DILLON CONSULTING

City of Toronto

Rouge Park Bridges Transportation Master Plan

Final Report

February 2025 - 19-1924

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Appendices (provided as separate document)

Acronyms, Abbreviations, Definitions

a.m.	Morning
AA	Archaeological Assessment
AADT	Annual average daily traffic
AAQC	Ambient Air Quality Criteria
ANSI	Area of Natural and Scientific Interest
AODA	The Accessibility for Ontarians with Disabilities Act
APEC	Area of Potential Environmental Concern
AQHI	Air Quality Health Index
ASI	Archaeological Services Inc.
AST	Aboveground Fuel Storage Tanks
BCI	Bridge Condition Index
BP	before present
BRT	Bus Rapid Transit
CE	Common Era
CHER	Cultural Heritage Evaluation Report
CHR	Cultural heritage resources
CHRA	Cultural Heritage Resource Assessment
CHVI	Cultural Heritage Value or Interest
City	City of Toronto
CNoR	Canadian Northern Railway
CNP	Cycling Network Plan

CP Rail	Canadian Pacific Railway
CTC	Credit Valley-Toronto and Region-Central Lake Ontario
DFO	Department of Fisheries and Oceans Canada
DRT	Durham Region Transit
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
EMS	Fire and Emergency Medical Services
ESA	Environmental Site Assessment
ESA 2007	Endangered Species Act, 2007
FLR	Field Liaison Representative
FSDS	Federal Sustainable Development Strategy
GGH	Greater Golden Horseshoe
GPS	Global Positioning System
GTA	Greater Toronto Area
HIA	Heritage Impact Assessment
HVA	Highly Vulnerable Aquifers
ID	Identity
IPZ	Intake Protection Zone
Km	kilometre
Km^2	kilometre square
Km/h	kilometre per hour
LCP	Living City Policies

m	metre
m^2	metre square
MCEA	Municipal Class Environmental Assessment
MCM	Ministry of Citizenship and Multiculturalism
MECP	Ministry of Environment, Conservation and Parks
MMAH	Ministry of Municipal Affairs and Housing
MT	megatonne
MTO	Ministry of Transportation of Ontario
OHA	Ontario Heritage Act
OP	Official Plan
OPG	Ontario Power Generation
p.m.	Afternoon
PAC	Polycyclic Aromatic Hydrocarbons
pg.	Page
PIC	Public Information Centre
PIF	Personal Identification Form
PPS	Provincial Policy Statement
PSW	Provincially Significant Wetland
RNUP	Rouge National Urban Park
ROW	Right-of-Way
RSP	Vision Zero Road Safety Plan
SAR	Species at Risk

SARA	Species at Risk Act
SARO	Species at Risk in Ontario
SCP	Strategic Conservation Plan
SGRA	Significant Groundwater Recharge Areas
SPP	Scarborough Preservation Panel
SS	Archaeological Assessment
TAC GDG	Transportation Association of Canada's Geometric Design Guide
TAC	Technical Advisory Committee
TMP	Transportation Master Plan
TPS	Toronto Paramedic Services
TRCA	Toronto and Region Conservation Authority
TTC	Toronto Transit Commission
URL	Uniform Resource Locator
VPR	Voluntary Project Review
WHPA	Wellhead Protection Areas
WSE	Water surface elevations
WSP/MMM	Williams Sale Partnership Limited, which acquired MMM Group Limited in 2015

Executive Summary

The City of Toronto (City) initiated a Transportation Master Plan (TMP) to study five municipal bridges within the Rouge National Urban Park (RNUP). The objective of this TMP is to develop long-term strategies for improving the transportation infrastructure for each bridge.

The bridges included in the TMP study are:

- Sewell's Road Bridge (Site No. 812) – Bridge A;
- Milne's Bridge (Site No. 813) – Bridge B;
- Hillside Bridge (No. 806) – Bridge C;
- Maxwell's Bridge (No. 802) – Bridge D; and
- Stott's Bridge (No. 803) – Bridge E.

While the five bridges are within the RNUP, which is owned and operated by Parks Canada, the City maintains ownership, jurisdiction and management responsibility for public roads and bridges on its right-of-way within RNUP boundaries. The bridges and the road right-of-way (ROW) are owned and operated by the City of Toronto.

This TMP has been completed in accordance with the 2023 amended MCEA process following Approach #2 for Master Plans (as described in Appendix 4 of the MCEA). This approach requires a level of investigation, consultation, and documentation to fulfill the requirements for Schedule "B" projects, as a minimum, including the completion of Phases 1 and 2 of the MCEA process. This TMP report documents the study process and findings, including the existing conditions, consultation and engagement activities, evaluation of alternative solutions, and the long-term improvement strategy for each of the five bridges.

Existing Conditions

Four of the five bridges (Sewell's Bridge, Stott's Bridge, Maxwell's Bridge, and Hillside Bridge) retain cultural heritage value and are designated under Part 4 of the *Ontario Heritage Act*. The Milne Bailey Bridge crossing, currently listed on the City's Heritage Register also retains cultural heritage value. A Scoped Heritage Impact Assessment (HIA) was completed for the five bridges. The HIA evaluated the Milne Bailey Bridge against

Regulation 9/06 criteria and found the bridge to retain cultural heritage value or interest.

A Stage 1 Archaeological Assessment (PIF# P1066-0163-2020) indicated the presence of 42 registered archaeological sites within one kilometre of the study bridges, and one site within 50 m of Hillside Bridge on Meadowvale Road.

The Cultural Heritage Resource Assessment (ASI, 2022) identified 11 built heritage resources and/or cultural heritage landscapes within the surrounding road right-of-way for a distance of 500 metres from the centre of each bridge.

The transportation network within the RNUP Study Area serves traffic that is visiting the park as well as those who are travelling through. With the City of Pickering directly east of the park and the City of Scarborough directly to the west, vehicles traveling between the two have the option of traveling through the park, either via Finch/Old Finch Avenue, or Twyn Rivers Road/Sheppard Avenue. Primary destinations within the park include the Toronto Zoo and the many trails and natural areas.

As part of the TMP, a natural heritage existing conditions background review and scoped field program were undertaken. There are several designated natural heritage features associated with the RNUP located within the Project Study Area, including:

- Rouge River;
- Rouge River Valley Area of Natural and Scientific Interest (ANSI), Life Science;
- Candidate Pickering-Scarborough Iroquois Beach Candidate ANSI, Life Science;
- Cedar Grove Wetland Complex Provincially Significant Wetland (PSW);
- Townline Swamp Wetland Complex PSW;
- Unevaluated wetlands; and
- Woodland.

Seventeen SAR designated as Threatened or Endangered under the provincial *Endangered Species Act, 2007* and/or designated as Threatened or Endangered under the federal *Species at Risk Act, 2002* and eleven (11) Species of Conservation Concern defined as nationally, provincially (SRank of S1-S3), regionally or locally rare (LRang L1-L3) and/or species listed as Special Concern under the *Endangered Species Act, 2007* have the potential occur within the vicinity of the five bridges.

Phase 1: Problem/Opportunity Statement

The Problem/Opportunity statement for this project is as follows:

The City of Toronto is undertaking a TMP study to determine preferred alternatives for the future of five bridges located within the Rouge National Urban Park, recognizing the need to:

- **Address the deteriorating condition** of the bridges;
- **Maintain the rural character of the roadways** and the right-of-way, consistent with City policies;
- **Support the local transportation network** within the Park, including access for emergency services;
- **Follow heritage conservation principles** at each bridge;
- **Improve the safety and function** of these sites for all users; and
- **Mitigate potential impacts to the natural environment** of the RNUP.

Phase 2: Alternative Solutions

The following alternative solutions were developed for each of the five crossings:

- **Retain** – Retention of the existing bridge means keeping the bridge in its existing configuration with **minimal changes**, if any. It may include maintenance repairs, or improvements to roadway approaches, sign lines, signage, or other ancillary features. However, functional improvements that change the cross-section of the bridge, or strengthening that substantially alters the form and appearance of the structure are not considered in this alternative;
- **Rehabilitate** – Rehabilitation of the existing bridge means strengthening and altering the existing bridge substantially to improve its function. This may include adding structural components to supplement the existing ones, replacing components of the structure or other similar improvements. **Significant alterations** in form and appearance may occur in this alternative. For the types of bridges in this study, widening through a major rehabilitation would require such an extensive dismantling and replacement of the original structure and abutments that it is not considered feasible; and

- **Replace** – Replacement of the existing bridge means complete removal of the existing bridge and construction of a **new structure at the same location**. This allows the greatest improvement in the functional characteristics of the bridge such as load-carrying capacity, width, and service life. For replacement of heritage bridges, it must be demonstrated through a Heritage Impact Assessment that the other alternatives are not suitable before replacement is considered.

A total of 19 individual criteria were considered for each bridge across the following six categories:

- Bridge Condition and Function;
- Transportation;
- Cultural Heritage and Archaeology;
- Natural Environment and Hydraulics;
- Public Uses in RNUP; and
- Implementation.

Based on the evaluation of alternatives and feedback received during stakeholder engagement and Indigenous consultation, the Preferred Solution for Sewell's Bridge and Maxwell's Bridge is retention with sympathetically designed maintenance repairs and the Preferred Solution for Milne Bridge, Stott's Bridge, and Hillside Bridge is replacement with a sympathetically designed replacement structure.

Stakeholder Engagement and Indigenous Consultation

Consultation activities for this project were divided into two phases.

- Phase 1 (December 2020 to December 2021) of public consultation focused on collecting information on users' experiences of the bridges and adjacent roadways. Phase 1 consultation activities included consultation with the public, agencies, and Indigenous communities as well as targeted consultation with local stakeholder organizations, Parks Canada, and the TRCA. A virtual public meeting (PIC #1) was hosted in October 2021; and
- Phase 2 (January 2022 to August 2022) of public consultation focused on presenting the evaluation of alternatives and the recommendations for each bridge. Phase 2 consultation activities included consultation with the public, agencies, and Indigenous communities as well as targeted consultation with local stakeholder

organizations. A virtual public meeting (PIC #2) was held on July 20, 2022, and an online survey was available from July 11, 2022, to August 10, 2022, to provide feedback.

1.0 Introduction

The City of Toronto (City) initiated a Transportation Master Plan (TMP) to study five municipal bridges within the Rouge National Urban Park (RNUP). The objective of this TMP is to develop long-term strategies for improving the transportation infrastructure for each bridge.

The bridges included in the TMP study are:

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While the five bridges are within the RNUP, which is owned and operated by Parks Canada, the City maintains ownership, jurisdiction and management responsibility for public roads and bridges on its right-of-way within RNUP boundaries. The bridges and the road right-of-way (ROW) are owned and operated by the City of Toronto.

The RNUP has historic and ecological significance, including the five bridges being reviewed under this TMP which provide connections to trails and roadways across the Rouge River and Little Rouge River. Four of the bridges, Maxwell Bridge, Stotts Bridge, Hillside Bridge, and Sewell's Road Bridge, were built between 1912 and 1927 and are designated under Part 4 of the *Ontario Heritage Act*, R.S.O. 1990, c. O.18. The Milne Bridge, constructed in 1988, was listed on the City's Heritage Register in in 2006. Due to the age and existing condition of all five bridges, a long-term improvement strategy is required, as outlined in the MCEA.

Two Canadian Pacific (CP) Rail bridges located in the study area were also reviewed as part of this TMP. While these CP Rail bridges are not the focus of the TMP study, they were considered in the evaluation due to their potential impacts on the long-term strategies for the bridges including connecting roads as well as height and weight restrictions.

The TMP study objectives are:

- **Bridge Deficiencies** – Evaluate the existing deficiencies of the five bridges related to medium-term and long-term deterioration;
- **Heritage Preservation** – Identify opportunities to conserve the cultural heritage value of the bridges. Four of the five bridges are designated under Part 4 of the *Ontario Heritage Act* and retains cultural heritage value or interest. The fifth is listed in the City of Toronto Municipal Heritage Register as having potential heritage value;
- **Roadway Usage** – Confirm the function of the roads that influence the extent of rehabilitation required for each structure by:
  - Confirming locations where additional active transportation infrastructure can be accommodated;
  - Considering constraints posed by the CP Rail bridges (height, weight, etc.); and
- **Safety** – Consider the principles associated with Vision Zero[1], considering:
  - Safety of connections and road crossings for vulnerable multi-modal road users (pedestrians, cyclists).

This TMP report documents the study process and findings, including the existing conditions, consultation and engagement activities, evaluation of alternative solutions, and the long-term improvement strategy for each of the five bridges.

1.1 Study Area and Bridge Locations

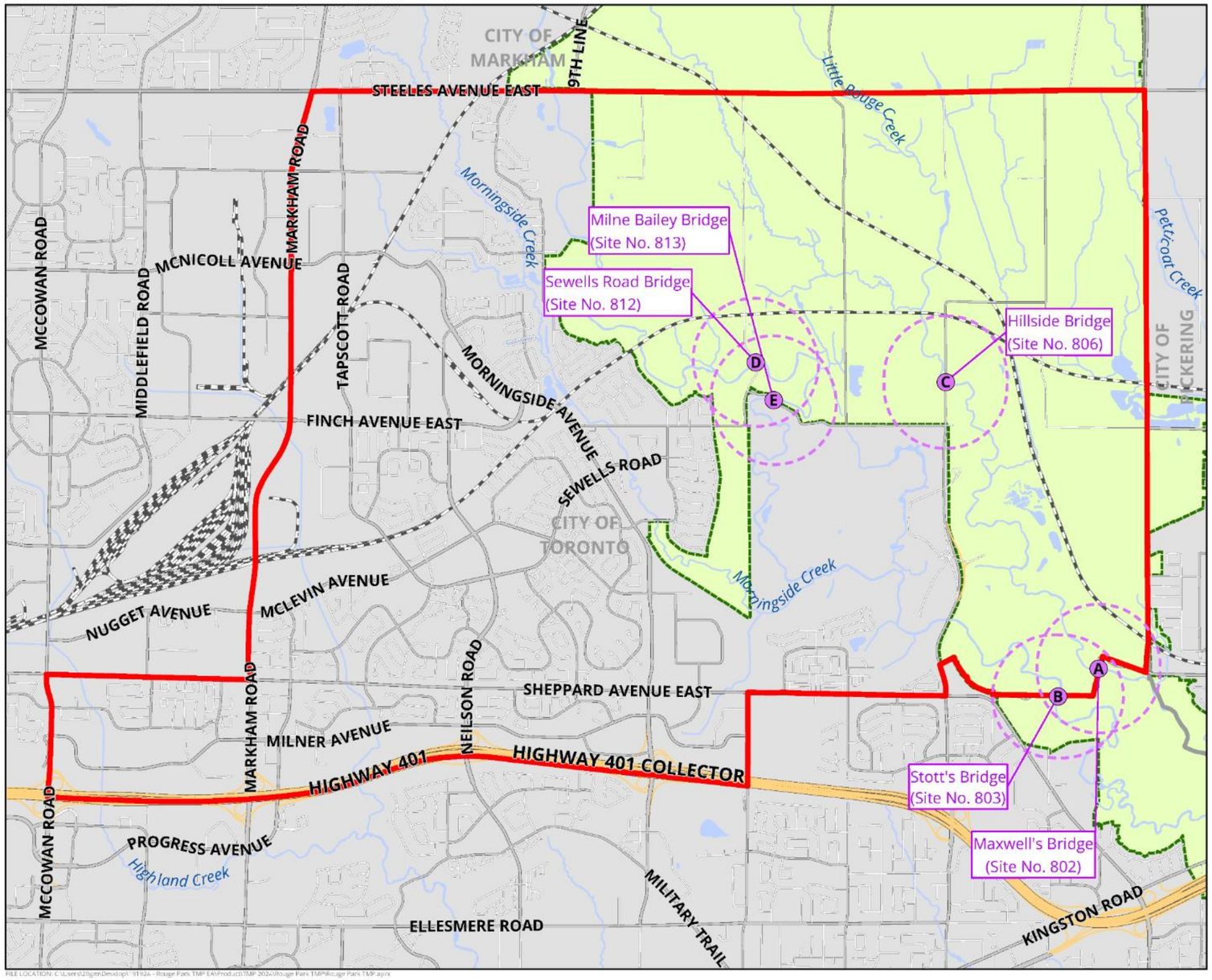
The RNUP is located in northeastern Toronto where the City abuts the jurisdictional boundaries of the City of Markham to the north and the City of Pickering to the east. The study area boundary and location of the five bridges included in the TMP are shown in **Figure 1**. Detailed locations of the five bridges are shown in **Figure 2a to 2e**.

While the project site specific focus areas for each bridge encompass a radius of approximately 500 m around each bridge, changes to vehicular access to any of the crossings have the potential to impact travel within the broader TMP Study Area. The

[1] Vision Zero, is a comprehensive action plan focused on reducing traffic-related fatalities and serious injuries on Toronto's streets. The plan prioritizes the safety of the most vulnerable road users across seven emphasis areas through a range of extensive, proactive and data driven initiatives. For more information the City of Toronto Vision Zero Road Safety Plan, visit: https://www.toronto.ca/services-payments/streets-parking-transportation/road-safety/vision-zero/vision-zero-plan-overview/

TMP Study Area is generally bounded by Steeles Avenue East to the north, Highway 401 to the south, Markham Road to the west, and York Durham Line to the east.

Figure 1: Study Area



ROUGE PARK TMP EA

FIGURE 1
STUDY AREA

- Bridge Location
- 500 m Project Focus Area
- Project Study Area
- Railway
- Municipal Boundary
- Water Body
- Rouge National Urban Park

1:30,000
0 250 500 1,000 m

MAP CREATED BY: GM
MAP CHECKED BY: AB
MAP PROJECTION: NAD 1983 UTM ZONE 17N

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, ESRI

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PROJECT: 191924
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Figure 2a: Specific Bridge Study Areas Sewells Road Bridge

ROUGE PARK TMP EA

FIGURE 2A
SPECIFIC BRIDGE STUDY AREAS
SEWELLS ROAD BRIDGE

- Bridge Location
- 500 m Project Focus Area
- Railway
- Water Body

1:4,000
0 25 50 100 150 m

N W E S

MAP CREATED BY: GM
MAP CHECKED BY: EW
MAP PROJECTION: NAD 1983 UTM ZONE 17N

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, ESRI

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DATE: 2024-03-25

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Figures 2b: Specific Bridge Study Areas Milne Bailey Bridge

ROUGE PARK TMP EA

FIGURE 2B
SPECIFIC BRIDGE STUDY AREAS
MILNE BAILEY BRIDGE

- Bridge Location
- 500 m Project Focus Area
- Railway
- Water Body

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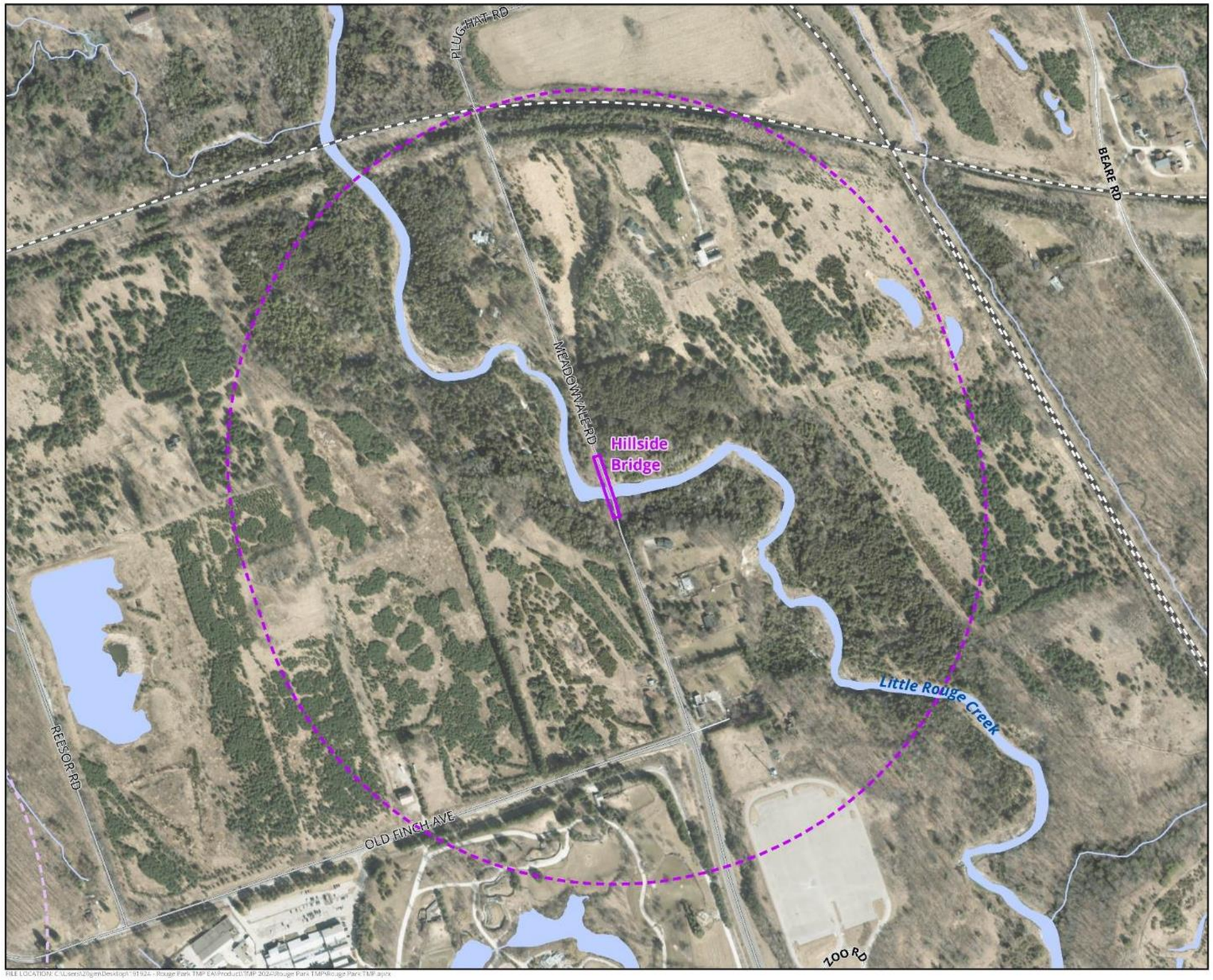
Figures 2c: Specific Bridge Study Areas Hillside Bridge



ROUGE PARK TMP EA

FIGURE 2C
SPECIFIC BRIDGE STUDY AREAS
HILLSIDE BRIDGE

- Bridge Location
- 500 m Project Focus Area
- Railway
- Water Body

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Figures 2d: Specific Bridge Study Areas Stott's Bridge

ROUGE PARK TMP EA

FIGURE 2D
SPECIFIC BRIDGE STUDY AREAS
STOTT'S BRIDGE

- Bridge Location
- 500 m Project Focus Area
- Railway
- Water Body

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Figures 2e: Bridge-Specific Study Areas Maxwell's Bridge

ROUGE PARK TMP EA

FIGURE 2E
SPECIFIC BRIDGE STUDY AREAS
MAXWELL'S BRIDGE

- Bridge Location
- 500 m Project Focus Area
- Railway
- Water Body

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1.2 Environmental Assessment (EA) Process

Municipal infrastructure projects must meet the requirements of the Ontario *Environmental Assessment Act*. The Municipal Engineers Association's amended Municipal Class EA (MCEA) came into force and effect on March 3, 2023. The MCEA applies to a group or "class" of municipal projects which occur frequently and have relatively minor and predictable impacts. These projects are approved under the *EA Act*, as long as they are planned, designed and constructed according to the requirements of the MCEA.

The requirements of the MCEA for a proposed undertaking depend on the type of the proposed work, its complexity and the significance of its potential environmental impacts. Under the 2021 amended MCEA, various municipal maintenance, operational activities, rehabilitation works, minor reconstruction or replacement of existing facilities (formerly classified as Schedule A and A$^+$) are now exempt or eligible for exemption from the *EA Act.* Four categories of projects are identified in the 2023 amended MCEA:

- **Exempt**: projects generally include various maintenance, operation, rehabilitation, and other small projects that are limited in scale and have minimal adverse environmental effects. Previously these projects were classified as Schedule A or A$^+$;
- **Projects Eligible for Screening to Exempt**: may be eligible for exemption based on the results of a screening process submitted to the local Ministry of Environment, Conservation and Parks (MECP) Regional Environmental Planner. If the process concludes that the project is not exempt, it must follow the applicable Schedule B or C process;
- **Schedule B**: projects generally include improvements and minor expansion to existing facilities and have the potential for some adverse environmental impacts. A Schedule B project must follow Phases 1 and 2 of the Class EA process and requires an environmental screening to avoid or minimize adverse impacts. Public and agency consultation is also required. The screening process is documented in a Project File; and
- **Schedule C**: projects generally include the construction of new facilities or major expansions to existing facilities and have the potential for significant environmental impacts. A Schedule C project must follow all five phases of the Class EA process and requires the completion of an Environmental Study Report. Extensive public and agency consultation is required for a Schedule C project.

Master plans are long range plans which integrate municipal infrastructure requirements for existing and future land uses with environmental assessment planning principles. These projects are not their own MCEA category but may be required to follow the requirements of a MCEA category. These plans examine an infrastructure system or group of related projects in order to outline a framework for planning for subsequent projects and/or developments over the long-term.

This TMP was initiated in 2020 under the 2015 MCEA, following Approach #2 for Master Plans. The MCEA was amended in 2023 and this TMP was completed following the updated requirements. The TMP process continued to follow Approach #2 for Master Plans and meets the requirements for a Schedule "B" project for each structure (described in Appendix 4 of the MCEA). This approach requires a level of investigation, consultation, and documentation to fulfill the requirements for Schedule "B" projects, including the completion of Phases 1 and 2 of the MCEA process. The process for this TMP, following the MCEA, is outlined in **Figure 3**.

Figure 3: The Municipal Class EA Transportation Master Plan Process

2.0 Policy Context and Background Studies

The following subsections provide an overview of federal, provincial, regional, and municipal policies that may influence the Project.

2.1 Federal

2.1.1 Federal Sustainable Development Strategy (2022 to 2026)

The Federal Sustainable Development Strategy (FSDS) is a document that sets out the Government of Canada's sustainable development priorities, establishes goals and targets, and identifies actions to achieve them. The FSDS supports Canada's efforts to advance the 17 Sustainable Development Goals of the United Nations 2030 Agenda for Sustainable Development. The Government of Canada's sustainable development priorities include:

- Achieving net-zero greenhouse gas emissions;
- Conserving nature and biodiversity for future generations;
- Advancing reconciliation with First Nations, Inuit and Métis communities;
- Promoting gender equality; and
- Supporting innovation and economic growth.

Goal 11 of the FSDS is to "Improve Access to Affordable Housing, Clean Air, Transportation, Parks, and Green Spaces, as well as Cultural Heritage in Canada" (ECCC, 2022). This goal includes providing opportunities for Canadians to get out into nature and experience Canada's cultural heritage, including through Canada's network of national parks. This goal is supported by the Government of Canada's launch of the new National Urban Parks program and goals to develop green spaces close to urban centres and provide opportunities to connect with nature, green spaces, trail networks and culture.

Goal 15 of the FSDS is to "Protect and Recover Species, Conserve Canadian Biodiversity" (ECCC, 2022). This goal aims to conserve and protect natural ecosystems across Canada.

2.1.2 Rouge National Urban Park Act (2015)

Enacted in 2015, the *Rouge National Urban Park Act* established the Rouge National Urban Park as a federal protected area intended to provide "protection and presentation of its natural and cultural resources and the encouragement of sustainable farming practices within the park" (Rouge National Urban Park Act [S.C. 2015, c. 10]).

2.1.3 Rouge National Urban Park Management Plan (2019)

The 2019 Rouge National Urban Park Management Plan (RNUP Management Plan) recognizes the need for transportation and green infrastructure within the Park. The RNUP Management Plan outlines key strategies for the park in the 10 years following publication. The plan includes a range of objectives from the protection of the natural environment to enhancements to user experiences within the park by means of infrastructure improvements and other services (Parks Canada, 2019). All proposed work within the boundaries of RNUP must be completed in accordance with the guidelines of this Plan. The RNUP Management Plan sets out actions for its various strategies and objectives. **Table 1** summarizes the strategies, objectives and actions from the RNUP Management Plan that are particularly relevant to this project.

Table 1: Summary of Relevant Strategies from the Rouge National Urban Park Management Plan

Strategy	Objectives	Actions	How Strategy is to be Realized Through the Rouge TMP
1 – "Protect and restore natural heritage values in support of a resilient park landscape" (Parks Canada, 2019, pg. 17).	2 – "Enhance ecological connectivity throughout the park and adjacent natural areas" (Parks Canada, 2019, pg. 20).	Encourage the incorporation of connectivity improvements "in the planning, management and operation of roads, highways, rail lines, hydro corridors and other infrastructure that traverses the park" Strengthen trail connections with adjacent natural areas and communities (Parks Canada, 2019, pg. 21).	Mitigation measures will be identified to limit the impact of proposed infrastructure on existing wildlife habitats and movement corridors. Recommended strategies for the watercourse crossings will be reflective of the desire to support active transportation linkages through the Park.
2 – "Sustain a Living Landscape – Past, Present and Future" (Parks Canada, 2019, pg. 25).	4 – "Conserve, celebrate, and manage the park's cultural resources and traditions" (Parks Canada, 2019, pg. 30).	"Work to conserve structures, landscapes and viewscapes that are relevant to the park's heritage" "Work collaboratively with Indigenous partners, governments, lessees and non-governmental organizations to identify and conserve cultural resources and to integrate their conservation with that	The recommendations of the TMP will appropriately conserve the cultural heritage value or interest of each of the five watercourse crossings that are the focus of this study. Indigenous Partners and other key stakeholders will be consulted with and actively

Strategy	Objectives	Actions	How Strategy is to be Realized Through the Rouge TMP
		of other park resources" (Parks Canada, 2019, pg. 30). "Integrate and interpret, where feasible, ecological integrity in the management of cultural resources, such as allowing natural reclamation in old building foundations for snake hibernacula" (Parks Canada, 2019, pg. 31).	engaged throughout the duration of this study.
3 – "Celebrate Rouge National Urban Park as a National and International Gateway to Discovering Canada's Environment and Heritage" (Parks Canada, 2019, pg. 32).	3 – "Develop a range of infrastructure and supporting services to facilitate memorable experiences in the park's rich landscapes and features" (Parks Canada, 2019, pg. 36).	Ensure the park meets universal design principles to allow for inclusive access (Parks Canada, 2019, pg. 31). Develop the park trail system by introducing new trails and creating connections to points of interest, various facilities and campgrounds, and the local and regional trail and cycling networks (Parks Canada, 2019, pg. 37).	Wherever provision of pedestrian facilities are contemplated as a component of this study, those facilities will be AODA compliant. Watercourse crossings will be prioritized where existing and/or proposed trail connections have been identified.

Strategy	Objectives	Actions	How Strategy is to be Realized Through the Rouge TMP
4 – "Achieve Success through Collaboration" (Parks Canada, 2019, pg. 40).	3 – "Collaborate with partners and stakeholders in park operations, access, infrastructure and planning" (Parks Canada, 2019, pg. 43)	Provide low cost or free shuttle bus service to the park from various centres, including downtown Toronto and municipal transit hubs. Create convenient, affordable and sustainable park access, including links to transit (present and future) and commuter lots; local and regional trails; and carpooling options at parking lots within RNUP (Parks Canada, 2019, pg. 43).	Selection of a recommended solution at each crossing location will consider potential impacts associated with any changes in connectivity, as well as opportunities to support planned connections.

2.2 Provincial

2.2.1 Conservation Authorities Act (2024)

The provincial regulation and updated legislation related to the role of Conservation Authorities in regulating development in or near natural hazards came into effect on April 1, 2024. Any development activities planning to be undertaken in or near a regulated area, including flood plains, valley lands, and wetlands will still be required to apply for a permit.

Permit applications submitted on or after April 1, 2024 will be required to follow the processes outlined in in the updated Section 28 of the *Conservation Authorities Act* and the new regulations (Ontario Regulation 41/24).

All future development work related to the Rouge Bridges will follow the updated Section 28 *Conservation Authorities Act* policy and appropriate permits will be acquired prior to any construction or work which may disturb the natural environment.

2.2.2 Ontario Heritage Act (2022)

The Ontario Heritage Act (O.H.A.) (Ontario Heritage Act, R.S.O. c. O.18, 1990 [as Amended in 2022], 1990) is the primary piece of legislation that determines policies, priorities and programs for the conservation of Ontario's heritage. The relevant Heritage Designation By-Laws are referred to for any Reasons for Designation of each bridge.

2.2.3 Provincial Policy Statement (2020)

The Provincial Policy Statement (PPS) came into effect on May 1, 2020, and is issued under Section 3 of the *Planning Act.* This section states that decisions affecting planning matters "shall be consistent with" the PPS (MMAH, 2020). (Note: a proposed update to the PPS was made available in Spring 2024 but is not in effect at the time of writing of this TMP).

Section 1 of the PPS, Building Strong Healthy Communities, has the general objective of supporting "Ontario's long-term prosperity, environmental health and social well-being [by] wisely managing change" (MMAH, 2020). Accordingly, the following two excerpts of the PPS aim to follow that objective:

Public Spaces, Recreation, Parks, Trails and Open Space

Section 1.5 of the PPS includes policies to promote healthy, active communities by:

- "Planning public [infrastructure], spaces and facilities to be safe, meet the needs of pedestrians, foster social interaction and facilitate active transportation and community connectivity" (MMAH, 2020); and
- "Recognizing provincial parks, conservation reserves, and other protected areas, and minimizing negative impacts on these areas" (MMAH, 2020).

Infrastructure and Public Service Facilities

Section 1.6 of the PPS includes the following relevant policies for infrastructure and public service facilities:

- "Infrastructure and public service facilities shall be provided in an efficient manner that prepares for the impacts of a changing climate while accommodating projected needs" (MMAH, 2020);
- "Before consideration is given to developing new infrastructure and public service facilities:
  - The use of existing infrastructure and public service facilities should be optimized; and
  - Opportunities for adaptive re-use should be considered, wherever feasible" (MMAH, 2020).

Cultural Heritage and Archaeology

Section 2.6 of the PPS includes the following relevant policies for cultural heritage and archaeology:

- Significant built heritage resources and significant cultural heritage landscapes shall be conserved;
- Development and site alteration shall not be permitted on lands containing archaeological resources or areas of archaeological potential unless significant archaeological resources have been conserved;
- Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property except where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved;

- Planning authorities should consider and promote archaeological management plans and cultural plans in conserving cultural heritage and archaeological resources; and
- Planning authorities shall engage with indigenous communities and consider their interests when identifying, protecting and managing cultural heritage and archaeological resources.

2.2.4 Ontario's Greenbelt Plan (2017)

Through the authority of the *Greenbelt Act* (2005), the *Greenbelt Plan* (2017) came into effect July 1, 2017, to provide permanent protection to the agricultural land base and the ecological and hydrological features, areas and functions occurring on this landscape. The plan also aims to preserve cultural heritage and recreation opportunities within the Greater Golden Horseshoe (GGH) (Ministry of Municipal Affairs, 2017). The plan provides support to other federal initiatives, such as the Rouge National Urban Park and Management Plan (Ministry of Municipal Affairs, 2017).

Within the Geographic-Specific Policies in the Protected Countryside section of the plan, Section 3.2.7 of the plan provides an overview of the project area and its significance as an ecological corridor linkage for vital environmental systems within the GTA. The plan identifies the need to support various park functionalities and supports "connections to surrounding natural heritage, agricultural and open space and trail systems, together with transportation infrastructure, visitor facilities and cultural heritage". In particular, the plan notes that:

- "Infrastructure traversing the Park should be planned, designed and constructed to limit and mitigate impacts, support recreational uses and promote environmental restoration opportunities" (Ministry of Municipal Affairs, 2017).

Section 4.2 of the plan identifies policies for infrastructure within the Greenbelt. Policy 4.2.1.1 indicates that all new infrastructure subject to and approved under the *EA Act* is permitted within the Protected Countryside if "it supports agriculture, recreation and tourism, Towns/Villages and Hamlets, resource use or the rural economic activity that exists and is permitted within the Greenbelt; or it serves the significant growth and economic development expected in southern Ontario beyond the Greenbelt by providing for the appropriate infrastructure connections among urban centres and between these centres and Ontario's borders." Further, infrastructure within the Greenbelt is required to avoid key natural heritage features, key hydrologic features, or

key hydrologic areas. Where infrastructure does cross the Natural Heritage System, planning, design, and construction practices are required to minimize negative impacts and, where reasonable, maintain or improve connectivity.

The Rouge River is designated as an Urban River Valley under the Plan. The Urban River Valley designation applies to lands within the main corridors of river valleys connecting the rest of the Greenbelt to the Great Lakes and inland lakes. Only publicly owned lands are subject to the policies of the Urban River Valley designation. Policy 6.2.3 of the Plan indicates that all new infrastructure subject to and approved under the *EA Act* is permitted within the designation provided "it supports the needs of adjacent settlement areas or serves the significant growth and economic development expected in southern Ontario and supports the goals and objectives of the Greenbelt Plan."

2.2.5 Toronto and Region Conservation Authority's Crossing Guidelines for Valley and Stream Corridors

Toronto and Region Conservation Authority's (TRCA) Valley and Stream Corridor Crossings Guidelines (2015) outlines study requirements and design recommendations for any crossing of a TRCA-regulated watercourse or valley system. As all crossings under study in the current TMP are located over TRCA-regulated watercourses, these guidelines must be applied if the existing bridges are identified for future replacement – particularly if the new bridge is to be at a different location than the existing structure (TRCA, 2015).

2.2.6 Toronto and Region Conservation Authority's Living City Policies (2014)

The TRCA's Living City Policies (LCP) is a document that guides the implementation of TRCA's legislated and delegated roles and responsibilities in the planning and development approvals process.

Section 7: Policies for Environmental Planning includes policies to guide the TRCA in its commenting roles as a public commenting body, resource management agency, service provider, and landowner under the *Environmental Assessment Act*. Below is an overview of relevant sections of the LCP.

- Section 7.3.1 of the LCP identifies requirements and guidance to protect, restore, and enhance the TRCA's Natural System which is comprised of water resources, natural features and areas, natural hazards, and potential natural cover and/or buffers;

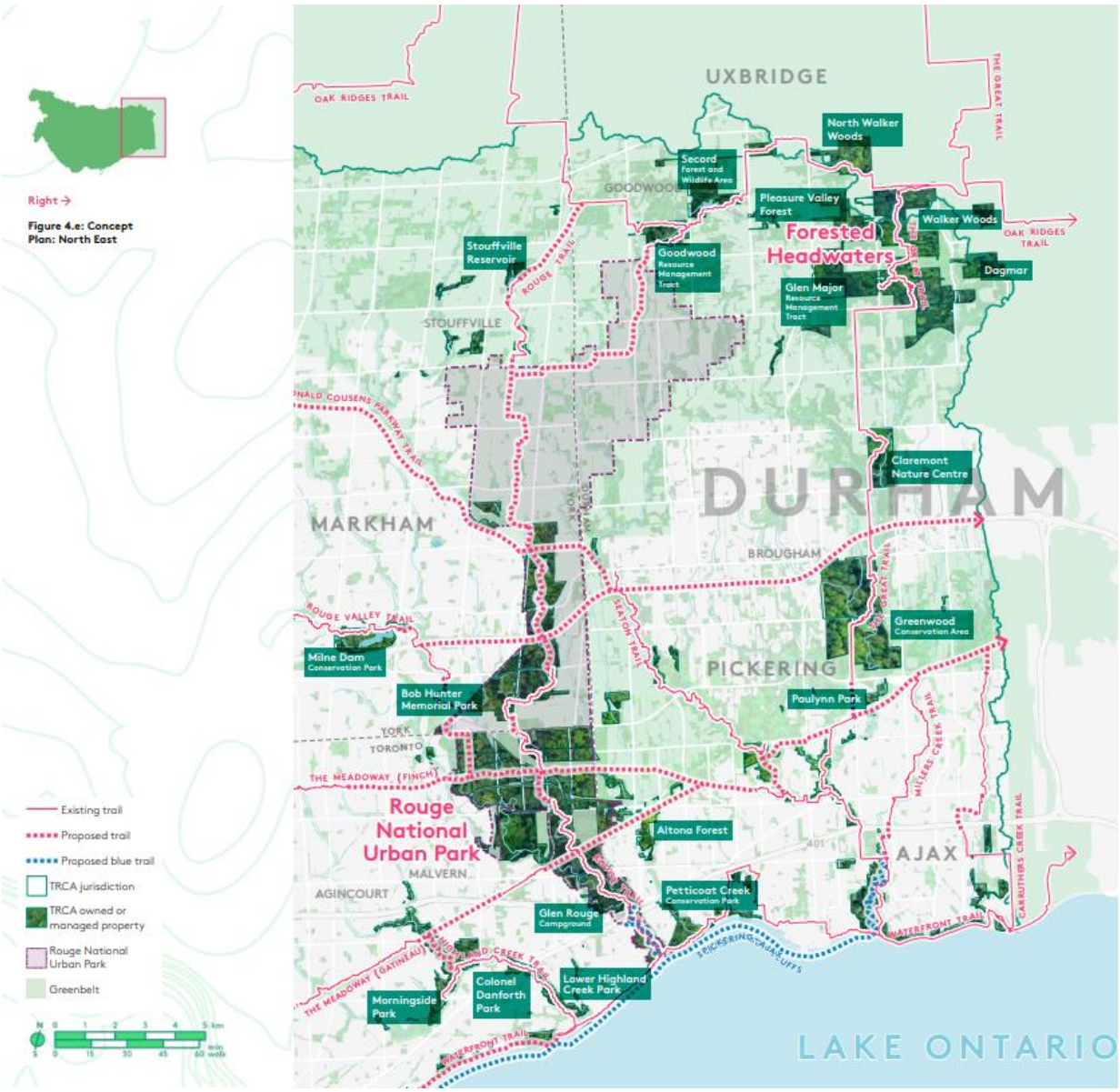
- Section 7.4 of the LCP identifies requirements for developing adjacent to, and in, the Natural System, while minimizing impacts to, maintaining, and enhancing the functions of the protected Natural System. This includes direction for water resources management (i.e., water quality and quantity, erosion control, and source water protection), natural hazard management, and infrastructure projects; and
- Section 7.5.2.1 of the LCP identifies requirements for TRCA comments on master plans and environmental assessments that are circulated to them.

2.2.7 Toronto and Region Conservation Authority's Trail Strategy

The TRCA's Trail Strategy for the Greater Toronto Region (2019) outlines the plan for collaboration between the TRCA and partners to complete, manage, and expand the Greater Toronto Region Trail Network (TRCA, 2019). The trail strategy document is also meant to provide additional rationale to secure greenspace and support the Greenlands Acquisition Project for 2016-2020.

Approximately 480 additional kilometres are proposed through the trail strategy to improve and expand the existing trail system in the Greater Toronto Area. The concept section of the strategy document includes maps outlining the proposed trail network which identifies missing links, and potential trail connections. The concept maps outline the boundary of the RNUP and the proposed trails that would intersect it. The trails proposed through the RNUP area are shown below in **Figure 4**.

Figure 4: RNUP Trail Strategy (TRCA, 2019)



The bridges discussed in the TMP are not expected to interact with the proposed trail strategy but may provide additional crossings and potential for trail connections if pedestrian infrastructure is added to the bridges.

2.3 Regional

2.3.1 York Region Transportation Master Plan

The York Region Transportation Master Plan (2022) was approved by York Regional Council on September 29, 2022. The Plan provides a long-term vision for York Region's transportation network to 2051 and builds on the 2016 York Region Transportation Master Plan.

The York Region Transportation Master Plan notes the following key transportation improvements close to the RNUP:

- Extension of Highway 7 bus rapid transit to Durham Region;
- Improving Highway 7 and 14th Avenue, including future grade separations at the Canadian Pacific Havelock corridor, Steeles Avenue, 16th Avenue and Elgin Mills Road;
- Arterial road improvements to support the future Pickering Airport;
- South York Greenway, Cycling, Pedestrian and Micromobility corridor which would connect active transportation users east-west across the Region and into Rouge National Urban Park;
- Future Highway 407 Transitway;
- Via Rail's high-frequency rail project on the Havelock corridor and potential future GO service on the same line; and
- Other projects to expand GO Transit train service.

The Plan also includes a 2051 Rapid Transit Network which identifies Steeles Avenue East (which forms the northern boundary of the Project Study Area) as a Rapid Transit Corridor (York Region, 2022).

2.3.2 Durham Region Transportation Master Plan (2017)

The Durham Region Transportation Master Plan (2017) was approved by Durham Regional Council on December 13, 2017. The Plan defines the policies, programs, and infrastructure needed to meet the Region's transportation needs to 2031 and beyond.

The Durham Region Transportation Master Plan notes the following transportation improvements and opportunities close to the RNUP:

- Direct routing is a key function of transit services in Durham Region Transit's (DRT) proposed rapid transit and high frequency network corridors which would provide convenient access to several GO stations including the Rouge Hill GO station; and
- Opportunity for the Durham Regional Trail Network to enhance connections to the RNUP, particularly within the expanded area in north Pickering/Uxbridge.

2.4 Municipal

2.4.1 City of Toronto Official Plan

The City of Toronto Official Plan was implemented in 2006 and is intended to guide efficient and effective city-building. The Official Plan provides a long-term vision for growth in the City and incorporates key services such as transit and infrastructure into its planning and development frameworks.

As part of the *Planning Act*, the City began an Official Plan review in 2011. This included undertaking a Municipal Comprehensive Review that focuses on designated areas of employment within the Official Plan. This review has been conducted in stages by thematic area; certain thematic areas are completed, while others are currently undergoing review. As of September 2023, the City has concluded the Municipal Comprehensive Review with the exception of eight remaining employment area conversion requests and one remaining property for the Chapter 7 Site and Area Policy Review (City of Toronto, 2024a).

The most recent Official Plan consolidation of Chapters 1 to 5 is in effect as of June 2023. The most recent consolidation of Schedule 1-4 is in effect as of March 2022 and the most recent consolidation of Chapters 6 and 7 is in effect as of June 2015. (Note: the most recent Official Plan consolidation came into effect as of June 2024, after the time of drafting this TMP).

The TMP Study Area is wholly located within Official Plan Area. **Table 2** outlines the policies applicable to the Study Area, including how each policy is relevant to the TMP.

Table 2: Summary of City of Toronto Official Plan Policies Applicable to the TMP Study Area

OP Section	Applicable Policy	How the Policy is Being Realized through the Rouge Park Bridges TMP
2.1 Building a More Liveable Urban Region	1. Toronto will work with neighbouring municipalities, the Province of Ontario and Metrolinx to address mutual challenges and to implement the Provincial framework for dealing with growth across the GTA which: k) protects, enhances and restores the region's system of green spaces and natural heritage features and functions and the natural corridors that connect these features, recognizes the role of river valleys that connect the Greenbelt to Lake Ontario and protects the region's prime agricultural land (City of Toronto, 2022a).	Impacts to natural heritage resources within the RNUP will be minimized and mitigated to the extent feasible. Access to natural features will be further enabled through the recommendations of this study.
	2. Toronto will consult with adjacent municipalities when making decisions regarding matters of mutual interest such as shared transportation corridors and cross-boundary service provision (City of Toronto, 2022a).	Representatives from the City of Pickering have participated as members of the Stakeholder Committee.
2.3.2 Toronto's Green Space System and Waterfront	1. Actions will be taken to improve, preserve and enhance the Green Space System by: a) improving public access and enjoyment of lands under public ownership; b) maintaining and increasing public access to privately owned lands, where appropriate (City of Toronto, 2022a).	The TMP will strive to maintain and/or improve multi-modal access to the natural heritage resources within the RNUP through consideration of improvements to vehicular, cycling and pedestrian safety and trail connectivity.

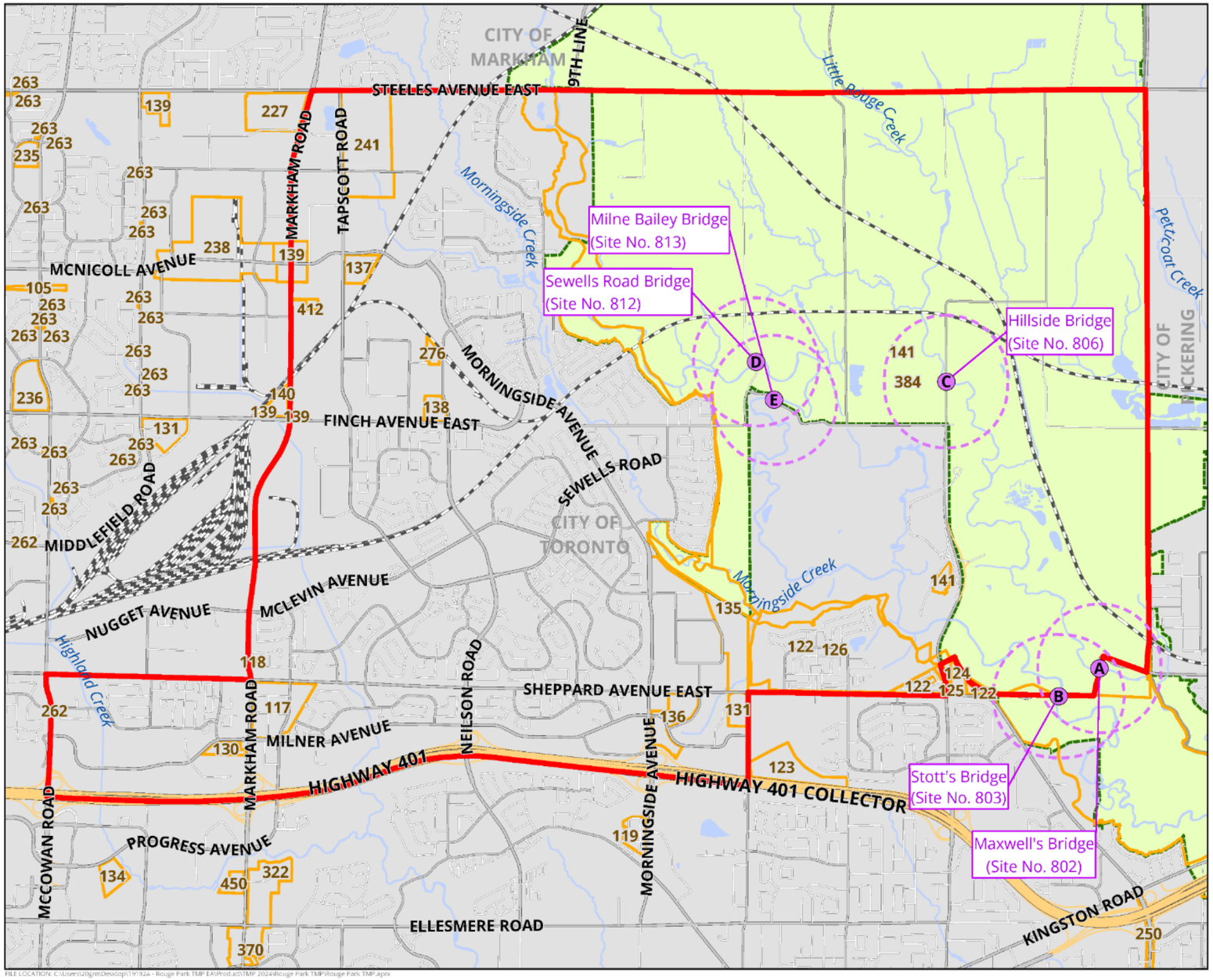
OP Section	Applicable Policy	How the Policy is Being Realized through the Rouge Park Bridges TMP
2.4 Bringing the City Together: A Progressive Agenda of Transportation Change	1. Given the health benefits of physical activity, active forms of transportation will be encouraged by integrating and giving full consideration to pedestrian and cycling infrastructure in the design of all streets, neighbourhoods, major destinations, transit facilities and mobility hubs throughout the City (City of Toronto, 2022a).	Planning for safe pedestrian and cyclist operating spaces along primary corridors and across study watercourse crossings will be an important consideration of this study.
3.1.6 Heritage Conservation	4. Properties on the Heritage Register will be conserved and maintained consistent with the Standards and Guidelines for the Conservation of Historic Places in Canada, as revised from time to time and as adopted by Council (City of Toronto, 2022a). 5. Proposed alterations, development, and/or public works on or adjacent to, a property on the Heritage Register will ensure that the integrity of the heritage property's cultural heritage value and attributes will be retained, prior to work commencing on the property and to the satisfaction of the City. Where a Heritage Impact Assessment is required in Schedule 3 of the Official Plan, it will describe and assess the potential impacts and mitigation strategies for the proposed alteration, development or public work (City of Toronto, 2022a). 13. In collaboration with First Nations, Métis and the Provincial Government, the City will develop a protocol for matters related to identifying, evaluating and protecting properties	Decisions related to the heritage bridge structures will be made in accordance with the *Ontario Heritage Act*, Provincial Policy Statement (2020), and City of Toronto Official Plan, in consultation with specialists in the field of heritage structures, City of Toronto Heritage Planning staff, Parks Canada, and Indigenous Communities.

OP Section	Applicable Policy	How the Policy is Being Realized through the Rouge Park Bridges TMP
	and cultural heritage landscapes on the Heritage Register, archaeological sites and artifacts here they may be of interest to First Nations or Métis (City of Toronto, 2022a).	

2.4.1.1 Site and Area Specific Policies

Chapter 7 of the City's Official Plan (OP), Site and Area Specific Policies, outlines specific policies for various areas across the city. **Figure 5** illustrates the various Site and Area Specific Policies that apply to lands with the RNUP.

Figure 5: Excerpt from Toronto Official Plan Map 33 Indicating Site and Area Specific Policies that Apply to RNUP



ROUGE PARK TMP EA

FIGURE 5
TORONTO OFFICIAL PLAN SITE SPECIFIC POLICIES APPLICABLE TO THE TMP STUDY AREA

- Bridge Location
- 500 m Project Focus Area
- Project Study Area
- Railway
- Municipal Boundary
- Water Body
- Rouge National Urban Park
- Site and Area Specific Policies Data

1:30,000
0 250 500 1,000 m

MAP CREATED BY: GM
MAP CHECKED BY: EW
MAP PROJECTION: NAD 1983 UTM ZONE 17N

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, ESRI

DILLON CONSULTING

PROJECT: 191924
STATUS: DRAFT
DATE: 2024-03-25

Site and Area Specific Policy 141

Portions of the TMP Study Area fall under the Site and Area Specific Policy 141, specifically the lands north of Twyn Rivers Drive, and east of Staines Road.

Implementation of the policy will include creating a coordinated trail program by connecting compatible recreational uses that exist within the area (City of Toronto, 2015). Since the transfer of TRCA Lands within Rouge Park to Parks Canada in May of 2019, providing connectivity of the active transportation network outside of existing City of Toronto rights-of-way is no longer being managed by the City of Toronto. Policy 141 also states that "27-metre rights-of-way [within the limits of the specific policy area] will not be used to accommodate four lane roads" (City of Toronto, 2015, Chapter 7, pg. 97).

Site and Area Specific Policy 384

Area Specific Policy 384 applies solely to the lands within Rouge Park and was put in place to exempt the park from OP Policies 2.3.2(4) and 4.3(8) which otherwise would have prevented the transfer of park lands to the Federal Government (City of Toronto, 2015).

2.4.2 Cycling Network Plan (2024)

The Cycling Network Plan (CNP) serves as a comprehensive roadmap and work plan, outlining the City's planned investments in the near-term and intentions for the long-term. The CNP is an evolution of the Ten-Year Cycling Network Plan, approved in principle in June 2016 and a culmination of significant research, analysis, and extensive public consultation. In 2019, 2021, and 2024, the Cycling Network Plan was updated to continue to build on the work of the Ten-Year Plan, including updated data sources; a revised approach to short-term programming and long-term planning that better reflects the nature of capital coordination, development planning, and challenging feasibility assessments; a strengthened focus on safety, equity, and connectivity; and an enhanced prioritization framework. On June 26, 2024, Toronto City Council adopted the Cycling Network Plan Update (2025-2027), including endorsement of the next three-year program and initiation of many Major City-Wide Cycling Routes.

Existing cycling network elements within the TMP Study Area include:

- A signed cycling route on Meadowvale Road, the Meadoway Trail, and the Scarborough Railpath Trail;
- Along Steeles Avenue East generally from Beare Road to Durham Line; and
- Along Sheppard Avenue East from Old Kingston Road to Morningside Avenue.

New Bikeways were implemented in 2023 along Morningside Avenue between Steeles and Tapscott Road. The 2025-2027 Near-Term Implementation Program identifies cycling infrastructure Approved for Future Implementation along Steeles Avenue East between Tapscott and Ninth Line as part of the Steeles Avenue East Widening project.

2.4.3 Vision Zero: Road Safety Plan

Approved by City Council in 2016, the Vision Zero Road Safety Plan (RSP) is a comprehensive five year (2017-2021)[2] action plan that aims to eliminate traffic-related fatalities and serious injuries on Toronto's streets. Through a range of initiatives, this plan focuses on prioritizing the safety of the most vulnerable users, which are addressed in the six emphasis areas outlined in the plan:

- Pedestrians;
- Cyclists;
- Motorcyclists;
- School-aged children (age 4-19);
- Older adults (age 65 and over); and
- Aggressive and distracted driving (City of Toronto, 2017).

Several, if not all, of the above emphasis areas can be considered significant in the TMP Study Area.

[2] The commencement of the TMP occurred within the active timeframe of the Vison Zero RSP action plan. Although the five-year period for the Vision Zero RSP concluded in 2021, considerations for the action plan remain within the TMP.

In 2019, the City of Toronto released an update to Vision Zero RSP, called Vision Zero 2.0. Vision Zero 2.0 recommends a set of data driven, extensive, proactive, and targeted initiatives that will continue to enhance safety for vulnerable road users. The plan proposes five key focus actions, including:

- Speed management strategy;
- Road design improvements;
- Proactive application of pedestrian head start signals;
- Proactively addressing high-risk mid-block crossings; and
- Education and Engagement Plan (City of Toronto, 2019b).

Existing and proposed transportation facilities within the focused Study Areas will be examined from a Vision Zero lens.

2.4.4 City of Toronto Infrastructure Standards

Transportation Facilities

The design of City transportation infrastructure is guided by a number of design standards, including Transportation Association of Canada's Geometric Design Guide (TAC GDG) (TAC, 2017), the City's Lane Widths Guideline (City of Toronto TS, 2018) and the City's Construction Specifications and Drawings for Roadworks (City of Toronto, 2014-2021). In the rural environment of the RNUP, it is anticipated that design of vehicular and active transportation facilities will be completed in accordance with the TAC GDG.

3.0 Public and Agency Consultation

The following section summarizes consultation activities completed for the TMP. Consultation was undertaken in accordance with the requirements of the Class EA process. All comments received are considered in the final recommendations of the TMP. All consultation materials are located in **Appendix A**.

Consultation activities for this project were divided into two phases.

- Phase 1 (December 2020 – December 2021) of public consultation focused on collecting information on users' experiences of the bridges and adjacent roadways. Phase 1 consultation activities included consultation with the public, agencies, and Indigenous communities as well as targeted consultation with local stakeholder organizations, Parks Canada, and the TRCA. A virtual public meeting (PIC #1) was hosted in October 2021; and
- Phase 2 (January 2022 to August 2022) of public consultation focused on the recommendations for the five bridges, following an in-depth evaluation of the alternatives and collecting feedback on the recommendations. Phase 2 consultation activities included consultation with the public, agencies, and Indigenous communities as well as targeted consultation with local stakeholder organizations. A commenting period was open from January 2022 and August 2022, a virtual public meeting (PIC #2) was held on July 20, 2022, and an online survey was available from July 11, 2022, to August 10, 2022, to provide feedback.

3.1 Project Contact List

The City of Toronto maintained the project contact list and circulated project notifications to stakeholders including members of the public, agencies, Indigenous communities, and interest groups (**Appendix A-1**).

3.2 Project Specific Website

Throughout the TMP study, the City of Toronto maintained a project website at the following URL: www.toronto.ca/rougebridges

The project website contained copies of the following project-related documents:

- Project Notices;
- Study Area and Project Background;
- Project List Subscription;
- Presentation Materials (Public Information Centre #1 and #2);
- Project Survey; and
- Interactive map displaying site-specific bridge information and opportunity for comments submissions in a spatial format.

3.3 Notices

3.3.1 Notice of Commencement

A Notice of Commencement was issued the week of December 14, 2020, and published on December 24, 2020, in the Mirror (Scarborough-East) and Pickering News (**Appendix A-2**). The Notice was also distributed through:

- Flyers delivered to 25,867 residents and businesses in the study area;
- Posting on the project website;
- Email and letter sent to Indigenous communities (sent December 15, 2020);
- Email to all mandatory and applicable agencies and utility companies (sent December 15, 2020);
- Email to Stakeholders and Community Groups;
- Email to subscribed members of the public; and
- Notification sent to City Councillor for Ward 25 (Scarborough-Rouge Park).

The notice introduced the TMP and provided an overview of the bridges and their history. The notice explained the TMP process under the MCEA, the study purpose, and provided City contact information as a way for the public and agency contacts to provide comments.

3.3.2 Phase 1: Notice of Public Consultation

A Notice of Public Consultation (Phase 1) was issued the week of October 4, 2021. The Notice was distributed through:

- Flyer delivered to 25,867 residents and businesses in the Study Area;
- Posting on the project website;
- Email and letter sent to Indigenous communities (sent October 8, 2021);
- Email to all mandatory and applicable agencies and utility companies (sent October 8, 2021);
- Email to stakeholders and community groups;
- Email to subscribed members of the public; and
- Notification sent to City Councillor for Ward 25 (Scarborough-Rouge Park).

The notice provided an overview of the project and bridges as well as provided details on the virtual public meeting held on October 21, 2021, from 6 p.m. to 8 p.m. The notice provided City contact information as a way for the public and agency contacts to provide comments either online, by email or by phone. The deadline for comments was listed as November 4, 2021.

3.3.3 Phase 2: Notice of Public Consultation

A Notice of Public Consultation (Phase 2) was issued on June 28, 2022 (**Appendix A-4**). The Notice was distributed through:

- Flyer delivered to 25,867 residents and businesses in the Study Area;
- Posting on the project website;
- Email and letter sent to Indigenous communities (sent July 8, 2022);
- Email to agencies and utility companies;
- Email to stakeholders and community groups;
- Email to subscribed members of the public; and
- Notification sent to City Councillor for Ward 25 (Scarborough-Rouge Park).

The notice provided an overview of the project and the recommended alternative solutions for the bridges as well as provided details on the virtual public meeting held July 20, 2022, from 6:30 p.m. to 8:30 p.m. The notice provided City contact information

as a way for the public and agency contacts to provide comments either online, by email, or by phone. The deadline for comments was listed as August 3, 2022.

3.4 Technical Advisory Committee (TAC)

A Technical Advisory Committee (TAC) was established at the beginning of the project, consisting of representatives of the City of Toronto departments. The intent of the TAC was to bring together internal departments to comprehensively review recommendations and findings of the TMP. A list of TAC members is located in **Appendix A-8**.

3.4.1 TAC Meeting #1

The first TAC meeting was held on March 3, 2021, to provide an overview of the study, including background information, key issues, and information on each bridge.

3.4.2 TAC Meeting #2

The second TAC meeting was held on April 25, 2022. This meeting consisted of a virtual presentation that provided an overview of the project and an opportunity for the members of the committee to offer feedback on the evaluation of alternatives and the draft preferred solution for each bridge site.

3.5 Interest Groups Consultation

Targeted interest groups consultation was undertaken throughout the project to provide an overview of the project and solicit feedback from interested interest groups. Targeted interest groups meetings were conducted in small groups or one-on-one with major stakeholders of the RNUP, specifically the Scarborough Preservation Panel, TRCA, and Parks Canada. Three broader interest groups meetings were also held throughout the project.

3.5.1 Interest groups Meeting #1 – March 25, 2020

Interest groups Meeting #1 was held via conference call on March 25, 2020. The meeting included representatives from the City of Pickering, Parks Canada, and the TRCA. During the meeting, an overview of the project and the TMP process was provided including an overview of the draft problem/opportunity statement and the

Ontario Heritage Bridge Preservation Guidelines (2008). A complete list of interest groups in attendance at the meeting is located in **Appendix A-9**.

Table 3 summarizes the feedback provided during the meeting.

Table 3: Summary of Feedback Received during Interest Groups Meeting #1

Stakeholder	Question/Comment
TRCA	• Key areas of interest include reduction of vegetation removal and natural heritage impacts in riparian zones while respecting the active transportation users of the RNUP; • Noted that the bridges generally have relatively high clearance and hydraulic conveyance is not a primary constraint; • Noted that TRCA has a long history with these bridges dating back before the establishment of RNUP; • Noted that TRCA is currently working with Parks Canada on in-stream and adjacent to stream restoration projects and expressed interest in ongoing interaction with the project; and • Shared that they have a regional trails strategy that should be considered during the project.
Parks Canada	• Key areas of interest include safety, accessibility, and encouraging pedestrian usage of the trails in RNUP; • Noted current constraints for cyclist and pedestrian traffic at Hillside Bridge and the CP Rail subway (underpass) on Meadowvale Road; and • Asked about opportunities for some short-term prioritizations such as traffic calming, signs or bump outs, prior to the long-term solutions.
City of Pickering	• Key area of interest includes complete streets with pedestrian or cycling components; • Noted preference not to close roadways through RNUP. ○ Noted Tywn Rivers Drive is an important east-west link and consideration should be given to improving safety and widening of the road and bridges. • Noted that the City of Pickering Integrated Transportation Master Plan is underway and that it will be important for the two projects to be coordinated where possible; and • Noted that the Durham Region Cycling Plan is undergoing an update.

3.5.2 Interest Group Meeting #2 – October 14, 2021

Interest group Meeting #2 was held on October 14, 2021, to provide interested interest groups an overview of the TMP and the opportunity to ask questions and provide comments on the TMP. Representatives from 33 interest groups were in attendance. A complete list of interest groups in attendance at the meeting is located in **Appendix A-10**.

Table 4 summarizes the feedback provided during the meeting.

Table 4: Summary of Feedback Received during Interest Groups Meeting #2

Theme	Question/Comment

Natural Environment	• Apply an ecological lens to the evaluation of these bridges and next steps:
	  ○ Improve fish habitat; and
	  ○ Increase project budget to include ecological restoration.
	• Consider lighting (i.e., so that it does not interfere with the natural environment, but increases safety).

Cultural Heritage	• Name bridges after significant people who have contributed to the park.

Public Safety	• Increase safety for people walking and cycling:
	  ○ Use a Vision Zero approach;
	  ○ Encourage the use of alternate forms of transportation to vehicles; and
	  ○ Increase safety measures on Twyn Rivers Drive.

EA Process and Future Consultations	• Consider noise disturbances to people and habitat; and • Ensure coordination with other interest groups in the park (i.e., Parks Canada and Toronto Zoo) Update the Steeles Avenue East EA.

Future Conditions	• Ensure increased bridge capacity does not equate to a greater amount of heavy trucks or increased vehicle traffic:
	  ○ Concern that there will be heavy traffic flow from growing suburbs; and
	  ○ Analyze traffic data.
	• Consider building an additional bridge.

3.5.3 Interest Groups Meeting #3 – July 18, 2022

Interest group Meeting #3 was held virtually on July 18, 2022, to provide a project update and opportunity to ask questions and provide feedback. More than 165 individuals across the many interest groups were invited to attend and representatives from six local organizations attended the meeting. A complete list of interest groups in attendance at the meeting is located in **Appendix A-11**.

Table 5 provides a summary of feedback received during the meeting.

Table 5: Summary of Feedback Received during Interest Groups Meeting #3

Theme	Question/Comment
Active Transportation	• Consider repurposing or reusing the suspension bridges as pedestrian or car-free bridges; and • Make it safer for people to walk and cycle on the bridges.
Vehicular Traffic	• Continue to consider emergency vehicles and servicing. • Maintain connections to Twyn Rivers Drive.
Heritage Resource	• In favour of retaining the Sewell's and Maxwell bridges for their heritage character; • Retain Sewell's road bridge – it is unique and the only suspension bridge in Toronto; • Consider imitating/using the heritage elements on the existing bridges when they are going to be replaced; and • Support the recommendation to retain Maxwell Bridge because of its concrete arch design.
Other	• Support the recommendation to replace Hillside Bridge and Stott's Bridge and recommend replacing them with modern bridges; and • City of Pickering is in favour of the recommendations.

3.5.4 Parks Canada

The project team initially met with Parks Canada on December 15, 2020, to provide an overview of the project and bridges as well as the TMP process.

Over the course of Phase 1 of consultation, the project team had several meetings with Parks Canada. The following outlines the discussions and feedback received during Phase 1:

- Continue coordination among park and internal City of Toronto interest groups who also work on RNUP projects;
- Share relevant documents;
- Consider future plans and planning documents for RNUP, including new visitor centres, trails and trail removals, pedestrian bridges, etc.;
- Enhance, improve and/or maintain trails and connectivity;
- Prioritize safety for vulnerable road users; and
- Ensure baseline conditions are reviewed, addressed and considered.

During Phase 2 of consultation, the project team met with Parks Canada on May 20, 2022, to discuss the recommendations for the five bridges. The following comments were received during this meeting:

- Parks Canada supports the recommendations and associated bridge removal;
- Ensure roads and the bridges that connect them support people walking and cycling;
- Consider Parks Canada's new and future trail projects; and
- Consider minimizing the impacts of staging and construction in the areas where those activities occur.

3.5.5 Toronto and Region Conservation Authority (TRCA)

The project team initially met with the TRCA on December 3, 2020, to provide an overview of the project and bridges as well as the TMP process and to identify TRCA requirements and recommendations for the study.

Comments were received from the TRCA throughout Phase 1 of consultation through meetings and formal letters. Comments were also received via email from the TRCA during Phase 2 of consultation.

Table 6 summarizes the feedback received.

Table 6: Summary of Feedback Received during December 2020 TRCA Meeting

Theme	Question/Comment

Areas of Interest	• TRCA Program and Policy Areas:
	  ○ Natural System Programs and Policies; and
	  ○ Sustainability Programs and Policies.
	• Provincial Program Areas; and
	• Federal Program Areas.

Assessment of Alternatives	• In developing, evaluating and selecting alternatives, staff require the LCP policies be considered. TRCA staff recommends that the preferred alternatives meet the policies of Section 7. In particular, impacts to and opportunities for the following should be addressed:
	  ○ Flooding, erosion or slope instability;
	  ○ Existing landforms, features and functions;
	  ○ Aquatic and terrestrial habitat and functions, including connectivity;
	  ○ TRCA property and heritage resources;
	  ○ Environmental best management practices that support climate change mitigation and adaptation; and
	  ○ Community and public realm benefits.
	• TRCA requires that the preferred alternatives consider avoiding, minimizing, mitigating, and compensating impacts to the ecosystem, and avoid, mitigate or remediate hazards, in that order; and
	• In order to fulfil requirements of O.Reg. 166/06 at the detailed design stage, staff also requires that the preferred alternatives meet LCP policies in Section 8.

Submission Requirements	• Requested submission of the following documents as the project proceeds through the master plan process:
	  ○ All TAC agendas as well as draft and final meeting minutes;
	  ○ All TRCA technical meeting agendas, as well as draft and final meeting minutes;
	  ○ Draft public information boards;
	  ○ Notices of public meetings, including final display material and handouts;
	  ○ Draft technical reports and associated materials;
	  ○ Draft evaluation criteria and matrices;
	  ○ Draft Master Plan document; and
	  ○ Final Master Plan document.

Theme	Question/Comment
Coordination with Agency and Projects	• Parks Canada; • Meadoway project; • Regional-level trail systems; and • Federal-level trail systems

Technical Considerations	• Conduct a geotechnical study to measure slope stability and inform recommendations:
	  ○ Account for methods which do not trigger the destabilization of the slopes/banks; and
	  ○ Review slope stability.
	• Conduct (two) fluvial geomorphology studies/assessments:
	  ○ Sewell's, Milne and Stott's are on the Lower Rouge River; and
	  ○ Hillside and Maxwell are on the Little Rouge River.
	• Submit a Voluntary Project Review to understand impacts related to flooding, erosion, pollution and conservation of land.

Natural Environment /Water Resources	• Methods to improve ecological function as an evaluation criteria; and • Review TRCA's flora and fauna dataset.

Project Scope Considerations	• Consider in the project scope:
	  ○ Ice jamming;
	  ○ Road closures; and
	  ○ Hydraulic analysis.

Construction Considerations	• Milne's Bridge has TRCA-owned lands adjacent to the bridge: ○ Any construction, staging, stockpiling or access may need an archaeological assessment prior to construction.

Connectivity	• Reference TRCA's Trail Strategy:
	  ○ Existing and proposed trails in the study area include:
	  • The Meadoway (Finch);
	  • Rouge Trail; and
	  • Rouge Valley Trail.
	  ○ Local trail and active transportation corridor connection opportunities should be planned and accommodated;
	  ○ Interest in seeing trail use patterns overlaid with plans; and
	  ○ Prioritize pedestrian safety access.

3.5.6 Scarborough Preservation Panel (SPP)

On February 26, 2021, the project team provided the Scarborough Preservation Panel (SPP) with an information package including briefing slides on the project. This information was later followed up with an updated information package on March 19, 2021.

In addition to the information packages, two meetings were held with the SPP. Several representatives of the SPP was also in attendance at Interest groups Meeting #1 in October 2021.

3.5.6.1 Scarborough Preservation Panel Meeting #1

On March 1, 2022, the project team held a virtual meeting with members of the SPP to provide an overview of the project including the problem/opportunity statement, existing conditions, the alternative solutions, and evaluation criteria, as well as to provide an opportunity for a roundtable discussion.

Table 7 summarizes the feedback provided during the meeting.

Table 7: Summary of Feedback Received during SPP Meeting #1

Theme	Question/Comment
Vision	• Is there a vision for the project and the bridges?
Active Transportation & Pedestrians	• Has there been consideration for parallel crossings for pedestrians? • How do you plan to have pedestrians and cyclists cross without twinning? • Suggested closing the road and redirecting traffic to Sheppard Avenue or the 401.
Heritage Value	• Noted that a heritage bridge on Kirkham Road was removed and do not want to lose more heritage bridges in the area; and • Maintaining bridges is important to the cultural landscape.
Emergency Services	• Why does access for emergency services need to be maintained through the park if no one lives in the area?
Evaluation Criteria	• Emphasized the importance of cultural heritage being included in the evaluation criteria for the alternative solutions.

3.5.6.2 Scarborough Preservation Panel Meeting #2

On May 24, 2022, the project team held a virtual meeting with members of the SPP to provide an update on the project and to seek feedback on the evaluation of the alternative solutions and the preferred solution for each bridge.

Table 8 summarizes the feedback provided during the meeting.

Table 8: Summary of Feedback Received during SPP Meeting #2

Theme	Question/Comment
Emergency Services	• Coordinate emergency services between Markham, Toronto, and York Region so that certain bridges do not need to be suitable for emergency service vehicles.
Vehicle Traffic	• Do not enhance or widen the bridges to increase motor vehicle traffic.
Coordination	• Coordinate plans for CP Rail and nearby GO station with Metrolinx.
Heritage Value	• Maintain historical and architectural factors and features.

3.6 Public Consultation

3.6.1 Public Information Centre #1 (Phase 1)

Public Information Centre (PIC) #1 was held on October 21, 2021, from 6:00 p.m. to 8:00 p.m. Due to the ongoing public health developments related to COVID-19, the PIC was held virtually. The PIC was scheduled to provide interest groups with an opportunity to learn more about the project and to provide comments.

3.6.1.1 Overview of PIC

PIC #1 included a formal presentation delivered by members of the project team as well as over an hour for questions, comments, and feedback. The PIC was held virtually, and attendees were able to register in advance and join online via smartphone, tablet or computer or call-in via phone.

The presentation covered the following topic areas:

- Project Overview;
- Study Process;
- Problem & Opportunity Statement;
- Existing Conditions;
- Alternative Solutions; and
- Next Steps.

3.6.1.2 Summary of Feedback Received

Approximately 30 participants attended the meeting. The materials presented, including the notice and presentation slides are found in **Appendix A-11**. Comments and questions received during the PIC are summarized in **Table 9**.

Table 9: Summary of Public Feedback Received during PIC #1

Theme	Question/Comment
Active Transportation	• Ensure safe passage for people walking and cycling; and • Improve pedestrian crossings.
Transportation	• Consider if widening the bridges will increase traffic flow, especially given increased development in the area.
Future Considerations	• Add a second, parallel bridge next to existing bridges; and • Consider other winter road maintenance options instead of salts.
Construction Considerations/Impacts	• Modify the steep gradients or the road itself to enhance vehicle safety; and • EMS vehicles need to cross bridges.
Consultation	• Ensure Town of Pickering is providing project feedback.
Cultural Heritage	• Enhance historical signage (especially at Milne Bridge).
Scope Clarification	• Clarify if the purpose of the project is to prioritize vehicles crossing the bridges (and therefore increase the potential for greater traffic congestion).

3.6.2 One Window Commenting Period (Phase 2)

Throughout the duration of the Phase 2 consultation (January 2022 to August 2022), a one window commenting period was provided. Interest groups and members of the public were invited to share comments and ask questions via phone, email, or written letter. A total of 6 responses were received during the one window commenting period. Comments and questions received during the One Window Commenting Period are summarized in **Table 10**.

Table 10: Summary of Public Feedback Received during the One Window Commenting Period

Theme	Question/Comment
Active Transportation	• Make it safer for people to walk and cycle on the bridges; • Create a wide, attractive pedestrian space; • Consider separating the sidewalk and the cycling lanes from the traffic with a barrier; • Consider adding look-out spots and benches in scenic area for people to enjoy the view and rest; • Easily walkable and accessible path connections should exist to connect the bridges to nearby trails; • Include easy-to-understand wayfinding on or in the vicinity of the bridges; • Use Sewell's Road Bridge for people walking and cycling and construct a second bridge that would be used for motor vehicle traffic; • Maintain Milne Bailey Bridge for people walking and construct a second, parallel bridge for motor vehicles; and • Consider reducing Maxwell Bridge to one lane of vehicle traffic and converting the surplus space to space for people walking.
Vehicular Traffic	• Ensure that bridges are not all closed for construction at once and sequenced in a way to minimize inconveniences to the local community (especially the Hillside bridge).
Other	• Do not reconstruct the bridges with surfaces that will require salt in the wintertime as it is toxic; • Consider reusing bridge materials for art installations; and • Control erosion around the bridge structures, especially north of Hillside Bridge on Meadowvale Road.

3.6.3 Public Information Centre #2 (Phase 2)

A second PIC was held virtually on July 20, 2022, from 6:30 p.m. to 8:30 p.m. The PIC was scheduled to provide interest groups with a brief overview of the TMP, an opportunity to learn more about the draft preferred alternatives for each site, and to provide comments.

3.6.3.1 Overview of PIC

The project team presented the PIC through a virtual forum and attendees could register and view the presentation and/or call in to listen. The presentation covered the following:

- Project overview;
- Preferred Alternative Solution (for each site);
- Next Steps.

3.6.3.2 Summary of Feedback Received

A total of 14 members of the public attended the meeting. PIC materials, including the notice, and presentation slides are found in **Appendix A-12**. Comments and questions received during the PIC are summarized in **Table 11**.

Table 11: Summary of Public Feedback Received during PIC #2

Theme	Question/Comment
Transportation Considerations and Impacts	• Provide an update on the widening of Steeles Avenue at Markham Road. This is significant for the flooding and climate change conditions and ecological integrity of the RNUP; • Minimize additional traffic to the area – there is already a lot of cut-through traffic. Commuter and truck traffic makes the park noisier and more dangerous and puts additional strain on the existing bridges; • Make Twyn Rivers Drive safer – it is very dangerous, and people are racing through it; • Consider improving the road visibility, specifically on Sewell's Road Bridge – coming up from the south and heading north, there is a bend in the road that affects visibility for people driving;

Theme	Question/Comment
	• Do not lower the roadway under the CP rail overpasses – would encourage overweight and large vehicles to use the roads and may result in failure or a lower life cycle of the bridge; • Undertake a traffic demand management and traffic flow analysis and determine alternatives. Consider associated turn and time-of-day restrictions; • Factor in the increase in development in Durham Region, especially the likely increase in traffic on Meadowvale, Plug Hat and Beare Roads; and • Examine noise issues associated with the grated bridges, along with lighting and ecological enhancement.
Active Transportation	• Support active transportation for people cycling and walking.
Natural Environment	• Consider terrestrial and aquatic connectivity; and • Examine noise issues associated with the grated bridges, along with lighting and ecological enhancement.
Context and Future Use	• Do not support the bridges being converted into two lanes – encourages more traffic, does not match the Greenbelt and rural context of the park, and increases road mortality for species such as turtles and snakes.

3.7 Social Pinpoint

The project team set up a Social Pinpoint map to allow people to provide comments in a spatial format. The map was open during Phase 1 of consultation from October 6 to November 6, 2021, and garnered 167 total visits and 8 comments. The Social Pinpoint map was promoted through the Notice of Public Consultation (Phase 1), project website, PIC #1, and email correspondence.

The Social Pinpoint map allowed participants to interact with a map showing the study boundaries and the bridges. By clicking on each of the five bridges within the study, participants could learn more information and specifications. Participants were also able to drag a comment pin to a specific location and write a comment. If preferred, email and phone comments were also received by the project team.

Table 12 summarizes the comments received through the Social Pinpoint map.

Table 12: Summary of Public Feedback Received through the Social Pinpoint Map

Theme	Question/Comment
Heritage	• Encourage heritage value and aesthetics of the structure; and • Rehabilitate heritage bridges.

Environment	• Protect species:
	  ○ Conduct bat and snake surveys (protected under the *Endangered Species Act*);
	  ○ Protect fish and mussel species that live in the river; and
	  ○ Do not disrupt flora and fauna through widening bridges.
	• Improve runoff quality and salt management;
	• Improve wildlife connectivity at these crossings:
	  ○ Reduce wildlife mortality around these structures; and
	  ○ Assess and prioritize opportunities for habitat bridges.
	• Complete a geotechnical study:
	  ○ Protect and restore natural landforms, features and functions.
	• Adhere to relevant policy documents, including:
	  ○ *Rouge National Urban Park Act*, *Fisheries Act* and *Species at Risk Act*;
	  ○ *Migratory Birds Act* and *Navigable Waters Act;*
	  ○ Ontario *Environmental Assessment Act* and federal *Assessment Act;*
	  ○ Ontario Greenbelt Plan and Provincial Planning Policies;
	  ○ Ontario *Lakes and Rivers Improvement Act* and Ontario *Water Resources Act*; and
	  ○ *Conservation Authorities Act*, Regulation 166 and TRCA Living City Policies.
	• Protect, mitigate and remediate flooding, erosion and climate change risks.

Avoid Disruptions	• Minimize the level and spread of noise; • Avoid light pollution; and • Major construction may be economically disruptive/costly.

Vehicles/Traffic	• Traffic concerns:
	  ○ Heavy traffic during rush hour;
	  ○ Many accidents on tight curve following slope before Sewells and Milne's bridges;
	  ○ New developments in Pickering and Stouffville may cause more traffic; and

Theme	Question/Comment
	○ Bridge widening would lead to an increase in vehicle speeds. • Traffic management: ○ Consider "red for stop, green for go" on specific bridges; ○ Single lane bridges inherently reduce traffic and decrease attractiveness of the particular route; ○ Close bridges to vehicles: • Opportunity to reduce cars and create peace and quiet in the park; and • Main entrance to the park has all the parking needed and several entry points. ○ Separate people walking, cycling and driving; ○ Consider closing Twyn Rivers for emergency vehicles only; ○ Replace bridges to code; ○ Widen the bridges; ○ Restrict the use of heavy vehicles over the bridges; and ○ Enforce height restriction near CP rail bridge to avoid collisions and road closures. • Replace bridges to code.
People Walking and Cycling	• Improve pedestrian and cycling infrastructure on or adjacent to the structures; • Address access by pedestrians, hikers, cyclists and casual users: ○ Widen bridges for pedestrian and cyclist (multi-use) safety; ○ Use Stott's bridge as a pedestrian/cycling-only bridge; and ○ Use the bridges as observation decks, • Connect to trails.
Twyn Rivers Drive	• Both Stott's and Maxwell bridges are located on Twyn Rivers Drive; • A very important east-west connection between Toronto and Pickering: ○ Is also identified in the City of Pickering Integrated Transportation Master Plan.
Sewells Road Bridge	• Has poor sight lines unless vegetation is cut back frequently; • Rehabilitate with potential widening; • Retain or replace to code: ○ Is an attractive, special and historic rarity.
Milne's Bridge	• Replace: ○ It is narrow and noisy. • Not designated as indicated in the report, it is listed as heritage.

Theme	Question/Comment
Hillside Bridge	• Rehabilitate or replace to code.
Maxwell's Bridge	• Retain or rehabilitate with potential widening; and • Blend in with trails and shoulders of the road.
Stott's Bridge	• Retain or rehabilitate with potential widening.

3.8 Project Survey

An online project survey was available during Phase 2 of consultation from July 11, 2022, to August 10, 2022, on the project website to provide additional opportunity for the public to provide feedback on the project.

The survey included background information on the project and asked respondents to identify their relationship to the project and indicate their level of agreement with the recommendation for each of the five bridges. The survey included an opportunity to provide additional comments related to each bridge and to the study overall.

3.8.1 Summary of Feedback Received

A total of 43 anonymous responses were received.

Overall, feedback was largely supportive for the bridges proposed to be retained (Sewell's Road Bridge and Maxwell Bridge), but quite mixed for the bridges proposed to be replaced (Milne Bailey Bridge, Hillside Bridge and Stott's Bridge).

An overall summary of feedback received is outlined in **Table 13.**

Table 13: Overall Summary of Public Feedback Received through the Project Survey

Theme	Question/Comment
Vehicle Traffic	• Discourage cut-through vehicular traffic, especially larger transport vehicles and trucks; • Ensure emergency services and overall roadway connectivity is maintained, including during construction phasing; • Not in support of increasing some of the bridges to two lanes of traffic; and • Consider the effects of nearby road widening and development projects.
Prioritize Active Transportation	• Prioritize the safety for people cycling and walking on these bridges; • Enhance connections to existing and future trails and destinations near and within the park; and • Improve wayfinding, signals and intersections for people cycling and walking.
Highlight Character and History	• Maintain heritage character, architecture, and historical significance of the bridges, especially when they have unique designs and features; • Improve the aesthetics of existing bridges; • Change the names of the bridges to acknowledge and recognize the significance of the land to Indigenous communities; and • Integrate oral histories and Indigenous knowledge into final report and recommendations.
Minimize Environmental Impacts	• Control erosion around the structures; • Minimize ecological and environmental disturbances during staging and construction; • Identify more opportunities to benefit and improve natural heritage systems and wildlife connectivity; • Identify and analyze impacts to culturally significant species, not just species at risk and endangered species; and • Conduct an underwater survey from a historic and Indigenous perspective.

4.0 Indigenous Community Consultation

The following Indigenous Communities were consulted as part of the TMP:

- Alderville First Nation;
- Beausoleil First Nation;
- Chippewas of Georgina Island;
- Chippewas of Rama First Nation;
- Curve Lake First Nation;
- Hiawatha First Nation;
- Huron-Wendat First Nation;
- Mississaugas of Scugog Island First Nation; and
- Mississaugas of the Credit First Nation.

4.1 Notice of Commencement and Notice of Public Consultation (Phase 1)

The Notice of Commencement was sent on December 15, 2020, via email to the Indigenous Communities identified above (**Appendix A-5**) and a Notice of Public Consultation (Phase 1) was sent on October 8, 2021 (**Appendix A-6**). Within the correspondence, the project team offered to meet each community individually.

No comments were received from the circulated Indigenous communities during Phase 1 of consultation.

4.2 Notice of Public Consultation (Phase 2)

The Notice of Public Consultation for Phase 2 was sent on July 8, 2022, via email to the Indigenous Communities identified above (**Appendix A-7**). Within the correspondence, the project team offered to meet each community individually.

Curve Lake First Nation requested a meeting with the project team, which was subsequently held on April 13, 2022.

No additional responses were received from the circulated Indigenous Communities during Phase 2 of consultation.

4.2.1 Meeting with Curve Lake First Nations

The project team met with Curve Lake First Nation on April 13, 2022, and provided an overview of the project, history of the area, bridge specific details, alternative solutions, and next steps in the process. An opportunity to ask questions and provide comments was included as part of the meeting. **Table 14** summarizes the feedback provided during the meeting.

Table 14: Summary of Feedback Received during Curve Lake First Nations Meeting

Theme	Question/Comment
Significant Lands	• Understand the cultural and natural heritage significance of the park for Curve Lake First Nation; and • Build on the work Parks Canada has done over the past 10 years to engage Curve Lake First Nation and other Indigenous communities.
Natural Environment	• Maintain biological connectivity; • Have biologists from Curve Lake First Nation present when you conduct Environmental Assessments and heritage assessments; • Include culturally significant species in EAs – they tend to only include species at risk and endangered species; • Ensure compliance in accordance with Fisheries and Oceans Canada (DFO); • Complete an underwater archaeological assessment if the project will eventually impact a site, as all of the bridge sites extend into the water; • Complete an underwater survey from a historic and Indigenous perspective; and • Specify how studies were conducted and over what length of time (i.e., over a single season or longer). Prefer a four-season approach.
EA Process and Future Consultations	• Conduct consultations in advance of and during construction phases; • Consider cumulative effects of the various changes in the area, including infrastructure and new development projects; • Ensure we are represented during Stage 2 of the EA and construction monitoring. Would like to be there for

Theme	Question/Comment
	construction and stripping to monitor as cultural heritage sites are in the water everywhere; and • Refer to Curve Lake to outline processes and steps that we would like to be taken in the future.
Oral History	• Include and integrate our oral history in your Archaeological Assessment; and • Read it thoroughly and understand the point.
Other Items	• Look for opportunities to change the names of the bridges to acknowledge and recognize the significance of the land to Indigenous communities. This would highlight the 10,000-year history and Indigenous culture.

5.0 Existing Conditions – TMP Study Area

This section outlines the existing conditions within the TMP Study Area, including the built, natural, physical, socio-economic, and cultural environment.

5.1 Rouge National Urban Park (RNUP)

The five bridges are all located within RNUP. RNUP is Canada's only national urban park and one of the largest urban parks in the world. Encompassing natural, cultural and agricultural landscapes, this urban park offers activities for a variety of interests while also protecting significant land, including some of Canada's oldest known Indigenous sites. **Figure 6** and **Figure 7** show a depiction of the Rouge River within the RNUP.

Figure 6: Rouge River at Stott's Bridge within RNUP

Figure 7: Little Rouge River at Hillside Bridge within RNUP

RNUP straddles four jurisdictional boundaries, including City of Toronto, City of Pickering, and City of Markham, as well as the Township of Uxbridge, and stretches from Lake Ontario north to the Town of Whitchurch-Stouffville.

5.1.1 RNUP Ownership

The lands and management of RNUP were transferred to the Federal government in 2015; however, the road rights-of-way and maintenance and improvements of transportation assets remain under the jurisdiction of the City of Toronto. Land ownership in RNUP is unique from other national parks managed and owned by Parks Canada in that about half of the land area is managed by farmers through agricultural

leases (Parks Canada, 2019). Providing even further contrast to other operating parks in Canada, it is a stated goal to maintain agricultural operations in RNUP facilitated through long-term leases. There are also some buildings and commercial properties under lease in RNUP. Outside of the lease areas, the land is owned and managed primarily by Parks Canada.

As noted in **Section 2.1.3**, all works proposed within the boundary of the park are to be completed in accordance with the RNUP Management Plan.

5.2 Built Environment

5.2.1 Transportation Network

5.2.1.1 Overview

The transportation network within the RNUP Study Area serves traffic that is visiting the park as well as those who are traveling through. With the City of Pickering directly east of the park and the City of Scarborough directly to the west, vehicles traveling between the two have the option of traveling through the park, either via Finch/Old Finch Avenue, or Twyn Rivers Road/Sheppard Avenue. Primary destinations within the park include the Toronto Zoo and the many trails and natural areas. The park is most easily accessible by personal vehicle, however, can also be accessed via transit, cycling, and walking the network of trails.

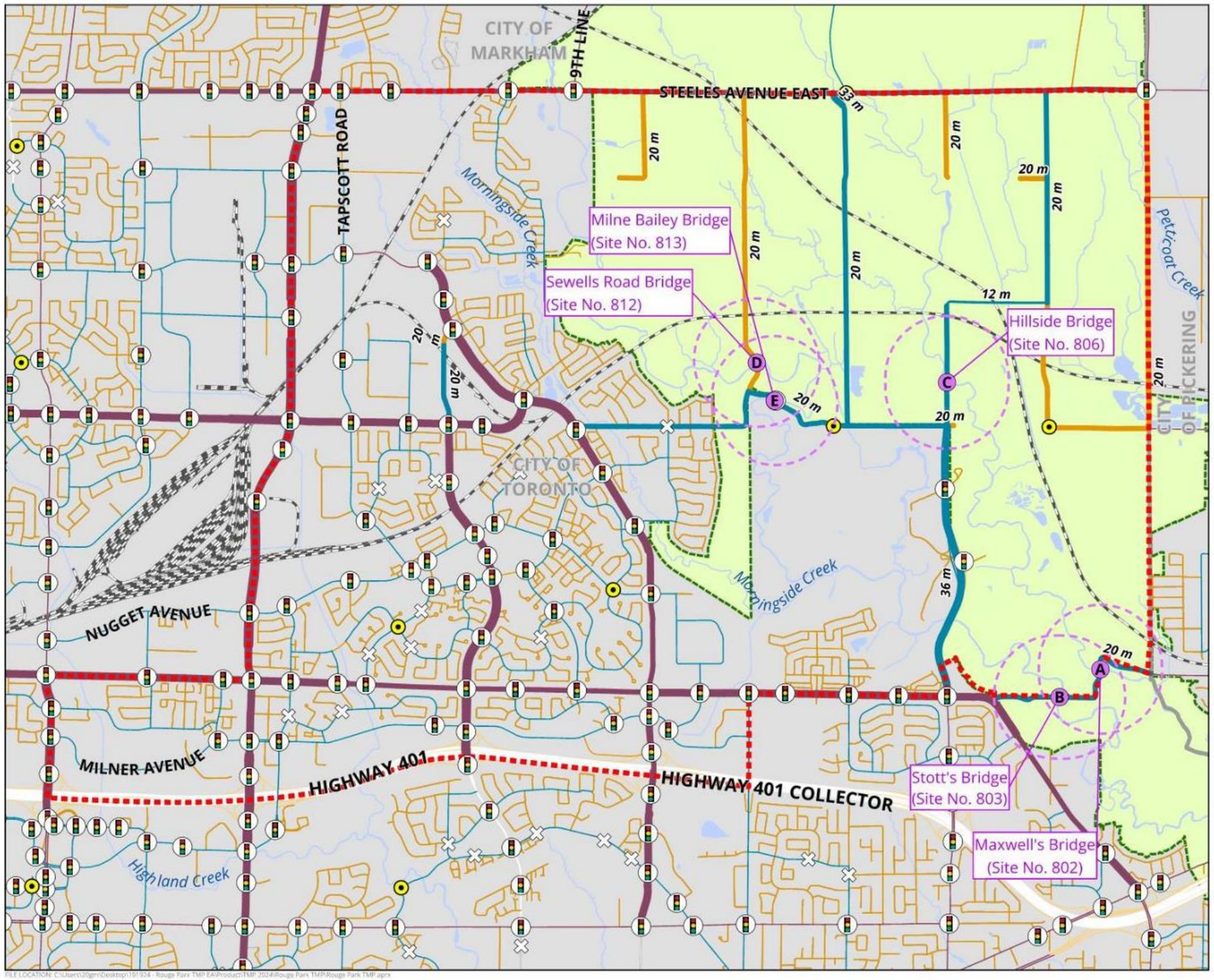
The bridges currently serve collector or local road functions carrying volumes ranging from 1,100 vehicles to 13,000 vehicles based on average daily trip information. Due to the limited load-carrying capacity of the bridges, the roads have been posted as prohibited for use by trucks.

A Transportation Assessment and Traffic Analysis were completed for the Study Area and are located in **Appendix B**.

5.2.1.2 RNUP Network and Connections

There are five primary north-south roads and four primarily east-west roads within the TMP Study Area (**Figure 8**). Information on these roads, including road type, primary direction, classification, number of lanes, and posted speed limit, are provided in **Table 15**.

Figure 8: Existing Transportation Network



ROUGE PARK TMP EA

FIGURE **8**
EXISTING TRANSPORTATION NETWORK

- Pedestrian Crossover
- Traffic Beacon
- Traffic Signal

RoW Width and Road Class

- 36 m Arterial
- 20 m Arterial
- Arterial
- 36 m Collector
- 33 m Collector
- 20 m Collector
- 12 m Collector
- Collector
- 20 m Local
- Local

- Bridge Location
- 500 m Project Focus Area
- Project Study Area
- Municipal Boundary
- Water Body
- Rouge National Urban Park

1:30,000
0 250 500 1,000 m

MAP CREATED BY: GM
MAP CHECKED BY: EW
MAP PROJECTION: NAD 1983 UTM ZONE 17N

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, ESRI

DILLON CONSULTING

PROJECT: 191924
STATUS: FINAL
DATE: 2024-03-25

Table 15: Roads within the Study Area

Road Name	Primary Direction	Road Classification	Number of Lanes	Posted Speed Limit (km/h)
Beare Road (N of Plug Hat)	North-South	Collector	2	60
Beare Road (S of Plug Hat)	North-South	Local	2	60
Meadowvale Road (N of Old Finch)	North-South	Collector	2	50
Meadowvale Road (S of Old Finch)	North-South	Collector	4	60
Old Finch Avenue	East-West	Collector	2 (1 over Milne bridge)	50
Plug Hat Road	East-West	Collector	2	50
Reesor Road	North-South	Collector	2	60
Sewell's Road	North-South	Collector	2 (1 over Sewell's Road bridge)	50 (20 over Sewell's Road bridge)
Sheppard Avenue	East-West	Arterial	4	60
Steeles Avenue	East-West	Minor Arterial	2	60
Twyn Rivers Drive	East-West	Collector	2 (1 over Stott's Bridge)	40 (50 west of Stott's bridge)
York Durham Line	North-South	Local	2	60

Truck Restrictions (Road Weights)

The City of Toronto restricts truck access on several routes within RNUP, as outlined in the Toronto Municipal Code Chapter 950 (City of Toronto, 2022b). **Table 16** outlines the roads within the Study Area that prohibit truck and heavy vehicle travel.

Table 16: Truck Restrictive Roads within the Study Area

Road	Between
Beare Road	Old Finch Avenue and Steeles Avenue
Meadowvale Road	Old Finch Avenue and Plug Hat Road (includes Hillside Bridge)
Plug Hat Road	Meadowvale Road and Beare Road
Old Finch Avenue	Sewell's Road (north intersection) and Reesor Road (includes Milne's Bridge)
Twyn Rivers Drive	Sheppard Avenue and the east limit of the City of Toronto

Emergency Access and Evacuation Routes

Toronto Paramedic Services (TPS) and Toronto Fire Services require access to RNUP when emergency situations arise. **Figure 9** highlights the locations of Fire and Ambulance Stations that serve RNUP.

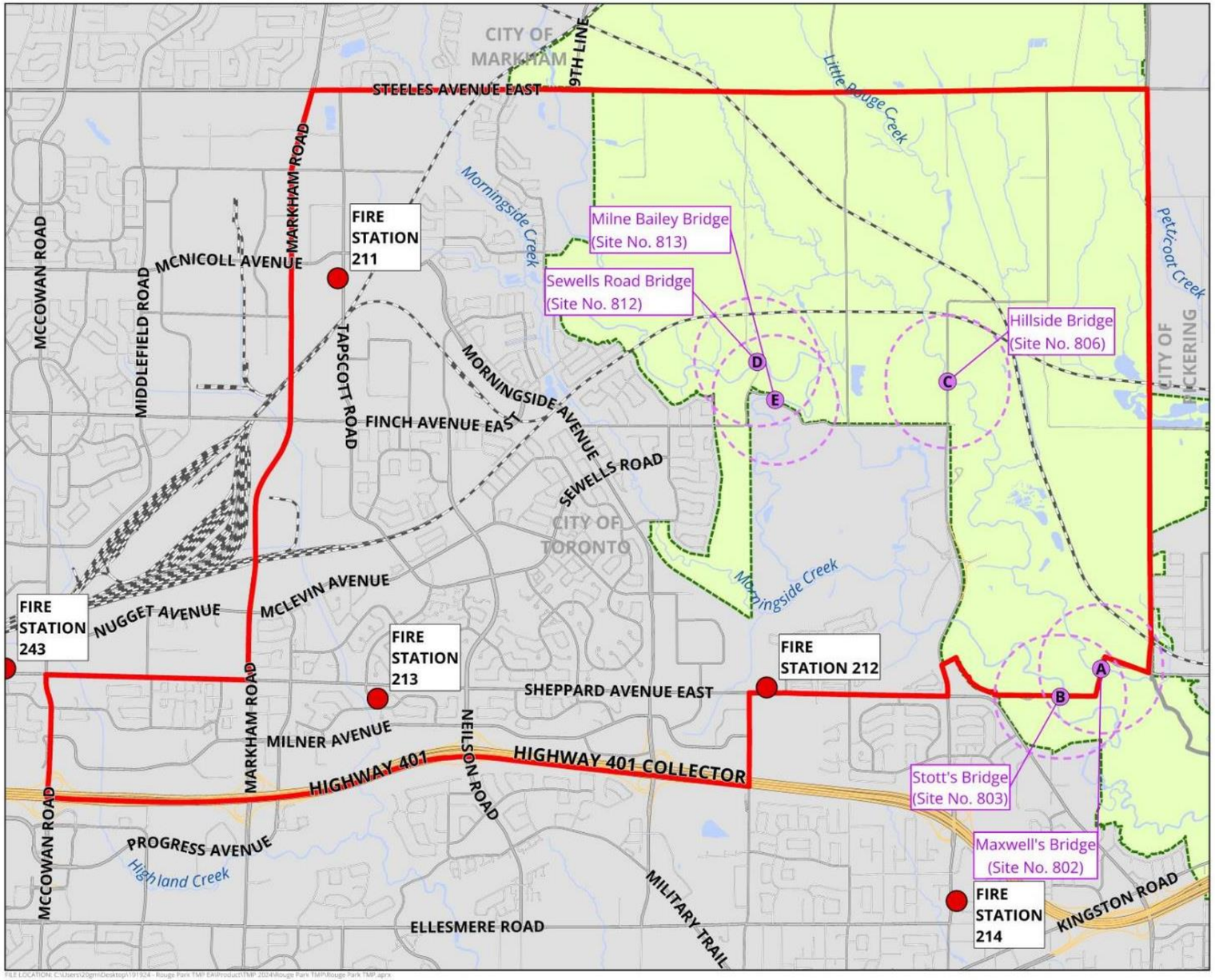
Due to load restrictions, Fire Services presently avoid the use of all five study bridges. Consequently, the main routes utilized by Fire Services to access locations within and bounding RNUP include Reesor Road, Altona Road, Steeles Avenue, and Highway 2. One of the criteria being considered as part of this TMP is the ability for emergency vehicles to access the five study bridges.

A CP Rail level crossing intersects Reesor Road, which introduces potential delays for fire vehicles if a train is crossing or waiting on the tracks. It should also be noted that due to narrow road cross-sections and soft shoulders, there is limited space for emergency vehicles to turn around if blocked at a train crossing.

There is a Mutual Aid agreement in place between the City of Toronto and City of Pickering, and as such Fire Services must be able to access the City of Pickering.

TPS vehicles are able to utilize all five bridges within the Study Area to gain access to locations within RNUP. TPS vehicles are limited, however, by the vertical clearances at the two CP Rail bridges on Sewell's Road north of Sewell's Bridge and Meadowvale Road north of Hillside Bridge. The main access routes currently used by TPS include Steeles Avenue, Finch Avenue, Morningside Avenue, and Meadowvale Road. In general, TPS vehicles do not travel through the park unless they are responding to a situation within RNUP. Due to the response process, TPS vehicles are dispatched from various locations within the community and are not necessarily coming from their base station. As a result, vehicular access should be maintained from various directions so as not to delay response times.

Figure 9: Existing Locations of Fire and Ambulance Stations



ROUGE PARK TMP EA

FIGURE **9**

EXISTING LOCATIONS OF FIRE AND AMBULANCE STATIONS

- Fire/EMS Station Serving Rouge National Urban Park
- Bridge Location
- 500 m Project Focus Area
- Project Study Area
- Railway
- Municipal Boundary
- Water Body
- Rouge National Urban Park

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0 250 500 1,000 m

MAP CREATED BY: GM
MAP CHECKED BY:EW
MAP PROJECTION: NAD 1983 UTM ZONE 17N

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, ESRI

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5.2.1.3 Transportation Modes

Cycling Facilities

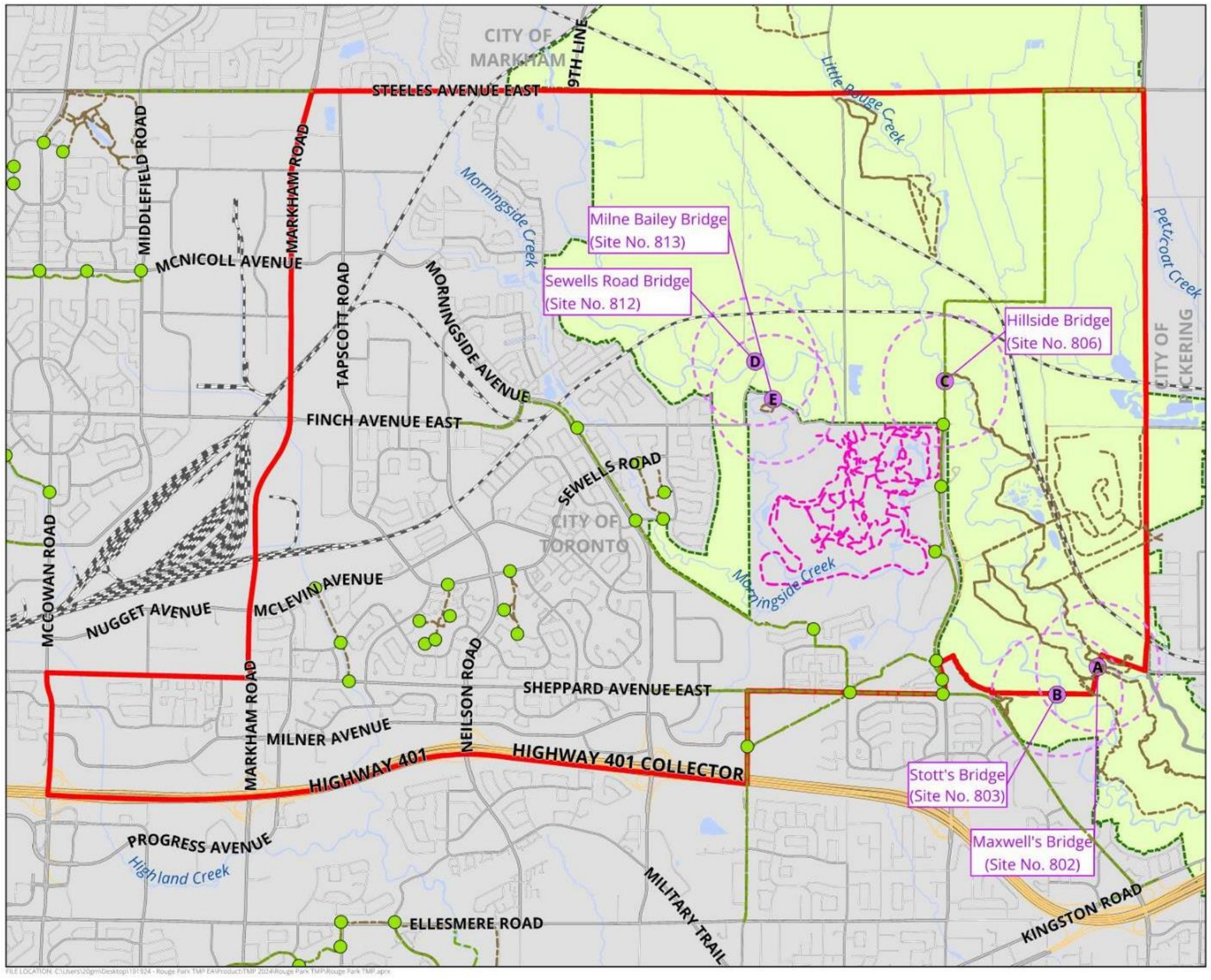
Within the TMP Study Area, there are approximately 10 km of bicycle facilities, which are illustrated in **Figure 10**. **Table 17** below gives further detail on the various facilities.

Table 17: Cycling Facilities within the Study Area

Location	Facility Type	Surface Type	Length	Connectivity
Steeles Avenue from west of Beare Road to York Durham Line	Bike Lanes	Asphalt	0.8 km	Connects to Beare Road Signed Route
Sheppard Avenue from Morningside Avenue to Kingston Road	Bike Lanes	Asphalt	4.7 km	Connects to Meadowvale Road Multi-use Path
Meadowvale Road from Old Finch Avenue to Sheppard Avenue	Multi-Use Pathway	Asphalt	2.4 km	Connects to Gatineau Hydro Corridor Trail, Sheppard Avenue Bike Lanes, Meadowvale Road Signed Route, and Old Finch Avenue Suggested On-Street Route
Beare Road from Steeles Avenue to Plug Hat Road	Signed Route with Narrow Paved Shoulder	Asphalt	1.7 km	Connects to Steeles Avenue Bike Lanes, Plug Hat Road Signed Route, and Beare Road Suggested On-Street Route
Plug Hat Road from Meadowvale Road to Beare Road	Signed Route, No Paved Shoulder	Asphalt	0.8 km	Connects to Meadowvale Road Signed Route, Beare Road Signed Route and Beare Road Suggested On-Street Route

Location	Facility Type	Surface Type	Length	Connectivity
Meadowvale Road from Plug Hat Road to Old Finch Road	Signed Route, No Paved Shoulder	Asphalt	1.0 km	Connects to Meadowvale Road Multi-Use Pathway and Old Finch Avenue Suggested On-Street Route

Figure 10: Existing Active Transportation Routes



ROUGE PARK TMP EA

FIGURE **10**
EXISTING ACTIVE TRANSPORTATION ROUTES

- Trail Entrance (City of Toronto)
- Existing Bicycle Infrastructure (City of Toronto)
- RNUP Trail
- Toronto Zoo Trail
- Bridge Location
- 500 m Project Focus Area
- Project Study Area
- Railway
- Municipal Boundary
- Water Body
- Rouge National Urban Park

1:30,000
0 250 500 1,000 m

MAP CREATED BY: GM
MAP CHECKED BY: EW
MAP PROJECTION: NAD 1983 UTM ZONE 17N

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, ESRI, CITY OF TORONTO

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Pedestrian Facilities

The TMP Study Area contains roughly 16 km of pedestrian facilities, the majority of which are RNUP hiking trails. These pedestrian facilities are illustrated in **Figure 10.** **Table 18** highlights key information about the various pedestrian facilities, including location and connectivity to nearby destinations.

Table 18: Pedestrian Facilities within the Study Area

Location	Facility Type	Surface Type	Length	Connectivity
Zoo Road North	Sidewalk	Paved	0.7 km	Connects to the Toronto Zoo west of Meadowvale Road and Lot 2 of the zoo east of Meadowvale Road
Zoo Road South	Sidewalk	Paved	0.4 km	Connects to the Toronto Zoo and Meadowvale Road Multi-Use Pathway east of Meadowvale Road, and the RNUP Trail Network and TTC bus stop west of Meadowvale Road.
Cedar Trail and the Beare Wetlands Loop (east of Meadowvale)	Trail	Grass/Dirt	4.5 km	The north trail head connects to Meadowvale Road north of Hillside Bridge. As of 2019, there does not appear to be anywhere to park to access the trail at the north trail head. The south trail head connects to Orchard Trail and is close to the Toronto Zoo, parking and transit.
Mast Trail (southeast of Twyn Rivers Drive)	Trail	Grass/Dirt	2.5 km	The north trail head connects to Vista Trail. The south trail head connects to Rouge River Park and Glen Rouge Campground.

Location	Facility Type	Surface Type	Length	Connectivity
Orchard Trail (east of Meadowvale Road between Zoo Road and Twyn Rivers Drive)	Trail	Grass/Dirt	2 km	The north trail head connects close to the Toronto Zoo, parking and transit. The south trail head connects to the RNUP Twyn Rivers Area.
Vista Trail (east of Meadowvale Road and south of Zoo Road)	Trail	Grass/Dirt	1.5 km	The north trail head connects close to the Toronto Zoo, parking and transit. The south trail head connects to Mast Trail. A portion of the trail is wheelchair accessible.
Woodland Trail (east of Reesor Road and south of Steeles Avenue)	Trail	Grass/Dirt	4.5 km	The north trail head connects to parking and the RNUP Woodlands Area.

Public Transit

Toronto Transit Commission (TTC) routes 85AB and 86A service the RNUP Study Area, servicing stops at the Toronto Zoo.

The 85 Sheppard East bus route operates between Sheppard-Yonge Station on the Yonge-University-Spadina Subway, Don Mills Station on the Sheppard Subway, and Rouge Hill GO Station, generally in an east-west direction. Stops at the Toronto Zoo which service the RNUP Study Area only occur on weekends and holidays.

The 86 Scarborough bus route operates between Kennedy Station on Line 2 Bloor-Danforth, the Toronto Zoo, and the area of Lawrence Avenue East and Beechgrove Drive. The 86A branch to Toronto Zoo operates until approximately 6:25 p.m. from Monday to Friday. During the summer, the 86A branch to Toronto Zoo also operates during the early evening from Monday to Friday, and during the daytime and early evening on Saturdays, Sundays, and holidays.

The 200 Toronto Zoo bus route is a new addition to the TTC service and is a seasonal bus route that goes directly to the Toronto Zoo from Rouge Hill GO Station.

5.3 Natural Environment

As part of the TMP, a natural heritage existing conditions background review and scoped field program were undertaken, which included the following activities:

- A desktop review of secondary source information and consultation with regulatory agencies to identify potential natural heritage features/species present within the Project Study Area and/or the Project Focus Areas (500 metre [m] radius around each of the five bridge structures); and
- Site investigations within 120 m of each bridge structure (the Field Study Areas).

The majority of the Project Study Area lies within the Lake Erie-Lake Ontario Ecoregion (7E); the northeastern portion of the Project Study Area lies within the Lake Simcoe-Rideau Ecoregion (6E) (**Figure 11**). Ecoregion 7E is Ontario's most southern ecoregion and extends from Windsor and Sarnia to the Niagara Peninsula and Toronto (Crins et al., 2009). It is the most heavily urbanized and industrialized ecoregion in Ontario, has a relatively mild climate, and contains the most diverse flora and fauna in Canada (Crins et al., 2009). Ecoregion 6E stretches from Lake Huron east to the Ottawa River (Crins et al., 2009). It is the second most densely populated ecoregion in Ontario, and includes cities such as Owen Sound, Collingwood, Barrie, Peterborough, Kingston, and Ottawa. Ecoregion 6E has a mild and moist climate and also has relatively diverse vegetation (Crins et al., 2009).

The western and southwestern portions of the Project Study Area are located within the Highland Creek watershed, while the remainder of the Project Study Area is located within the Rouge River watershed (**Figure 11**). The Highland Creek watershed drains an area of approximately 102 kilometres squared (km^2) (TRCA, 2020a) and is highly urbanized with 89% urban land cover and 11% natural cover (TRCA, 2018a). Key issues in the Highland Creek watershed include stormwater runoff, habitat loss and fragmentation, and invasive species (TRCA, 2018a). The Rouge River watershed is approximately 336 km^2 and includes all of the lands which drain to the Rouge River and its tributaries, including Little Rouge Creek (TRCA, 2020b). Land cover in the watershed is approximately 40% rural, 35% urban, 24% forest/wetland/meadow, and 1%

watercourses/water bodies (TRCA, 2020b). Key issues in this watershed include increased urbanization, stormwater runoff, and habitat protection, including a fish Species at Risk (SAR), Redside Dace (*Clinostomus elongatus*) (TRCA, 2018b).

The RNUP overlaps the eastern portion of the Project Study Area (**Figure 11**). The RNUP has a south-to-north orientation which overall extends for 25 km and links Lake Ontario in the south with the Oak Ridges Moraine in the north (Parks Canada, 2019). Under the *Rouge National Urban Park Act* (2015), the maintenance and restoration of ecological integrity, through the protection of natural resources and natural processes, is the first priority when considering all aspects of the management of the park.

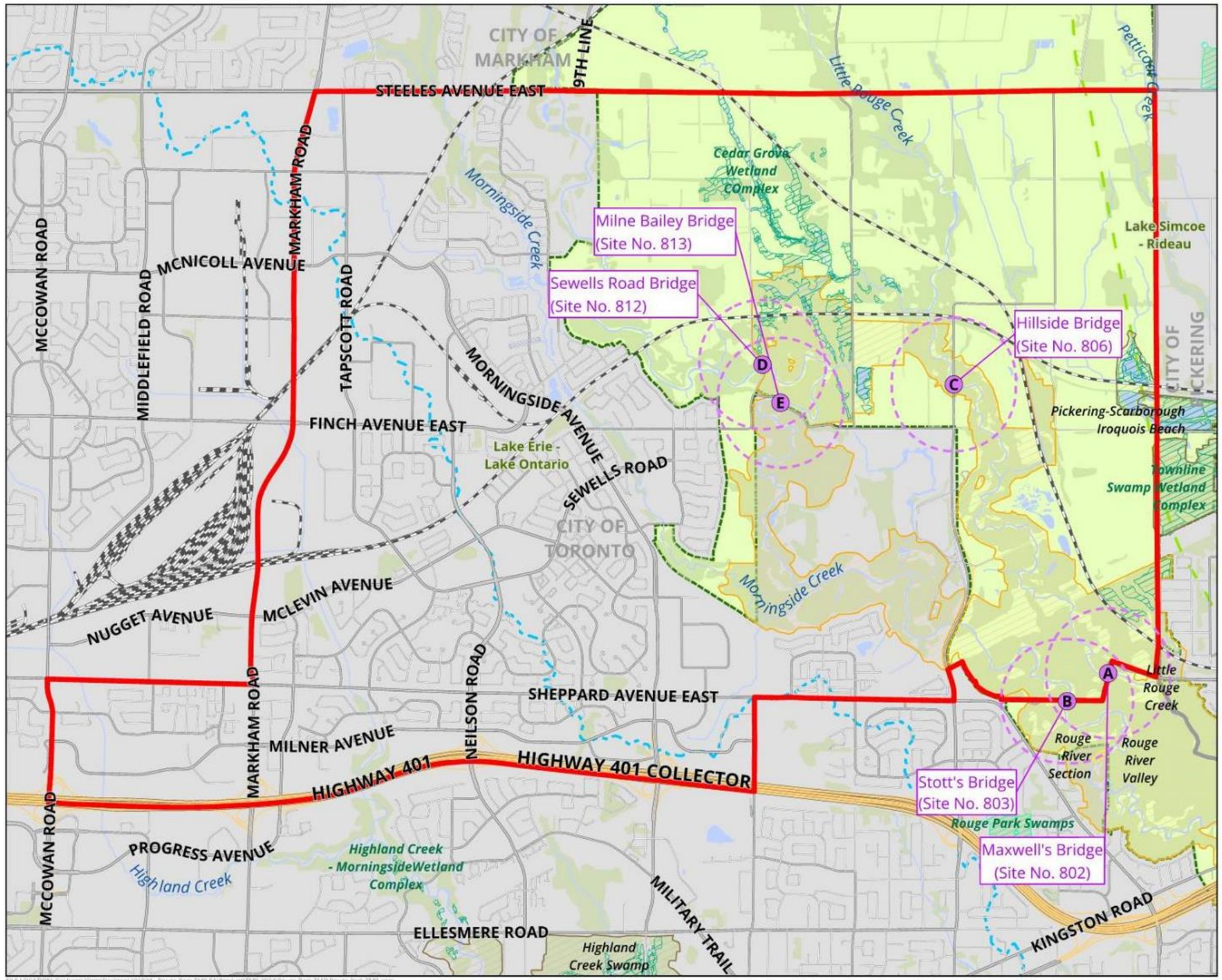
As shown on **Figure 11**, there are several designated natural heritage features associated with the RNUP located within the Project Study Area, including:

- Rouge River;
- Rouge River Valley Area of Natural and Scientific Interest (ANSI), Life Science;
- Candidate Pickering-Scarborough Iroquois Beach Candidate ANSI, Life Science;
- Cedar Grove Wetland Complex Provincially Significant Wetland (PSW);
- Townline Swamp Wetland Complex PSW;
- Unevaluated wetlands; and
- Woodland.

In addition, over 1,700 flora and fauna species are known to occur in RNUP, including 1,000 plants, 261 birds, 65 fish, 40 mammals, and 21 reptile and amphibian species (Parks Canada, 2019). Twenty-seven SAR, designated as Special Concern, Threatened, or Endangered under the federal *Species at Risk Act* are also found within the park (Parks Canada, 2018). These SAR include Butternut (*Juglans cinerea*), bat species (Tri-colored Bat [*Perimyotis subflavus*], Northern Myotis [*Myotis septentrionalis*], Little Brown Bat [*Myotis lucifugus*]), Blanding's Turtle (*Emydoidea blandingii*), Redside Dace, Chimney Swift (*Chaetura pelagica*), Least Bittern (*Ixobrychus exilis*), Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*), among others.

A detailed Natural Heritage Existing Conditions memo is located in **Appendix C**.

Figure 11: Project Study Area Designated Natural Heritage Features



ROUGE PARK TMP EA

FIGURE 11
PROJECT STUDY AREA DESIGNATED NATURAL HERITAGE FEATURES

- Bridge Location
- 500 m Project Focus Area
- Project Study Area
- Railway
- Provincially Significant Wetland
- Evaluated Wetland
- Unevaluated Wetland
- ANSI, Earth Science
- ANSI, Life Science
- Candidate ANSI, Life Science
- Municipal Boundary
- Water Body
- Woodland
- Rouge National Urban Park
- Ecoregion
- Quaternary Watershed

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MAP CREATED BY: GM
MAP CHECKED BY: EW
MAP PROJECTION: NAD 1983 UTM ZONE 17N

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, ESRI

DILLON CONSULTING

PROJECT: 191924
STATUS: FINAL
DATE: 2024-03-25

5.4 Physical Environment

5.4.1 Physiography, Geology, and Hydrogeology

A Geotechnical and Hydrogeological Assessment was completed for the TMP Study Area (**Appendix D**).

The majority of the study area and specifically the project focus areas are located within the Rouge River Watershed and falls under the jurisdiction of the TRCA. The regional topography slopes southerly toward the Rouge River, and eventually drains into Lake Ontario. Groundwater flow is interpreted to follow the existing topography, with the study area draining southeasterly to Rouge River. The Rouge River and Little Rouge Creek Valleys have incised deep valleys within the study area, with localized steep slopes and erosion features.

5.4.2 Source Water Protection

The Study Area falls under the Credit Valley-Toronto and Region-Central Lake Ontario (CTC) Source Protection Region.

Vulnerable Areas are areas where drinking water quality and quantity may be threatened by certain activities. There are five types of Vulnerable Areas within the CTC Source Protection Region: Wellhead Protection Areas (WHPAs), Intake Protection Zones (IPZs), Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Wellhead Protection Area-Q (WHPA-Qs; Water Quantity), and Event Based Areas (EBAs). An overview of the five vulnerable areas as they relate to the Study Area is provided below.

5.4.2.1 Wellhead Protection Areas (WHPAs)

WHPAs are areas on the land around a municipal well that contributes source water a drinking water system.

No WHPAs were identified within the Study Area.

5.4.2.2 Intake Protection Zones (IPZs)

IPZs are areas where run-off from streams or drainage systems could carry contaminants to the source water intakes. There are three types of IPZs. Intake Protection Zone 1 (IPZ-1) are areas within a 1 km radius around the intake if it is located in one of the Great Lakes. Intake Protection Zone 2 (IPZ-2) are areas just beyond IPZ-1 and reflect areas where water and contaminants could reach the intake within 2 hours. There can be no significant threats in an IPZ-1 or IPZ-2 if it is located in one of the Great Lakes. Intake Protection Zone 3 (IPZ-3) are areas beyond IPZ-1 and IPZ-2 where spills from a specific activity may be transported to an intake and result in a deterioration of the water quality at an intake.

The Study Area is partially located within areas identified as IPZ-3.

5.4.2.3 Highly Vulnerable Aquifers (HVAs)

An HVA is an aquifer on which external sources have or are likely to have a significant adverse impact and include the land above the aquifer. An aquifer can be considered highly vulnerable based on several factors, including how close the aquifers are to the ground surface, what types of soil or rock are covering the aquifers, and the characteristics of the soil or rock surrounding them.

A large portion of the Study Area is located within areas identified as HVAs.

5.4.2.4 Significant Groundwater Recharge Areas (SGRAs)

A SGRA is a recharge area that helps maintain the water level in an aquifer that supplies a community with drinking water.

The Study Area is partially located within areas identified as SGRAs.

5.4.2.5 Wellhead Protection Area-Q (WHPA-Q; Water Quantity)

Water quantity vulnerable areas are areas with water quantity stress within WHPA-Qs. Any WHPA-Q areas where significant or moderate drinking water stress has been identified is an area where significant drinking water quantity threat activities can occur. There are two types of WHPA-Q: WHPA-Q1 are areas where activities that take water without returning it to the same source may be a threat; WHPA-Q2 are areas where activities that reduce recharge may be a threat.

5.4.2.6 Event Based Areas (EBAs)

EBAs are areas where a spill from specific activities could contaminate source water. The Study Area is partially located within areas identified as EBAs.

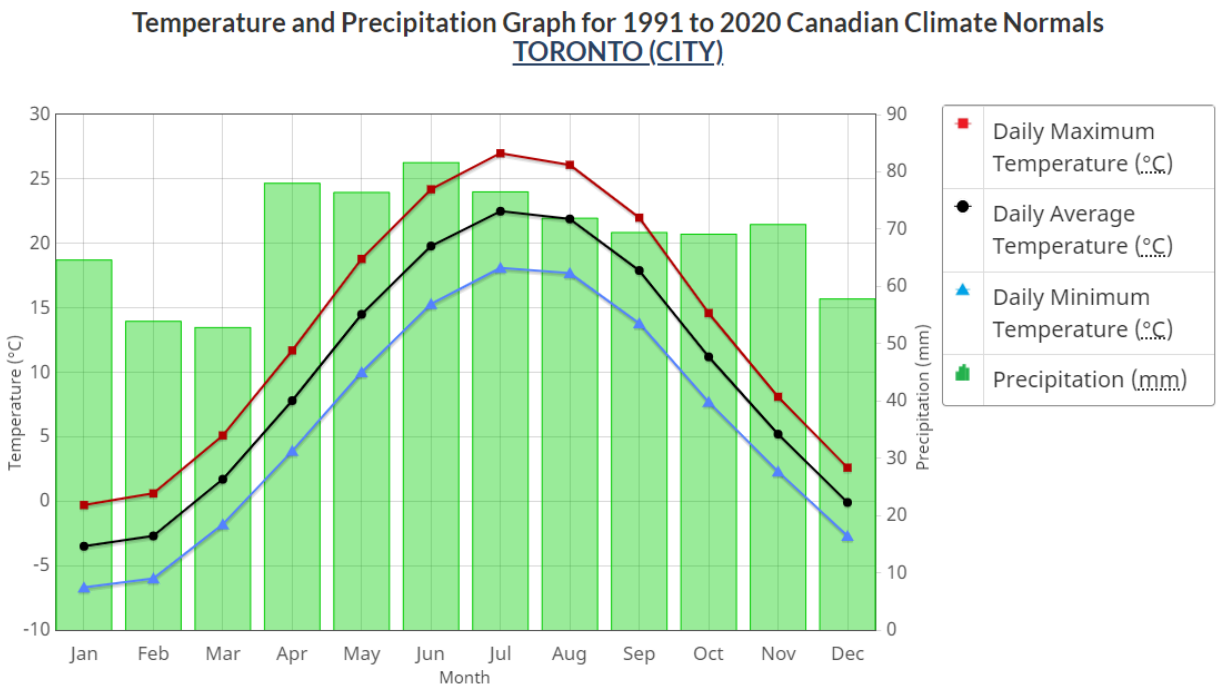
5.4.3 Atmospheric Environment

5.4.3.1 Climate

Climate averages are commonly used to describe the climatic conditions of a particular location in Canada. At the end of each decade, ECCC updates its climate averages for several locations across Canada and for as many climatic characteristics as possible. The climate averages and extremes are obtained from Canadian climate stations with at least 15 years of data between 1981 and 2010 (ECCC 2024).

Figure 12 shows temperature and precipitation data averaged over the 29-year period of 1991 to 2020 recorded for the City of Toronto (ECCC 2024).

Figure 12: Temperature and Precipitation Graph for 1991 to 2020 – City of Toronto



The annual daily average temperature recorded was 9.7°C, January being the coldest month (average daily temperature of -3.5°C) and July being the warmest month

(average daily temperature of 22.5°C). The extreme minimum temperature on record was -32.8°C on January 10, 1859, and the extreme maximum temperature was 40.6°C on July 8, 1936.

The annual average precipitation recorded was 822.7 millimetres, with June being the rainiest month (average rainfall of 81.6 millimetres) and January being the snowiest month (average snowfall of 64.6 millimetres). The extreme daily rainfall recorded for on record was 98.6 millimetres on July 27, 1897, and the extreme daily snowfall was 48.3 centimetres on December 11, 1944.

5.4.3.2 Air Quality and Greenhouse Gases

Air quality criteria, standards, and objectives in Ontario have been established by MECP and federally by ECCC. The purpose of air quality objectives and standards is to protect against adverse effects on health and the environment. The MECP has established a network of 39 ambient air monitoring stations across Ontario that collect air pollution data (MECP 2010). Annually, MECP prepares an Air Quality Report which assesses the state of air quality in Ontario.

Based on a review of the most recent Air Quality Report, over the 9-year period of 2012 to 2021, air quality in Ontario has improved due to the decrease of ambient concentrations of common air pollutants and emissions (MECP 2023). During this 9-year period, concentrations of nitrogen dioxide have decreased by 28 percent, fine particulate matter concentrations by 18 percent, and sulphur dioxide concentrations by 54 percent on average across the province (MECP 2023). Although the 9-year trend shows a general improvement in air quality, in 2021, there were exceedances of the provincial Ambient Air Quality Criteria (AAQC) and/or Canadian Ambient Air Quality Standard for ground-level ozone, fine particulate matter, and sulphur dioxide in some Ontario communities (MECP 2023).

Due to the variety of factors that influence air quality, such as pollutant emissions, weather, natural events, and the long-range transport of air pollutants, air quality can vary year to year across Ontario. As such, long-term trends provide a better reflection of air quality in Ontario and the improvements or deterioration in air quality over time (MECP 2023).

The nearest Air Quality Health Index (AQHI) monitoring stations to the RNUP is the Toronto East station which is located approximately 16 kilometres west of RNUP. The 9-year trend at this station shows a decrease in annual mean of nitrogen dioxide.

Greenhouse gases (GHGs) negatively impact the environment, economy, and human health. In 2021, about 28% of Canada's total GHG emissions were from the oil and gas sector, 22% from transport, 13% from buildings, and 11% from the heavy industry sector (ECCC 2023). According to the City of Toronto 2021 Sector-Based Emissions Inventory, in 2021 Toronto's community-wide GHG emissions were 14.5 megatonnes (MT) of carbon dioxide equivalent (CO2e). A 4% increase over the 14 MT CO2e emitted in 2020 and 41% less than 1990 levels (City of Toronto, 2021). In 2021, the three largest sources of GHG emissions were the building sector (56%), transportation sector (35%), and waste sector (9%) (City of Toronto, 2021).

5.5 Socio-Economic Environment

The following sections provide information related to the existing ownership, land uses and built form within, and adjacent to, the TMP Study Area. This information will be used to inform existing and future travel patterns and demands along study corridors, as well as to assess potential social implications resulting from changes to the transportation network.

5.5.1 Existing and Future Land Use

The project Study Area, as illustrated in **Figure 13**, includes a portion of RNUP and surrounding communities. Existing uses within RNUP include passive recreational areas, active farmland, and the Toronto Zoo. There are existing Federal level utility and transportation corridors which bisect RNUP east-west. There are existing golf courses and cemeteries within the park boundary.

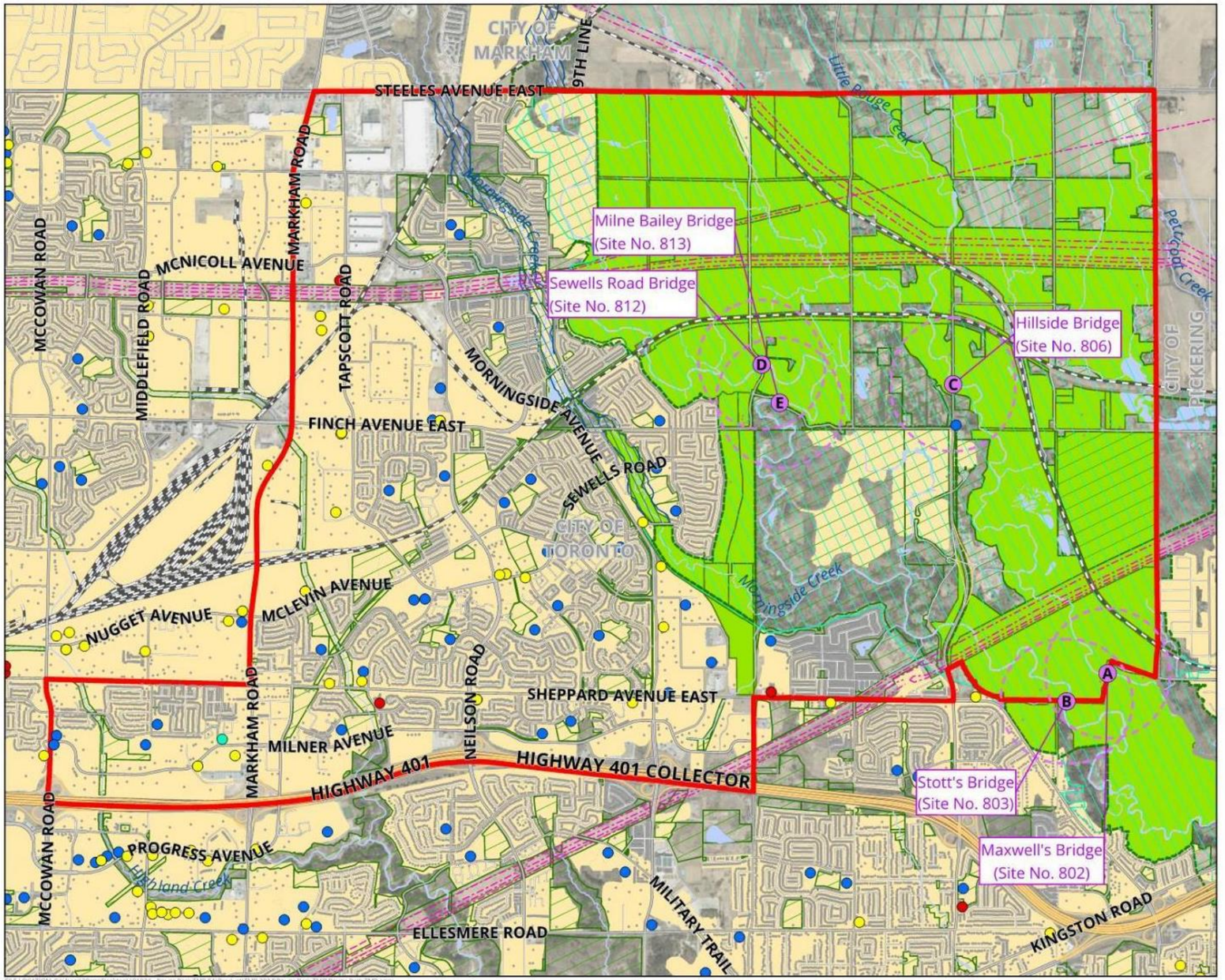
Outside of the park boundary, there are significant built-up areas in the City of Markham, City of Pickering, and City of Toronto. The lands surrounding RNUP are primarily residential communities with some commercial development. Built form in the Study Area, outside of the park boundary is primarily low density, single family residential development. There are some low-rise commercial developments. The built form within the park boundary is largely undeveloped or farmhouse developments.

There are several existing neighbourhoods in the Study Area including Rouge Hill – South, Malvern, Morningside Heights, Brookside, and Hillside. The lands within the City of Toronto boundary are largely built out; however, some opportunities for redevelopment exist. The park edge interface is discussed in detail in the RNUP Management Plan (Parks Canada 2019). It is clear both the park and the residential communities need to co-exist and work together to create sustainable solutions for the future.

While there are no major future land use changes anticipated to occur within the City of Pickering adjacent to the Rouge National Urban Park, the following planned developments are occurring near or adjacent to the Study Area as of January 2024:

- There are a number of residential developments and proposals to the east of the Study Area in the City of Pickering in the Rouge Park, Highbush, and Rougemount neighbourhoods for single-detached, semi-detached, and row dwellings (City of Pickering, 2024); and
- The Seaton Community, located east of the Study Area, is an emerging community in central Pickering and is expected to accommodate 70,000 people and 35,000 jobs (Durham Region, 2023).

Figure 13: Existing Land Use in the Study Area



ROUGE PARK TMP EA

FIGURE 13
EXISTING LAND USE IN THE STUDY AREA

- Bridge Location
- 500 m Project Focus Area
- Project Study Area
- Place of Worship
- Police Station
- School
- Fire Station
- Building
- Railway
- Municipal Boundary
- Hydro Line
- Rouge National Urban Park
- Built Up Area
- Protected Countryside
- Urban River Valley
- Rouge Park
- Other Park or Open Space
- Water Body

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0 250 500 1,000 m

MAP CREATED BY: GM
MAP CHECKED BY: EW
MAP PROJECTION: NAD 1983 UTM ZONE 17N
MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, ESRI, CITY OF TORONTO

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PROJECT: 191924
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DATE: 2024-03-25

5.5.2 Local Population, Employment and Economies

The Study Area is located in the north-eastern part of the City and is within Ward 25 – Scarborough-Rouge Park. In 2021, the population of this ward was 102,254, which is a 0.02 percent decrease in population since 2016 (Statistics Canada, 2023).

The Study Area is unique in that the population within RNUP is minimal, with only a few remaining lease holders occupying dwellings and maintaining agriculture farms. However, RNUP is surrounded by significant population and development pressure from the City of Toronto, City of Markham to the west, and the City of Pickering to the east.

Because of the existing population around RNUP, there continues to be significant traffic through the park as it links residents to neighbouring municipalities.

Similar to population, the project Study Area has employment centres surrounding the RNUP boundaries, with limited employment within the RNUP boundaries. The main drivers of employment within the project Study Area are the Toronto Zoo and Parks Canada's RNUP offices. According to the Toronto Zoo: Facts and Figures document, the Zoo employs 273 permanent full-time employees and over 330 part-time or seasonal employees and a team of over 500 year-round volunteers (Toronto Zoo, n.d.). There are several existing businesses in RNUP and the broader Study Area. The main employment centre is the Toronto Zoo. Outside of the RNUP boundary there are several existing commercial and industrial businesses. On the south side of the Study Area, closer to the 401 corridor, there is a higher concentration of commercial businesses. At Sheppard Avenue and Morningside Drive there is a cluster of industrial – commercial business operations.

5.5.3 Tourism and Recreation

There are a variety of tourism and recreation opportunities within the Study Area. While the RNUP Management Framework seeks to increase visitor opportunities and offerings, studies have shown national park visitation across Canada has decreased by 15% over the past 10 years (Ramsay *et al*, 2017). RNUP has the benefit of proximity to the largest population centre in Canada, as well as strong transportation network connectivity. In addition, there are two golf courses located within the RNUP boundary.

The RNUP Management Plan has set targets to increase the number of personal and virtual contacts by 40% by 2029 (Parks Canada, 2019). In addition, the Toronto Zoo attracts a large number of visitors per year, with estimates of approximately 1,300,000 visitors per year (Toronto Zoo, n.d.).

5.6 Cultural Heritage Environment

5.6.1 Archaeological Resources

Archaeological Services Inc. (ASI) was retained to complete a Stage 1 Archaeological Assessment (AA), including background research and property inspection, for the five bridges and their roadway approaches to support completion of the TMP.

The completed Stage 1 AA (PIF# P1066-0163-2020) has been provided in **Appendix E-1**.

The Stage 1 AA background study indicated the presence of 42 registered archaeological sites within one kilometre of the study bridges, and one site (AlGt-542) within 50 m of Hillside Bridge on Meadowvale Road. The location of site AlGt-542 is not considered to extend into the potential area of impact associated with alternative solutions for Hillside Bridge. Two ancestral Huron-Wendat village sites were also located within one kilometre of the bridges. One of the two villages was located on former Milne lands (known as the Milne Site) and was situated approximately 600 m north of Sewell's Road Bridge. The other village was located on former Reesor Lands (known as the D. Reesor Site) and was situated approximately 500 m northwest of Hillside Bridge. As ossuaries have not been identified for either site, lands within 1000 m of the villages and 300 m of adjacent watercourses carry ossuary potential. This includes Sewell's Road Bridge, Milne's Bridge, and Hillside Bridge, as well as their roadway approaches. Areas of ossuary potential will require a program of archaeological monitoring during removal of top soil. Part of the study area was also previously assessed by ASI (P392-0035-2013, P094-0192-2014, P094-0193-2014) which noted that Sewell's Road ROW in proximity to the Milne site requires a Stage 3 site-specific assessment.

The property inspection completed as part of the Stage 1 AA determined that parts of the Study Area exhibit archaeological potential and will require Stage 2 AA. A Stage 3 AA will also be required within the Sewell's Road right-of-way near the Milne Site (AkGt-41). The Stage 2 AA will be completed at a future project phase, prior to the start of any land-disturbing activities.

5.6.2 Built Heritage Resources and Cultural Heritage Landscapes

5.6.2.1 Cultural Heritage Resource Assessment (CHRA)

A Cultural Heritage Resource Assessment (CHRA) was conducted by ASI for areas within, or adjacent to, City-owned rights-of-way within 500 m of the five heritage bridges in the fall of 2020. The CHRA provides an inventory of built heritage resources and cultural heritage landscapes adjacent to the bridges so that potential impacts to these features can be adequately considered within the development and evaluation of alternative solutions.

The CHRA identified 11 built heritage resources and/or cultural heritage landscapes within the surrounding road right-of-way for a distance of 500 metres from the centre of each bridge. The CHRA also determined that four of the subject bridges were included within two separate cultural heritage landscapes, with mapping provided in Section 10.0 of the CHRA:

- Old Finch Avenue and Sewell's Road roadscape (CHR 13) which includes Sewell's Bridge and Milne Bailey Bridge; and
- Twyn Rivers Drive roadscape (CHR 14) which includes Stott's Bridge and Maxwell's Bridge.

The complete CHRA can be found in **Appendix E-2**.

5.6.3 Indigenous Community Land and Resource Use

The historical summary below is extracted from the Stage 1 AA completed by Archaeological Services Inc. (ASI). Greater detail on Indigenous settlement and history in the Project area can be found in the Stage 1 AA Report (**Appendix E-1**).

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years before present (BP) (Ferris 2013). Populations at this time would have been highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic.

Between approximately 10,000-5,500 BP, the Great Lakes basins experienced low-water levels, and many sites which would have been located on those former shorelines are now submerged. The earliest evidence for cemeteries dates to approximately 4,500-

3,000 BP and is indicative of increased social organization, investment of labour into social infrastructure, and the establishment of socially prescribed territories (Ellis et al. 1990; Ellis et al. 2009; Brown 1995:13).

Between 3,000-2,500 BP, populations continued to practice residential mobility and to harvest seasonally available resources, including spawning fish. The Woodland period begins around 2,500 BP and exchange and interaction networks broaden at this time (Spence et al. 1990:136, 138) and by approximately 2,000 BP, evidence exists for small community camps, focusing on the seasonal harvesting of resources (Spence et al. 1990:155, 164).

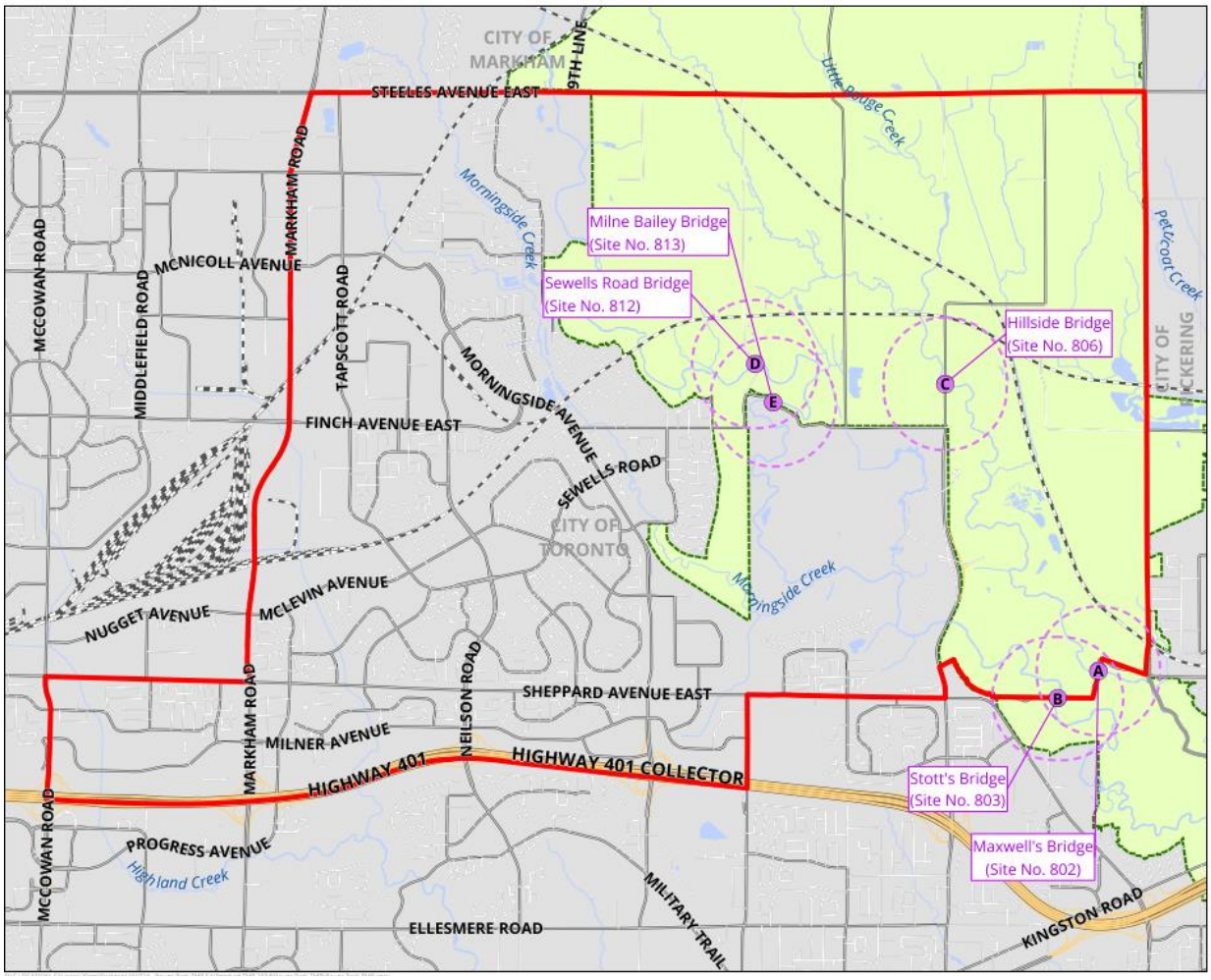
From the beginning of the Late Woodland period at approximately 1,000 BP, lifeways became more similar to that described in early historical documents. Between approximately 1000-1300 Common Era (CE), the communal site is replaced by the village focused on horticulture. Seasonal disintegration of the community for the exploitation of a wider territory and more varied resource base was still practised (Williamson 1990:317). By 1300-1450 CE, this episodic community disintegration was no longer practised and populations now communally occupied sites throughout the year (Dodd et al. 1990:343). From 1450-1649 CE this process continued with the coalescence of these small villages into larger communities (Birch and Williamson 2013).

By 1600 CE, the communities within Simcoe County had formed the Confederation of Nations encountered by the first European explorers and missionaries. In the 1640s, the traditional enmity between the Haudenosaunee and the Huron-Wendat (and their Algonquian allies such as the Nippissing and Odawa) led to the dispersal of the Huron-Wendat. Shortly afterwards, the Haudenosaunee established a series of settlements at strategic locations along the trade routes inland from the north shore of Lake Ontario. By the 1690s, however, the Anishinaabeg were the only communities with a permanent presence in southern Ontario.

6.0 Existing Conditions – Bridge Specific

This section describes the existing conditions of each of the five Study Area bridges shown in **Figure 14** in further detail.

Figure 14: Study Area



6.1 Sewell's Road Bridge (Bridge A)

6.1.1 Bridge Purpose

6.1.1.1 Location and Overall Transportation Network Connectivity

The Sewell's Road Bridge is located in the central-west quadrant of RNUP on Sewell's Road between Steeles Avenue East and Old Finch Avenue. The bridge spans the Rouge River, which runs west to east under the crossing. Sewell's Road is a key north-south connection through RNUP connecting Old Finch Avenue to Steeles Avenue. The location of Sewell's Road Bridge and its associated focused Study Area is illustrated in **Figure 2a**.

Sewell's Road is linear from Steeles Avenue to approximately 200 m north of the Rouge River. From 200 m north of the crossing, the road follows the natural topography, with a significant curve immediately south of Rouge River. Vertical and horizontal sight distances were checked for the approaches and departures to/from Sewell's Road Bridge. Deficiencies were found on the northbound approach to the bridge, failing to meet horizontal sight lines due to the curvature of the road. No deficiencies were identified on the southbound approach to the bridge. The northbound and southbound approaches of Sewell's Road Bridge can be seen in **Figure 15** and **Figure 16,** respectively.

Figure 15: Sewell's Road Bridge Northbound Approach

Figure 16: Sewell's Road Bridge Southbound Approach

There is a CP Rail bridge over Sewell's Road (at Mileage 194.05, Belleville Subdivision) located 0.45 km north of the Sewell's Road Bridge. The CP Rail bridge is posted with a 3.5 m vertical clearance limit and the horizontal clearance restricts traffic to a single

traffic lane. Further north, there is a CN Rail level crossing. Due to the height restriction at the CP Rail bridge, ambulances must utilize Sewell's Road Bridge to access locations between Rouge River and the CP Rail line. The CP Rail bridge can be seen in **Figure 17** and **Figure 18**.

Sewell's Road Bridge has a vertical clearance limit of 4.1 m at the pier sway frames, which would only be vulnerable to northbound traffic, since the CP Rail structure constrains southbound traffic.

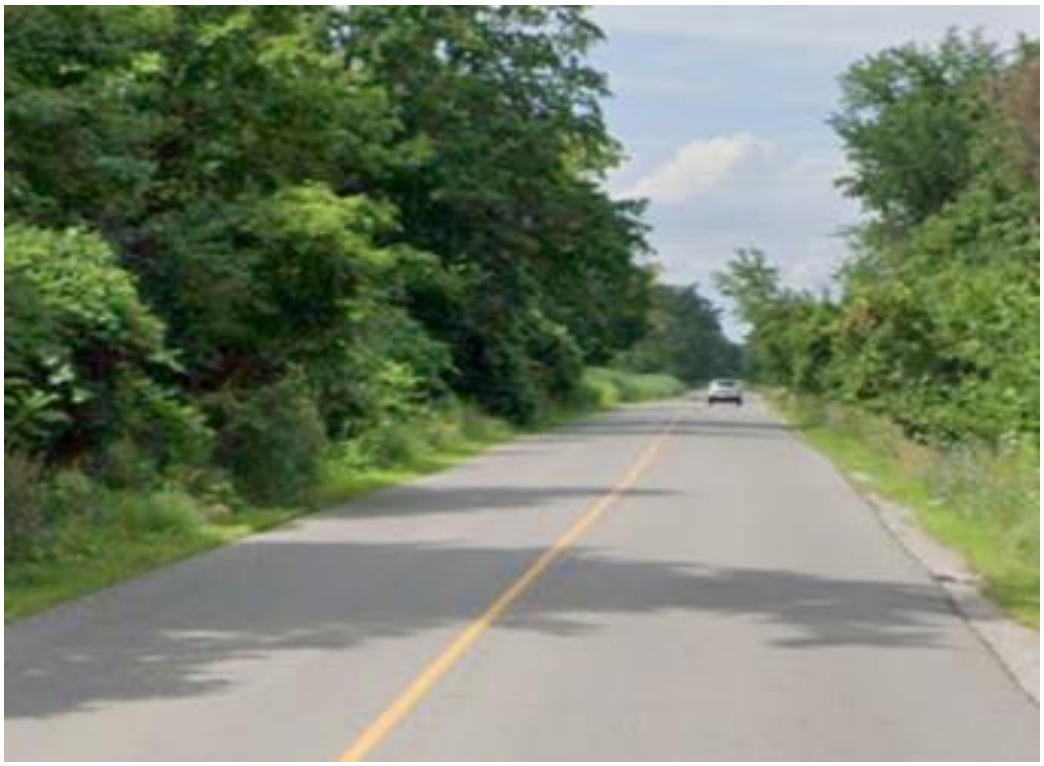
Figure 17: CP Rail Bridge over Sewell's Road, Southbound

Figure 18: CP Rail Bridge over Sewell's Road, Northbound

6.1.1.2 Vehicular Lanes and Traffic Volumes

Sewell's Road is a two-lane north-south road with a rural cross-section and a 50 km/h posted speed. It has 3.75 m wide travel times and narrow gravel shoulders. The posted speed is reduced to 20 km/h at the single lane Sewell's Road Bridge, with the bridge access being yield-controlled to accommodate alternating traffic. Sewell's Road is classified as a collector road with a rural cross-section and has an annual average daily traffic (AADT) of approximately 1,100 vehicles. There are no major destinations along Sewell's Road, therefore most vehicles would be using it as a means of travelling between Steeles Avenue East and Old Finch Avenue (**Figure 19**).

Figure 19: Sewell's Road North of Sewell's Road Bridge and CP Bridge over Sewell's Road



6.1.1.3 Active Transportation Facilities

There are presently no dedicated active transportation facilities on, or crossing, Sewell's Road or over Sewell's Road Bridge, however the RNUP Management Plan proposes a trail corridor just east of Sewell's Road. The trail would travel along the east edge of the Sewell's Road right-of-way approximately between Old Finch Avenue and the CN rail corridor, crossing over Rouge River. Sewell's Road is also a suggested on-street cycling route, connecting to existing cycling lanes on Steeles Avenue and a recommended future cycling route on Old Finch Avenue.

6.1.2 Bridge Design

Sewell's Road Bridge, constructed in 1912, is a 48.76 m long three-span (9.14 m, 30.48 m, and 9.14 m) "stiffened" suspension bridge Sewell's Road over the Rouge River. The superstructure is comprised of suspension cables attached to floor beams, stiffening trusses, and an exposed concrete deck. The towers have sway bracing at the top, restricting the vertical clearance to 4.1 m.

The bridge has a 200 mm thick bare concrete deck and a clear width of 3.96 m between concrete curbs. The bridge clear width between curbs restricts traffic to a single-lane, with yield signs to alternate traffic.

The main cables are attached to deadweight anchors of unknown size buried behind abutments. There are two concrete piers supporting the steel towers. The foundation type is not known. Sewell's Road Bridge can be seen in **Figure 20** below.

Figure 20: Sewell's Road Bridge - October 2020

6.1.3 Bridge Condition Assessment

The 2016 biennial bridge inspection was assigned a Bridge Condition Index (BCI) of 77.8, which relates to a bridge in good condition. The abutments and piers were in generally good condition. The structural steel inspection and evaluation completed in 2013 confirmed the 5-tonne load posting.

In general, the bridge appears to have additional service life remaining.

6.1.4 Existing Constraints

6.1.4.1 Site Hydraulics

The calculated maximum water surface elevations (WSE) for the 25-year, 100-year and Regional Storm events at Sewell's Road Bridge are summarized in **Table 19**. The design event for Sewell's Road Bridge is the 25-year storm event based on the Ministry of Transportation of Ontario (MTO) design criteria. The hydraulic model results suggest that the existing structure meets the MTO design criteria for clearance, freeboard, and check flow rate, where clearance is the distance between WSE and the underside of the bridge, freeboard is the distance between WSE and the road grade, and check flow rate is the flow in the 100-year storm event. The bridge is only overtopped during the Regional Storm Event. Further details, including the MTO design criteria, can be found in **Appendix F**.

Table 19: Sewell's Road Bridge Existing Conditions

Flood Event	Flow (m^3/s)	Calculated Upstream WSE[3] (mASL)	Calculated Downstream WSE[4] (mASL)	Freeboard[5] (m)	Clearance[6] (m)
25-Year[7]	92.73	126.51	126.20	3.95	2.17
100-Year	155.00	127.24	126.55	3.22	1.44
Regional	665.78	130.52	129.11	-	-

[3] Calculated values at HEC-RAS cross section 4695.849.
[4] Calculated values at HEC-RAS cross section 4678.375.
[5] Calculated based on edge of travel lane elevation of 130.46 m.
[6] Calculated based on minimum soffit elevation.
[7] Design event as per MTO design Criteria.

Flood Event	Flow (m^3/s)	Calculated Upstream WSE[3] (mASL)	Calculated Downstream WSE[4] (mASL)	Freeboard[5] (m)	Clearance[6] (m)
Design Criteria	-	-	-	≥ 0.3 m	≥ 0.3 m

6.1.4.2 Phase 1 Environmental Site Assessment

The Phase 1 ESA identified evidence of potential sources of contamination within the 500 m radius Study Area surrounding the bridge. Three potential sources of subsurface contamination were identified; however, all three sources were deemed to have a low probability of causing contamination on the bridge site. A summary of the potential sources of contamination is provided in **Table 20**. The complete report can be found in **Appendix G-1**.

Table 20: Summary of Potential Contamination Sources near Sewell's Road Bridge

Location	Description	Information source	Potential to cause subsurface contamination on the Site
On-Site	Importation of fill of unknown quality	Site Visit	Low – potential for soil impacts within the fill
Off-Site (Study Area) – Exact distance from the Site is unclear	Historical spill of motor oil into the watercourse (Rouge River)	ERIS EcoLog	Low – record of spill was dated in 1995 and is unlikely to still be present at the Site due to natural degradation and washout
Off-Site (Study Area) – Approximately 350 m north of the Site	Rail tracks	Aerial Photographs/ Site Visit	Low – distance of rail tracks to Site is approximately 350 m, which is unlikely to influence the Site

Due diligence environmental sampling or a Phase 2 Environmental Site Assessment (ESA) is not recommended to assess the environmental conditions of the Site as the potential for contamination at the Site appears low.

6.1.4.3 Natural Environment

There are three vegetation communities within the Sewell's Road Bridge Field Study Area identified by the TRCA to be of regional concern: Fresh-Moist Bitternut Hickory

Deciduous Forest, Horsetail Mineral Shallow Marsh, and Flat-stemmed Bluegrass – Forb Open Sand Barren (TRCA, 2017).

The Rouge River at the Sewell's Road Bridge crossing is a permanent river that flows in an easterly direction. At the crossing, the mean wetted width and depth was approximately 15 m and 0.3 m, respectively. The bankfull width was approximately 25 m and the mean bankfull depth was approximately 3 m. Banks were generally protected from erosion and the southern bank was observed to be a depositional zone. However, the northern bank downstream of the bridge was observed to be heavily eroded with an exposed steep sandy bank. The southern bank consisted of primarily meadow before transitioning to a forest beyond 10 m. The northern bank consisted of forest that extended beyond 30 m.

No species at risk were observed within the Study Area during the 2019 or 2020 field investigations, however two observed species, Great Blue Heron, and Golden-crowned Kinglet, are of regional conservation concern. Two potential inactive Barn Swallow nests were observed on the underside of Sewell's Road Bridge. Barn Swallow is designated as Threatened under the *Endangered Species Act*, 2007 (ESA, 2007) and *Species at Risk Act*, 2002 (SARA). In addition, a high exposed sand bank was identified as having the potential to provide suitable habitat for Bank Swallow, a species at risk designated as Threatened under the ESA, 2007 and Threatened under the SARA, 2002. Three snag trees which have the potential to provide suitable habitat for at risk bat species were observed within the Study Area. The bridge abutments were also identified as having the potential to provide suitable snake hibernacula.

6.1.4.4 Cultural Heritage Resources

Both Sewell's Road and Sewell's Road Bridge retain cultural heritage value or interest. Sewell's Road Bridge, which was constructed in 1912 to replace an earlier wooden structure, is designated under Part 4 of the *Ontario Heritage Act* through By-law No. 25155 as being of cultural heritage value or interest. The bridge was one of three suspension bridges designed by York County engineer Frank Barber between 1909 and 1915 (Cuming, 1983). Barber supervised construction in 1912 and aimed to produce a simple design and have it erected with the minimum about of time, labour, and material cost (Cuming, 1983). Mitigation measures related to the impacts of the preferred alternative will be provided within a bridge-specific Heritage Impact Assessment report.

Additional heritage resources adjacent to Sewell's Road Bridge include the railway bridge abutments from the now-defunct Canadian Northern Railway. While the bridge has long since been removed, the abutments have the potential to retain cultural heritage value and an additional Cultural Heritage Evaluation Report (CHER) should be completed to evaluate the cultural heritage value or interest of these abutments.

6.2 Milne's Bridge (Bridge B)

6.2.1 Bridge Purpose

6.2.1.1 Location and Overall Transportation Network Connectivity

The Milne's Bridge is located in the central-west quadrant of RNUP on Old Finch Avenue between Sewell's Road and Reesor Road. The bridge spans the Rouge River, which runs east to west at the crossing location. Old Finch Avenue accommodates traffic traveling into and out of the park as well as those passing through. The location of Milne's Bridge and its surrounding Study Area can be seen in **Figure 2b**.

Old Finch Avenue is a historic roadway that follows the local topography and is therefore significantly curvilinear. Vertical and horizontal sight distances were checked for the approaches and departures to/from the Milne's Bridge. This location currently uses a signal to manage two-way flow across the bridge. As such, sight distances were measured to the signals. No deficiencies were identified for sightlines to the traffic signals.

However, on both the northbound and southbound approach there are insufficient sightlines to the bridge deck, so if there is a vehicle erroneously on the bridge or if there is another obstruction, approaching vehicles will not be able to see it in time to respond. Additional signage warning of reduced operating speeds and sharp turns are required at this site. The northbound and southbound approaches of Milne's Bridge can be seen in **Figure 21** and, **Figure 22**, respectively.

Figure 21: Milne's Bridge Northbound Approach

Figure 22: Milne's Bridge Southbound Approach

6.2.1.2 Vehicular Lanes and Traffic Volumes

Figure 23: Old Finch Avenue east of Milne's Bridge

Old Finch Avenue is a two-lane east-west road with a narrow rural cross-section and a posted speed limit of 50 km/h (**Figure 23**). It has 3.2 m wide travel lanes and no shoulders. At the bridge, the tight horizontal curves, combined with a bump transition at the north end of the bridge tend to slow the operating speed of traffic substantially with several southbound vehicles observed to slow or stop before driving onto the bridge deck. The roadway is reduced to one lane on Milne's Bridge, with access to the bridge controlled by traffic signals. These signals often create queues of traffic, resulting in cohorts of several closely spaced vehicles crossing the bridge at the same time, increasing the load density on a frequent basis.

Old Finch Avenue is classified as a collector road and has an AADT of approximately 2,200 vehicles. Within RNUP, Old Finch Avenue intersects with Meadowvale Road, Reesor Road, and Sewell's Road, and continues into the residential area directly west of

the park, intersecting with Morningside Avenue. Old Finch Avenue provides a means of accessing the park, including Toronto Zoo, as well as a route to travel through the park.

6.2.1.3 Active Transportation Facilities

There are presently no dedicated active transportation facilities on, or crossing, Old Finch Avenue and Milne's Bridge. However, Old Finch Avenue between Sewell's Road and Meadowvale Road is a suggested on-street route for cyclists. There is presently a multi-use pathway on Meadowvale Road at the east end of Old Finch Avenue and a proposed future trail corridor along Sewell's Road at the west end of Old Finch Avenue. Southwest of the bridge there is a parking area for access to the RNUP *Finch Meander Trail*.

6.2.2 Bridge Design

Milne's Bridge, constructed in 1988, and is a 57.9 m long two-span (27.4 m, 30.5 m) steel Bailey bridge carrying Old Finch Avenue over the Rouge River. The trusses support a floor beam and bracing system with an open-grated steel deck. The bridge width of 3.6 m restricts traffic to a single-lane, alternating direction configuration.

The bridge pier is constructed of four wood piles with a steel cap frame and vertical steel bracing. The pier is located near the center of the river channel, making it vulnerable to debris and ice flows. A debris deflector was constructed upstream of the pier using armour stone and concrete.

Milne's Bridge can be seen in **Figure 24** and **Figure 25**.

Figure 24: West Side of Milne's Bridge

Figure 25: Milne's Bridge Deck

6.2.3 Bridge Condition Assessment

The deck grating has been damaged numerous times and repaired with flat plate. The deck panels are loose, causing significant noise under traffic, with abrasion observed and loose bolted connections. The deck appears to be at or near the end of its useful service life.

The wood piles at the pier have not been subjected to non-destructive testing such as coring to investigate the amount of decay, which typically initiates at the core of the pile and is usually worst at or just below grade level. Based on the age of the piles, and the exposure to wetting effects, there is a significant risk that the piles are at or near the end of their useful service life, and replacement of the pier should be considered.

Panel bridges were originally designed for temporary use, but in practice have been kept in service for decades. However, the reasonable normal service life for these bridges in long-term use has been about 25 to 35 years.

In general, the age and condition of the bridge suggest, replacement or rehabilitation of the bridge is recommended.

6.2.4 Existing Constraints

6.2.4.1 Site Hydraulics

The calculated WSE for the 25-year, 50-year, 100-year, and Regional Storm events at the Milne's Bridge are summarized in **Table 21**. The design event for the Milne's Bridge is the 50-year storm based on the MTO design criteria. The hydraulic model results suggest that the existing structure meets the MTO design criteria for clearance and freeboard. Hydraulic calculations were not performed to evaluate the check flow rate (115% of the 100-year storm event flow rate), but the results show that the structure is not overtopped during the 350-year event, whose flow rate exceeds the check flow rate. Therefore, the existing structure meets the check flow rate design criteria as well. Further details, including the MTO design criteria, can be found in **Appendix F**.

Table 21: Milne's Bridge Existing Conditions

Flood Event	Flow (m^3/s)	Calculated Upstream WSE[8] (mASL)	Calculated Downstream WSE[9] (mASL)	Freeboard[10] (m)	Clearance[11] (m)
25-Year	92.73	119.19	118.53	4.11	3.04
50-Year[12]	122.96	119.55	118.70	3.75	2.68
100-Year	155.00	119.88	118.84	3.42	2.35
Regional	665.78	123.45	121.73	-	-
Design Criteria	-	-	-	≥ 1.0 m	≥ 1.0 m

6.2.4.2 Phase 1 Environmental Site Assessment

The Phase 1 ESA identified evidence of potential sources of contamination within the 500m radius Study Area surrounding the bridge. Two potential sources of subsurface contamination were identified, however both sources were deemed to have a low probability of causing contamination on the Site. A summary of the potential sources of

[8] Calculated values at HEC-RAS cross section 3039.615.
[9] Calculated values at HEC-RAS cross section 3020.872.
[10] Calculated based on edge of travel lane elevation of 123.30 m.
[11] Calculated based on minimum soffit elevation.
[12] Design event as per MTO design Criteria.

contamination is provided in **Table 22**. The complete report can be found in **Appendix G-2.**

Table 22: Summary of Potential Contamination Sources near Milne's Bridge

Location	Description	Information source	Potential to cause subsurface contamination on the Site
On-Site	Importation of fill of unknown quality	Site Visit	Low – potential for soil impacts within the fill
Off-Site (Study Area) – Exact distance from the Site is unclear	Historical spill of motor oil into the watercourse (Rouge River)	ERIS EcoLog	Low – record of spill was dated in 1995 and is unlikely to still be present at the Site due to natural degradation and washout

Based on the findings of this report, due diligence environmental sampling or a Phase 2 ESA is not recommended to assess the environmental conditions of the Site as the potential for contamination at the Site appears low.

6.2.4.3 Natural Environment

At the Milne's Bridge crossing, the Rouge River flows in a westerly direction. Mean wetted width at the crossing was approximately 12 m and mean wetted depth was approximately 0.25 m. The mean bankfull width was approximately 15 m and the mean bankfull depth was approximately 2 m. Both banks appeared to be protected from erosion since they consist of non-erodible material. Meadows were the dominant community within the riparian zone on both banks before transitioning to a forest community 10 m from the river.

There were no vegetation communities within the Milne's Bridge Field Study Area identified by the TRCA to be of regional concern (TRCA, 2017).

No SAR were observed within the Study Area during the 2019 or 2020 field investigations; however, two inactive potential Barn Swallow nests were observed on the underside of the Milne's Bridge. In addition, a high exposed sand bank was identified as having the potential to provide suitable habitat for Bank Swallow. A snag tree, which has the potential to provide suitable habitat for SAR bat species was also

observed within the Field Study Area. The bridge abutments were also identified as having the potential to provide suitable snake hibernacula.

6.2.4.4 Cultural Heritage Resources

Old Finch Avenue, and its crossing of the Rouge River – known as the Milne's Bridge, are both identified as cultural heritage resources. The original Milne's Bridge was installed by the 2nd Field Engineer Regiment of the Royal Canadian Engineers in October 1954, when the previous iron bridge was washed away by Hurricane Hazel. The 1954 Bailey Bridge was replaced in 1988 with a similar structure, once again installed by the Canadian Military. The bridge is so named as it was located on property owned by Wm. A. Milne, who operated Milne Sawmill southwest of the crossing location. Old Finch Avenue was aligned to provide access to the Mill.

A monument was installed in 1985 at the southwest corner of the bridge, commemorating the bridge construction of 1954. The bridge is currently listed on the City's Heritage Register and was nominated for designation by the Scarborough Preservation Panel. Further mitigation measures for the preferred design will be discussed in a bridge specific Heritage Impact Assessment report.

6.2.4.5 Archaeology

Part of the Study Area was also previously assessed by ASI (P392-0035-2013, P094-0192-2014, P094-0193-2014) which noted that Sewell's Road ROW in proximity to the Milne site requires a Stage 3 site-specific assessment. The Milne site (AkGt-41) and the D. Reesor (AlGt-63) are ancestral Huron-Wendat villages adjacent to the study area and an associated ossuary has not yet been identified for either site.

6.3 Hillside Bridge (Bridge C)

6.3.1 Bridge Purpose

6.3.1.1 Location and Overall Transportation Network Connectivity

The Hillside Bridge is located centrally within RNUP on Meadowvale Road between Beare Road and Old Finch Avenue. The bridge spans the Little Rouge River, which flows west to east at the crossing. Meadowvale Road is a significant corridor within the Study

Area as it directly connects to the Toronto Zoo. The location of Hillside Bridge and its surrounding Study Area can be seen in **Figure 2c.**

Vertical and horizontal sight distances were checked for the approaches and departures to/from the Hillside Bridge. No deficiencies were identified.

There is a CP Rail bridge over Meadowvale Road (at Mileage 193.03, Belleville Subdivision) located 0.55 km north of the Hillside Bridge. The CP Rail bridge is posted with a 3.0 m vertical clearance limit and its width restricts traffic to a single lane. Due to the height restriction at the CP Rail bridge, ambulances must utilize Hillside Bridge to access locations between Little Rouge River and the CP Rail line. The CP Rail bridge can be seen in **Figure 26**.

Figure 26: CP Rail Bridge Over Meadowvale Road

6.3.1.2 Vehicular Lanes and Traffic Volumes

Meadowvale Road is a north-south road with a rural cross-section and a posted speed limit of 50 km/h (**Figure 27**). It has 3.5 m wide travel lanes with narrow gravel shoulders. It is classified as a collector road and has an AADT of approximately 13,000 vehicles. The number of lanes on Meadowvale Road varies along its length, however it has two lanes on either end of Hillside Bridge or reduces to one lane on the bridge. Toronto Zoo is located on Meadowvale Road, meaning it accommodates all traffic entering and exiting the zoo. It also intersects with Plug Hat Road and Old Finch Avenue within the park. South of the park, it connects to Sheppard Avenue and has ramps to access Highway 401.

Figure 27: Meadowvale Road North of Hillside Bridge

6.3.1.3 Active Transportation Facilities

Meadowvale Road between Plug Hat Road and Old Finch Road (and therefore over Hillside Bridge) is signed as a bike route. South of Old Finch Road, there is a multi-use path on the west side of Meadowvale Road that extends to Sheppard Avenue. The Cedar Trailhead is located directly north of Hillside Bridge, however as of 2018, parking is not available at the trailhead.

Additionally, Plug Hat Road between Meadowvale Road and Beare Road is signed as a bike route. Old Finch Avenue is a suggested on-street route between Sewell's Road and Meadowvale Road. However, neither of these routes have dedicated active transportation infrastructure. The Meadowvale Road multi-use path connects to painted bike lanes on Sheppard Avenue.

6.3.2 Bridge Design

The Hillside Bridge, constructed in 1917, is a 24.68 m single-span steel pony truss bridge with an open grating deck carrying Meadowvale Road over the Little Rouge River. The bridge width of 4.64 m restricts traffic to a single-lane, alternating direction configuration. The bridge has a load posting of 15 tonnes.

The bridge deck is comprised of galvanized open grating on galvanized steel stringers installed during the 1986 rehabilitation. Hillside Bridge can be seen in **Figure 28** and **Figure 29.**

Gabion walls have been installed at the abutments to address erosion and scour, and the corner slopes have riprap rock protection. There is a system of groynes and guide banks along the riverbanks (upstream) as river training to reduce erosion at the bend in the river.

Figure 28: West Side of Hillside Bridge

Figure 29: Hillside Bridge Deck, Guide Rail and Railing

6.3.3 Bridge Condition Assessment

The 2016 biennial bridge inspection was assigned a BCI of 65.4, which relates to a bridge in fair condition.

The structural steel inspection and fatigue analysis completed in 2017 indicated that some truss members could develop fatigue cracking but confirmed that there were no fatigue cracks identified in these members at that time. The evaluation confirmed the 15-tonne load posting. The report recommended the structure be monitored for fatigue cracking every five years until rehabilitation or replacement.

The lower chord of the truss has areas of severe corrosion and perforation at connections. Monitoring in 2020 has determined that immediate localized repairs be undertaken to allow the bridge to remain in service until rehabilitation or replacement.

In general, the bridge is nearing the end of its service life and should be removed, rehabilitated, or replaced in the next five years.

6.3.4 Existing Constraints

6.3.4.1 Site Hydraulics

The calculated WSE for the 25-year, 50-year, and 100-year, and the Regional Storm events at the Hillside Bridge are summarized in **Table 23**. The design event for Hillside Bridge is the 50-year storm based on the MTO design criteria. Hydraulic calculations were not performed to evaluate the check flow rate (115% of the 100-year return period), but the results show that the structure is not overtopped during the 350-year event, whose flow rate exceeds the check flow rate. Therefore, the existing structure meets the check flow rate design criteria as well. Further details, including the MTO design criteria, can be found in **Appendix F**.

Table 23: Hillside Bridge Existing Conditions

Flood Event	Flow (m^3/s)	Calculated Upstream WSE[13] (mASL)	Calculated Downstream WSE[14] (mASL)	Freeboard[15] (m)	Clearance[16] (m)
25-Year	51.55	125.64	125.13	6.06	5.39
50-Year[17]	61.68	125.82	125.31	5.88	5.21
100-Year	71.00	125.96	125.45	5.74	5.07
Regional	279.44	128.43	127.94	3.27	2.60
Design Criteria	-	-	-	≥ 1.0 m	≥ 1.0 m

6.3.4.2 Phase 1 Environmental Site Assessment

In 2017, a Phase 1 ESA of properties along Plug Hat Road and Meadowvale Road was completed by WSP/MMM for the City of Toronto. Four properties were investigated as part of this Phase 1 ESA; Property ID 7 encompasses Hillside Bridge and is considered

[13] Calculated values at HEC-RAS cross section 1280.451.
[14] Calculated values at HEC-RAS cross section 1254.999.
[15] Calculated values at HEC-RAS cross section 1254.999.
[16] Calculated based on minimum soffit elevation.
[17] Design event as per MTO design Criteria.

the Site. The Study Area considered a 250 m radius around the property. Based on the results of the Phase 1 ESA, no potentially contaminating activities were identified on the Site. Potentially contaminating activities were identified off-site (within the Study Area); however, the potential for impacts from these activities to soil and groundwater at the Site was considered to be low. A summary of the potential sources of contamination is provided in **Table 24**. The complete report can be found in **Appendix G-3**.

Table 24: Summary of Potential Contamination Sources near Hillside Bridge

Location	Description	Information source	Potential to cause subsurface contamination on the Site
Off-Site (Study Area) – East and North of the Site	CN Rail Crossing	Site Visit/ Aerial Photographs	Low – Based on the relative immobility of contaminants typically associated with railway ties (heavy metals and polycyclic aromatic hydrocarbons [PAHs]), the presence of the rail line adjacent to the Site does not result in an area of potential concern (APECs) at the Site.
Off-Site (Study Area) – East and west of the Site	Historical spills	ERIS EcoLog	Low – Based on the nature of spills, surficial geology, distance from the Site and remedial efforts completed at the spill source, the spills do not result in an APEC at the Site.
Off-Site (Study Area) – East and northeast of the Site	Aboveground fuel storage tanks (ASTs)	ERIS EcoLog	Low – ASTs are inferred to be down or cross-gradient of the Site. Based on the distance, inferred direction of groundwater flow and low to moderate permeability of the soils, ASTs within the Study Area do not result in APECs at the Site.

No additional environmental investigations were recommended upon the completion of the Phase 1 ESA.

6.3.4.3 Natural Environment

At the Hillside Bridge Crossing, the Little Rouge River flows in an easterly direction. The mean wetted width and depth was approximately 14 m and 0.25 m, respectively. Mean bankfull width and mean bankfull depth was approximately 30 m and 5 m, respectively. Both banks were observed to be erodible as undercutting was present. Meadow was the dominant community within the riparian zone on north bank before the vegetation transitioned to a forest community 10 m away from the river. Forest was the dominant community along the southern bank.

There is one vegetation community within the Hillside Bridge Field Study Area identified by the TRCA to be of regional concern: White Cedar Treed Bluff (TRCA 2017)[18].

No SAR were observed within the Hillside Bridge Study Area during the 2019 or 2020 field investigations, however Beaver, which were observed during the field study, are considered to be of urban concern in the region. A single snag tree, which has the potential to provide suitable habitat for SAR bat species was observed within the Study Area. The bridge abutments were also identified as having the potential to provide suitable snake hibernacula.

6.3.4.4 Cultural Heritage Resources

The Meadowvale Road crossing of Little Rouge River predates 1914 aerial photography, with the current Pony Warren Truss Bridge constructed in 1917 (and rehabilitated in 1986). The bridge was named after the wider Hillside community, which has managed to maintain its rural character. Hillside Bridge is designated under Part 4 of the *Ontario Heritage Act* through By-law No. 25153 as being of cultural heritage value or interest. Mitigation measures related to the impacts of the preferred alternative will be provided within a bridge-specific Heritage Impact Assessment report.

6.3.4.5 Archaeology

The Stage 1 Archaeological Assessment for this study has confirmed archaeological potential associated with most areas beyond the existing ditch lines on Meadowvale Road. A minimum Stage 2 Archaeological Assessment will be required prior to disturbing

[18] Annual local occurrence and local rank update for 2017: terrestrial species and vegetation communities.

any areas identified as having archaeological potential. Additionally, due to the proximity of a former Huron-Wendat village to the crossing location, the Study Area retains ossuary potential. As a result, any work within the Study Area for Hillside Bridge that involves removal of topsoil will require archaeological monitoring.

6.4 Maxwell's Bridge (Bridge D)

6.4.1 Bridge Purpose

6.4.1.1 Location and Overall Transportation Network Connectivity

Maxwell's Bridge is located in the southeast quadrant of RNUP on Twyn Rivers Drive between Altona Road (City of Pickering) and Sheppard Avenue East. Little Rouge River runs west to east at the crossing location. Twyn Rivers Drive provides a connection through the southern portion of RNUP and allows vehicles to travel between the communities on either side of the park without having to access Highway 401. The location of Maxwell's Bridge and its surrounding Study Area can be seen in **Figure 2d.**

Twyn Rivers Drive has a number of sharp curves and steep slopes within the limits of RNUP – many of which don't meet modern recommended design standards for transportation facilities. Vertical and horizontal sight distances were checked for the approaches and departures to/from Maxwell's Bridge. On the southbound approach the sight distance to the bridge deck meets minimum requirements for both horizontal and vertical sightlines. However, there's a gap in the approach guardrails for pedestrian access to a trail, and this location does not meet the horizontal sightline requirement (**Figure 30**). On the northbound approach, the bridge does not meet the minimum standard for horizontal sightlines based on posted speed, with issues caused by both topography and vegetation. Speed reductions are recommended for both the northbound and southbound approaches to reduce sight distance requirements. The northbound and southbound approaches can be seen in **Figure 31** and **Figure 32**, respectively. Within

Figure 30: Gap in Guardrails for Trail Access along Twyn Rivers Drive

200 m north and south of the crossing are two very tight radius curves that, based on posted speeds, do not currently meet sight distance requirements for either opposing traffic or the trail connections located there.

Figure 31: Maxwell's Bridge Northbound Approach

Figure 32: Maxwell's Bridge Southbound Approach

6.4.1.2 Vehicular Lanes and Traffic Volumes

Twyn Rivers Drive is a two-lane 40 km/h east-west road with a rural cross-section, 3.4 m wide travel lanes and narrow paved shoulders. It is classified as a collector road and has an AADT of approximately 6,300 vehicles (**Figure 33**). Unlike the other study bridges, Maxwell's Bridge maintains two lanes and the 40 km/h limit on Twyn Rivers Drive. Twyn Rivers Drive intersects with Altona Road to the east of RNUP and Sheppard Avenue on either side of RNUP. There is an access to the Twyn Rivers Area of RNUP, however there are no major destinations along Twyn Rivers Drive. Therefore, most vehicles would be using Twyn Rivers Drive as a means of travelling through the park.

Figure 33: Twyn Rivers Drive East of Maxwell's Bridge

6.4.1.3 Active Transportation Facilities

Twyn Rivers Drive has does not currently have dedicated operating spaces for either pedestrians or cyclists. However, there are trail connections both north and south of the crossing for vehicles approaching is limited.

The RNUP *Orchard Trail* crosses the road north of the bridge. Wood fencing has been installed to slow pedestrian traffic at the roadway intersection. Guide rails have been interrupted to allow hikers to cross the road, resulting in nonstandard termination of guide rail system at the bridge. Due to a sharp curve in Twyn Rivers Drive to the north, and an S-curve in the road to the south, the sight distance to the trail crossing for vehicles approaching is limited.

The RNUP *Vista-Mast Trail* meets the road approximately 40 m to the southeast of the bridge, approaching from the east. Wood fencing has been installed to slow pedestrian traffic at the roadway intersection. The trail continues westward from an intersection with Twyn Rivers Drive at a location approximately 70 m south of the intersection of the east leg of the trail, along the road. This requires that pedestrians walk along the shoulder of the road to connect the east and west legs of the trail. The sight distance to the trail heads for vehicles approaching is limited.

Approximately 400 m east of the bridge along Twyn Rivers Drive there is a parking lot for hikers, on property owned by RNUP.

6.4.2 Bridge Design

Maxwell's Bridge, constructed in 1927, is a 19.0 m single-span concrete bowstring half-through arch bridge with a concrete deck slab and an asphalt wearing surface carrying Tywn Rivers Drive Road over Little Rouge River. The substructure is constructed of conventional closed concrete U-shaped abutments, founded on spread footings. Photos of Maxwell's Bridge can be seen in **Figure 34** and **Figure 35**.

The curb to curb width of 6.1 m accommodates two lanes of traffic. The bridge has a load posting of 3 tonnes.

Figure 34: West Side of Maxwell's Bridge

Figure 35: North Abutment of Maxwell's Bridge

6.4.3 Bridge Condition Assessment

The 2016 biennial bridge inspection was assigned a BCI of 74.0, which relates to a bridge considered in good condition. A structural inspection and evaluation completed in 2013 confirmed the 3-tonne load posting. The abutments were in generally good condition.

In general, despite its age, the bridge has been maintained in good condition, accommodated two lanes of traffic, and appears to have a useful remaining service life.

6.4.4 Existing Constraints

6.4.4.1 Site Hydraulics

The calculated WSE for the 50-year, 100-year and Regional Storm events at Maxell's Bridge are summarized in **Table 25**. The design event for Maxwell's is the 50-year storm based on the MTO design criteria. The existing structure meets the MTO design criteria for freeboard but not for clearance. Hydraulic calculations were not performed to evaluate the check flow rate (115% of the 100-year return period), but the results show that the structure is not overtopped during the 350-year event, whose flow rate exceeds the check flow rate. Therefore, the existing structure meets the check flow rate design criteria as well. Further details, including the MTO design criteria, can be found in **Appendix F**.

Table 25: Maxwell's Bridge Existing Conditions

Flood Event	Flow (m^3/s)	Calculated Upstream WSE[19] (mASL)	Calculated Downstream WSE[20] (mASL)	Freeboard[21] (m)	Clearance[22] (m)
50-Year[23]	65.76	87.33	86.87	1.34	0.82
100-Year	76.73	87.53	86.99	1.14	0.62
Regional	294.57	89.45	88.44	-	-
Design Criteria	-	-	-	≥ 1.0 m	≥ 1.0 m

6.4.4.2 Phase 1 Environmental Site Assessment

In 2017, a Phase 1 ESA of Twyn Rivers Drive was completed by WSP/MMM for the City of Toronto. Two properties were investigated as part of this ESA; Property ID 11 encompasses Maxwell's Bridge and is considered the Site. The Study Area considered a 250 m radius around the property. Based on the findings of the Phase 1 ESA, no potentially contaminating activities were present at the Site and/or within the Study Area.

No additional environmental investigations were recommended upon the completion of the Phase 1 ESA.

6.4.4.3 Natural Environment

The Little Rouge River, at the Maxwell's Bridge crossing flows in an easterly direction. The mean wetted width was approximately 12 m while the mean wetted depth was 0.25 m. The mean bankfull width and depth was approximately 15 m and 1.5 m, respectively. The south bank was considered vulnerable to erosion as it was undercut, while the northern bank was observed to be a depositional zone. Meadow was the dominant vegetation along the northern bank before it transitioned to a forest community approximately 10 m away from the creek. Forest was the dominant community along the southern bank.

[19] Calculated values at HEC-RAS cross section 2519.924.
[20] Calculated values at HEC-RAS cross section 2488.285.
[21] Calculated based on edge of travel lane elevation of 123.30 m.
[22] Calculated based on minimum soffit elevation.
[23] Design event as per MTO design Criteria.

One vegetation community within the Maxwell's Bridge Field Study Area was identified by the TRCA to be of regional concern: White Cedar Treed Bluff[24].

No SAR were observed within the Maxwell Bridge Study Area during the 2019 or 2020 field investigations, however one observed species, Golden-crowned Kinglet, is of regional conservation concern. A single snag tree, which has the potential to provide suitable habitat for SAR bat species was observed within the Study Area. The bridge abutments were also identified as having the potential to provide suitable snake hibernacula.

6.4.4.4 Cultural Heritage Resources

Replacing an earlier wooden crossing structure, the current concrete bowstring arch bridge was constructed in 1927 and is one of the last concrete bowstring through-arch bridges constructed in Ontario. The bridge was originally constructed to allow access to saw and grist mills and is named after the owner of the property on which it was located – James A. Maxwell. Maxwell's Bridge is designated under Part 4 of the *Ontario Heritage Act* through By-law No. 25152 as being of cultural heritage value or interest. Mitigation measures related to the impacts of the preferred alternative will be provided within a bridge-specific Heritage Impact Assessment report.

6.4.4.5 Archaeology

The Stage 1 Archaeological Assessment confirmed that the areas beyond the ditch lines for Twyn Rivers Drive have maintained archaeological potential. A minimum Stage 2 Archaeological Assessment will be required prior to disturbing any areas identified as having archaeological potential.

[24] Toronto and Region Conservation Authority (TRCA). 2017. Annual local occurrence and local rank update for 2017: terrestrial species and vegetation communities.

6.5 Stott's Bridge (Bridge E)

6.5.1 Bridge Purpose

6.5.1.1 Location and Overall Transportation Network Connectivity

The Stott's Bridge is located in the southeast quadrant of RNUP on Twyn Rivers Drive between Altona Road, (City of Pickering) and Sheppard Avenue East. The Rouge River flows north to south at the crossing location. Twyn Rivers Drive provides a connection through the southern portion of RNUP and allows vehicles to travel between the communities on either side of the park without having to access Highway 401. The location of Stott's Bridge and its surrounding Study Area can be seen in **Figure 2e**.

Twyn Rivers Drive is fairly linear in proximity to the crossing and provides adequate vertical and horizontal sight distances on the bridge approaches. Tywn Rivers Drive has an elevation drop of approximately 40 m heading eastbound on approach to the bridge, with a sustained roadway grade of approximately 20% over a distance of approximately 120 m. (Posted signage indicates 30% grade.) The roadway grade becomes approximately level about 150 m west of the bridge and has a slight sag curve at the bridge.

6.5.1.2 Vehicular Lanes and Traffic Volumes

Twyn Rivers Drive is a two-lane, east-west roadway with a rural cross-section and posted speed of 50 km/h (**Figure 36**). It has 3.2 m wide travel lanes and narrow paved shoulders. The roadway is reduced to a single lane at Stott's Bridge, with a reduced speed limit of 40 km/h. It is classified as a collector road and has an AADT of approximately 6,300 vehicles.

Figure 36: Twyn Rivers Drive East of Stott's Bridge

6.5.1.3 Active Transportation Facilities

Twyn Rivers Drive has no active transportation facilities adjacent to or crossing Stott's Bridge. However, if cyclists choose to use Stott's Bridge, they must dismount prior to crossing the bridge for safety reasons associated with the open grate decking.

6.5.2 Bridge Design

Stott's Bridge, constructed in 1915, is a 22.1 m single-span steel pony truss bridge with an open-grating deck carrying Tywn Rivers Drive Road over the Rouge River. The bridge clear width of approximately 4.1 m restricts traffic to a single lane with yield signs to alternate traffic. The bridge has a load posting of 3 tonnes. The bridge deck is comprised of galvanized open grating on steel stringers installed during a 1997 rehabilitation. Stott's Bridge can be seen in **Figure 37** and **Figure 38**.

Figure 37: North Side of Stott's Bridge

Figure 38: Stott's Bridge Deck, Looking East

6.5.3 Bridge Condition Assessment

The 2016 biennial bridge inspection was assigned a BCI of 63.0, which relates to a bridge in fair condition. The abutments were in generally good condition. The structural steel inspection and evaluation completed in 2013 confirmed the 3-tonne load posting. In 2020, the bridge was closed to accommodate repairs to sway bracing and tie plates.

In general, the bridge is nearing the end of its service life and should be removed, rehabilitated or replaced in the next five years.

6.5.4 Existing Constraints

6.5.4.1 Site Hydraulics

The calculated maximum WSE for the 50-year, 100-year and Regional Storm events at Stotts Bridge are summarized in **Table 26.** The design event Stott's Bridge is the 50-year storm based on the MTO design criteria. The existing structure meets the MTO design

criteria for freeboard but not for clearance. The check storm (115% of the 100-year return period) was not assessed, since the structure is overtopped during the 350-year event (approximately 183% of the 100-year event) it is unknown whether the structure meets the check flow rate design criteria. Additional analysis is required to evaluate whether the existing structure meets this design criteria. Further details, including the MTO design criteria, can be found in **Appendix G-4**.

Table 26: Stott's Bridge Existing Conditions

Flood Event	Flow (m^3/s)	Calculated Upstream WSE[25] (mASL)	Calculated Downstream WSE[26] (mASL)	Freeboard[27] (m)	Clearance[28] (m)
50-Year[29]	127.4	87.58	87.09	1.49	0.51
100-Year	160.06	88.47	87.32	0.60	-
Regional	733.36	90.08	90.40	-	-
Design Criteria	-	-	-	≥ 1.0 m	≥ 1.0 m

6.5.4.2 Phase 1 Environmental Site Assessment

In 2017, a Phase 1 ESA of Twyn Rivers Drive was completed by WSP/MMM for the City of Toronto. Two properties were investigated as part of this ESA; Property ID 10 encompasses Stotts's Bridge and is considered the Site. The Study Area considered a 250 m radius around the property. The Phase 1 ESA did not identify evidence of potential sources of contamination on the Site and within the Study Area. The complete report can be found in **Appendix F**.

No additional environmental investigations were recommended upon the completion of the Phase 1 ESA.

[25] Calculated values at HEC-RAS cross section 4407.875.
[26] Calculated values at HEC-RAS cross section 4377.297.
[27] Calculated based on edge of travel lane elevation of 123.30 m.
[28] Calculated based on minimum soffit elevation.
[29] Design event as per MTO design Criteria.

6.5.4.3 Natural Environment

The Rouge River at the Stott's Bridge crossing flowed in a southerly direction. At the crossing, the mean wetted width and depth was approximately 15 m and 0.25 m, respectively. The bankfull width was approximately 20 m and the mean bankfull depth was approximately 2 m. In general, the banks were protected with non-erodible material. North of the bridge, the eastern bank was heavily eroded with a steep exposed sandy bank. This bank may provide suitable Bank Swallow habitat. Along the western bank, meadow was the dominant riparian community before transitioning to a forest community approximately 10 m away from the river. No riparian community was present along the eastern bank on the north side of the bridge, but a forest community occurred approximately 10 m to 20 m from the toe of slope.

Two vegetation communities within the Stott's Bridge Field Study Area are identified by the TRCA to be of regional concern: Reed Canary Grass Riparian Bar and Fresh-Moist Cottonwood Tall Treed Woodland (TRCA, 2017).

No SAR were observed within the Stott's Bridge Field Study Area during the 2019 or 2020 site investigations. An exposed sand bank north of Stott's Bridge was identified as having the potential to provide suitable habitat to Bank Swallow. A single snag tree, which has the potential to provide suitable habitat for SAR bat species, was observed within the Field Study Area. The bridge abutments were also identified as having the potential to provide suitable snake hibernacula.

6.5.4.4 Cultural Heritage Resources

Stott's Bridge was constructed in 1915 to replace an earlier wooden structure. The structure is a steel Pony Warren Truss. Though the bridge was located on property owned by James A. Maxwell, the bridge bears the name of William Stotts, who owned property nearby. Stotts Bridge is designated as being of cultural heritage value or interest under Part 4 of the *Ontario Heritage Act*, through By-law No. 25154. Mitigation measures related to the impacts of the preferred alternative will be provided within a bridge-specific Heritage Impact Assessment report.

6.5.4.5 Archaeology

The Stage 1 Archaeological Assessment confirmed that the areas beyond the ditch lines for Twyn Rivers Drive have maintained archaeological potential. A minimum Stage 2 Archaeological Assessment will be required prior to disturbing any areas identified as having archaeological potential.

7.0 Problem and Opportunity Statement

The Problem & Opportunity statement was developed during Phase 1 of the MCEA process. This crucial step is needed to identify and define the improvements or changes required for this project, and to ensure all subsequent phases proceed with solving or addressing the problem or opportunity. The Problem/Opportunity statement for this project is as follows:

The City of Toronto is undertaking a TMP study to determine preferred solutions for the future of five bridges located within the Rouge National Urban Park, recognizing the need to:

- **Address the deteriorating condition** of the bridges;
- **Maintain the rural character of the roadways** and the right-of-way, consistent with City policies;
- **Support the local transportation network** within the Park, including access for emergency services;
- **Follow heritage conservation principles** at each bridge;
- **Improve the safety and function** of these sites for all users; and
- **Mitigate potential impacts to the natural environment** of the RNUP.

8.0 Identification of Alternative Solutions

Four potential alternative solutions were initially identified for evaluation and are described in **Table 27**.

Table 27: Alternative Solutions

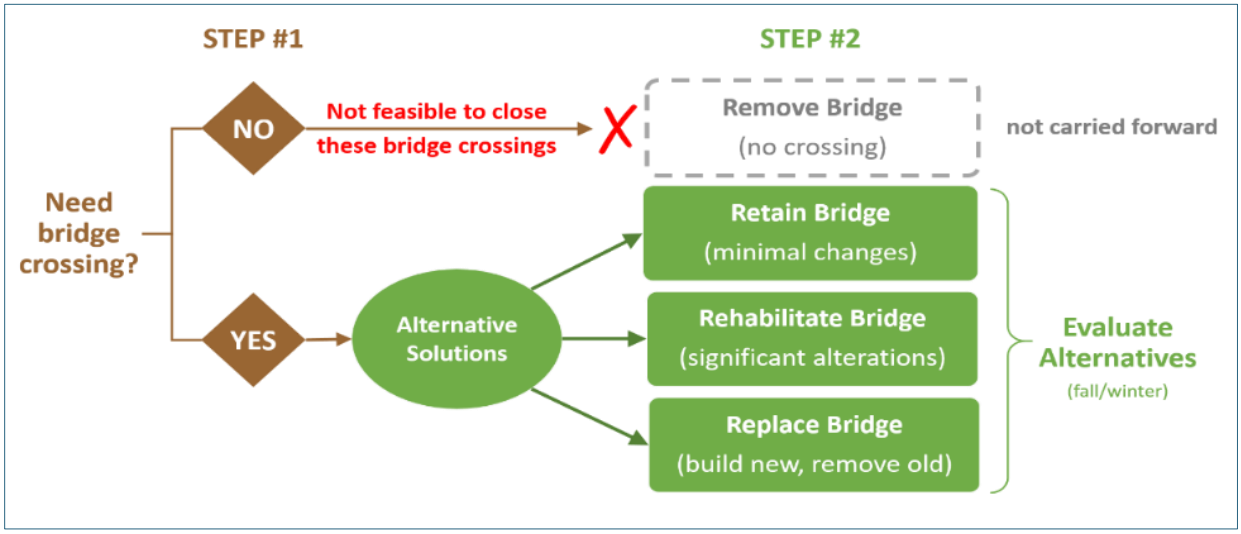
Alternative Options	Description
Remove	Remove the existing bridge and block roadway access across the river.
Retain	Keep the existing bridge in its existing configuration with minimal changes, if any ("Do Nothing").
Rehabilitate	Strengthen and alter the existing bridge to address deficiencies.
Replace	Complete removal of the existing bridge and replace with a new structure.

The development and evaluation of these alternative solutions at each site followed a two-step approach described below and shown in **Figure 39**.

- **Step 1 – Determine need for the bridge at each site:** This initial step included a screening to confirm whether a bridge is required at each location. If a bridge was confirmed to be required, the bridge proceeded to Step 2. If a bridge was determined not to be required, the existing bridge would be planned to be permanently removed.
- **Step 2 – Develop and evaluate alternative solutions:** This step was completed for bridges confirmed to be required in Step 1. The step involved the development and evaluation of alternative solutions to retain, rehabilitate, or replace the existing bridge.

This section provides an overview of the results of Step 1 and provides an overview of the alternative solutions identified for each bridge in Step 2. The evaluation of the alternative solutions is covered in **Section 9.0**.

Figure 39: Identification of Alternative Solutions Process



8.1 Alternative Solutions: Step 1 – Need for Bridge Crossings

The assessment of the need for a crossing at each of the five locations was based on the following factors:

- **Fire and Emergency Medical Services** – Fire and Emergency Medical Services (EMS) response times need to be reasonable and alternative routes desirable in the event an access road is blocked. Currently, some bridges in the TMP have load or vertical clearance restrictions. Consultation with City Fire and EMS departments has confirmed the existing conditions are substandard and pose significant constraints on the level of service offered to property owners in the affected areas. This has required workarounds such as the use of smaller vehicles that may not be ideally suited to the range of needs that may arise. The removal of the crossings would worsen this condition to an unacceptable degree. This is viewed as a mandatory requirement and a determining factor in the decision to retain each river crossing on its own, supplemented by other factors discussed below;
- **Evacuation Route** – Twyn Rivers Drive has been designated for use as an evacuation route in the event of a nuclear emergency at the Pickering nuclear power plant. Discussions with the City have revealed the intended use is for service vehicles while the public would be routed to Highway 401, and the future designation of this route is being reviewed under a process that is separate from this TMP. At this time, the

need to maintain Tywn Rivers Drive as a viable east-west link is viewed as a mandatory requirement and a constraint for the remove option;

- **Traffic Access** – A traffic analysis was completed to consider access to and from the area for Parks Canada employees, City service employees, Toronto Zoo employees, and the public. In general, removal of any of these bridges created undesirable constraints on access and the free flow of traffic both in the immediate condition and the long run. Alternatives routes that avoided river crossings do not appear practical. The Traffic Analysis recommended the retention of the crossings; and
- **Heritage** – While the analysis was focused on the need for the crossings as a functional component to the road network, it must be acknowledged that the project scope includes five heritage bridges that are included in the City's Heritage Register. Four bridges are individually designated under Part 4 of the *Ontario Heritage Act*, and one bridge is listed on the Heritage Register and has been nominated for individual designation under the OHA. The heritage value of the structures lies not only in the structure type and its specific history, but also in the history of the location and setting of the bridge as a cultural connection to the past. Therefore, retention of a crossing at these locations has inherent value.

Based on the assessment completed, the study team has confirmed a crossing is required at all of the sites considered within the TMP, and permanent removal is not a viable alternative to carry forward at any of the sites.

8.2 Alternative Solutions: Step 2 – Retain, Rehabilitate or Replace

The following alternative solutions were developed for each of the five crossings:

- **Retain** – Retention of the existing bridge means keeping the bridge in its existing configuration with **minimal changes**, if any. It may include maintenance repairs, or improvements to roadway approaches, sign lines, signage, or other ancillary features. However, functional improvements that change the cross-section of the bridge, or strengthening that substantially alters the form and appearance of the structure are not considered in this alternative;
- **Rehabilitate** – Rehabilitation of the existing bridge means strengthening and altering the existing bridge substantially to improve its function. This may include adding structural components to supplement the existing ones, replacing components of the structure or other similar improvements. **Significant alterations** in form and

appearance may occur in this alternative. For the types of bridges in this study, widening through a major rehabilitation would require such an extensive dismantling and replacement of the original structure and abutments that it is not considered feasible. Rehabilitation will follow the Guidelines for the Conservation of Historic Places in Canada which aims to conserve the heritage value of a historic place and repair character-defining elements where possible; and

- **Replace** – Replacement of the existing bridge means complete removal of the existing bridge and construction of a **new structure at the same location**. This allows the greatest improvement in the functional characteristics of the bridge such as load-carrying capacity, width, and service life. For replacement of heritage bridges, it must be demonstrated through a Heritage Impact Assessment that the other alternatives are not feasible before replacement is considered. The replacement and rehabilitation of the bridge will follow the Guidelines for the Conservation of Historic Places in Canada.

An alternative long-term plan to be considered for Sewell's Bridge is the implementation of a bypass for the "Replace" alternative. A new road alignment to the west with a straighter alignment along Sewell's Road would be implemented to allow for better future traffic and safety, and may allow the existing bridge to be repurposed for trail users, and its service life extended. The replacement offline from the current alignment would require property on Parks Canada lands, and a separate Environmental Assessment be undertaken, and is therefore not being further explored through this TMP.

8.3 Alternative Solutions: Bridge-Specific Solutions

The bridge-specific alternative solutions are outlined for each of the five crossings in **Table 28**.

Table 28: Summary of Alternatives by Site

Bridge Name	Bridge Description	Alternatives		
		Retain	Rehabilitate	Replace
Sewell's Bridge	Sewell's Bridge is a three-span suspension structure over the Rouge River on Sewell's Road. The bridge was constructed in 1912. It is one lane wide, which is narrower than the existing two-lane roadway and located on a slight bend in the road. The bridge has a load posting of 5 tonnes, which an extremely low value. The bridge is designated as a heritage property under Part 4 of the *Ontario Heritage Act*.	Would involve keeping the bridge essentially in its current condition for the retention period, at which time a re-evaluation would be undertaken. Maintenance repairs would be conducted. Following repairs, a monitoring and maintenance program would be required to extend the service life until rehabilitation or replacement.	Would involve repairing the existing bridge similar to the retain alternative. Widening and adding a sidewalk are not feasible.	Would involve constructing a new bridge at the same location and removing the existing bridge. The new bridge may be longer and higher than existing, to meet hydraulic requirements. Sympathetic design would be recommended.
Milne's Bridge	Milne Bridge is a two-span steel panel bridge (with the trade name "Bailey bridge") structure over the Rouge River on Old Finch Avenue. The bridge was constructed in 1988 to replace a similar bridge constructed in 1954 following the loss of its predecessor from Hurricane Hazel. In both 1954 and 1988, the bridge was erected by the Canadian Army. The bridge is one lane wide, which is narrower than the existing two-lane roadway and located on a sharp bend in the road, requiring traffic signals at each end to accommodate alternating direction of traffic on the bridge. The bridge has a load posting of 5 tonnes, which is an extremely low value. The bridge is currently listed on the City's Heritage Register.	Would involve keeping the bridge essentially in its current condition for the retention period, at which time a re-evaluation would be undertaken. Following repairs, a monitoring and maintenance program would be required to extend the service life until rehabilitation or replacement.	Would involve repairing the existing bridge similar to the retain alternative. Widening and adding a sidewalk are not feasible.	Would involve constructing a new bridge with sympathetic framing design to resemble the original panel bridge to be built at the same location and removing the existing bridge. The new bridge may be longer and higher than existing, to meet hydraulic requirements. Sympathetic design would be recommended.

Bridge Name	Bridge Description	Alternatives		
		Retain	Rehabilitate	Replace
Hillside Bridge	The Hillside Bridge is a single-span steel pony-truss structure over the Little Rouge River on Meadowvale Road. The bridge was constructed in 1917. It is one lane wide, which is narrower than the existing two-lane roadway, and requires drivers to yield to oncoming traffic. The bridge has a load posting of 15 tonnes, which is approximately one quarter of the capacity of a modern bridge. Critical repairs were required in 2020 involving temporary closure of the bridge during the work. The bridge is designated as a heritage property under Part 4 of the *Ontario Heritage Act*.	Would involve keeping the bridge essentially in its current condition for the retention period, at which time a re-evaluation would be undertaken. Maintenance repairs would be conducted. Following repairs, a monitoring and maintenance program would be required to extend the service life until rehabilitation or replacement.	Would involve repairing the existing bridge similar to the retain alternative. Widening and adding a sidewalk are not feasible.	Would involve constructing a new bridge at the same location and removing the existing bridge. The new bridge would be longer and higher than existing, to meet hydraulic requirements. Sympathetic design would be recommended.
Maxwell's Bridge	Maxwell's Bridge is a single-span concrete bowstring arch structure over the Little Rouge River on Twyn Rivers Drive. The bridge was constructed in 1927. It is two lanes wide which matches the existing roadway. The bridge has a load posting of 3 tonnes, which is the lowest posting that is typically used in practice. The bridge is designated as a heritage property under Part 4 of the *Ontario Heritage Act*.	Would involve keeping the bridge in its current condition for the retention period, at which time a re-evaluation would be undertaken. Maintenance repairs would be conducted. Following repairs, above-average maintenance is anticipated until the next assessment is conducted.	Would involve repairing the existing bridge similar to the retain alternative. Widening and adding a sidewalk are not feasible.	Would involve constructing a new bridge at the same location and removing the existing bridge. The new bridge would be longer and higher than existing, to meet hydraulic requirements. Sympathetic design would be recommended.
Stotts' Bridge	Stotts' Bridge is a single-span steel pony-truss structure over the Rouge River on Twyn Rivers Drive. The bridge was constructed in 1915. It is one lane wide, which is narrower than the existing two-lane roadway, and requires drivers to yield to oncoming traffic. The bridge has a load posting of 3 tonnes, which is the lowest posting that is typically used in practice. Critical repairs were required in 2020 involving temporary closure of the bridge during the work. The bridge is designated as a heritage property under Part 4 of the *Ontario Heritage Act*.	Would involve keeping the bridge essentially in its current condition for the retention period, at which time a re-evaluation would be undertaken. Maintenance repairs would be conducted. Following repairs, a monitoring and maintenance program would be required to extend the service life until rehabilitation or replacement.	Would involve repairing the existing bridge similar to the retain alternative. Widening and adding a sidewalk are not feasible.	Would involve constructing a new bridge at the same location and removing the existing bridge. The new bridge would be longer and higher than existing, to meet hydraulic requirements. Sympathetic design would be recommended.

9.0 Evaluation of Alternatives

9.1 Criteria Used for Evaluation of Alternative Solutions

A total of 19 individual criteria were considered for each bridge across the following six categories:

- Bridge Condition and Function;
- Transportation;
- Cultural Heritage and Archaeology;
- Natural Environment and Hydraulics;
- Public Uses in RNUP; and
- Implementation.

The criteria for the evaluation of the alternative solutions at each bridge are presented in **Table 29** (Bridge Condition and Function), **Table 30** (Transportation), **Table 31** (Cultural Heritage and Archaeology), **Table 32** (Natural Environment and Hydraulics), **Table 33** (Public Uses in RNUP), and **Table 34** (Implementation).

Table 29: Criteria for Bridge Condition and Function

Criteria	Measures
Bridge Condition	Assessment of the existing condition of the bridge and the extent of deterioration currently present. The greater deterioration on key structural components of the bridge will require more extensive repairs.
Bridge Life & Maintenance	Estimated remaining service life of the existing bridge. The need for frequent repairs is undesirable as repairs and maintenance disrupt the use.
Vehicle types crossing the bridge	Ability of the structure to support loads of the following vehicles. It is preferred the structure can support each of these vehicle types: Fire trucks (30 t), Ambulances (9 t), service vehicles; delivery trucks and snow removal vehicles.
Bridge Safety & Function	Assessment of the structure's safety and function, including the width, collision risk, active transportation separation and deck surface. The preferred solution will maintain or improve the structure's safety and function.

Table 30: Criteria for Transportation

Criteria	Measures
Roadway Design	• Assessment of the structure's transportation safety, including design criteria, geometry, speed reduction, cross-section, and approach sight lines. The preferred solution will maintain or improve the safety of vehicles.
Traffic Operations	• Assessment of the structure's traffic operations, including potential travel delays due to single lane bridge. The preferred solution will have lower travel delays.
Network Connectivity & Access	• Evaluation of the network connectivity of the structure, including potential alternative routes and redundant routes, and detour travel time. The preferred solution will maintain or improve potential network connections to the structure. Assessment of the structure's Emergency Access capabilities, including Fire and emergency response, and the nuclear evacuation route. The preferred solution will have a lower response time for Fire and EMS and a shorter evacuation route.
Active Transportation	• Assessment of the structure's active transportation capabilities, including supporting on-road cyclists and future pedestrians. The preferred solution will maintain or improve the structure's ability to support these activities.
Recreational Access	• Assessment of the structure's access to recreation, including the maintenance or improvement of recreational access to RNUP and Toronto Zoo. The preferred solution will maintain or improve recreational access.

Table 31: Criteria for Cultural Heritage and Archaeology

Criteria	Measures
Cultural Heritage	Assessment of cultural heritage landscapes and built heritage resources, to determine their potential Cultural Heritage Value or Interest (CHVI) using the criteria prescribed in Ontario Regulation 9/06. Where necessary, mitigation and conservation measures are recommended using applicable standards and guidelines to ensure resources are appropriately conserved.
Built Heritage	Assessment of the Built Heritage of the structure, including the uniqueness of bridge. Alternative that provides more conservation will be preferred if engineering safety criteria are met.
Archaeological Potential	Assessment of the Archaeological Potential adjacent to the structure, including the potential area(s) of disturbance. The preferred solution will have limited impacts to area(s) of Archaeological Potential.

Table 32: Criteria for Natural Environment & Hydraulics

Criteria	Measures
Terrestrial Habitat	Assessment of effects to Species at Risk and Significant Wildlife Habitat, including any potential temporary and permanent effects, and any potential disturbance, removal and/or destruction of habitat, wildlife movement or habitat fragmentation. The preferred solution will have limited impacts to Species at Risk and Significant Wildlife Habitat. Any impacts that cannot be mitigated will be evaluated on their ability to be restored.
Aquatic Habitat	Assessment of effects to Species at Risk and Aquatic Habitat, including any potential temporary and permanent effects, and effects to bank vegetation, run habitat, in-stream habitat, cover habitat and water/surface flow. The preferred solution will have limited impacts to Species at Risk and Aquatic Habitat. Any impacts that cannot be mitigated will be evaluated on their ability to be restored.

Criteria	Measures
River Conveyance	Assessment of effects to the river conveyance, including any potential effects to clearance, span, bank scour, and climate change resilience (i.e., potential damage to structure). The preferred solution will have limited impacts to river conveyance. Any impacts that cannot be mitigated will be evaluated on their ability to be restored.

Table 33: Criteria for Public Uses in Rouge National Urban Park

Criteria	Measures
Rouge National Urban Park (RNUP)	Assessment of effects to public and worker access to amenities at Rouge National Urban Park, (e.g., visitor centre and trailheads), and any potential effects on the RNUP. The preferred solution will be supportive of the RNUP Management Plan, and ongoing operations.
Toronto Zoo	Assessment of effects to public and worker access to the Toronto Zoo. The preferred solution will be supportive of the ongoing operations of the Toronto Zoo.

Table 34: Criteria for Implementation

Criteria	Measures
Complexity & Constructability	Assessment of the complexity of implementing the alternative, including construction access, duration, utilities, and other factors. The preferred solution is less complex to implement.
Cost Considerations	Assessment of the initial cost of the structure, including Environmental mitigations, design, and construction. Consideration of the lifecycle of the structure, including maintenance and future replacement. The preferred solution has a lower cost.

Given the identified cultural heritage attributes of the bridges, additional criteria for heritage conservation options are based on the 'Conservation of Historic Places in Canada;' (Parks Canada, 2010) which provides principles for infrastructure conservation and references the Ontario Heritage Bridge Guidelines (MTO, 2008) for the specific case of bridges. This provides a rank-order approach to heritage bridge conservation options,

ranging from least to most heritage impact. The rank-order approach requires each option to be evaluated and found to be non-viable before the subsequent option is considered. These options were considered in addition to the evaluation criteria above. The rank-order options are listed below:

1. Retain existing bridge with no major modifications
2. Retain and restore missing or deteriorated elements
3. Retain bridge with sympathetic modification
4. Retain with sympathetically designed new structure nearby
5. Retain and adapt for alternative use
6. Retain as heritage monument for viewing purposes
7. Relocate (applicable for smaller, lighter structures)
8. Remove and replace (consider sympathetic design and details)

For the purpose of the TMP, the following relative ratings were assigned to each alternative solution for the 19 criteria evaluated. Definition of the relative ratings include:

- **Most preferred** – this relative rating considers all of the criteria evaluated and is considered the most preferred option based on having the lowest anticipated impacts;
- **Neutral** – this relative rating considered all the criteria evaluated and is considered neutral and not significantly favourable to high or low anticipated impacts; and
- **Least preferred** – this relative rating considers all the criteria evaluated and is considered the least preferred option based on having the highest anticipated impacts.

9.2 Sewell's Road Bridge (Bridge A) Alternative Solutions

9.2.1 Key Considerations for Alternative Solutions

9.2.1.1 Bridge Condition and Function

The existing bridge has additional service life remaining based on the Structural Assessment, whereas a new replacement bridge would have a 75-year design life with minimal maintenance required for the first 20 years after construction. The replacement bridge would improve the traffic conditions as it would resolve the roadway width

mismatch between the existing Sewell's Road and Sewell's bridge widths and would provide full access for truck traffic and emergency vehicles.

9.2.1.2 Transportation Network

With a new bridge, trucks and emergency vehicles would be allowed full access due to the increased crossing width. The replacement bridge would also not require a posted speed reduction crossing the bridge. As Sewell's Road is not currently designated as a cycling route, Sewell's Bridge has no cycling provisions and cyclists are expected to continue to share lanes with vehicles under the retain in option.

9.2.1.3 Cultural Heritage Resources

Sewell's Bridge is one of the only suspension bridges on a public road in Ontario and is identified as having cultural heritage value or interest. Further details about the cultural heritage value and potential impacts of the alternatives for this bridge can be found in **Appendix E-2**.

9.2.1.4 Natural Environment and Hydraulics

No impacts are expected to SAR if no new construction is proposed. Significant changes to the bridge may result in permanent loss of aquatic habitat if proposed widening work extends below the high-water mark. New construction would also increase the hydraulic opening and provide increased water conveyance. The new span would include an allowance for spanning the meander belt or erosion limits of the river.

9.2.1.5 Implementation

The existing bridge structure is unusual, and the suspension cable anchorage condition is unknown. These conditions increase the complexity of the retain and rehabilitation options. The removal option would likely require minor property acquisition or land swap with Parks Canada.

9.2.2 Evaluation of Alternative Solutions for Sewell's Road Bridge (Bridge A)

Sewell's Bridge has existing deficiencies with sight lines on the northbound approach to the bridge and constraints with the existing CP Rail bridge located 0.45 km north of Sewell's Road Bridge. The 2016 bridge inspection was assigned a BCI of 77.8, which

indicates good condition. The bridge is also considered to have significant cultural value and is designated as being of historical and architectural value or interest.

A detailed evaluation of the Alternative Solutions is located in **Appendix H-1**.

Table 35 provides a summary of the above considerations and the criteria identified in **Section 8.1.**

Table 35: Sewell's Bridge Summarized Evaluation

Criteria Groups	Retain	Rehabilitate	Replace
Bridge Condition and Function	Neutral	Least Preferred	Most Preferred
Transportation	Neutral	Neutral	Most Preferred
Heritage & Archaeology	Most Preferred	Neutral	Least Preferred
Natural Environment & Hydraulics	Most Preferred	Neutral	Neutral
Public Uses in RNUP	Neutral	Neutral	Neutral
Implementation	Most Preferred	Least Preferred	Most Preferred

Table 36 provides the overall evaluation for Sewell's Bridge. Overall, the retain alternative (Alternative 1) is the preferred alternative solution. Rehabilitation (Alternative 2) cannot address the safety concerns and functional limitations of the single-lane crossing without replacing a large proportion of the superstructure. Replacement (Alternative 3) does not appear to be warranted at this time, based on the reported condition. Further information about the impacts to the property's cultural heritage value and mitigation measures to reduce negative impacts can be found in the Heritage Impact Assessment in **Appendix E-2**. A more detailed Heritage Impact Assessment conforming to the City of Toronto's Terms of Reference for Heritage Impact Assessments as early as possible in preliminary or detailed design stages.

Table 36: Sewell's Bridge Overall Evaluation

Overall Evaluation	Retain	Rehabilitate	Replace
Sewell's Bridge Overall Evaluation	**Most Preferred**	Least Preferred	Neutral

9.2.2.1 Bypass Alternative

An alternative long-term plan to be considered for Sewell's Bridge is the implementation of a bypass for the Replacement Alternative. A new road alignment to the west with a

straighter alignment along Sewell's Road would be implemented to allow for better future traffic flow and safety. The replacement off-line from the current alignment would require property on Parks Canada lands, and a separate Environmental Assessment be undertaken. This may allow the existing bridge to be repurposed for trail users, and its service life extended. This alternative is outside of the scope of the TMP and has not been further explored through the TMP and would require a separate study under the Municipal Class EA process.

9.3 Milne Bridge (Bridge B) Alternative Solutions

9.3.1 Key Considerations for Alternative Solutions

9.3.1.1 Bridge Condition and Function

The existing bridge has notable deck grating damage and the deck appears to be at or near the end of its useful service life, and existing piers are in poor condition requiring replacement. The current load posting of 5 tonnes would only be improved through a replacement bridge as the ability to strengthen the existing structure is limited by the structure type.

9.3.1.2 Transportation Network

The existing bridge requires trucks and emergency vehicles to use an alternative route. With the improved structural properties of a replacement bridge, trucks and emergency vehicles would have reduced travel distances by 2-3 km. The existing alternative one-way traffic with no shoulder is a mismatch to the remaining roadway width and operating speeds. A replacement bridge would match roadway widths and operating speeds and require no posted speed reductions.

9.3.1.3 Cultural Heritage Resources

Milne Bridge has cultural heritage value and is commemorated by a plaque. Further details about the cultural heritage value and potential impacts of the alternatives for this bridge can be found in **Appendix E-2**.

9.3.1.4 Natural Environment and Hydraulics

No impacts are expected to SAR if no new construction is proposed. Significant changes to the bridge may result in permanent loss of aquatic habitat if proposed widening work extends below the high-water mark and the bypass bridge would require disturbances to adjacent potential species-at-risk birds and bat habitat. The replacement bridge would involve raising the roadway profile and bridge soffit to meet current standards. The replacement substructure may be arranged to reduce impact on river conveyance with two piers positioned outside the normal channel.

9.3.1.5 Implementation

Due to the condition of the existing piers, removal of the existing bridge would be required to replace the piers. These conditions increase the complexity of the retain and rehabilitation options as it may increase the risk of not being able to re-erect the bridge. The replacement option allows for a new pony truss bridge with sympathetic framing design to resemble the original panel bridge to be built, which allows increasing the length of the bridge and elimination of the need for a permanent pier in the channel. If the bridge is replaced, there is the potential to involve the military in its erection to connect with the history of the previous bridges.

9.3.2 Evaluation of Alternative Solutions Milne Bridge (Bridge B)

The existing conditions of Milne Bridge indicates that the bridge is reaching the end of its service life and creates significant traffic queues. Old Finch Avenue is significantly curvilinear however has no sightline deficiencies to the existing traffic signals. Sight lines on both the northbound and southbound approach to the bridge deck have deficiencies. The deck grating has been damaged numerous times and repaired with flat plate. The deck panels are loose, causing significant noise under traffic, with abrasion observed and loose bolted connections. The deck appears to be at or near the end of its useful service life. Due to the decay on the wood piles, the piers have not been subjected to a non-destructive testing to investigate the amount of decay.

A detailed evaluation of the Alternative Solutions is located in **Appendix H-2**.

Table 37 provides a summary of the above considerations and the criteria identified in **Section 8.1**.

Table 37: Milne Bridge Summarized Evaluation

Criteria Groups	Retain	Rehabilitate	Replace
Bridge Condition and Function	Least Preferred	Least Preferred	Most Preferred
Transportation	Neutral	Neutral	Most Preferred
Heritage & Archaeology	Most Preferred	Neutral	Least Preferred
Natural Environment & Hydraulics	Most Preferred	Neutral	Neutral
Public Uses in RNUP	Neutral	Neutral	Neutral
Implementation	Least Preferred	Least Preferred	Most Preferred

Table 38 provides the overall evaluation for Milne Bridge. Overall, the replace solution (Alternative 3) is the preferred alternative solution. Retaining the original structure (Alternative 1) is not feasible based on the condition of the existing pier bent. Risks associated with rehabilitating (Alternative 2) an obsolete proprietary system would be difficult to manage and could lead to significant delays, alterations, and associated cost increases during construction. A replacement bridge would have a similar form, massing and appearance to the existing bridge, but no structural parts would be reused. Further information about the impacts to the property's cultural heritage value and mitigation measures to reduce negative impacts can be found in the Heritage Impact Assessment in **Appendix E-2**. A more detailed Heritage Impact Assessment conforming to the City of Toronto's Terms of Reference for Heritage Impact Assessments as early as possible in preliminary or detailed design stages.

Table 38: Milne Bridge Overall Evaluation

Overall Evaluation	Retain	Rehabilitate	Replace
Milne Bridge Overall Evaluation	Least Preferred	Least Preferred	**Most Preferred**

9.4 Hillside Bridge (Bridge C) Alternative Solutions

9.4.1 Key Considerations for Alternative Solutions

9.4.1.1 Bridge Condition and Function

The existing structure is nearing the end of its service life and a monitoring and maintenance program would be required to extend the service until rehabilitation or replacement. The lower chord of the truss has areas of severe corrosion and perforation at connections. Immediate localized repairs were recommended in 2020 to allow the bridge to remain in service until rehabilitation or replacement.

9.4.1.2 Transportation Network

The current bridge requires trucks and emergency vehicles to utilize an alternative route. The CP rail crossing creates a vertical constraint on the trucks unless the roadway is lowered. As Meadowvale is designated as a cyclist route, the replacement bridge would accommodate cyclists and sidewalks would be considered optional as there are no existing sidewalks along the roadway. The existing one-way traffic with no shoulder is a mismatch to the remaining roadway width and operating speeds. A replacement bridge would match roadway widths and operating speeds and require no posted speed reductions.

9.4.1.3 Cultural Heritage Resources

Hillside Bridge retains cultural heritage value or interest, which is outlined in **Appendix E-2**.

9.4.1.4 Natural Environment and Hydraulics

Significant changes to the bridge may result in permanent loss of aquatic habitat if proposed widening work extends below the high-water mark and the bypass bridge would require disturbances to adjacent potential species-at-risk birds and bat habitat. The replacement bridge would involve raising the roadway profile and bridge soffit to meet current standards.

9.4.1.5 Implementation

The existing bridge structure uses old grades of metal which are less compatible for welding and generally weaker. This increases the complexity of the retaining option significantly and would require extensive strengthening. Replacement options include low complexity slab-on-girder type of bridge or moderately complex pony truss bridge.

9.4.2 Evaluation of Alternative Solutions for Hillside Bridge (Bridge C)

Hillside Bridge is noted as fair to poor condition (BCI: 55.0) and would need to be significantly repaired to address significant deficiencies. An existing CP rail crossing is located 0.55 km north of the Hillside Bridge which, due to height restrictions, creates travel restrictions for larger vehicles. Meadowvale Road is signed as a bike route, but the existing Hillside Bridge has no cycling provisions.

Table 39 provides a summary of the above considerations and the criteria identified in **Section 8.1**.

A detailed evaluation of the Alternative Solutions is located in **Appendix H-3**.

Table 39: Hillside Bridge Summarized Evaluation

Criteria Groups	Retain	Rehabilitate	Replace
Bridge Condition and Function	Least Preferred	Least Preferred	Most Preferred
Transportation	Neutral	Neutral	Most Preferred
Heritage & Archaeology	Most Preferred	Neutral	Least Preferred
Natural Environment & Hydraulics	Most Preferred	Neutral	Neutral
Public Uses in RNUP	Neutral	Neutral	Neutral
Implementation	Least Preferred	Least Preferred	Most Preferred

Table 40 provides the overall evaluation for Hillside Bridge. Overall, the replace solution (Alternative 3) is the preferred alternative solution. Retaining the original structure (Alternative 1) is not feasible based on its current condition. The existing design is functionally obsolete, and rehabilitation (Alternative 2) cannot address all of the safety concerns and functional deficiencies of the single lane crossing. As rehabilitation would require major modifications, the bridge's heritage value would be significantly impacted. Further information about the impacts to the property's cultural heritage

value and mitigation measures to reduce negative impacts can be found in the Heritage Impact Assessment in **Appendix E-2**. A more detailed Heritage Impact Assessment conforming to the City of Toronto's Terms of Reference for Heritage Impact Assessments as early as possible in preliminary or detailed design stages.

Table 40: Hillside Bridge Overall Evaluation

Overall Evaluation	Retain	Rehabilitate	Replace
Hillside Bridge Overall Evaluation	Least Preferred	Least Preferred	**Most Preferred**

9.5 Maxwell Bridge (Bridge D) Alternative Solutions

9.5.1 Key Considerations for Alternative Solutions

9.5.1.1 Bridge Condition and Function

The existing bridge is in good to fair condition with additional service life remaining. The existing bridge has a load posting of 3 tonnes. The structural inspection and evaluation completed in 2013 recommended concrete patching, and replacement of asphalt and waterproofing which has since been completed. Rehabilitation may involve strengthening, but it may not be sufficient to allow trucks and emergency vehicles to use the bridge. Replacement would meet current standards for loading.

9.5.1.2 Transportation Network

The replace option would allow trucks and emergency vehicles to cross the bridge and improve emergency access to the area between Rouge River and Little Rouge River regardless of changes at the Stott's Bridge. With the replace alternative, cyclists and pedestrians would be accommodated for use in the trails network. A separate pedestrian bridge could be constructed if needed.

9.5.1.3 Cultural Heritage Resources

Maxwell Bridge retains cultural heritage value or interest. Further details about the cultural heritage value and potential impacts of the alternatives for this bridge can be found in **Appendix E-2**.

9.5.1.4 Natural Environment and Hydraulics

Significant changes to the bridge may result in permanent loss of aquatic habitat if proposed widening work extends below the high-water mark and the bypass bridge would require disturbances to adjacent potential species-at-risk birds and bat habitat. The replacement bridge would involve raising the roadway profile and bridge soffit to meet current standards.

9.5.1.5 Implementation

The complexity to retain is low given the limited scope of work but the risk of unknowns is high due to the lack of detail in the existing drawings. The replacement option would include a low complexity slab-on-girder type of bridge or higher complexity concrete arch bridge.

9.5.2 Evaluation of Alternative Solutions for Maxwell Bridge (Bridge D)

Maxwell's Bridge has existing deficiencies with sight lines on the northbound and southbound approach to the bridge. Speed reductions are recommended for both approaches to reduce sight distance requirements. There are trail connections on both the north and south of the crossing but there are no dedicated operating spaces for either pedestrians or cyclists.

Table 41 provides a summary of the above considerations and the criteria identified in **Section 8.1**.

A detailed evaluation of the Alternative Solutions is located in **Appendix H-4**.

Table 41: Maxwell Bridge Summarized Evaluation

Criteria Groups	Retain	Rehabilitate	Replace
Bridge Condition and Function	Neutral	Least Preferred	Most Preferred
Transportation	Neutral	Neutral	Most Preferred
Heritage & Archaeology	Most Preferred	Neutral	Least Preferred
Natural Environment & Hydraulics	Most Preferred	Neutral	Neutral

Criteria Groups	Retain	Rehabilitate	Replace
Public Uses in RNUP	Neutral	Neutral	Neutral
Implementation	Most Preferred	Least Preferred	Most Preferred

Table 42 provides the overall evaluation for Maxwell's Bridge. Overall, the retain solution (Alternative 1) is the preferred alternative solution. Rehabilitation (Alternative 2) to permit truck traffic is not expected to be feasible. The anticipated rehabilitation would significantly alter the form and appearance of the structure and negatively impact the bridge's cultural heritage value. Replacement (Alternative 3) does not appear to be warranted at this time, based on the reported condition.

Table 42: Maxwell Bridge Overall Evaluation

Overall Evaluation	Retain	Rehabilitate	Replace
Maxwell's Bridge Overall Evaluation	Most Preferred	Least Preferred	Neutral

9.6 Stott's Bridge (Bridge E) Alternative Solutions

9.6.1 Key Considerations for Alternative Solutions

9.6.1.1 Bridge Condition and Function

The existing bridge is reaching the end of its service life based on the Structural Assessment, whereas a new replacement bridge would have a 75-year design life. The existing bridge has a load posting of 3 tonnes. Rehabilitation may involve strengthening but it may not be sufficient to allow trucks and emergency vehicles to use the bridge. Replacement would meet current standards for loading.

9.6.1.2 Transportation Network

The replace option would allow trucks and emergency vehicles to cross the bridge and improve emergency access to the area between Rouge River and the Little Rouge River regardless of changes on Maxwell Bridge. The evacuation route on Twyn Rivers Drive would also be improved if both Maxwell and Stott's bridge are improved. If a replacement option is pursued, the bridge would remove the requirement for the

posted speed reduction and have the potential to reduce the sag curve. With the replace alternative, cyclists and pedestrians would be accommodated for use in the trails network.

9.6.1.3 Cultural Heritage Resources

Stott's Bridge retains cultural heritage value or interest. Further details about the cultural heritage value and potential impacts of the alternatives for this bridge can be found in **Appendix E-2**. The replacement bridge is anticipated to remain on the existing alignment and right-of-way but has the potential to impact areas of archaeological potential with temporary works outside of the existing right-of-way.

9.6.1.4 Natural Environment and Hydraulics

Significant changes to the bridge may result in permanent loss of aquatic habitat if proposed widening work extends below the high-water mark and the bypass bridge would require disturbances to adjacent potential species-at-risk birds and bat habitat. The replacement bridge would involve raising the roadway profile and bridge soffit to meet current standards.

9.6.1.5 Implementation

The existing bridge structure uses old grades of metal which are less compatible for welding and generally weaker. There are risks of fatigue cracking on the existing bridge and may lead to more replacement members. This increases the complexity of the retaining option significantly and would require extensive strengthening. Widening through rehabilitation would not be feasible and would likely trigger a full bridge replacement. Replacement options include low complexity slab-on-girder type of bridge or moderately complex pony truss bridge.

9.6.2 Evaluation of Alternative Solutions for Stott's Bridge (Bridge E)

Stott's Bridge has existing loading limit of 3 tonnes with galvanized open grating on steel stringers installed during a 1997 rehabilitation. The 2016 bridge inspection was assigned a BCI of 63 which indicates fair condition but reaching the end of its service life. Structural steel inspection and evaluation from 2013 confirms the 3-tonne load posting.

Table 43 provides a summary of the above considerations and the criteria identified in **Section 8.1**.

A detailed evaluation of the Alternative Solutions is located in **Appendix H-5**.

Table 43: Stott's Bridge Summarized Evaluation

Criteria Groups	Retain	Rehabilitate	Replace
Bridge Condition and Function	Least preferred	Least Preferred	Most Preferred
Transportation	Neutral	Neutral	Most Preferred
Heritage & Archaeology	Most Preferred	Neutral	Least Preferred
Natural Environment & Hydraulics	Most Preferred	Neutral	Neutral
Public Uses in RNUP	Neutral	Neutral	Neutral
Implementation	Least Preferred	Least Preferred	Most Preferred

Table 44 provides the overall evaluation for Stott's Bridge Overall, the replace solution is the preferred alternative solution. Retaining the original structure (Alternative 1) is not feasible based on its current condition. The existing design is functionally obsolete, and rehabilitation (Alternative 2) cannot address all of the safety concerns and functional deficiencies of the single lane crossing and would require major modifications, significantly impacting the bridge's heritage value.

Table 44: Stott's Bridge Overall Evaluation

Overall Evaluation	Retain	Rehabilitate	Replace
Stott's Bridge Overall Evaluation	Least Preferred	Least Preferred	**Most Preferred**

9.7 Summary of Site-Specific Preferred Solutions

Table 45 identifies the bridge-specific preferred alternative solutions. The detailed evaluation of alternatives for each bridge site is located in in **Appendix H**.

Table 45: Summary of Site-Specific Preferred Solutions

Bridge Site	Preferred Solution
Sewell's Road Bridge (Bridge A)	Retain
Milne Bridge on Old Finch Avenue (Bridge B)	Replace
Hillside Bridge on Meadowvale Road (Bridge C)	Replace
Maxwell Bridge on Twyn Rivers Drive (Bridge D)	Retain
Stott's Bridge on Twyn Rivers Drive (Bridge E)	Replace

10.0 Functional Design of Preferred Solutions

This section provides an overview of the key features of the functional design of the preferred solutions for each bridge crossing. The functional design of each bridge is further detailed in the Functional Design Report for each bridge (**Appendix I**). Any bridges which may be replaced will be commemorated with an appropriate fixture to the bridge's heritage value.

10.1 Sewell's Road Bridge (Bridge A)

Retaining the existing structure (Alternative #1) is the preferred solution for the Sewell's Road Bridge with steel repairs, localized recoating, installation of steel beam guide rail sections, and concrete repairs where medium to severe concrete deterioration has occurred recommended.

10.2 Milne Bridge (Bridge B)

Structure replacement (Alternative #3) is the preferred solution for the Milne Bridge. The layout of the preferred solution has been advanced to an approximate 10% level of design development and includes the following design characteristics:

- Modern sympathetically designed truss bridge;
- A single span allowing for the elimination of the existing pier, improving river flows and reducing maintenance;
- New structure is expected to remain on the existing (straight) alignment and include two traffic lanes with shoulders, matching the roadway width at the approaches;
- Roadway width anticipated to be 11.6 m wide from face-to-face of curbs, with the following bridge layout:
  - Two 3.3 m wide traffic lanes;
  - Two 2.5 m wide raised concrete shoulders separated by a mountable curb; and
  - TL-4 traffic barriers connected to proprietary floor beams;
  - Preservation of a panel from the existing bridge to use in a commemorative monument nearby to be considered; and;

- The placement of a second memorial plaque next to the existing plaque at the site to recognize the history of the structure, including the 1988 replacement of the original structure to be considered.

10.3 Hillside Bridge (Bridge C)

Structure replacement (Alternative #3) is the preferred solution for the Hillside Bridge. The layout of the preferred solution has been advanced to an approximate 10% level of design development and includes the following design characteristics:

- Modern sympathetically designed truss bridge;
- Single span of approximately 36 m;
- New structure is expected to remain on the existing (straight) alignment and include two traffic lanes with shoulders;
- Roadway width anticipated to be 11.6 m wide from face-to-face of curbs, with the following bridge layout:
  - Two 3.3 m wide traffic lanes;
  - Two 2.5 m wide raised concrete shoulders separated by a mountable curb;
  - Two bicycle-height combination traffic railings mounted on concrete curbs; and
  - Pony truss members located outside of the bridge railings.

10.4 Maxwell Bridge (Bridge D)

Retaining the existing structure (Alternative #1) is the preferred solution for the Maxwell Bridge with concrete repairs recommended where medium to severe concrete deterioration has occurred. Concrete repairs will be undertaken through partial-depth concrete removals and new patch repairs. Additional repairs for minor spalls on the curbs, barriers and abutments are also recommended based on the findings of the 2021 Bridge Inspection Form.

10.5 Stott's Bridge (Bridge E)

Structure replacement (Alternative #3) is the preferred solution for the Stott's Bridge. The layout of the preferred solution has been advanced to an approximate 10% level of design development and includes the following design characteristics:

- Modern sympathetically designed truss bridge;
- Single span of approximately 30 m;
- New structure is expected to remain on the existing (straight) alignment and include two traffic lanes with shoulders;
- Roadway width anticipated to be 11.6 m wide from face-to-face of curbs, with the following bridge layout:
  - Two 3.3 m wide traffic lanes;
  - Two 2.5 m wide raised concrete shoulders separated by a mountable curb;
  - Two bicycle-height combination traffic railings mounted on concrete curbs; and
  - Pony truss members located outside of the bridge railings.

11.0 Environmental Impacts & Mitigation Measures

This section provides an overview of the potential direct and indirect environmental impacts of the preferred solutions for each bridge crossing as well as associated mitigation measures that must be incorporated into the detailed design and construction phases. The mitigation measures outlined in this report will be refined during the detailed design phase.

Table 46 outlines the impact assessment and mitigation measures for Sewell's Bridge and Maxwell's Bridge. The Preferred Solution for both bridges is retention with sympathetically-designed maintenance repairs. As a result, the impacts and mitigation measures are common for both bridges, however, where applicable, differences between the bridges are noted.

Table 47 outlines the impact assessment and mitigation measures for Milne Bridge, Stott's Bridge, and Hillside Bridge. The Preferred Solution for all three bridges is replacement with a sympathetically-designed replacement structure. As a result, the impacts and mitigation measures are common for all three bridges, however, where applicable, differences between the bridges are noted.

Due to the importance of heritage considerations within this TMP, Section 11.1 provides an overview of the Scoped Heritage Impact Assessment that was completed and outlines the next steps required during the future design phases for each structure.

11.1 Heritage Impact Assessment (HIA)

A Scoped Heritage Impact Assessment (HIA) was completed by ASI for the five bridges (**Appendix E-3**). As this TMP has only recommended the preferred alternative for each bridge, and only conceptual design work has been completed, the HIA was scoped to evaluate potential impacts in a broad sense related only to either the rehabilitation or replacement of the bridges. As each of the subject bridges are identified as built heritage resources by the City of Toronto, and there are direct impacts anticipated to each in the recommended alternatives, a resource-specific HIA will be required to assess the specific impacts to each structure and provide specific mitigation measures for each. These HIAs will be prepared by a qualified heritage consultant with recent and relevant experience with heritage bridges according to the City of Toronto's Terms of Reference

for Heritage Impact Assessments (City of Toronto, 2019) as early as possible in preliminary or detailed design. These HIAs should be submitted for review and comment to the Ministry of Citizenship and Multiculturalism and Heritage Planning at the City of Toronto. The HIAs will include an updated Ontario Regulation 9/06 evaluation for each structure designated before 2005.

To support the preparation of the Scoped HIA, a Historical Engineering Memo (**Appendix E-4**) was prepared and provided to ASI by Michael Bartlett, Professor Emeritus of Civil and Environmental Engineering, University of Western Ontario.

Four of the five bridges (Sewell's Bridge, Stott's Bridge, Maxwell's Bridge, and Hillside Bridge) were already determined to retain cultural heritage value and have previously been designated under Part 4 of the *Ontario Heritage Act*. It was further determined that the Milne Bailey Bridge crossing retains cultural heritage value as it was listed on the City's Heritage Register in 2006 and following the application of Ontario Regulation 9/06 criteria in the HIA.

It was further determined that the Milne Bailey Bridge crossing retains cultural heritage value following the application of Ontario Regulation 9/06 of the *Ontario Heritage Act* and is currently listed on the City's Heritage Register and was nominated for designation by the Scarborough Preservation Panel

The HIA was scoped to evaluate potential impacts for the recommended preferred alternative for each bridge based on the conceptual design work completed to date. A resource specific HIA is required during the next phase of design to assess the impacts to each structure and provide specific mitigation measures for each bridge. The HIA must be prepared by a qualified heritage consultant with recent and relevant experience with heritage bridges according to the *City of Toronto's Terms of Reference for Heritage Impact Assessments* as early as possible in preliminary or detailed design. These HIAs will be submitted for review and comment to the Ministry of Citizenship and Multiculturalism (MCM) and Heritage Planning at the City of Toronto.

11.2 Climate Change

Climate change resilience is an important factor to consider for the design of new water crossings. Climate change impacts have the potential to produce more frequent and more severe rainfall events, resulting in increased water flows in the river, and

increased conveyance requirements for the water crossing over the lifespan of the structure. Similarly, erosive potential may increase with increased flows and velocities, depending on specific channel characteristics.

For any new structure, a hydraulic evaluation will be completed at detailed design. The assessment will include anticipated increase in water flows due to climate change over the lifespan of the new bridges.

Table 46: Impacts & Mitigation Measures - Sewell's Bridge and Maxwell's Bridge

Environmental Feature	Potential Impacts	Mitigation Measures
Physical Environment		
Groundwater and Source Water Protection	• Potential for localized surface water impacts to Rouge River and Little Rouge Creek water quality through spills, discharge or dumping of materials, fluids and other wastes during maintenance repairs.	• Maintain equipment in good working condition such that equipment and vehicles are free of leaks; • Store all fuels, chemicals, and other lubricants away from drainage features and on relatively flat areas in contained storage areas; • Any hazardous materials will be handled in accordance with appropriate regulations; and • Should a spill occur, the MECP Spills Action Centre (1-800-268-6060) should be contacted immediately, and containment should occur as soon as practical.
Atmospheric Environment	• Potential for an increase in air emissions from vehicle and equipment use during maintenance repairs.	• Equip vehicles with emission controls, as applicable, and operate within regulatory requirements; and • Limit long-term idling, where possible.
Natural Environment		
Vegetation	• Potential for limited removal of and impacts to vegetation during maintenance and repairs. • Physical site disturbance may increase the likelihood that non-native and/or invasive species will be introduced to the surrounding vegetation communities.	• Minimize vegetation clearing to the extent possible and replant/seed with compatible vegetation as required; • Machinery is to arrive and depart clean to prevent spread of invasive species to and from other sites; • Areas identified as having invasive species present will be considered during access and maintenance planning. Stands of invasive plant species will be

Environmental Feature	Potential Impacts	Mitigation Measures
		avoided to the extent practical during maintenance activities; • Maintenance access and laydown areas will be restored following completion of maintenance; and • Limits of the workspace should be clearly marked to avoid encroachment into adjacent vegetated areas and to avoid unnecessary tree removals and encroachment.
Aquatic Habitat	• No in-water work is anticipated to be required for the maintenance repairs.	• Not Applicable (N/A)
Species at Risk	• Limited potential disturbance or loss of SAR and/or SAR habitat during maintenance repairs. Confirmation of potential impacts will be confirmed as part of the future design phase, based on timing and scope of work; • Although no SAR occurrences were observed during the 2019 and 2020 field investigations, potential habitat for the following SAR identified during the background review was observed: ○ Bashful Bulrush; ○ Bank Swallow;	• A Review of potential SAR and SAR Habitat adjacent to the site will be completed during the future design phase. Information on potential SAR in the area is included in Appendix B of this TMP; • Any species listed as Endangered or Threatened on the Species at Risk in Ontario (SARO) List that is encountered during construction must be protected from all harm and harassment; • Impacts to potential SAR habitat will be avoided, where possible. In the event impacts cannot be avoided, MECP will be consulted regarding permitting/approval requirements under the *ESA* during detailed design;

Environmental Feature	Potential Impacts	Mitigation Measures
	○ Blanding's Turtle; ○ Eastern Small-footed Myotis; ○ Little Brown Myotis; ○ Northern Myotis; and, ○ Tri-colored Bat. ○ The maintenance repairs to Sewell's Bridge and Maxwell's Bridge may result in temporary anthropogenic disturbances (i.e., noise, lights) to adjacent potential SAR bird and SAR bat habitat (i.e., forests, swamps and bluffs).	• Maintenance personnel will be aware of the potential presence of, and able to identify SAR with the potential to occur within the general work areas; • Should SAR be encountered during maintenance activities, activities will be stopped until it has been determined that harm will not occur. The required activities will be assessed to determine whether the work/schedule can be modified, or mitigation measures employed, to avoid potential effects on SAR and their habitat; and • SAR observed during maintenance activities will be reported to the MECP.
Wildlife Habitat	• Potential disturbance or loss of wildlife habitat during maintenance repairs; and • The maintenance repairs to Sewell's Bridge and Maxwell's Bridge may result in temporary anthropogenic disturbances (i.e., noise, lights) to adjacent potential wildlife habitat for birds and bats (i.e., forests, swamps and bluffs).	• Vegetation removals should occur outside the breeding bird season (April 1 to August 31). Should clearing be required during the breeding bird season, nest searches conducted by a qualified person must be completed within 48 hours in advance of clearing activities; • Should tree removal be required during the bat roosting window (May 1 – September 30), a review of bat roosting habitat should be completed by a qualified person prior to removal; • If bridge works occur during the turtle active season (May 1 to September 30), exclusion fencing (i.e., silt fencing) should be installed along the construction area

Environmental Feature	Potential Impacts	Mitigation Measures
		boundary and to contain areas with exposed soil, including stockpile areas, as required based on the anticipate scope of the work; • If wildlife is encountered, work shall be temporarily suspended until the animal is out of harm's way; and • Maintenance personnel will be aware of the potential for wildlife which may be encountered within the general work areas.
Socio-Economic Environment		
Air Quality & Noise	• Increase in nuisance noise and dust during maintenance repairs.	• Maintenance activities will be carried out in compliance with City of Toronto noise by-laws; • Implement dust control measures during dry and windy conditions; and • Limit construction activities during high wind events.
Traffic	• Occasional bridge and road maintenance may be required in the future, causing disruptions to traffic.	• Traffic access will be maintained, where possible, during maintenance repairs. If required, temporary detour routes will be provided to reduce potential impacts to drivers; and • Appropriate traffic management procedures and signage will be put in place.
Public Use of RNUP	• Potential for temporary disturbance to public and worker access to RNUP and the Toronto Zoo during maintenance repairs.	• Access to nearby pedestrian and cycling facilities should be maintained during maintenance activities, where feasible.

Environmental Feature	Potential Impacts	Mitigation Measures
Cultural Environment		
Archaeological Resources	• Maintenance repairs to Sewell's Bridge and Maxwell's Bridge are anticipated to remain within previously disturbed roadway and on the bridge.	• Should previously undocumented archaeological resources be discovered during maintenance activities, there 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 Ministry of Citizenship and Multiculturalism 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*.

Environmental Feature	Potential Impacts	Mitigation Measures
Cultural Heritage	• Impacts on built heritage resources or cultural heritage landscapes during construction or land-disturbing activities.	• Once detailed designs for the bridges are available, this report should be updated to confirm the impacts of the undertaking on the built heritage resources and cultural heritage landscapes identified within and/or adjacent to the study area to recommend appropriate mitigation measures. Mitigation measures may include but are not limited to, completing a CHER, HIA or Documentation Report or employing suitable measures such as landscaping, buffering or other forms of mitigation, where appropriate. In this regard, provincial and municipal guidelines should be consulted for advice and further heritage assessment work should be undertaken as necessary and directed by City of Toronto Staff.

Table 47: Impacts & Mitigation Measures - Milne Bailey Bridge, Hillside Bridge, and Stott's Bridge

Environmental Feature	Potential Impacts	Mitigation Measures
Physical Environment		
Physiography and Drainage	• Potential to impact the Rouge River and Little Rouge Creek water quality through erosion and sedimentation during construction.	• Erosion and sediment control measures will be developed during detailed design to prevent entry of sediment to the Rouge River and Little Rouge Creek.
Groundwater and Source Water Protection	• Potential for localized surface water impacts to the Rouge River and Little Rouge Creek water quality through spills, discharge or dumping of materials, fluids and other wastes during construction.	• Maintain equipment in good working condition such that equipment and vehicles are free of leaks; • Store all fuels, chemicals, and other lubricants away from drainage features and on relatively flat areas in contained storage areas; • Any hazardous materials will be handled in accordance with appropriate regulations; and • Should a spill occur, the MECP Spills Action Centre (1-800-268-6060) should be contacted immediately, and containment should occur as soon as practical.
Atmospheric Environment	• Potential for an increase in air emissions from vehicle and equipment use during construction.	• Equip vehicles with emission controls, as applicable, and operate within regulatory requirements; and • Limit long-term idling, where possible.

Environmental Feature	Potential Impacts	Mitigation Measures
Natural Environment		
Vegetation	• Impacts and/or removal of trees and vegetation associated with construction activities; and • Physical site disturbance may increase the likelihood that non-native and/or invasive species will be introduced to the surrounding vegetation communities.	• Minimize vegetation clearing to the extent possible and replanted/seeded with compatible vegetation as required; • Machinery is to arrive and depart clean to prevent spread of invasive species to and from other sites; • Areas identified as having invasive species present will be considered during access and construction planning. Stands of invasive plant species will be avoided to the extent practical during construction; • Construction access and laydown areas will be restored following completion of construction; • Limits of the workspace should be clearly marked to avoid encroachment into adjacent vegetated areas and to avoid unnecessary tree removals and encroachment; and • A Landscaping and Planting Plan should be prepared during detailed design to protect or off-set vegetation removal and propose enhancements to natural areas where possible.

Environmental Feature	Potential Impacts	Mitigation Measures
Aquatic Habitat	• Potential disturbance to fish and fish habitat as a result of vegetation loss, soil erosion, sedimentation, etc.; • The replacement of the Milne Bridge, Stotts Bridge, and Hillside Bridge may result in permanent loss of aquatic habitat if the proposed widening work extends below the high-water mark; and • The replacement of the Milne Bridge, Stotts Bridge, and Hillside Bridge may result in temporary loss of aquatic habitat to accommodate construction footprint if in-water work is proposed.	• Construction access, laydown and work areas will be planned to avoid waterbodies and potential fish habitat to the extent practical; • Any disturbance to waterbodies, shorelines, riparian areas, etc. will be stabilized to prevent erosion immediately; • Project wastes will be stored and/or removed from all riparian areas immediately; • If permanent or temporary works are required below the high-water mark of a watercourse with potential fish habitat, a Request for Review will be prepared and submitted to the DFO in support of a Letter of Advance and/or approvals under the Fisheries Act; and • Work will be conducted in accordance with a permit from the Toronto and Region Conservation Authority (TRCA) when working within their regulated area.
Species at Risk	• Potential disturbance or loss of SAR and/or SAR habitat during construction; • The replacement of the Milne Bridge may result in temporary or permanent removal of potential Barn Swallow habitat (i.e., bridge) to facilitate bridge replacement;	• Any species listed as Endangered or Threatened on the Species at Risk in Ontario (SARO) List that is encountered must be protected from all harm and harassment; • Impacts to potential SAR habitat will be avoided, where possible. In the event impacts cannot be avoided, MECP will be consulted regarding

Environmental Feature	Potential Impacts	Mitigation Measures

	• Confirmation of potential impacts will be confirmed as part of the future design phase, based on timing and scope of work;
	• Although no SAR occurrences were observed during the 2019 and 2020 field investigations, potential habitat for the following SAR identified during the background review was observed:
	  ○ Bashful Bulrush;
	  ○ Bank Swallow;
	  ○ Blanding's Turtle;
	  ○ Eastern Small-footed Myotis;
	  ○ Little Brown Myotis;
	  ○ Northern Myotis; and,
	  ○ Tri-colored Bat.
	• Construction activities may result in temporary anthropogenic disturbances (i.e., noise, lights) to adjacent potential SAR bird and SAR bat habitat (i.e., forests, swamps and bluffs).
		permitting/approval requirements under the ESA during detailed design;
		• Boundaries of SAR habitats will be identified and flagged off and protected;
		• Construction personnel will be aware of the potential presence of, and able to identify SAR with the potential to occur within the general work areas;
		• Should SAR be encountered during construction activities, activities will be stopped until it has been determined that harm will not occur. The required activities will be assessed to determine whether the work/schedule can be modified, or mitigation measures employed, to avoid potential effects on SAR and their habitat; and
		• SAR observed during construction activities will be reported to the MECP.

Environmental Feature	Potential Impacts	Mitigation Measures
Wildlife Habitat	• Potential interactions with and disturbance or loss of significant wildlife habitat during construction; and • The replacement of the Milne Bridge, Stotts Bridge, and Hillside Bridge may result in removal of potential snake hibernacula habitat if bridge abutments are proposed to be replaced.	• Bridge works and vegetation removal should occur outside the breeding bird season (April 1 to August 31). Should clearing be required during the breeding bird season, nest searches conducted by a qualified person must be completed within 48 hours in advance of clearing activities; • Should tree removal be required during the bat roosting window (May 1 – September 30), a review of bat roosting habitat should be completed by a qualified person prior to removal; • If bridge works occur during the turtle active season (May 1 to September 30), exclusion fencing (i.e., silt fencing) should be installed along the construction area boundary and to contain areas with exposed soil, including stockpile areas; • If wildlife is encountered, work shall be temporarily suspended until the animal is out of harm's way; • Trees containing stick nests and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied, as determined by a qualified person; and • Construction personnel will be aware of the potential for wildlife which may be encountered within the general work areas.

Environmental Feature	Potential Impacts	Mitigation Measures
Socio-Economic Environment		
Air Quality & Noise	• Increase in nuisance noise and dust during construction.	• Construction activities will be carried out in compliance with City of Toronto noise by-laws; • Implement dust control measures during dry and windy conditions; and • Limit construction activities during high wind events.
Traffic	• Construction within road rights-of-way has the potential to impact traffic; and • No operational or maintenance related effects are anticipated following the replacement of the bridges. Occasional bridge and road maintenance may be required; however, it is not anticipated to have significant effects on the traffic.	• Temporary detour routes will be provided to reduce potential impacts to drivers; and • Appropriate traffic management procedures and signage will be put in place.
Public Use of RNUP	• Potential for temporary disturbance to public and worker access to RNUP and the Toronto Zoo during construction; and • No impacts are anticipated to pedestrian and cycling facilities during construction.	• Access to nearby pedestrian and cycling facilities will be maintained during construction, where possible; and • Refer to mitigation measures under Traffic.

Environmental Feature	Potential Impacts	Mitigation Measures
Cultural Environment		
Archaeological Resources	• Disturbance of previously undiscovered archaeological resources during construction.	• Follow the recommendations of the Stage 1 Archaeological Assessment and the forthcoming Stage 2 Archaeological Assessment, and any recommended archaeological assessments (e.g., Stage 3 and 4); • Any disturbance to TRCA owned lands will require TRCA staff to review archaeological potential as part of a TRCA led archaeological assessment; • Fieldwork for Archaeological Stages 2 through 4 will include participation of a First Nations Field Liaison Representative (FLR); • Should previously undocumented archaeological resources be discovered, there 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

Environmental Feature	Potential Impacts	Mitigation Measures
		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 Ministry of Citizenship and Multiculturalism 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*; and • Should deeply buried archaeological deposits be found during construction activities, the Ontario Ministry of Citizenship and Multiculturalism must be notified immediately (at archaeology@ontario.ca).

Environmental Feature	Potential Impacts	Mitigation Measures
Cultural Heritage	• Impacts on built heritage resources or cultural heritage landscapes during construction or land-disturbing activities.	• Once detailed designs for the bridges are available, this report should be updated to confirm the impacts of the undertaking on the built heritage resources and cultural heritage landscapes identified within and/or adjacent to the study area to recommend appropriate mitigation measures. Mitigation measures may include but are not limited to, completing a CHER, HIA or Documentation Report or employing suitable measures such as landscaping, buffering or other forms of mitigation, where appropriate. In this regard, provincial and municipal guidelines should be consulted for advice and further heritage assessment work should be undertaken as necessary and directed by City of Toronto Staff.

12.0 Implementation

12.1 Estimated Project Costs

Estimated project costs have been prepared for each bridge crossing and are further detailed in the Functional Design Report for each bridge (**Appendix J**).

12.2 Prioritization and Construction Phasing

The following sequence of work is based on assessment of urgency and importance identified through the study. The sequence may be modified by the City, as needed, and projects may be undertaken simultaneously. The list is organized by road names to capture network connectivity. The specific timing of these works is anticipated to be undertaken in the next five years, or as determined by the City. Full bridge replacements have been prioritized due to the safety and functional deficiencies associated with the existing conditions as explained in **Section 9.0**.

1. Twyn Rivers Drive
   - Stotts Bridge over Twyn Rivers Drive – Full bridge replacement is recommended first in the sequence due to the safety and functional deficiencies and its location on a priority evacuation route. (Note: Stott's Bridge was closed to all motorized traffic in July 2024 due to safety concerns identified during an inspection. Pedestrian and cyclist access remains).
2. Meadowvale Road
   - Hillside Bridge on Meadowvale Road – Full bridge replacement is recommended due to the safety and functional deficiencies of the existing structure.
   - CP Rail Bridge over Meadowvale Road - Lowering of the road is recommended to improve vertical clearance for emergency and construction vehicle access. Work to be coordinated with the railway.
3. Old Finch Avenue
   - Milne Bridge on Old Finch Avenue – Full bridge replacement is recommended due to the condition of the existing bridge and to eliminate need for traffic signals.

4. Sewell's Road
    - Sewell's Road Bridge – Bridge retention and maintenance is recommended. In the future a bypass alternative may be considered using a straighter alignment of the Sewell's Road, and it would allow the existing bridge to be preserved and repurposed for trail use.
    - CP Rail Bridge over Sewell's Road – Lowering of the road is recommended to improve vertical clearance for emergency and construction vehicle access. Work to be coordinated with the railway.
5. Twyn Rivers Drive
    - Maxwell Bridge on Tywn Rivers Drive – Bridge retention and maintenance is recommended due to the condition of the bridge.

12.3 Approvals and Permitting

Permits and approvals may be required to facilitate construction of each bridge crossing. Any required permits, approvals, or exemptions required will be obtained prior to the start of construction. Permits anticipated to be required are identified below. It is noted that additional permits could be required and will be identified during subsequent design and construction stages.

Table 48: Potential Permits, Approvals, or Notifications

Agency	Legislation, Regulation, or Standard	Permit/Approval/Notification
Ministry of Environment, Conservation, and Parks (MECP)	*Endangered Species Act, 2007 (ESA)* (SO 2007, c. 6)	A permit or approval is required for activities that may affect a provincially listed species at risk (SAR) Endangered or Threatened) and/or their habitat.
Ministry of Citizenship and Multiculturalism (MCM)	*Ontario Heritage Act* (RSO 1990, c. O.18)	Archaeological clearance is required prior to any ground disturbance and/or site alterations. A Stage 1 Archaeological Assessment (AA) was completed for the bridge crossings and determined that parts of the Study Area exhibit archaeological potential and will require a Stage 2 AA. A Stage 3 AA will also be required within the

Agency	Legislation, Regulation, or Standard	Permit/Approval/Notification
		Sewell's Road right-of-way near the Milne Site (AkGt-41) prior to construction. A Cultural Heritage Resource Assessment (CHRA) was conducted by ASI for areas within, or adjacent to, City-owned rights-of-way within 500 m of the five heritage bridges. A Scoped Heritage Impact Assessment (HIA) was completed by ASI for the five bridges. However, a resource-specific HIA will be required to assess the specific impacts to each structure and provide specific mitigation measures for each bridge. These HIAs must be prepared by a qualified heritage consultant with recent and relevant experience with heritage bridges according to the City of Toronto's Terms of Reference for Heritage Impact Assessments as early as possible in preliminary or detailed design. These HIAs should be submitted for review and comment to MCM and Heritage Planning at the City of Toronto. The Scoped HIA also recommended the completion of a Strategic Conservation Plan (SCP) for the Sewell's Bridge and Maxwell's Bridge.

Agency	Legislation, Regulation, or Standard	Permit/Approval/Notification
Toronto and Region Conservation Authority	*Conservation Authorities Act* Section 28.1	While the five bridges are within the boundaries of the RNUP, the city maintains ownership, jurisdiction and management responsibility for public roads and bridges on its right-of-way. Since the bridges and the road right-of-way are owned and operated by the City of Toronto, the city will require permits from TRCA for all works in the ROW. Further coordination with RNUP may be required at the design stage should access/construction be required beyond the limits of the ROW, on RNUP lands.
City of Toronto	Noise Control By-Law (No. 591-2.3)	A Noise By-law Exemption is required if construction noises will occur outside of the allowable hours.
	Ravine and Natural Feature Protection By-Law (No. 838-2002)	A permit is required for activities harming or removing any trees, changing the natural land topography, the placing or dumping of fill, and constructing new or replacing old structures or retaining walls.
	Ontario Heritage Act (RSO 1990, c. O.18)	Any heritage property designated under Part 4 of the OHA must receive permissions under Sections 33 and 34 of the OHA for proposed alterations to heritage attributes and for proposed removals.

12.3.1 Archaeological Resources

The recommendations of the Stage 1 AA, as documented in the Stage 1 AA report (**Appendix E-1**) are provided below:

- Parts of the Study Area exhibit archaeological potential. These lands require Stage 2 archaeological assessment by test pit survey and pedestrian survey, both at five metre intervals, prior to any proposed ground-disturbing activities;
- AlGt-542 is a Pre-Contact Indigenous findspot with Cultural Heritage Value or Interest located within 50 metres of the Study Area. The location of the site should be noted while any Stage 2 Archaeological Assessment is undertaken in this area;
- Part of the Study Area was previously assessed by ASI (P392-0035-2013, P094-0192-2014, P094-0193-2014). In keeping with these previous recommendations, the Sewell's Road ROW in proximity to the Milne site (AkGt-41) requires Stage 3 site-specific assessment. Stage 2 test pit survey at a minimum of 5 m intervals should be conducted prior to the Stage 3 assessment in these lands to confirm the presence of any intact soils. The Stage 3 should be conducted in accordance with Table 3.1 Standards 10-12 for Stage 3 excavation of Woodland Period village sites:
    - The Stage 3 archaeological assessment should commence with the creation of a recording grid on a fixed datum, the position of which has been recorded using a GPS;
    - Following the S & G Table 3.1 Standards 10-12 for Stage 3 excavation of Woodland Period village sites, a series of one metre by one metre units will be excavated at five metre intervals across all areas of artifact concentrations. An equal number of additional test units will be excavated across the remainder of the project area, either in a systematic grid or in focused areas to recover a sample of topsoil deposits. The test units should be excavated five centimetres into the sterile subsoil and soil fills screened through six-millimetre wire mesh to facilitate artifact recovery. The sterile subsoil should be troweled and all soil profiles examined for undisturbed cultural deposits; and
    - During the Stage 3 assessment, meaningful engagement with Indigenous communities, should be conducted, as outlined in the S & G Section 3.5, and in the Engaging Aboriginal Communities in Archaeology Technical Bulletin (Ministry of Tourism and Culture 2011a).

- Part of Sewell's Road has been previously subject to a program of archaeological monitoring by ASI in 2015 during construction impacts which occurred above the existing granular surface. Additional construction monitoring is required in these areas for any construction impacts below the existing granular surface;
- The Milne Site (AkGt-41) and the D. Reesor (AlGt-63) are ancestral Huron-Wendat villages adjacent to the Study Area. An associated ossuary has not yet been identified for either site. To minimize the risk of impacting an ossuary within the project limits, a licensed archaeologist should be engaged to conduct a program of archaeological monitoring during the removal of topsoil for all parts of the Study Area that are within both 1000 metres of the sites and 300 metres of water;
- The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance, low and wet conditions, slopes in excess of 20 degrees, or being previously assessed. These lands do not require further archaeological assessment; and,
- Should the proposed work extend beyond the current Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

12.4 Commitments to Future Work

Through consultation with key interest groups, agencies, members of the public, and Indigenous Communities, where the preferred solution cannot avoid impacts, future commitments for inclusion during detailed design, construction and post-construction have been identified.

Appendix J contains all commitments to future work, interested party/agency and details discussed.

To ensure that all future commitments (during detailed design, construction, and post-construction) were adequately documented and clearly defined, the commitments were itemized and grouped using the following overarching themes:

- Natural Environment Commitments;
- Cultural Heritage Commitments;
- Technical and Design Commitments;
- Interest groups Commitments; and
- Program and Policy Commitments.

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