossing structure along a more natural alignment. Additionally, a minor loss in channel length would pose no risk to the structure or downstream channel. Downstream, the crossing at Kirkwall Road has been aligned with skew to the northeast rather than

perpendicularly crossing the road, which may serve as a reference for performance of the creek when aligned through the culvert.

## 5.6 Wildlife Passages

Wildlife passage will be provided by the equalization culvert (box culvert), as well as four (4) additional dry passages spaced no more than 150m apart within the central wetland area. Dry passages should target an openness ratio for mid-sized animals (>0.4 but no less than 0.1) and use of pre-fabricated semi-open passages (ACO KT500) or similar custom open/semi-open top passage designs should be considered to allow reduced passage size with sufficient openness to encourage use. Barriers to wildlife are required in association with passages to ensure they function as intended. Barriers should be targeted to, as a minimum, prevent turtles from defeating the barrier, with barrier parameters being 60cm above grade and 10-20cm below, or alternatives that serve the same function (e.g. proprietary wildlife barriers, custom solutions, etc.). Barriers should be installed along the central wetland limits with 25m extensions to ensure effectiveness, with curved ends.

## 5.7 Preliminary Cost Estimates and Timelines

### 5.7.1 Preliminary Construction Timelines

Construction timelines to implement the preferred solution will be determined based on capital budget and subject to Council approval.

### 5.7.2 Preliminary Cost Estimates

A high-level preliminary cost estimate has been prepared for the proposed Safari Road improvements. It is important to note that the construction cost estimate is based on the preliminary design and is subject to refinement during the detailed design phase. The preliminary cost estimate to complete the reconstruction of Safari Road (including variance, utility relocation, and property acquisition) is \$8,095,938, as shown in Table 5.2. A detailed breakdown of the estimate is provided in **Appendix 9-3**.

Table 5.2 Preliminary Cost Estimate

Item	Cost
<b>Traffic Control</b>	<b>\$200,000</b>
<b>Roadworks</b>	<b>\$4,295,650</b>
<i>Earth Excavation and Grading</i>	<i>\$804,000</i>

<i>Subgrade Stabilization</i>	\$155,250
<i>Granular 'A' (150mm depth)</i>	\$275,625
<i>Granular 'B' (450mm depth)</i>	\$843,413
<i>Granular 'M' Shoulder (100mm depth)</i>	\$20,213
<i>Asphalt - (150mm depth)</i>	\$1,676,250
<i>Tack coat</i>	\$29,400
<i>Retaining Wall (OPSD cast-in-place, 0.4m tall max.)</i>	\$220,000
<i>Ditch grading</i>	\$39,000
<i>Topsoil and Seed</i>	\$232,500
<b>Road Crossings and Eco-Passages</b>	<b>\$181,390</b>
<i>1.2m x 2.4m box culvert</i>	\$96,750
<i>630mm x 520mm Eco Passage</i>	\$64,000
<i>600mm dia.</i>	\$20,640
<b>Miscellaneous Construction Items</b> (includes: removals – guiderails, culverts, headwalls, tree clearing & grubbing, topsoil stripping, granular shoulder sealing, ESC measures, pavement markings & signage, driveway restoration, and remove/salvage new private signs and mailboxes)	<b>\$935,408</b>
<b>Subtotal</b>	<b>\$5,612,448</b>
Variance (20%)	\$1,122,490
<b>Total Construction Cost Estimate</b>	<b>\$6,734,938</b>
Utility Relocation Costs	\$219,500
Property Acquisition Costs	\$1,141,500
<b>Total Estimate</b>	<b>\$8,095,938</b>

## 6.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

### 6.1 Natural Environment Impacts

The following sections provide a preliminary assessment of the potential impacts of the preferred alternative, raised road profile, on the natural heritage features within the Study Area and suggest avoidance and operational constraints to mitigate these impacts.

Further ecological constraints and opportunities to be considered during detailed design are provided in the Natural Heritage Assessment Report in **Appendix 2** and briefly outlined below.

- Constraints - vegetation protection zones for permanent and intermittent streams, wetlands, fish habitat, woodlands, and significant woodlands; fish habitat; SAR wildlife and habitats; bats; Blanding's Turtle; and species of conservation concern.
- Opportunities – road ecology; wildlife passages and barriers; restoration and enhancement of vegetation protection zones; enhances surface water treatment; pollinator habitat/roadside vegetation; soil management; and invasive species management.

### **6.1.1 Impacts to Vegetation**

Potential direct impacts to terrestrial vegetation, as a component of construction of the preferred alternative, include complete removal through construction and grading activities, as well as vegetation clearing to support surveying and construction equipment access. Indirect impacts to woody vegetation along the periphery of construction areas may occur due to damage to roots, stems and branches through interaction with construction equipment. Excessive dust raised by construction activities may also negatively impact vegetation.

The preferred alternative will directly impact vegetation communities overlapping the 20m envelope beyond the ROW. This includes Deciduous Forest and Mixed Forest, Coniferous Cultural Plantation, Cultural Mineral Woodland. Mineral Cultural Thicket and Woodland, Hedgerows, Mineral Thicket Swamp, Swamp Maple Mineral Deciduous Swamp, Cattail Mineral Shallow Marsh, Agricultural Lands, and Residential Yards. Mineral Cultural Meadow make up a significant proportion of the impacted area. Notable large-diameter Maple, Oak, and Walnut trees occur within close proximity to the existing road and may be impacted.

Vegetation will be impacted by the proposed construction through clearing and removals associated with regrading, raising, or cutting the road elevation, as well as associated road widening, shoulder and cycling lane, slope grading, construction of the retaining wall, and replacement of culverts. The Deciduous Forest, Mixed Forest, and all the wetlands present are the most sensitive vegetation communities within the Study Area, so the focus will be on avoiding and minimizing impacts in these areas.

Mitigation measures include:

- Laydown, staging, access and other areas of temporary disturbance should be reduced as is possible and limited to only Mineral Cultural Meadow or Mineral Cultural Thicket habitats, as these have a high tolerance to disturbance and are candidate areas for ecologically restorative plantings.
- Revegetation of cleared areas should consider using non-invasive, native plant species with high wildlife value which will provide long-term ecological contributions to the local terrestrial system.
- European Common Reed and other invasive species are present throughout the Study Area. Prior to construction efforts should be made to not spread these species. The Clean Equipment Protocol for Industry should be provided to contractors at the implementation stage to assist with these efforts.
- Control of invasive species, in particular European Common Reed, within the ROW as a component of construction would also provide long-term benefit, as these species causes significant negative ecological impacts and can impact infrastructure as well.
- The impacts of dust on the surrounding ecosystem can be mitigated by moistening dry soils with water as required during construction and adhering to erosion and sediment management measures.

#### 6.1.1.1 TREES

Based on the preliminary limit of grading, 254 trees would require removal. The most affected species include American Basswood (56 trees), Sugar Maple (54 trees), Black Walnut (30 trees), Bur Oak (14 trees), Freeman Maple (13 trees), Scot Pine (13 trees) and Butternut Hickory (10 trees). Fewer than 10 trees of other species would require removal. These impacts should be reassessed following detailed design.

#### 6.1.2 Impacts to Wildlife and Wildlife Habitat

Potential impacts to wildlife and their habitats during construction can occur through direct injury and habitat loss as well as indirect impacts such as avoidance of areas of active construction and resulting modification to established daily movement patterns. Over the longer term, renewed and increased use of the roadway (truck route) may lead to increased wildlife road mortality without mitigation measures. The design of the road also presents certain risks to wildlife. The single retaining wall design may trap smaller wildlife that enter the roadway, either from the opposite, open shoulder or areas outside of the wetland. The unconfined 3:1 granular shoulder has strong potential to attract nesting turtles, including

SAR, with an increased likelihood of road mortality specifically to reproductive female turtles, which is a very significant impact.

Vegetation clearing has the potential to impact breeding birds through disturbance of nesting birds and destruction of nests, eggs and young. Construction activities have the potential to indirectly affect all other wildlife within the surrounding landscape through vibration along with light and noise pollution. This disturbance will be temporary, and it is anticipated that local wildlife is accustomed to human disturbances.

Construction activities required to implement the preferred solution will impact terrestrial wildlife habitats and have the potential to impact wildlife. The following measures are recommended to reduce these impacts:

- To prevent incidental impacts to nesting birds and active bat maternity colonies, woody vegetation clearing should be restricted to outside of the bat maternity and migratory bird nesting seasons, generally April 1 through October 31. If vegetation clearing must occur within this window, a qualified ecological professional should be retained to ensure no birds, active bird nests, bats or SAR are incidentally harmed by vegetation removals.
- Grading activities should be limited to the active season for wildlife if practical, typically May 1 through September 30 to prevent entombment within burrows, tunnels or other subterranean features.
- Erosion and Sediment Control (ESC) fencing shall be designed and installed with wildlife barrier function in mind where applicable, such as wetland areas. This will entail installing an additional layer of geotextile on the outside of the existing ESC fencing to make the fencing un-climbable by wildlife. This additional geotextile will be designed and installed following the Reptile and Amphibian Exclusion Fencing best management practices from the MECP Species at Risk Branch. Erosion and sediment control fencing shall NOT contain nylon meshing.
- Limiting construction activities to daylight hours will reduce the impacts to behaviour changes (avoidance) of local wildlife in response to the project.
- Wildlife passages, especially in the vicinity of the wetlands, along with robust wildlife barriers (fencing, block wall, etc.) should be incorporated into the road design to mitigate against increased road mortality related to re-opening of Safari Road.

### **6.1.3 Impacts to Aquatic Habitat and Communities**

Potential impacts to aquatic habitats and the communities can be identified as: a direct loss of habitat; direct injury to fish due to construction; or indirect changes to the aquatic habitat

that may occur in the long term and/or over a larger area. In general, road reconstruction and surface water management are likely to cause impacts to the surrounding riparian vegetation, changes to the aquatic vegetation, changes to existing slopes and surface drainage, localized impacts to the streambed and fish habitat in areas of direct disturbance, and potentially more widespread impacts as a result of sedimentation and thermal changes.

Vegetation clearing exposes soils and increases the likelihood of erosion and release of sediments into nearby water features. Release of sediment into the wetland or tributary could have significant detrimental impacts to water quality and fish habitats. Sediments that enter a watercourse can increase turbidity, abrade fish gill membranes (leading to physical stress), cover spawning areas and incubating juvenile fish, cover/smother mussel beds, decrease food production, and smother eggs in nests. Removing riparian vegetation can also decrease watercourse shading, thereby potentially affecting the water temperature of surface flows, and can limit the natural shedding of organic materials which may flow into the nearby watercourse which may provide food, cover, and nutrients to the aquatic ecosystems.

Excavation will be required to construct the road, culvert, and retaining walls. Grading will be required following road, culvert, and retaining wall construction to shape the new embankments and ditches. Both excavation and grading activities expose soils and increase the likelihood of erosion and release of sediments into the nearby water features. They also change the shape of the land, which affects slopes and drainage and require the use of industrial equipment. Industrial equipment accessing surface water drainage paths may release deleterious materials such as debris, oil, fuel, and grease that could be conveyed into the nearby watercourse.

The new footprint of the raised road profile and paved shoulders will cover over existing fish habitat presently provided by the flooded roadbed and gravel shoulders in the wetland area. This will permanently remove the direct fish habitat in the footprint. In the current condition, the flooded granular shoulders are providing nursery/rearing habitat for young fish, and by raising the road and paving the shoulders, this habitat will be eliminated. It is unlikely this habitat is limited in the large wetland area beyond the existing flooded road. Lastly, unwatering of stormwater may be required during road construction. The resulting effluent will likely be discharged to the surrounding environment, ultimately entering adjacent creek or wetland and have potential to cause sedimentation and erosion in the receiving waterbodies. Considering the evidence of groundwater inputs in the wetland and tributary, dewatering of groundwater may be required during excavation for culvert replacement/extensions. This has potential to impact the water balance in the wetland, groundwater upwellings in the nearby creek, and the groundwater recharge area.

The following mitigation measures are recommended:

- No in-water work is permitted below the high-water mark of the Fairchild Creek Tributary between March 15 to June 30 to protect fish during sensitive life stages. This in-water restriction should be applied to all fish-bearing water features in the Study Area which includes any wetted portion of the marsh or hydrologically connected roadside ditches.
- Vegetation clearing impacts should be mitigated by access limitations and Erosion and Sediment Control (ESC) measures implemented prior to and maintained during the construction phases to prevent entry of sediment into the creek or wetland (creek headwaters).
- Design and implement ESCs to contain/isolate the construction zone, manage site drainage and prevent erosion of exposed soils and migration of sediment to adjacent watercourses/waterbodies during all phases of the project.
- All work below the high-water mark shall be completed in isolation of the open watercourse to ensure sediment generated during construction activities are contained to the worksite. Cofferdams are to be constructed using clean materials, free of particulate matter, to isolate the worksite, following the guidance in the DFO Interim standard: In-water site isolation.
- Work inside the isolated areas shall be conducted in the dry, as per the noted DFO standard. If unwatering activities are required within an isolated work area, screens should be placed at the end of all pump intakes, in accordance with DFO Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater, to prevent the potential entrainment of aquatic or semi-aquatic animals during water extraction.
- Unwatering effluent will be treated to remove suspended sediments prior to entering the creek or wetland. Treated water will be released back into the system in a manner that prevents erosion and sediment inputs in the receiving waterbody.
- All activities will be controlled to prevent the entry of petroleum products, debris, rubble, concrete, or other deleterious substances into the water. Vehicle refueling and maintenance will be conducted a minimum of 30 m from any watercourse to avoid potential impacts.
- Should any deleterious substances enter the watercourse or wetland, including sediment, this must be reported to the MECP Spills Action Centre (1-800-268-6060) and DFO Fish and Fish Habitat Protection Program (1-855-852-8320 or [FisheriesProtection@dfo-mpo.gc.ca](mailto:FisheriesProtection@dfo-mpo.gc.ca)).

- All disturbed areas shall be stabilized and restored, with native seed mixes, immediately upon completion of grading.
- Riparian vegetation removal should be kept to a minimum, as required for construction and access only. Vegetation scheduled for removal should have proper clearing techniques implemented to protect and retain the surrounding vegetation and root masses will be left in place for bank stabilization, where feasible.
- Restoration plan – all exposed soils should be immediately stabilized with a suitable seed and cover mix, and riparian areas should be replanted with native trees and shrubs to provide/replace stream shading.
- All ESC measures should be inspected weekly and maintained to ensure they are functioning as intended throughout the construction period and until such time that disturbed areas have stabilized.
- Travel paths, stockpile areas and staging areas should be pre-planned and followed.
- Mitigation measures should be updated and refined during the detailed design phase of the project.

#### **6.1.4 Species at Risk and Species of Conservation Concern**

Four (4) SAR bird species were noted to be displaying evidence of breeding within the Study Area, with a fifth (Eastern Whip-poor-will) not actively surveyed for but has been recorded by the Natural Heritage Information Center within the Study Area. Based on anticipated legislative changes, only Eastern Whip-poor-will will receive habitat protection when construction is to occur, via the federal SARA. A permit under the SARA for impacts to critical habitat of Eastern Whip-poor-will may be required to support the Project.

Candidate habitat for SAR bats (treed vegetation communities) is present within the Study Area, as are individual trees over 10 m DBH that could provide habitat. Further study is required to determine the extent of protected habitat proposed to be impacted by the proposed works. It is anticipated that the impacts will be able to be registered under the SCA, supported by a mitigation plan.

The SAR-specific mitigation measures are recommended:

- Vegetation clearing timing windows (no clearing between April 1 through October 31) will serve to protect against incidental impacts to SAR/SC species that utilize vegetation, aquatic or terrestrial habitats for important life history traits, such as nesting, feeding and rearing of young including, birds, bats and insects.

- Education of construction staff regarding the potential of encountering wildlife, including turtles and snakes, as well as appropriate actions is an effective mitigation against unintended impacts to wildlife.
- Location of wildlife exclusion fencing during construction should be considered at the detailed design stage for the project, especially near the wetland areas.
- Wildlife passages, especially in the vicinity of the wetlands, along with robust wildlife barriers (fencing, block wall, etc.) should be incorporated into the road design to mitigate against increased road mortality related to re-opening of Safari Road.

A post-construction restoration plan, including implementation of any habitat mitigation measures for SAR impacted, should be prepared and included as part of the final design. This plan should include revegetation of roadsides with native species, addition of habitats to compensate for those lost and any other measure required to support required permitting.

#### 6.1.4.1 ECOLOGICAL LINKAGES

Short-term impacts, as a result of the project, on the ecological linkages in the Study Area are associated with construction activities. With the application of the above noted mitigation measures to protect wildlife during construction, these impacts are not anticipated to significantly alter the function of the ecological linkages.

The long-term impacts of the proposed works include increased road mortality of wildlife due to an increase in vehicle traffic and minor increase in fragmentation of woodlands and wetlands due to the increase in the width of the road. Wildlife passages as proposed are expected to reduce the negative impacts of the re-opening of Safari Road on ecological linkage function.

## 6.2 Drainage and Stormwater Management Impacts

The proposed stormwater management conditions, as described in Section 5.3, were evaluated to determine the impact of the proposed Safari Road improvements and surrounding properties. The results demonstrate that impervious area increased from 1.49% of the watershed to 1.91% and the total flows increased by 0.09m<sup>3</sup>/s and 0.19m<sup>3</sup>/s for the 25-year and 100-year storms, respectively.

Additionally, the proposed stormwater management conditions were evaluated to determine if the design is adequate to improve Safari Road's resiliency to flooding. The results demonstrate that the increased impervious surface from the proposed Safari Road improvements are not impactful in the 25-year or 100-year events. Results also showed that

with the proposed improvements, there is no significant change to water levels or flows to private property as the hydraulic grade lines in each storm event remain unchanged or lowered at all culvert crossings, including the private property crossings.

Results indicate that the freeboard requirements for all Safari Road crossing culverts are met. Downstream of the Study Area, the large 3000x1200 box culvert on Kirkwall Road realizes improved freeboard from 0.87m to 0.94m. Critically, all culvert crossings on Safari Road and the downstream culvert on Kirkwall Road the road do not top and maintain some freeboard during the 100-year storm event.

Additionally, the results show that with the proposed Safari Road improvements there is no water level impact to private property as the hydraulic grade lines in each storm event remain unchanged or lowered at all culvert crossings, including the private property crossings. Through the wetland, CULV-8, acts as an equalization culvert between the wetland north and south of Safari Road. This culvert has been upsized for eco-passage needs and the road raised to meet freeboard requirements in the 25-year storm. These changes do not impact the seasonal water fluctuations of the wetland.

#### 6.2.1.1 HYDROLOGIC AND HYDRAULIC IMPACTS TO THE WETLAND

The proposed cross-section through the wetland occupies approximately 7,260m<sup>2</sup> of additional area beyond the existing road cross-section. In the 25-year storm, this equates to a loss of storage of 170m<sup>3</sup> and 532m<sup>3</sup> in the 100-year storm. Based on available mapping/terrain data, both the additional area of wetland that will be disturbed and the storage loss is considered “small” relative to the overall size of the wetland.

Nevertheless, the exact limits of the wetland will be “staked” in the field during the detailed design stage, so that a precise determination can be made as to the extent of wetland that will be disturbed. This is a requirement of the GRCA and will be used to determine appropriate wetland mitigation as part of their construction permitting requirements.

Further, the scope of the impacts noted above are based on hydrologic and hydraulic analysis that assumes the proposed Municipal Drain Improvements downstream of Safari Road are implemented. With reference to Figure 5.1 it can be seen that artificial blockages downstream of Safari Road have a significant impact on the flooding of the road, this is detailed in the Municipal Drain Study report prepared by Robinson Consultants, dated March 25, 2025.

However, if the Municipal Drain works are not implemented, the preferred solution being recommended can still be constructed with minimal additional impacts to the wetland. This can be achieved by elevating the road approximately 1.0m higher than has been

contemplated in this report. This would necessitate constructing longer and higher retaining walls along the limit of the road allowance to prevent additional intrusion into the wetland.

### 6.3 Groundwater

As the proposed works along Safari Road do not include significant groundwater dewatering or changes to permeability, it is anticipated that the preferred solution will have no impact to nearby groundwater wells.

### 6.4 Climate Change

Project impacts and resiliency to climate change were taken into consideration during the Study and will be carried forward into design. Considering how a project contributes to climate change, through greenhouse gas emissions or its effects on the natural environment is important to the planning process as it allows proponents to consider climate mitigation measures that will avoid and/or minimize such effects. Furthermore, considering how climate change may affect a project is critical to the planning process as it enables proponents to make informed decisions to increase infrastructure resilience and adapt to changing environmental conditions.

Raising Safari Road will help alleviate flooding, make the road more resilient to future flooding, thus supporting climate change resiliency. The addition of paved shoulders also promotes active transportation. Reopening Safari Road also allows for more direct travel routes, mitigating the need for detours, therefore reducing travel time and greenhouse gas emissions from vehicles.

### 6.5 Archaeological and Cultural Heritage Resources

#### 6.5.1 Impacts to Archaeological Resources

The Stage 1AA determined archaeological potential within the Study Area. The following recommendations were provided:

- As mentioned in 3.4.1, a Stage 2AA was recommended and must be conducted through a test pit and pedestrian survey at 5m intervals, prior to any proposed construction activities and proposed impacts.
- If the proposed work extends beyond the current Study Area, further archaeological assessments must be undertaken to determine the archaeological potential of the surrounding lands.

The complete Stage 1 AA report is provided in **Appendix 3**.

**6.5.2 Impacts to Built Heritage Resources and Cultural Heritage Landscapes**

As noted in Section 3.4.2, a stone landscape feature was identified along the northeast edge on 1267 Valens Road. While this landscape feature is present and may be considered historical, it is at the very end of the study area, and the City’s heritage staff feel that retention in situ may be appropriate and feasible. Should the feature need to be removed to support the work in the Study Area, the City’s heritage staff has sufficiently documented the feature.

Based on the preferred solution, no other impacts are anticipated to the four (4) Inventoried Properties identified within the Study Area and the CHVI of the adjacent cultural heritage resources will be conserved.

**6.6 Socio-Economic Environment**

**6.6.1 Property Requirements and Access Impacts**

As shown in the preliminary design drawings in **Appendix 9**, some property frontage impacts are anticipated to accommodate the 3:1 slope and grading that extends beyond the existing ROW in some areas along Safari Road. Seven (7) properties are anticipated to be impacted with an estimated total of 11,415m<sup>2</sup> of property required, see Table 6.1. This will be further refined during detailed design. Additionally, nine (9) properties may have access impacts, however it is anticipated that their driveways, including culverts, will be raised to match the new road profile elevation.

Table 6.1 Property Impacts

Address	Location	Area Impacted (m <sup>2</sup> )
PIN 17537-0042	South Side	4,055
1811 Safari Road	North Side	2,170
1665 Safari Road	North Side	1,042
1678 Safari Road	South Side	100
1267 Valens Road	South Side	1,980
PIN 17537-0042	North Side	1,096
1359 Valens Rd	North Side	972
	<b>Total</b>	<b>11,415</b>

Of note, the Ministry of Infrastructure (MOI) owns 2 parcels of Crown land, PIN 17537-0042 and PIN 17537-0016, within the Study Area, see Figure 6.1 below.

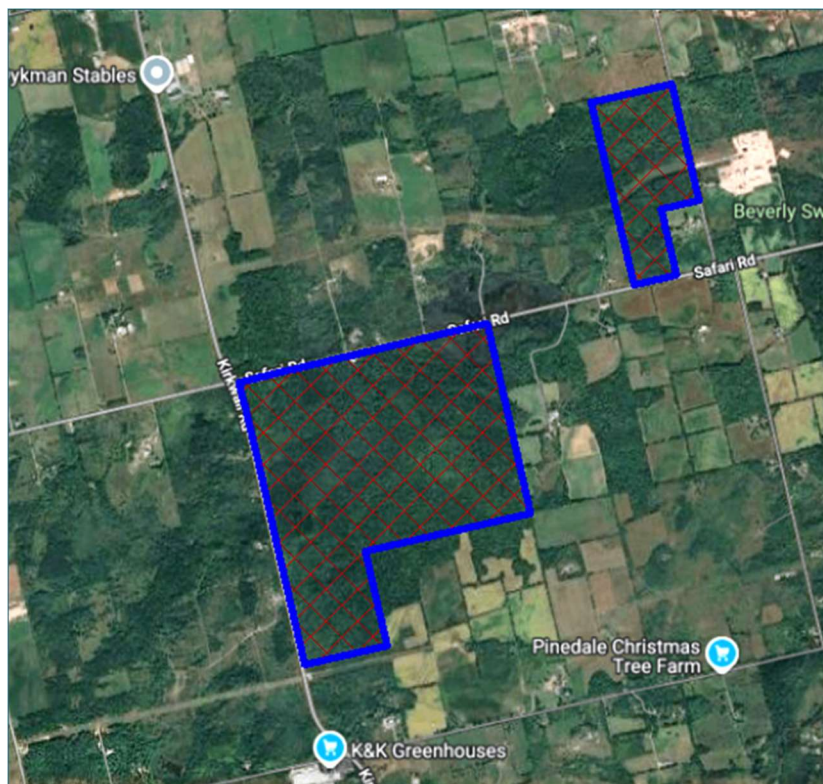


Figure 6.1 Lands Owned by Ministry of Infrastructure

### 6.6.2 Air Quality

With the improvement of active transportation facilities and connectivity to recreational trails, it is anticipated that the proposed works will promote multi-modal transportation and ideally, reduce the number of cars on the road, thus reducing greenhouse gas emissions and improving air quality.

### 6.6.3 Construction Dust, Noise, Vibration, and Traffic

Since Safari Road is adjacent to residential areas, the following identified potential impacts and mitigation measures will be considered during construction:

- Noise and vibration from construction activities and machinery may occur. Increased noise and vibration will be mitigated by planning the working hours following local noise bylaws, and construction machinery and heavy vehicles will be in compliance with source sound limits with local bylaws.
- The City will consider the possibility of restricting any lane or road closures hours during peak travel times (e.g., rush hour) for adjacent roadways, to minimize impact on traffic overall.

- Residential areas are located adjacent to the construction area. The Contractors will be made aware of this and are to exercise caution for all construction vehicle movements in the area.
- It is recommended that best management practices be followed during construction to mitigate diesel emissions from the truck and equipment operations, including:
  - › Proper maintenance and operation of engines and exhaust systems of fuel-burning equipment and the use of newer machinery that meets more stringent air emissions standards or retrofit older diesel engines with abatement technologies.
- Loads on haul trucks are to be covered.
- Burning of waste materials will be prohibited.

## 6.7 Servicing, Utilities, and Facilities

### 6.7.1 Impacts to Third-Party Utilities

The existing Bell and Hydro One utility poles within the Study Area will require relocation to outside the clear zone.

## 6.8 Cumulative Effects

### Cumulative Effects of Adjacent Construction

While no construction projects are currently occurring immediately surrounding the Study Area, concurrent with the Safari Road EA is the Municipal Drain Study which has potential to impact the natural heritage features and functions in the Study Area. Raising the road out of the wetted marsh will divide the wetland habitat, but the series of wildlife passages and/or culverts with guiding barrier will provide connectivity under the road. The construction of the road and drainage projects will result in cumulative effects to the surface flows in the Study Area. These impacts should be considered at the overall land use and planning level.

Based on the natural heritage features and functions identified within the Study Area and the implementation of the described mitigation measures, the preferred alternative will have minor negative impacts to the Natural Heritage System within the Study Area.

## 7.0 CONSULTATION PROCESS

Schedule 'B' EA projects are subject to Phases 1 and 2 of the Class EA planning process, in accordance with the Municipal Class Environmental Assessment (October 2000, amended

in 2007, 2011, 2015, 2023, and 2024). As such, extensive public and technical agency consultation played a key role in developing this Study's recommendations. A summary of the consultation process is provided in the sections below.

## 7.1 Consultation Approach

Schedule 'B' studies are subject to Phases 1 and 2 of the Class EA process, in accordance with the Municipal Class Environmental Assessment (October 2000, amended in 2007, 2011, 2015, 2023, 2024). As such, extensive public and technical agency consultation plays a key role in developing the Study recommendations. Per the MCEA, notification to the public, government agencies, key interested parties, and Indigenous Nations was provided in advance of key consultation opportunities.

### 7.1.1 Study Contact List

Various government agencies, authorities, utility companies, interest groups, and Indigenous Nations were informed of the Class EA Study commencement and Public Information Centres (PICs), through direct email. A brief overview of interested parties included in our Study Contact List is provided in Table 7.1 below. A complete list of interested parties who were contacted is provided in **Appendix 10-1**.

Table 7.1 Study Contact List

Study Contact List	
Provincial & Federal Agencies	<ul style="list-style-type: none"> <li>• Ministry of Natural Resources and Forestry</li> <li>• Ministry of Environment, Conservation and Parks</li> <li>• Ministry of Citizenship and Multiculturalism</li> </ul>
Conservation Agencies	<ul style="list-style-type: none"> <li>• Grand River Conservation Authority</li> <li>• Conservation Hamilton</li> </ul>
City of Hamilton Departments	<ul style="list-style-type: none"> <li>• Hamilton Water</li> <li>• Transportation Engineering</li> <li>• Transportation Planning</li> <li>• Traffic Operations</li> <li>• Divisional Project Services</li> <li>• Roadway Safety</li> <li>• Infrastructure Renewal</li> <li>• Infrastructure Planning</li> <li>• Design Services</li> <li>• Natural Heritage</li> <li>• Cultural Heritage</li> <li>• Capital Planning</li> <li>• Integrated Active Transportation</li> <li>• Water and Wastewater Planning &amp; Capital</li> <li>• Stormwater Operations</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Hydro One Networks Inc.</li> <li>• Transportation Canada</li> <li>• Infrastructure Ontario</li> </ul>
Other Interest Parties	<ul style="list-style-type: none"> <li>• Canada Post</li> </ul>
Indigenous Nations	<ul style="list-style-type: none"> <li>• Haudenosaunee Development Institute / Confederacy of Chiefs Council (HDI)</li> <li>• Mississaugas of the Credit First Nation (MCFN)</li> <li>• Six Nations of the Grand River (SNGR)</li> <li>• Metis Nation of Ontario</li> <li>• Huron-Wendat Nation</li> </ul>

### 7.1.2 Study Notification

Residents within and adjacent to the Study Area received direct mailings of all notices, while members of the general public were invited to participate in the Study through notices published in the newspaper and project website. Residents who asked to be added to the

project contact list were also notified by email if they provided their contact information. Table 7.2 below provides a summary of notifications published and distribution methods used throughout the duration of this Study. Copies of the notices distributed are provided in **Appendix 10-2**.

Table 7.2 Summary of Study Notification

Notice	Description	Date Notice Published	Distribution/Publication Methods
Notice of Study Commencement & Public Information Centre #1	The notice provided an introduction to the Study including the purpose of the EA. The notice also provided details of PIC #1 including the date and location the PIC is being held and the purpose of the PIC. The notice included contact information and where the public can find additional project information.	August 30, 2024	<ul style="list-style-type: none"> <li>• Posted to project website on August 23, 2024</li> <li>• Direct mailing to residents within the Study Area on August 21, 2024</li> <li>• Emailed to Study Contact List and Indigenous Nations on August 21, 2024</li> <li>• Published in the Hamilton Spectator on August 30, 2024 and September 6, 2024</li> <li>• Posted to social media on September 3, 2024 and September 9, 2024</li> </ul>
Notice of Public Information Centre # 2	The notice provided details of PIC #2 including the purposes, date, time, and location. The notice included contact information and where the public can find additional project information.	August 27, 2025	<ul style="list-style-type: none"> <li>• Posted to project website on August 27, 2025</li> <li>• Direct mailing to residents within the Study Area on August 21, 2024</li> <li>• Emailed to Study Contact List and Indigenous Nations on August 27, 2025</li> <li>• Published in the Hamilton Spectator on September 5, 2025 and September 12, 2025</li> <li>• Posted to social media on September 3, 2024 and September 9, 2024</li> </ul>
Notice of Study of Completion	Forthcoming	Forthcoming	Forthcoming

## 7.2 Public Consultation

Key opportunities for residents and general public input to the study included two (2) PICs, two (2) online information packages, and online comment forms on the project website as described below. Although the Schedule 'B' MCEA process requires only one PIC to be held during Phase 2, an extra PIC was held during Phase 1 to ensure the project team received as much community-based information as possible before developing alternative solutions. The PICs invited residents to learn about the Study, provide feedback, and ask questions.

After each PIC, a summary report was prepared highlighting the purpose of the PIC, the format in which they took place, materials presented, and comments received. Summary reports for PIC #1 and PIC #2 are available in **Appendix 10-3**.

### 7.2.1 Public Information Centre #1

The first PIC was held on September 10, 2024, from 6:00pm to 8:00pm at the Valens Community Centre. The purpose of the first PIC was to gather input and feedback from the local community and provide an overview of the Study. The format of the PIC was an informal open house, with materials pertaining to the Study displayed for the public to view. Members of the project team, which included staff from the City and RVA, were present to discuss the projects and concerns brought forward by the attendees.

Attendees were asked to sign-in upon arrival at the PIC. Based on the information provided on the sign-in sheet, a total of 23 individuals attended the PIC. Meeting attendees were encouraged to fill out the questionnaire and/or general comment form and provide comments and feedback on the materials presented. In total, 8 attendees filled in a comment form in-person. Following the PIC, display boards and comment forms were posted to the project webpage and made available for comments and feedback until September 25, 2024, so those who were unable to attend the PIC in-person could still participate in the Study and provide comments. A total of 11 responses were submitted using the online comment form. One (1) individual also provided comments via email. A summary of the comments received in-person and online is provided in Table 7.3. All comments are also available in **Appendix 10-3-1**.

Table 7.3 Summary of Comments Received from PIC #1

Topic of Comment Received	Comment Summary	Consideration of Comments in Class EA
Potential Cultural and Archaeological Resources/Value within Study Area.	<p>Participants expressed concerns regarding cultural and archaeological resources within the Study Area:</p> <ul style="list-style-type: none"> <li>The Study Area is part of the edge of Iroquoian villages and burials that occupied the Drumlins and surrounding area. The area specifically in this study does appear to be in the area of a smaller drumlin which provided raw materials for pottery and such. As such it would be expected that an archaeological assessment will be completed.</li> <li>The area in general could potentially be one of the villages that LaSalle visited, meeting the physical description of the swampiness of the area. The drumlins themselves could be considered a natural heritage area.</li> </ul>	<ul style="list-style-type: none"> <li>The Project Team conducted a Stage 1 AA to determine potential archaeological resources within the Study Area.</li> </ul>
Natural Environment within Study Area	<p>The following Natural Environment comments were provided:</p> <ul style="list-style-type: none"> <li>Technical studies should be increased in scope as to determine source contaminants that might be found somewhere.</li> <li>Study areas should also consider what is connected to the overall ecosystems by land water and air. As what is done one area can affect another area some at longer distances away.</li> <li>Repeated flooding of an area sends a message that the road may be inappropriately located. The context for this section of Safari Road is the nationally acclaimed Beverly Swamp wetland complex. The additional context is rapidly advancing climate change which in this part of Ontario includes extreme rainfall, as well as increasingly difficulties for many species of wildlife. A particular concern in wetlands is turtle habitat and survivability.</li> <li>The constraints focus on transportation vs this area's unique relevance to biodiversity protection and flood storage. The road was formerly a site of extreme levels of wildlife roadkill seasonally.</li> <li>Raising the road without providing tunnels or passageways could prove problematic- --see Coyotes drive turtle problem.</li> </ul>	<ul style="list-style-type: none"> <li>A comprehensive Natural Heritage Assessment and Tree Inventory was completed as part of the EA to inventory the ecosystem and natural habitat within the Study Area.</li> <li>A Fluvial Geomorphology Assessment was completed as part of the EA. Watercourses in the area and where the watercourse crosses the road were also examined.</li> </ul>
Future Development	<p>Participants raised concerns regarding Safari Road's current flooding issues and future road improvements:</p> <ul style="list-style-type: none"> <li>For flooding issues, the whole area should be considered, and development should be limited in the area due to the significant historical native villages and burials and the drumlins in the surrounding area.</li> <li>Improvements should not be meant to support expansion of development in the area. Housing development should be limited, and existing agriculture should be supported.</li> </ul>	<ul style="list-style-type: none"> <li>These comments were taken into consideration when the evaluation of alternative solutions was developed.</li> </ul>
Potential Safari Road Closure	<p>Many supported the idea of road closure for Safari Road and some even considered keeping the road opened:</p> <ul style="list-style-type: none"> <li>A resident noted that they would prefer Safari Road remain closed to traffic.</li> <li>Another resident noted that alternative solutions must include closure of parts of or all of Safari Road.</li> <li>The road should be eliminated as a through road. The road has not been functioning as a through road for several years.</li> <li>Closure of Safari Road has been redirecting traffic to Concession 8 West and this road is not suitable to handle heavy traffic.</li> <li>Another and more serious problem caused by this road closure is the delay of emergency services having to detour around the closure adding critical time to their responding to an emergency.</li> <li>Another resident recommends keeping Safari Road closed due to the biodiversity in the area. If the road profile is raised, a bridge or underpass should be considered to allow for wildlife crossings.</li> <li>Several other residents also noted they would like to see Safari Road reopened as this causes accessibility issues to local residents. It is creating confusion for African Lion Safari visitors, limiting school bus routes for children, and delaying emergency vehicle response times.</li> </ul>	<ul style="list-style-type: none"> <li>These comments regarding the potential closure of Safari Road were taken into consideration when developing alternative solutions and refining the evaluation criteria.</li> </ul>

Truck Route		
Evaluation Criteria	<p>Requested more information SAR, climate change, and flooding in the evaluation criteria</p> <ul style="list-style-type: none"> <li>• The Study should evaluate the benefits to SAR if Safari Road is permanently closed.</li> <li>• The evaluation criteria need to include both a climate change/flood water storage component and a biodiversity component.</li> </ul>	<ul style="list-style-type: none"> <li>• The Project Team considered potential impacts to SAR as part of the evaluation of alternative solutions.</li> <li>• The evaluation criteria included potential positive/negative impacts to climate change.</li> </ul>
Drainage & Flooding Issues	<p>The following comments expressed concerns with the current flooding issues caused by the wetlands and blocked culverts:</p> <ul style="list-style-type: none"> <li>• The wetlands' proper and normal flow are restricted and stopped all together. Clearing the blockage and restoring the normal flow of the water will clear up the issue with the flooded road.</li> <li>• Several residents noted that the easiest way to solve flooding issues is by fixing the blocked culvert. This should resume the natural flow of water.</li> </ul>	<ul style="list-style-type: none"> <li>• The blockage of the culvert on private property is being addressed through the City's Municipal Drainage Study.</li> </ul>
Purpose of Safari Road Class EA Study	<p>Many participants expressed concerns about the Class EA's approach and if this Study is necessary:</p> <ul style="list-style-type: none"> <li>• Many residents wondered why this Study was initiated if the drainage and flooding issues was expected to be resolved through the Municipal Drainage Study the City is currently undertaking.</li> <li>• Many residents feel this Study is not the best use of City resources.</li> </ul>	<ul style="list-style-type: none"> <li>• The purpose of this Study was to address flooding issues from the ROW perspective and implement additional operational and safety improvements to Safari Road.</li> </ul>

## 7.2.2 Public Information Centre #2

A second PIC was held on September 16, 2025, from 6:00pm to 8:00pm at the Valens Community Centre. The purpose of this PIC was to present the inventory of existing conditions, alternative solutions, evaluation criteria, the evaluation of alternative solutions, and the preliminary recommended solution. The format of the PIC was an informal open house with materials pertaining to the Study on display for the public to view. Members of the project team, which included staff from the City and RVA, were present to discuss the projects and concerns brought forward by the attendees.

Attendees were asked to sign-in upon arrival at the PIC. Based on the information provided on the sign-in sheet, a total of 27 individuals attended the PIC. Meeting attendees were encouraged to fill out the questionnaire and/or general comment form and provide comments and feedback on the materials presented. In total, 7 attendees filled in a comment form in-person. Following the PIC, display boards and comment forms were posted to the project webpage and made available for comments and feedback until September 30, 2025, so those who were unable to attend the PIC in-person could still participate in the Study and provide comments. A total of 69 responses were submitted using the online comment form and 7 individuals also provided comments via email. A summary of the comments received in-person and online is provided in Table 7.4. All comments are also available in **Appendix 10-3-2**.

### 7.2.2.1 SURVEY RESULTS

Out of the 83 individuals that submitted responses, 9 were residents living within the Study Area and 61 were residents living outside the Study Area, as shown in Figure 7.1.

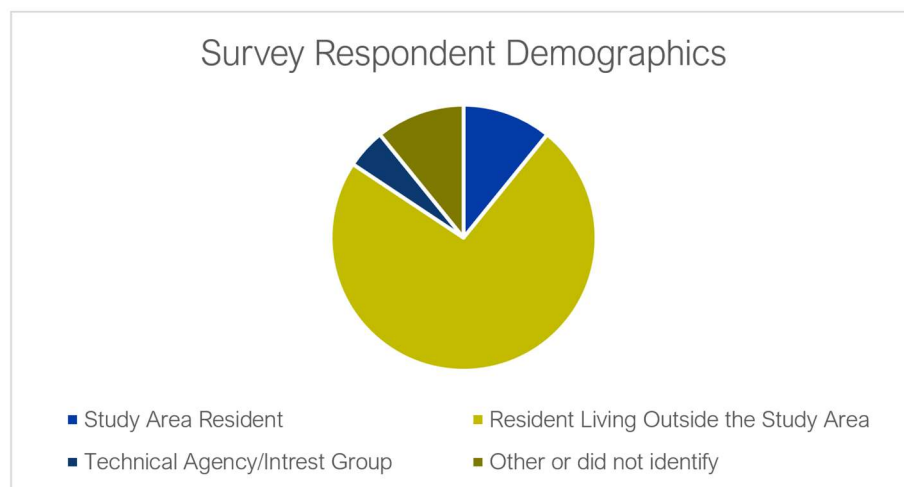


Figure 7.1 Survey Demographics

Amongst those that live within the Study Area, 33% expressed support for re-opening and raising Safari Road while 44% prefer to permanently close Safari Road, as shown in Figure 7.2, 22% of respondents living within the Study Area did not express their support, or lack of, for the recommended solution.

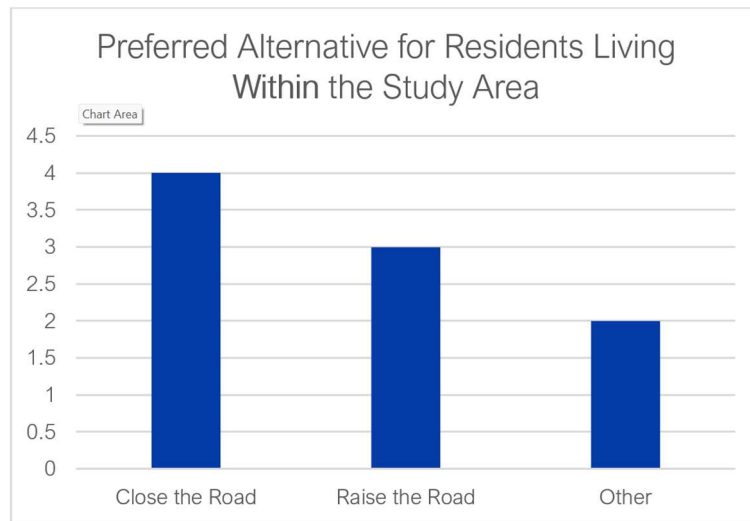


Figure 7.2 Preferred Alternative for Residents Living Within the Study Area

For those living outside of the Study Area, but are residents within the City of Hamilton, 83% prefer to permanently close Safari Road, while 7% agree with the recommendation to re-open and raise the road, as shown in Figure 7.3.

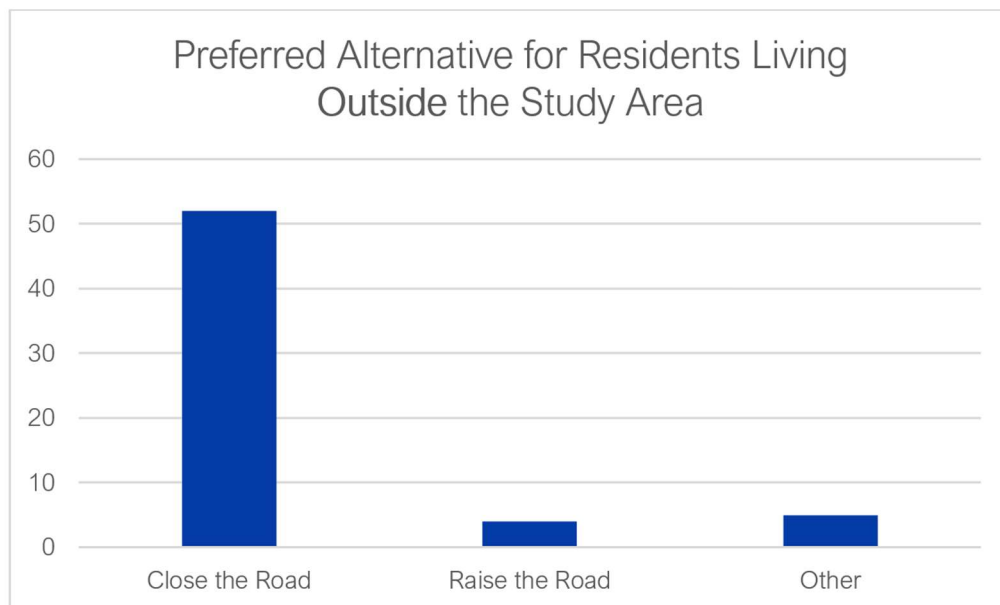


Figure 7.3 Preferred Alternative for Residents Living Outside the Study Area

Overall, 66 respondents prefer to permanently close Safari Road, while 9 respondents agree with the recommended solution to re-open and raise the road as shown in Figure 7.4 below.

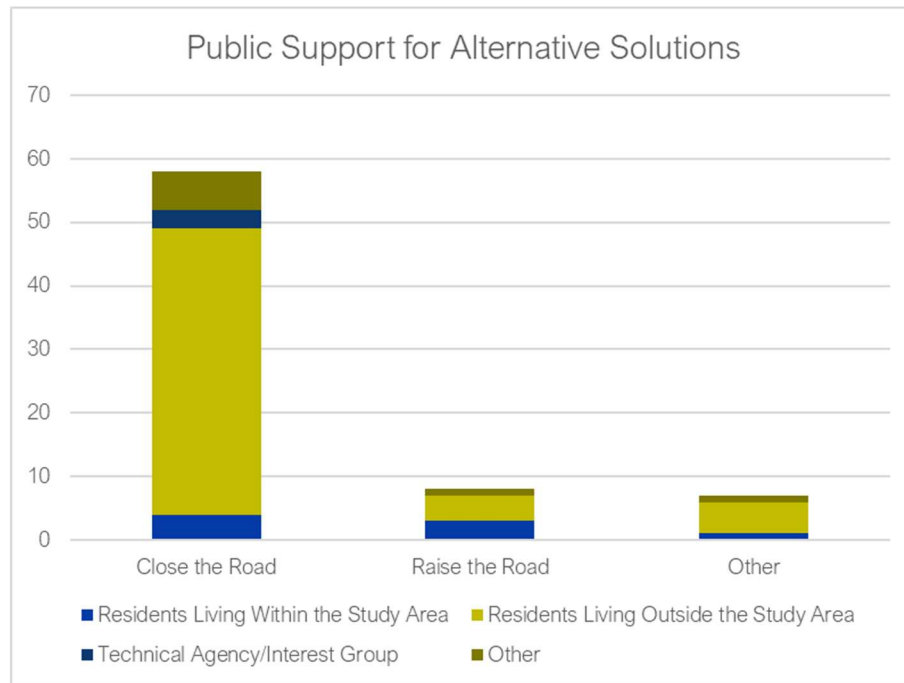


Figure 7.4 Public Support for Alternative Solutions

Table 7.4 Summary of Comments Received from PIC #2

Topic Of Comment Received	Comment Summary	Consideration Of Comments In Class EA
Support for Recommended Solution to Raise the Road	<ul style="list-style-type: none"> <li>Some residents support the recommended solution to re-open and raise Safari Road to address flooding issues as it is the only viable solution.</li> <li>It was noted that raising the road will also reduce truck traffic on Brock Road and 8<sup>th</sup> Concession. Until the recommended solution is implemented, residents request traffic calming be implemented on Brock Road between Highway 97 and 4<sup>th</sup> Concession.</li> <li>If the road is raised, wildlife mitigation fencing and box culverts should be installed to provide safe passage for animals.</li> </ul>	<ul style="list-style-type: none"> <li>Eco passages such as box culverts are being implemented into the preliminary design to provide a safe passage for wildlife to cross the road and mitigate roadkill accidents.</li> <li>The retaining wall will be of sufficient height to function as a barrier to guide wildlife to the eco passages.</li> </ul>
Timeline to Resolve Flooding Issues	<ul style="list-style-type: none"> <li>Many residents are frustrated with how long it has taken for flooding issues to be addressed on Safari Road and are disappointed that construction may not begin until 2028.</li> <li>A resident noted that Concessions 5 and 6 are busier now with many drivers not complying with stop signs. The resident would like the re-opening of Safari Road to be expedited so that traffic issues on neighbouring corridors are resolved.</li> </ul>	<ul style="list-style-type: none"> <li>The City will take these comments into consideration when progressing with the project to detailed design and construction.</li> </ul>
Maintain Road Closure	<ul style="list-style-type: none"> <li>Majority of residents living within and outside of the Study Area feel Safari Road should remain closed to protect the biodiversity and wetland area. They would also like to see the wetland restored to its natural state.</li> <li>Some residents feel Safari Road should remain closed but flooding issues should be addressed via culverts on private property through the Municipal Drain Study.</li> <li>It was noted that Safari Road has been closed intermittently for 5 years and residents and businesses have adapted to the road closure.</li> <li>Other reasons provided by respondents to permanently close the road include turtle and bird habitats threatened by the road, reduce road salt from entering the wetland, and stop habitat fragmentation.</li> </ul>	<ul style="list-style-type: none"> <li>The evaluation of alternative solutions identifies that Alternative 2 – Close the Road ranks higher from a natural environment perspective when considering the impacts to wildlife and the wetlands. However, taking all other evaluation criteria into consideration, and considering the function of the corridor (arterial road) in terms of network connectivity, the preferred solution is to raise the road. Mitigation measures for impacts to wildlife and the wetland will be included in the final Environmental Study Report and preliminary design.</li> <li>Although some residents within the Study Area are okay with closing Safari Road, many residents that attended the PIC noted they would like to see Safari Road re-opened as the current closure impacts them directly (postal services, emergency vehicle access/delays, school bus routes, etc.).</li> </ul>
Addressing Flooding through the Municipal Drain Study	<ul style="list-style-type: none"> <li>Some residents noted that if the blocked culverts on private properties are addressed, that will resolve the flooding issues and Safari Road will not require raising.</li> </ul>	<ul style="list-style-type: none"> <li>The Project Team developed and evaluated the alternative solutions assuming that the recommendations from the Municipal Drain Study are implemented to address drainage on private property. With this taken into consideration, Safari Road will require raising to meet anticipated storm events.</li> </ul>
Timeline of Flooding	<ul style="list-style-type: none"> <li>Residents noted that the flooding is not “historical” and only started occurring in the past few years.</li> </ul>	<ul style="list-style-type: none"> <li>The Project Team has documented this comment as part of the project record and background information.</li> </ul>
Impacts to Properties	<ul style="list-style-type: none"> <li>Some residents noted that if Safari Road is raised, they would like their driveways to be raised to be equal elevation to the road. This would help with any future flooding.</li> </ul>	<ul style="list-style-type: none"> <li>The preliminary design accounts for private driveways to be raised to align with the raised road profile.</li> </ul>
Natural Environment and its Assessment	<ul style="list-style-type: none"> <li>Safari Road runs through the Hyde-Rockton-Beverly Complex, identified as a Provincially Significant Wetland (PSW), and is one of the most important wetlands in southern Ontario.</li> <li>At least 3 federally and provincially recognized Species at Risk (Prothonotary Warbler, Least Bittern, Blandings Turtle) have been documented within the wetland during breeding season and some have been subject to road accidents.</li> <li>The Hamilton Naturalists Club suggests that keeping Safari Road closed would protect the wildlife corridor, Species at Risk, and the PSW.</li> </ul>	<ul style="list-style-type: none"> <li>This information is documented in the Natural Environment Assessment Report prepared for this Class EA Study.</li> <li>The evaluation of alternative solutions identifies that Alternative 2 – Close the Road ranks higher from a natural environment perspective when considering the impacts to wildlife and the wetlands. However, taking all other evaluation criteria into consideration, and considering the primary function of the corridor (arterial road) in terms of network connectivity, the preferred solution is to raise the road. Mitigation measures for impacts to</li> </ul>

	<ul style="list-style-type: none"> <li>It was noted that the City is a signatory to the Montreal Pledge: Cities United in Action for Biodiversity. The City is also committed to protecting biodiversity through the Biodiversity Action Plan. One of the actions is to “Investigate, identify, and prioritize wildlife corridors particularly where roads bisect Core Areas identified within the Natural Heritage System and respond by investigating appropriate best management practices and tools.” Keeping Safari Road closed would demonstrate the City’s commitment to the Biodiversity Action Plan.</li> <li>The natural heritage studies should take place over at least 2 full years to account for temporal variation in plants and wildlife.</li> </ul>	wildlife and the wetland will be included in the final Environmental Study Report and preliminary design.
Truck Route	<ul style="list-style-type: none"> <li>Although Safari Road is a designated truck route, many residents feel that the current signed detour route is working, and therefore Safari Road should not be re-opened simply to restore its truck route designation.</li> </ul>	<ul style="list-style-type: none"> <li>Truck route requirements were taken into consideration in the evaluation of alternative solutions. The evaluation notes that the current signed detour route, although longer, is suitable for truck traffic.</li> </ul>
Evaluation Criteria and Other Alternatives	<ul style="list-style-type: none"> <li>The evaluation criteria should include consideration for public enjoyment of nature. With the road closure it has become a prime spot to enjoy wildlife and the public benefit and access should be considered.</li> <li>The evaluation criteria should consider risks of wildlife mortality for each alternative solution.</li> </ul>	<ul style="list-style-type: none"> <li>The Project Team will take these comments into consideration when refining the evaluation of alternative solutions and design of the road, while recognizing the road’s primary function as an arterial corridor.</li> <li>The evaluation does consider impacts to wildlife for each alternative solution, including the implementation of wildlife crossings to reduce wildlife mortality.</li> </ul>
Other Alternatives	<ul style="list-style-type: none"> <li>It was suggested that a causeway should be considered to raise the road profile and maintain ecological connectivity, while reducing the potential for wildlife mortality</li> </ul>	<ul style="list-style-type: none"> <li>Compared to raising the road, implementing a bridge style raised causeway to maintain ecological connectivity would eliminate access to adjacent properties and be very costly to implement.</li> </ul>

### 7.2.3 Project Website and Additional Comments

In addition to the formal consultation described above, contact information for the City and Consultant Project Managers, including email, telephone and mailing address were available to the public on the City’s project website and *Engage Hamilton*, and was included in all public notices distributed. This provided an ongoing opportunity for members of the public to submit their questions, concerns, and/or comments to the project team at any time during the Study. Separate from comments received during PICs and PIC comment periods, 1 comment was received via email and 1 comment was received via *Engage Hamilton*, they are both summarized in Table 7.5 below.

Table 7.5 Other Comments Received Throughout the Study

Date Comment Received	Comment Summary	Response and Consideration of Comment in Class EA
November 29, 2024	The resident asked if the comment period was still open. They also expressed disapproval of the opening of Safari Road due to conservation concerns and requested further study for other roads within the Beverly Swamp.	Completing additional studies for roads outside the Study Area is not within the scope of the Study, this comment will be passed along internally as input to the appropriate municipal record.
April 9, 2025	The resident requested an update on the Safari Road flooding situation, requesting any draft reports/progress for the Municipal Drain Study and Safari Road EA, stating that none of the ‘neighbours’ have been provided updates.	A member of the project team provided an update on the studies and requested that the resident pass along any contact information of interested neighbours to add to Study Contact List. It was also communicated when Study will be completed and when reports will be made public.

### 7.3 Key Interested Parties, Interest Groups, and Technical Agencies

Various government agencies, authorities, interested parties and groups were informed of the Class EA Study commencement and PICs through direct mail and email. A complete list of interested parties who were contacted is provided in **Appendix 10-1**. During the EA Study, correspondence was received from various technical agencies, as summarized in

Table 7.6 and included in **Appendix 10-5**. Correspondence from utilities is summarized directly below in Table 7.7 and included in **Appendix 10-6**.

Table 7.6 Comments Received from Technical Agencies

Comments Received	Date Received	Response to / Consideration of Comments in Class EA
<b>Ministry of Environment, Conservation and Parks</b>		
In response to the Notice of Study Commencement, MECP noted that an updated version of the MCEA manual is available.	August 16, 2024	All related documents and processes that required it were updated accordingly.
<p>MECP confirmed receiving a Section 16 Order request from HDI. Following correspondence regarding the request, MECP provided the following information to the project team:</p> <ul style="list-style-type: none"> <li>• Informed that Section 16 order requests can be received at any point during the Class EA Study.</li> <li>• The email request received constitutes a valid receipt of the request.</li> <li>• Communicated that at this stage, the request is being reviewed, the EA can proceed but the project cannot be implement until the Minister makes a decision.</li> </ul>	January 21, 2025	The project team is currently in communication with MECP regarding the Section 16 Order request, to determine next steps.
<b>Ministry of Citizenship and Multiculturalism</b>		
<p>In response to the Notice of PIC #2, MCM provided a letter requesting the following information to be included in the Cultural Heritage Report:</p> <ul style="list-style-type: none"> <li>• Description of baseline cultural heritage conditions.</li> <li>• Identification of preliminary potential project-specific impacts.</li> <li>• Inclusion of recommended measure to avoid/mitigate potential negative impacts.</li> </ul>	September 12, 2025	The project team inquired about whether a full Cultural Heritage Report is required given that existing screening on cultural heritage resources has already been done and proposed project implementations are unlikely to impact any potential resources.
In response to the project team's inquiry regarding required level of investigation, MCM requested that although known cultural resource information is available, there still is a need to inventory any potential resources and identify possible impacts.	October 23, 2025	To address MCM's concerns, the project team proposed a windshield study/screening of the area to determine if any additional features not captured in the initial inventory are present in the area of the work as opposed to a full formal Report, to which MCM agreed.
<b>Ministry of Natural Resources and Forestry</b>		
In response to the Notice of Study Commencement the MNRF provided a letter with an information guide to help to project team in identifying and assessing natural features and resources in the Study Area.	August 23, 2024	The project team added these relevant background documents to their files for future reference.
<p>In response to the Notice of PIC #2 MNRF provided the following comments on the alternative solutions:</p> <ul style="list-style-type: none"> <li>• Advised there may be Public Lands Act (PLA) authorization requirements due to the presence of 2 Crown parcels (PIN 17537-0042 and PIN 17537-0016) within the Study Area.</li> <li>• Advised of fisheries timing windows and when to avoid survey work on aquatic habitats.</li> <li>• They also provided more relevant documents to use within technical studies and communicated that mitigation measures should include facilitation of wildlife movement and passage.</li> </ul>	September 16, 2025	<ul style="list-style-type: none"> <li>• The project team will be coordinating with MNRF and IO to purchase the required lands from the 2 Crown properties (owned by Ministry of Infrastructure and managed by Infrastructure Ontario).</li> <li>• The PLA authorization has been documented as a permit/approval and future detailed design commitment.</li> <li>• MNRF's comments for fisheries timing windows, Fish and Wildlife Conservation Act, Endangered Species Act, and wetlands were reviewed and incorporated into the Natural Environment Assessment Report (<b>Appendix 2</b>) as required.</li> <li>• Wildlife passages have been incorporated into the preliminary design. See Section 5.6 for additional details.</li> </ul>
<b>Grand River Conservation Authority</b>		

Comments Received	Date Received	Response to / Consideration of Comments in Class EA
In response to the Notice of Study Commencement the GRCA provided a letter containing background documents on watercourses, floodplains, and wetlands associated with the headwaters of Fairchild Creek to support study need sand permitting requirements.	Sept 13, 2024	The project team added these relevant background documents to their files for future reference.
<p>in response to receiving the preliminary conceptual cross section and roll plans and the interim Natural Environment Assessment Report from the project team, GRCA provided the following comments:</p> <ul style="list-style-type: none"> <li>• Suggested that wetland staking should be completed as soon as possible.</li> <li>• Natural Environment Assessment Report should include comparative assessment of potential impacts.</li> <li>• Suggested that the wetland loss and/or disturbance should be quantified.</li> <li>• Requested further information on plan and profile drawings.</li> <li>• Provided a list of detailed plans to include in the detail design stage.</li> </ul>	December 8, 2025	<p>The project team provided the following responses to the comments made by GRCA:</p> <ul style="list-style-type: none"> <li>• Implementation of the Municipal Drain Study recommendations will likely change the wetland boundary; therefore, wetland staking has been documented as a detailed design commitment during.</li> <li>• A comparative assessment of potential impacts regarding natural environment are to be provided in the evaluation of alternatives and documented in this PFR.</li> <li>• Quantification of the wetland loss was provided based on current wetland limits; again, it was noted that wetland boundaries are expected to change following implementation of improvements in the Municipal Drain Study.</li> <li>• Plan and profile drawings were updated to include further detail, including a 3:1 slope and a potential retaining wall; these are provided in this PFR.</li> <li>• Committed to the provided list of detailed plans to include in the detail design stage; also noted in this PFR.</li> <li>•</li> </ul>
GRCA acknowledged their support to the preliminary approach discussed, provided their closing comments and expressed their preference towards a retaining wall approach as it would help to minimize wetland loss.	January 6, 2026	The project team thanked GRCA for their comments and communicated again that they will be taken into consideration as the design is refined.
<b>City of Hamilton's Transportation Division (Road Authority)</b>		
Following the TAC meeting the City Road Authority provided further comments on flooding expectations and how it affects the design criteria for stormwater management. They communicated their expectation is that the completed roadway will not experience flooding at all and suggested that the specific recommendations with the stormwater and drainage report should be followed.	August 17, 2025	The project team committed to following the recommendations with the stormwater and drainage report.
<b>Transportation Canada</b>		
In response to the Notice of Study Commencement, Transportation Canada provided information to assist the project team in determining weather the study will interact with federal property	September 4, 2024	The project team determined that the study will not affect Transportation Canada.

Table 7.7 Utility Coordination

Comments Received	Date Received	Response to / Consideration of Comments in Class EA
<b>Bell</b>		
In response to an Ontario One Call Planning Request submitted, Bell provided markups of their existing infrastructure within the Study Area.	October 23, 2025	The project team incorporated Bell's existing infrastructure into their base plans.
<b>Enbridge Gas</b>		
In response to an Ontario One Call Planning Request submitted, Enbridge Gas noted they have no gas facilities in the Study Area.	September 10, 2025	The project team noted their response in the Study documentation.
<b>Hydro One</b>		
In response to the Notice of Study Commencement and PIC#1, Hydro One acknowledged the project, they had no comments at the time but requested to stay informed on project status	August 28, 2024	The project team continued to send Hydro One notices with project updates, but no further comments were received. The project team will send them the Notice of Study Completion when ready.
In response to an Ontario One Call Planning Request submitted, Hydro One provided markups of their existing infrastructure within the Study Area.	September 8, 2025	The project team incorporated Hydro One's existing infrastructure into their base plans.
<b>Infrastructure Ontario (IO)</b>		
IO reached out to the project team to inquire about whether the recommended solution of raising the road will have any impacts on 2 properties (PIN 17537-0042 and PIN 17537-0016) owned by the Ministry of Infrastructure within the Study Area.	November 4, 2025	The project team responded, confirming that that grading requirements would extend into IO property, and communicated that the City would be required to purchase land that would be impacted.
<p>IO responded with the following comments and questions:</p> <ul style="list-style-type: none"> <li>• After a preliminary review of the drawings, our concern is if there will be any impacts on the access on the south side of Safari Road (PIN 17537-0042). Will this access be altered or negatively impacted by the raising of the road? Could you please confirm that this access will remain open and accessible post-grading change?</li> <li>• IO also provided information regarding their process for acquiring their property rights and purchasing the land required to implement the Safari Road improvements.</li> </ul>	January 20, 2026	<ul style="list-style-type: none"> <li>• The project team documented the information regarding acquiring property rights and noted this as a detailed design commitment in this PFR.</li> <li>• The preliminary design will accommodate raising driveways along Safari Road to match the new road profile elevation. No access impacts are anticipated to the Hyde Tract trail parking lot.</li> </ul>
<b>TC Energy</b>		
In response to an Ontario One Call Planning Request submitted, TC Energy noted they have no gas facilities in the Study Area.	September 11, 2025	The project team noted their response in the Study documentation.

## 7.4 Indigenous Nations Engagement

Engagement with Indigenous Nations is a key component of the Class EA process. Various Indigenous Nations were notified of the Study, to identify any potential issues or concerns regarding possible impacts to Aboriginal and Treaty Rights, or any other interests or questions that the community may have regarding this study. In consultation with the MECP, the City sought direction on the identification of Indigenous Nations that may have an interest in the Study. MECP confirmed that engagement should proceed with the following Indigenous Nations:

- Haudenosaunee Development Institute / Haudenosaunee Confederacy (HDI)
- Mississaugas of the Credit First Nation (MCFN)
- Six Nations of the Grand River (SNGR)
- Huron Wendat
- Metis Nation Ontario

Table 7.8 through Table 7.12 below provide a summary of communications between the project team and Indigenous Nations. The complete list of Indigenous Nations engaged is provided in **Appendix 10-1**, while copies of comments received are provided **Appendix 10-7**.

Table 7.8 Indigenous Consultation Log – Haudenosaunee Development Institute (HDI) / Haudenosaunee Confederacy of Chiefs Council (HCCC)

Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received	Action Taken/Response to Comments Received
May 3, 2024	Introduction Letter	Email	HDI asked for specific address included in message to be removed from study contact list.	May 3, 2024	The City acknowledged receipt of HDI's email on May 3, 2024, and the contact was removed from study contact list.
August 21, 2024	Notice of Commencement and PIC #1	Email and Mail	No response received.	NA	NA
September 24, 2024	Follow Up Regarding the Notice of Commencement and PIC #1	Phone Call	No response received.	NA	The City was not able to get in touch with HDI on September 24, 2024.
September 25, 2024	Follow Up 2 Regarding the Notice of Commencement and PIC #1	Phone Call	HDI's receptionist picked up the phone and noted that the appropriate contact was not in the office at the time. The receptionist would forward the Study notifications internally and pass along the message.	NA	NA
NA	NA	Email	HDI wrote claiming that no engagement has taken place consistent with the PPS and/or the MCEA on this project and that no engagement was undertaken on the Transportation Master Plan despite an obligation to engage by way of, inter alia, the PPS and the MCEA. HDI advised that this project will impair infringe and interfere with established treaty rights are protected by s. 35 of the Constitution Act, 1982. HDI claims that the City Hamilton has not complied with our treaties, the Constitution Act, 1982, the PPS and/or the MCEA on this Project.	November 13-18, 2024	The project team is discussing next steps with MECP.
NA	NA	Email	HDI reached out to ASI and requested to participate in the Stage 1 AA for this Study. HDI provided their standard monitoring agreement.	November 18, 2024	The project team sent HDI the Stage 1 AA Report for their review and comment and asked for a cost estimate.
NA	NA	Email	HDI wanted to follow up regarding the Stage 1 AA of Safari and see if this project is still scheduled to proceed and asked if there are any updates.	December 5, 2024	The project team sent HDI the Stage 1 AA Report for their review and comment and asked for a cost estimate.
December 16, 2024	Notification of Upcoming Stage 1 Archaeological Assessment Report Review Opportunity and Cost Estimate Request	Email	HDI noted that all emails and reports for the study should be sent to a specific email and not to other individuals.	December 17, 2024	NA
January 13, 2025	Shared the Stage 1 Archaeological Assessment Report and Cost Estimate Request – Follow up #1	Email	No response received.	NA	NA
February 6, 2024	Follow Up Regarding Previous Emails and Stage 1 Archaeological Assessment Report	Phone Call	In the phone call, HDI requested that the Stage 1 Archaeological Assessment Report be re-shared with them.	February 6, 2025	The City re-shared the Stage 1 Archaeological Assessment Report.

Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received	Action Taken/Response to Comments Received
February 6, 2024	Stage 1 Archaeological Assessment Cost Estimate Request – Follow up #2	Email	No response received.	NA	NA
April 23, 2025	Stage 1 Archaeological Assessment Cost Estimate Request – Follow up #3	Email	No response received.	NA	NA
May 28, 2025	Confirmation that HDI is not providing comments for the Stage 1 AA Report	Email	No response received.	NA	NA
August 25, 2025	Notice of PIC #2	Mail	No response received.	NA	NA
August 27, 2025	Notice of PIC #2	Email	No response received.	NA	NA

Table 7.9 Indigenous Consultation Log - Mississaugas of the Credit First Nation

Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received	Action Taken/Response to Comments Received
May 3, 2024	Introduction Letter	Email	The Mississauga's of the Credit First Nation's Department of Consultation and Accommodation has disabled the DOCA.Admin@mncfn.ca email. Your message has been redirected to DOCA's primary Administration Email, DOCA@mncfn.ca *	May 3, 2024	The project team updated the Study Contact List with the new email address.
August 21, 2024	Notice of Commencement and PIC #1	Email and Mail	No response received.	NA	The City attempted to call MCFN on September 24, 2025, but could not get through to the appropriate contact.
September 25, 2024	Follow Up Regarding Notice of Commencement and Participation in the Study	Phone Call	After the phone call, MCFN, Department of Consultation and Accommodation (DOCA) responded via email and informed the project team that due to the lack of capacity in the Environmental sector, they are unable to participate and make well-informed comments regarding the Schedule "B" MCEA. So therefore, MCFN DOCA requested to be kept informed when studies are scheduled to happen and when reports have been completed and sent to us for our files. MCFN DOCA also communicated they would like to receive the Stage 1 Archaeological report for review and comment. If the study proceeds to a Stage 2 MCFN, DOCA expressed they would expect to be included in fieldwork, participation, and studies.	Sept 25, 2024	The project team continued to engage MCFN and share the Stage 1 AA report as noted below.
December 16, 2024	Notification of Upcoming Stage 1 AA Report Review Opportunity and Cost Estimate Request	Email	MCFN provided their review agreement for review and execution. Cost estimate for each stage of archaeology was included in this agreement. MCFN requested the project team fill in and return the agreement.	December 16, 2024	Signed and returned agreement.

Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received	Action Taken/Response to Comments Received
January 13, 2025	Shared the Stage 1 AA Report and Notification of PO Processing	Email	No response received.	NA	NA
April 23, 2025	Request to provide comments on Stage 1 AA Report	Email	MCFN request the project team re-share the Stage 1 Archaeological Assessment for review	April 23, 2025	The project team reshared the requested.
April 23, 2025	Re-Shared the Stage 1 AA Report as Requested	Email	MCFN expressed that they do not have any questions, comments or concerns at the time. Requested to stay informed of any archaeological field work that takes place as a result of the recommendations made in the report.	May 6, 2025	The project team noted MCFN's response.
August 25, 2025	Notice of PIC #2	Mail	NA	NA	NA
August 27, 2025	Notice of PIC #2	Email	MCFN would like to review the draft Stage 1 Archaeological Assessment report once it is available. Should a Stage 2 Archaeological Assessment be required, we require the presence of a Field Liaison Representative (FLR) on-site to ensure that the Nation's interests and concerns are appropriately considered throughout the fieldwork.	August 27, 2025	The project team responded noting that MCFN had already reviewed the Stage 1 AA report and stated they had no comments or concerns. The project team noted that if a Stage 2 AA is initiated, MCFN will be engaged.
August 28, 2025	Response to MCFN's Notice of PIC #2 Comments	Email	No response received.	NA	NA

Table 7.10 Indigenous Consultation Log - Six Nations of the Grand River

Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received	Action Taken/Response to Comments Received
May 3, 2024	Introduction Letter	Email	SNGR noted contact information changes.	May 6, 2024	The project team updated the Study Contact List.
May 6, 2024	Acknowledgement of May 6, 2024, Email from SNGR	Email	No response received.	NA	NA
August 21, 2024	Notice of Commencement & PIC #1	Email and Mail	SNGR acknowledged they have received the message (August 21, 2024). SNGR noted they would like project documents as they become available. In particular, SNGR was interested in natural environmental studies and alternatives when available. Additionally, SNGR noted they have a fee for participating in document review and meetings (August 22, 2024).	August 21-22, 2024	The City confirmed that SNGR will be informed on the project progress. The City noted that a copy of the natural heritage report will be made available for review once available but noted that the City at this time would not be able to provide any capacity funding for participation in natural heritage studies due to the absence of a

Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received	Action Taken/Response to Comments Received
					City policy that provides authorization to staff. The City noted they would not be able to provide capacity funding for natural heritage at this time, however, the City does have a policy to provide funding for archaeological studies.
August 22, 2024	Response to SNGR's August 22, 2024, Email	Email	SNGR responded to the City's email indicating that City of Hamilton refusing to honor the provincial legislation is disappointing and does not abide by the PPS regarding First Nation engagement on land use planning matters. SNGR also noted that the SNGR will not review any EA documents until capacity funding is agreed to.	August 22, 2024	The City had a phone call with SNGR to discuss capacity funding and City policies.
August 23, 2024	Discussion Regarding Capacity Funding and City Policy	Phone Call	NA	NA	NA
December 16, 2024	Notification of Upcoming Stage 1 AA Report Review Opportunity and Cost Estimate Request	Email	No response received.	NA	NA
January 13, 2025	Shared the Stage 1 Archaeological Assessment Report and Cost Estimate Request – Follow up #1	Email	No response received.	NA	NA
February 6, 2025	Left Voicemail for Follow-up Regarding Previous Emails and Call Back Request	Phone Call	SNGR called the City back and discussed the project.	February 7, 2025	NA
April 23, 2025	Stage 1 AA Report and Cost Estimate Request Follow Up	Email	SNGR gave thanks for following up, communicated that they have not had chance to review and will bring it to their immediate attention (April 23, 2025). SNGR stated that they had the opportunity to review the Stage 1 Archaeology Assessment and that they have no comments or concerns with the proposed methodologies (April 25, 2025).	April 23-25, 2025	The project team acknowledged receipt of SNGR's email. The project team noted SNGR's comments for EA records.
August 25, 2025	Notice of PIC #2	Mail	No response received.	NA	NA
August 27, 2025	Notice of PIC #2	Email	No response received.	NA	NA
September 3, 2025	Follow Up on Notice of PIC #2	Email	SNGR acknowledged receipt of the notice and stated that they will file a Section 16 Order Request for this Study unless capacity funding is made available.	September 4, 2025	The project team is consulting MECP in regards to this matter.

Table 7.11 Indigenous Consultation Log - Metis Nation of Ontario

Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received	Action Taken/Response to Comments Received
May 3, 2024	Introduction Letter	Email	No response received.	NA	NA
August 21, 2024	Notice of Commencement and PIC #1	Email and Mail	No response received.	NA	NA
September 25, 2024	Voicemail Follow Up Regarding Participation in the Study	Phone Call	No response received.	NA	NA
August 25, 2025	Notice of PIC #2	Mail	No response received.	NA	NA
August 27, 2025	Notice of PIC #2	Email	No response received.	NA	NA

Table 7.12 Indigenous Consultation Log - Huron Wendat Nation

Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received	Action Taken/Response to Comments Received
May 3, 2024	Introduction Letter	Email	Huron Wendat Nation advised their consultation email changed. They also expressed interest in participating in all archaeological field work.	May 13, 2024	The project team updated the Study Contact List and continued to engage them throughout the Study as noted below.
August 21, 2024	Notice of Commencement and PIC #1	Email and Mail	Thanked the project team for the email and expressed that the Huron-Wendat Nation is interested in participating in all archaeological fieldwork for this project, as well as receiving copies of the draft reports for review and comments. Noted that they had updated the way of processing consultations. Any new consultation or project notice must be sent to a specific email address and requested any other email address be removed from our files.	September 6, 2024	The project team updated the Study Contact List and acknowledged receipt of Huron Wendat's email.
December 16, 2024	Notification of Upcoming Stage 1 AA Report Review Opportunity and Cost Estimate Request	Email	No response received.	NA	NA
Jan 13, 2025	Shared the Stage 1 Archaeological Assessment Report and Cost Estimate Request – Follow up #1	Email	No response received.	NA	NA
February 6, 2025	Follow Up Regarding Previous Emails	Phone Call	No response received.	NA	The City only spoke to reception and was not able to get in touch with the appropriate contact. The City followed up via email on February 7, 2025.

Date of Communication Issued	Notification Sent to Community / Organization	Method of Communication	Comments Received	Date Comments Received	Action Taken/Response to Comments Received
February 7, 2025	Stage 1 AA Report and Cost Estimate Request Follow Up	Email	Thanked the project team follow-up and for sending the report. Communicated that they do not feel the need to review and comment this specific report but asked the team to continue to share reports once they are ready for any potential future comments.	March 20, 2025	The project team noted Huron Wendat Nation's response for EA records.
August 25, 2025	Notice of PIC #2	Mail	NA	NA	NA
August 27, 2025	Notice of PIC #2	Email	No response received.	NA	NA

## 7.5 Review of Draft Project File Report

The draft PFR will be shared with a few key technical agencies, such as MECP, GRCA and Indigenous Nations to obtain their input and feedback on the report including results from the technical studies, the decision-making process leading up to the preferred design concept and identified impacts and mitigation measures. Once comments have been received, the PFR will be finalized and placed in the public record for the 30-day public review period.

## 8.0 MONITORING

Following the completion of detailed design, contract drawings and specifications will be developed to allow the project to be tendered for construction. During construction, the on-site Contract Administrator will confirm that implementation of environmental mitigation measures and key design features are consistent with the contract and that commitments made in this EA document as well as conditions outlined in environmental permits and approvals are adhered to. In addition, the effectiveness of the environmental mitigation measures shall be assessed to confirm that the measures are providing the expected control and/or protection. Regular inspection of measures shall be undertaken to confirm they are maintained, functioning and effective and that any necessary repairs are completed expeditiously. For any unanticipated environmental issues that may arise during construction, the Contract Administrator will confirm that additional mitigation measures are provided, as required.

An Environmental Inspector will also visit the site on a regular basis to confirm that the environmental protection measures are functioning and effective, that timing windows and permits and approvals are adhered to, and to provide recommendations for additional environmental mitigation measures, as necessary. In the event problems develop, appropriate City of Hamilton and external representatives will be contacted to provide additional input and to address specific notification requirements as may be required.

## 9.0 ADDITIONAL WORK AND APPROVALS

### 9.1 Permits and Approvals

The following permits, approvals, and plans may be required prior to the implementation of the proposed works:

Table 9.1 Permits and Approvals

Agency	Permit / Approval	Description
GRCA	O. Reg. 41/24 (Prohibited Activities, Exemptions and Permits)	O.Reg 41/24 establishes regulated areas where development could be subject to flooding, erosion or dynamic beaches, or where interference with wetlands and alterations to shorelines and watercourses might have an adverse effect on those environmental features. Under this regulation, any proposed development, interference or alteration within these areas requires a permit from GRCA. To support this permit application, the following will detailed plans will be required: dewatering plan, erosion and sediment control plan, construction sequencing, access and staging areas, site restoration and enhancement plan.
DFO	Request for Review	The Project footprint will require the removal of direct fish habitat in the flooded wetland to raise and widen the road and impacts to the tributary crossing as a result of culvert work and road widening. As details of the impact areas are determined, the project will need to be submitted to the DFO via a Request for Review (RFR) application to initiate a site-specific review and determine compliance with the Fisheries Act.
MECP	SAR Permitting	It is the responsibility of the proponent to ensure that SAR are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the proposed activities to be carried out on the site. If the proposed activities cannot avoid impacting protected species and their habitats, then the proponent will need to apply for an authorization under the ESA. If the proponent believes that their proposed activities are going to have an impact or are uncertain about the impacts, they should contact SAROntario@ontario.ca to undergo a formal review under the ESA.
MECP	Permit to Take Water	Any water extraction over 50,000 L/day will require MECP approval(s) under the Environmental Protection Act and Ontario Water Resource Act, such as a Permit to Take Water (PTTW). Certain water taking activities that have been prescribed by the Water Taking Regulation O. Reg. 63/16 may require registration in the Environmental Activity and Sector Registry (EASR) instead of a PTTW. Regardless, a PTTW is required if the water-taking exceeds 400,000 litres per day.
MECP	Environmental Activity and Sector Registry	Impacts of temporarily lowering the groundwater level to facilitate construction, potentially impacting the recharge to the wetland and watercourse require further investigation in the next phase of design and an Environmental Activity and Sector Registry (EASR) may be required.
MECP	Further Consultation	Additional field work and correspondence with MECP is needed to determine required authorizations under legislation in force prior to construction
Environment Climate Change Canada via Canadian Wildlife Service	Species at Risk Act	A permit under the Species at Risk Act for impacts to critical habitat of Eastern Whip-poor-will may be required to support the project.
MCM	Discovery of Archaeological Resources During Construction	Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment, in compliance with Section 48(1) of the Ontario Heritage Act.  The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with Ontario Regulation 30/11 the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the MCM should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.
Infrastructure Ontario	Property Interest Application	This application is required to be filled out for IO's process to acquire property rights over Ministry of Infrastructure (MIO) lands. Once the application and fee is submitted, it will be reviewed internally for comment. If there are no objections, IO will work to complete the land acquisition process.
MNRF	Public Lands Act Authorization	There are 2 Crown parcels along this stretch of road (PINs 175370042 and 175370016). There may be PLA authorization requirements depending on the impacts to Crown land.

## 9.2 Detailed Design Commitments

The following works are anticipated to be completed during detailed design:

### 9.2.1 Additional Technical Studies

1. Archaeological and Cultural Heritage – A Stage 2 Archaeological Assessment will be completed as early as possible during detailed design.
2. Natural Environment
  - a) Tree Protection Plan – Detailed design should focus on preserving larger, uncommon or habitat trees and reassess the number of trees that require removal.
  - b) Impacts to Protected Habitat and Wildlife – Further study is required to determine the extent of protected habitat proposed to be impacted by the project.
    - i. Blandings Turtle and Fish (Northern Pike, White Sucker) – eDNA and electrofishing study to sample for cryptic or potentially low-density species within the wetland that may impact permitting/approvals and sample for fish that DFO has an interest in.
    - ii. Seven species of SAR bats were noted as occurring in the Study Area (see Section 3.2.5.3). Bat acoustics and netting/radio telemetry should be conducted to determine habitat use within the Study Area and inform agency approvals, including mitigation requirements.
    - iii. A target nocturnal bird survey for Whip-poor-will, a SAR bird, should be conducted to determine local habitat use and inform agency approvals.
  - c) Invasive Species Delineation – Determine the extent of areas that warrant treatment for phragmites (e.g. Common Buckthorn, Glossy Buckthorn, etc.). This aligns with the Invasive Species Act and provides mitigation for ecological impacts.
  - d) Wetland Staking – Conduct a site visit with GRCA to stake and verify the wetland boundaries.
3. Geotechnical Investigation – A comprehensive geotechnical investigation during detailed design should be undertaken and focus on identifying the existing subgrade conditions and the extents of where additional subgrade stabilization will be required.
4. Hydrogeological Monitoring - If dewatering is required for construction, monitoring of existing water wells is recommended to mitigate any potential impact.

## 9.2.2 Utilities

Utilities will be consulted and engaged with during detailed design to confirm potential impacts to utility infrastructure within the Study Area as a result of the preferred design.

## 9.2.3 Property Requirements

1. Submit a Property Interest Application to IO to start the property purchasing process.
2. Coordinate with impacted properties to obtain the required property to implement the proposed works.
3. Follow up with the City's real estate team to initiate the property acquisition process.

## 9.2.4 Design Considerations

### Road Design

Materials for the retaining wall should be determined during detailed design. Road based materials should also be determined after conducting a detailed geotechnical investigation.

### Natural Environment

The following ecological constraints and opportunities should be considered during detailed design. Further details are in the Natural Heritage Assessment Report in **Appendix 2**.

- Constraints - vegetation protection zones for permanent and intermittent streams, wetlands, fish habitat, woodlands, and significant woodlands; fish habitat; SAR wildlife and habitats; bats; Blanding's Turtle; and species of conservation concern.
- Opportunities – road ecology; wildlife passages and barriers; restoration and enhancement of vegetation protection zones; enhancement of surface water treatment; pollinator habitat/roadside vegetation; soil management; and invasive species management.
- Locations of invasive species within the project footprint and adjacent ROW should be mapped and indicated for treatment/removal as a component of construction by invasive species management professionals. This may entail treatments ahead of construction. The final tender package should include the requirement that contractors follow the Clean Equipment Protocol (Halloran et al. 2013) to reduce the spread or importation of invasive species within the Study Area.

### Drainage/Stormwater Management and Fluvial Geomorphology

The Fluvial Geomorphology Assessment Report (**Appendix 7**) recommends that replacement of watercourse crossing structure span, at a minimum, the bankfull width. As such, a minimum culvert width of 4m is suitable to accommodate the geomorphic

conditions of the channel for CULV-6. The Stormwater Management Report identified minimum culvert sizing of three (3) x 600mm diameter culverts to meet freeboard requirements for the 25-year design storm event. The specific sizing, configuration, and orientation of the new culvert will be refined during the detailed design to meet the hydraulic, geomorphologic, and any fishery requirements.

### 9.3 Distribution of Notice of Study Completion and Project File Report

In accordance with the requirements of the Municipal Class Environmental Assessment (MCEA) – Schedule 'B', a Notice of Study Completion is anticipated to be issued in Spring 2026. Through issuance of the Notice of Study Completion, this PFR documenting the planning process undertaken, details of the study recommendations, and potential impacts and mitigation measures will be placed on the public record for the mandatory 30-day review period.

The Notice of Study Completion will also advise the public that during the 30-day review period, a request may be made to the MECP for an order requiring a higher level of study (i.e., requiring an individual/comprehensive EA approval before being able to proceed), or that condition be imposed (e.g., require further studies), on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and Treaty rights.

Following the close of the 30-day public review period, the MECP has an additional 30 days to consider the project and review any potential Section 16 Order requests submitted during the 30-day public review period. The City of Hamilton may not proceed with the project for at least these 30 days of the MECP review period. Following the 30-day MECP review period, the project may proceed to detailed design and construction provided the ministry is not reviewing Section 16 Order requests related to the project and subject to any other permits and approvals that may be required.