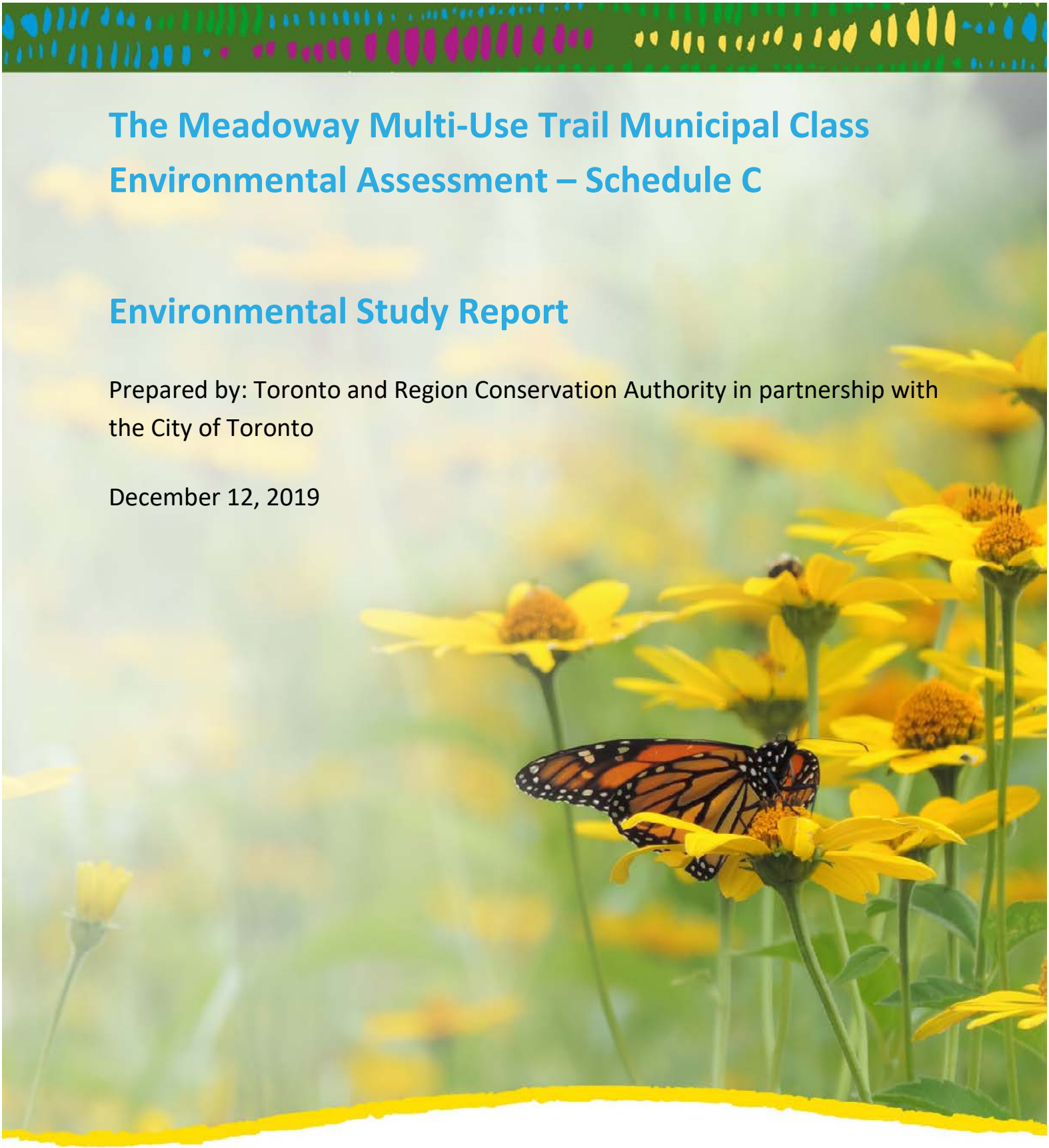
The Meadoway Multi-Use Trail Municipal Class Environmental Assessment – Schedule C

Environmental Study Report

Prepared by: Toronto and Region Conservation Authority in partnership with the City of Toronto

December 12, 2019



The Meadoway
COMMUNITY POWERED GREEN SPACES

A project of: Toronto and Region Conservation Authority

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THE MEADOWAY MULTI-USE TRAIL MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT – SCHEDULE C

Environmental Study Report

Prepared by:
Toronto and Region Conservation Authority in partnership with the City of Toronto (co-proponent)

December 12, 2019

101 Exchange Avenue
Vaughan ON L4K 5R6

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Acknowledgements

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Celene Mariano	Toronto and Region Conservation Authority
Corey Wells	Toronto and Region Conservation Authority
John Stille	Toronto and Region Conservation Authority
Justin Bak	City of Toronto
Karla Kolli	Dillion Consulting Limited
Katie Turnbull	Toronto and Region Conservation Authority
Konain Sajid	Toronto and Region Conservation Authority
Lisa Turnbull	Toronto and Region Conservation Authority
Michael Haymen	Dillon Consulting Limited
Miriam Bart	Dillion Consulting Limited
Ruthanne Henry	City of Toronto
Violetta Savage	Toronto and Region Conservation Authority

The Following as Technical Advisory Committee Members:

Agnes Reid	Hydro One Network Incorporated
Ahmed Hussein	Metrolinx
Andreas Houlios	Metrolinx
Andrew Au	City of Toronto
Arthur Lo	City of Toronto
Ben Morell	City of Toronto
Carolina Daza Ortiz	Metrolinx
Cherilyn Silvestri	Toronto and Region Conservation Authority
Clint Langevin	Perkins&Will
Cory Ostrowka	Infrastructure Ontario
David Fallows	Ministry of Transportation
Doris Chee	Hydro One Network Incorporated
Elizabeth Ignatius	Toronto and Region Conservation Authority
Jamie Milnes	Toronto and Region Conservation Authority
Jennifer Adams Peffer	University of Toronto Scarborough
Kaitlyn Chow	Rouge National Urban Park (Parks Canada)
Mark Preston	Toronto and Region Conservation Authority
Renee Pettigrew	Hydro One Network Incorporated
Richard Scott	Rouge National Urban Park (Parks Canada)
Rocio Schweigl	Metrolinx
Sasha Terry	City of Toronto
Sophie Knowles	City of Toronto
Sue Hayes	Toronto and Region Conservation Authority

Community Liaison Committee Members Representing the Following Groups:
Bee City Canada
Centennial College
Community Residents
Cycle TO
Friends of the Rouge Watershed
Friends of Thomson Memorial Park
Glen Andrew Community Association
Green Neighbours Network
Scarborough Cycles
Toronto Catholic District School Board – Saint Richards Catholic School
Toronto District School Board
Toronto Field Naturalists
Toronto and Region Conservation Foundation
Toronto Zoo
University of Toronto Scarborough
Walk Toronto

The Meadoway EA Public Event Attendees

The Meadoway Key Stakeholders

Councillors, Members of Parliament, Members of Provincial Parliament

EXECUTIVE SUMMARY

Purpose and Study Area (Chapter 1)

The purpose of The Meadoway Municipal Class Schedule C Environmental Assessment (Class EA) is to establish a complete active transportation route linking downtown Toronto and Rouge National Urban Park via a safe, accessible, and naturalized/ecologically diverse multi-use trail network.

Forming a key segment of Toronto's cycling network, The Meadoway will provide enhanced opportunity for and access to alternative modes of transportation in a rapidly urbanizing setting, facilitating connectivity within and between communities, as well as to the local environment through the restoration of naturalized greenspace throughout the hydro corridor. As one of the largest linear habitat restoration projects in Ontario, The Meadoway will serve as a model for how to successfully revitalize and repurpose hydro corridors across the Greater Toronto Area (GTA) and abroad.

The Class EA Local Study Area (LSA, i.e., the area where direct effects are anticipated) generally follows the margins of the Gatineau hydro corridor in eastern Toronto. Hydro One Inc. (HONI) and Infrastructure Ontario (IO) jointly manage the Provincial Secondary Land Use Program associated with transmission corridors owned by the Ministry of Government and Consumer Services. HONI maintains a statutory easement over these lands and manages them for the primary use, which is the safe transmission of electricity for the province (Figure 1-2, Chapter 1). The LSA begins to the west by the future East Don Trail Gateway at Bermondsey Avenue and extends eastwards to Rouge National Urban Park just east of Meadowvale Avenue.

Background (Chapter 1)

The Meadoway project is an innovative approach to revitalizing underutilized greenspace and has firm roots in one of the oldest infrastructure challenges in Ontario – the generation and supply of electricity. Beginning in the early 1920's, Ontario Hydro designated sections of land across the province for the transmission of electricity from major hydro-electric generating stations along the Ottawa River. One of the most important of these transmission lines was the Gatineau hydro corridor, which stretched across the City of Scarborough connecting downtown Toronto to the hydroelectric power plants in the Gatineau region of Quebec.

As Toronto grew, linear features like the Gatineau hydro corridor became one of the few open spaces remaining in Canada's largest urban region and, with pressure mounting to find solutions to the impacts of rapid urbanization, these corridors have more recently emerged as untapped candidates for alternative, low-impact modes of transportation and greenspace revitalization.

The viability of transforming Toronto's hydro corridors into revitalized greenspace was tested via two successful pilots known under its previous banner as the Gatineau Hydro Corridor Revitalization Project. One of these projects, formerly known as the Scarborough Centre Butterfly Trail (SCBT), transformed a 3.5 km section of the hydro corridor into a naturalized meadow habitat, active transportation route, and community gathering and educational space. Eventually encompassing over 200 hectares and spanning 16 linear km, The Meadoway will incorporate all the work completed as part of the Gatineau Hydro Corridor Revitalization Project and establish a connection between downtown Toronto to Rouge National Urban Park, integrating existing greenspaces and transportation networks across eastern Toronto.

Study Process and Part II Order (Chapter 2)

The Meadoway Class EA was conducted and prepared in accordance with the requirements of the Municipal Engineers Class EA (MCEA) process, Schedule C, as amended in 2015. The Class EA planning process consists of five phases (Figure 2-1, Chapter 2):

- **Phase 1**: Identify the problem (deficiency) or opportunity;
- **Phase 2**: Identify alternative solutions to address the problem or opportunity by taking into consideration the existing environment. Establish a preferred solution considering public and review agency input;
- **Phase 3**: Examine alternative methods of implementing the preferred solution, based upon the existing environment, public and review agency input, anticipated environmental effects, and methods of minimizing negative effects and maximizing positive effects;
- **Phase 4**: Document the project rationale, planning, design, and consultation process of the project and include it with the Environmental Study Report (ESR). The documentation is placed on public record for a 45-day review period; and,
- **Phase 5**: Involves details, preparation, and completion of contract drawings and documents, construction, operations and appropriate monitoring (Municipal Engineers Association, 2015).

As per the MCEA 2015 requirements, The Meadoway Class EA ESR has been prepared to include the project activities, correspondence, consultation, planning, and decision-making processes up to and including Phase 4 of the MCEA process. Members of the public, Indigenous communities, stakeholders, and government agencies were provided an opportunity to review, examine, and provide feedback on the project's findings at each phase of the process.

The Meadoway Class EA has been made available to the public, Indigenous communities, stakeholders, and government agencies for a 45-day review period in which written comments and/or questions pertaining to the proposed project can be provided digitally or in writing to the TRCA. A public notice, termed the Notice of Completion, will be released to announce the commencement of the review period. Following the review period, the requirements of the Environmental Assessment Act (EAA) will be deemed satisfied subject to the appropriate resolution of any objections received. If no objections are received within the 45-day review period, TRCA may proceed with detailed design and construction as outlined in this Class EA ESR.

Please address comments and/or questions related to this project to the contact information provided below and title your correspondence as "The Meadoway Class EA – Comment on ESR".

Contact: Corey Wells Project Manager, Project Management Services Project Management Office, Corporate Services Toronto and Region Conservation Authority	**Address:** 101 Exchange Avenue, Vaughan, ON, L4K 5R6 **Email:** info@themeadoway.ca

A Part II Order can be requested to address outstanding issues with a project that have not been resolved in a Class EA process. Individuals can make a Part II Order request during the 45-day review period as well as after the proponent issues the Notice of Completion. In order to make a Part II Order request, a request form can be downloaded from the Ministry of Environment, Conservation, and Parks (MECP) website.

All completed Part II Order Request Forms should be sent to the Minister of MECP, the Director of Environmental Assessment and Permission Branch, as well as the project proponent (TRCA).

Minister
Ministry of the Environment, Conservation and Parks
Floor 11
77 Wellesley Street West
Toronto ON M7A 2T5
Minister.mecp@ontario.ca

Director, Environmental Assessment and Permissions Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto ON M4V 1P5
enviropermissions@ontario.ca

Consultation (Chapter 3)

The public consultation program for The Meadoway Class EA was carried out in accordance with the consultation requirements as defined by the MCEA process, and included members of the public, affected and/or interested stakeholders, local interest groups, non-government organizations, government agencies, and Indigenous communities.

A comprehensive consultation program was undertaken in support of the Class EA, which included three public open houses, three technical advisory committee meetings, three community liaison committee meetings, and numerous touchpoints with key stakeholders, government agencies, and Indigenous communities. Through this program, valuable feedback was received and incorporated where achievable at each major phase of the Class EA process. Chapter 3 provides an overview of the consultation strategy, with a detailed summary of consultation provided at the end of each major phase. Appendix A provides a complete documentation of the entire consultation program.

Planning Context (Chapter 4)

Ontario's population is projected to grow by 38%, or approximately 5.4 million, over the next 24 years (Ministry of Finance, 2019). By 2046, over 50% of the provincial population will call the GTA home, which itself is projected to experience a population increase of just over 40% over the same period. Greater traffic volumes each year result in worsening road congestion and prolonged commute times, which contribute to greenhouse gas emissions and urban pollution in the form of smog. While the GTA ranks higher than many major North American cities in terms of parkland and greenspace availability, continuing to provide for access to healthy outdoor amenities for all communities will become an ever-increasing challenge. As the City's population grows and urbanization continues, so too will the need to provide for alternative forms of transportation, as well as fair and balanced access to well-planned recreational services and green infrastructure.

New opportunities for developing ecologically diverse and publicly accessible greenspace and trail systems are few and far between in large, rapidly growing cities. However, hydro corridors have been recognized in recent years as untapped and underutilized open spaces, with significant potential for transforming the form and function of the urban setting they traverse. Several pilot studies have tested the feasibility of re-imagining hydro corridors as active transportation networks and enhanced

greenspaces, including the popular Scarborough Centre Butterfly Trail, which transformed a 3.5 km section of the Gatineau Hydro Corridor into a naturalized habitat and multi-use trail. Building off lessons learned from these pilot projects, the implementation of a multi-use trail across a 16 km stretch of the hydro corridor will function as an east to west "stitch", connecting fragmented greenspaces and communities across eastern Toronto via an ecologically sustainable and active transportation network.

Problem/Opportunity Statement (Chapter 4)

A complete active transportation system linking eastern Toronto to the downtown core is missing from the City's existing major multi-use trail network. Opportunities to expand and construct new multi-use trail networks are limited in urbanized environments; however, hydro corridors have the potential to be repurposed as accessible, ecologically diverse greenspaces that permit active trail use. The Meadoway will revitalize and restore the existing hydro corridor and establish a full connection between downtown Toronto and Rouge National Urban Park via an accessible multi-use trail network.

Guiding Principles (Chapter 4)

The Meadoway Class EA is guided by six main principles:

Connections

- To provide a complete east-to-west multi-use trail network linking downtown Toronto to Rouge National Urban Park; and,
- To re-establish a portion of the naturalized east-to-west connections that once existed between the regions north-south oriented ravine systems.

Natural Environment & Education

- To increase access for a wide range of users to explore, learn, and enjoy urban greenspaces;
- To restore and enhance naturalized greenspaces through the creation of meadow habitat and provide for ecological diversity within the urban setting; and,
- To function as a platform for stewardship, education, and research on natural habitats in the urban environment, integrating opportunities for habitat creation, "citizen science", student/community member action projects, and educator training, to name a few.

Recreation

- To develop safe and accessible trail and outdoor recreational opportunities for a wide range of users and communities.

Community and Public Realm

- To facilitate opportunities for improving connectivity within and between communities, as well as to the local environment; and,
- Provide for a range of public spaces for people to gather and socialize, support community events and enable artistic expression.

Transportation

- To provide greater opportunity for and access to alternative modes of transportation in the GTA; and,
- To advance the integration of multi-modal transportation options.

Blueprint for Revitalization

- To serve as a model for how to successfully revitalize and repurpose hydro corridors across the GTA and abroad.

Existing Conditions (Chapter 5)

An assessment of existing conditions within the LSA provides context for the proposed multi-use trail, as well as the necessary information to understand and evaluate which environmental components (physical, social, cultural, and economic) may be positively or negatively impacted.

Areas of focus within the existing conditions assessment include:

- Transportation and existing trails (Chapter 5.3);
- Biological environment (Chapter 5.4);
- Physical environment (Chapter 5.5);
- Cultural environment (Chapter 5.6); and,
- Socio-economic environment (Chapter 5.7).

Alternative Solutions and Evaluation Criteria (Chapter 6)

The 16 km stretch of hydro corridor was divided into seven manageable sections based on where trail infrastructure is already in place. Sections 1, 2, 4, and 7 are considered complete for the purposes of this Class EA as they contain multi-use trail infrastructure (Chapter 6, Figure 6-1). The focus of this Class EA was on the incomplete sections of the corridor, where no multi-use trail currently exists and where additional features such as pedestrian bridge crossings need to be considered. Specifically:

- Section 3 extends just west of Kennedy Road towards Lawrence Avenue East and Brimley Road. Within the LSA this section includes the TTC/GO Stouffville rail corridor and the Southwest Tributary of Highland Creek;
- Section 5 extends from Scarborough Golf Club Road just south of Ellesmere Road to Neilson Road near Military Trail. Within the LSA this section includes the Milliken Branch of Highland Creek and intersects with the Upper Highland Creek Pan Am Path; and,
- Section 6 runs from Neilson Road, south of Military Trail, to Conlins Road north of Highway 401. Much of this section falls outside of the hydro corridor due to the presence of Highway 401 and includes Ellesmere Ravine and the University of Toronto Scarborough.

For Section 3, 5, and 6 the following alternative trail alignments were considered:

- **Option A (In-Corridor) –** trail alignment remains within the hydro corridor as much as is feasibly possible;
- **Option B (Maximize Existing Infrastructure) –** trail alignment navigates the existing street network; and,
- **Option C (Hybrid)** – the trail alignment is strategically placed both in the hydro corridor and on existing streets.

For each incomplete section, alternative trail alignments were assessed against evaluation criteria developed for each of the six Class EA guiding principles. Each alternative alignment was then ranked as “most preferred”, “less preferred”, or “least preferred” and the results of the evaluation were

summarized to show which alternative best met each of the six objectives and was thus considered the preferred trail alignment for that section.

Objectives and evaluation criteria for the alternative trail alignments

Objectives	Evaluation Criteria
Provide a positive user experience	• Maximizes interaction and connection to urban greenspace (e.g., restored meadow and natural ravine systems in the hydro corridor); provides opportunity for education and stewardship
Protect and enhance natural features	• Capacity to maximize and ensure the success of naturalization/restoration of the meadow • Minimizes impact to watercourses and aquatic habitat • Minimizes potential for impacts to valley slope (e.g., erosion) and vegetation/habitat
Provide connections	• Extent of linkages to multi-modal transportation • Extent of linkages to other trails or key amenities • Length of new trail connection (related to travel distance and time)
Maintain a safe environment for all potential trail users	• Minimizes potential for concern regarding personal safety (e.g., maintenance vehicles, road traffic, intersections, human conflict, safe trail design) • Extent of trail that can meet and/or exceed Accessibility for Ontarians with Disabilities Act (AODA) for trail design • Minimizes potential for flood risk to trail users
Be good neighbours	• Minimizes potential for operation and maintenance impacts on the hydro corridor and meadow • Minimizes potential for impact on neighbours adjacent to the hydro corridor, as well as road users • Extent of support/leverage for local communities and infrastructure initiatives
Be cost effective	• Constructability • Capital cost • Operating and maintenance costs

Based on the outcome of the evaluation process, Option A (In-Corridor) was selected as the preferred trail alignment for Sections 3 (Figure 6-2), 5 (Figure 6-3), and 6 (Figure 6-4) as it met most of the project objectives. For a full overview of the preferred trail alignments and the evaluation process, please refer to Chapter 6.

The Option A alignment will require new pedestrian water crossings over Southwest Highland Creek, Highland Creek, and Ellesmere Ravine, and a new pedestrian rail crossing over the TTC/GO Stouffville rail corridor. These structures will result in additional capital cost for this alternative. However, through the evaluation it was determined the additional costs did not outweigh the benefit of immersing trail users to the natural environment as well as the opportunity to utilize a multi-use trail that is removed from city streets. Due to the presence of Highway 401 in Section 6, Option A is temporarily routed south of the hydro corridor between Morningside Avenue and Conlins Road via the UTSC north campus. A separated bike lane on Conlins Road connects user back into the existing multi-use trail within the hydro corridor.

The preferred "In-corridor" trail alignment for the three incomplete sections provides the following advantages:

- Immerses trail users within the restored meadow, as well as existing environmental features associated with pedestrian water crossings (e.g., ravines);
- Can be constructed to minimize impacts on existing natural features and watercourses;
- Provides a continuous and direct multi-use trail, as well as connections to existing secondary paths and local community features;
- Provides a safe path for all ages and abilities that meets AODA for most of its length;
- Can be constructed with minimal impact on existing HONI infrastructure;
- Leverages local initiatives where possible, including the UTSC Master Plan (Section 6);
- Can be constructed with minimal impact on those who live in the project vicinity; and,
- Can be constructed at a cost that is considered reasonable relative to the project benefits.

Alternative Design Concepts and Evaluation Criteria (Chapter 7)

Once the preferred trail alignments were selected for the three incomplete sections of The Meadoway, some areas required further detailed assessment in order to confirm the appropriate method of providing the continuous multi-use trail between the Don River and Rouge National Urban Park. The alternative methods for implementing the preferred trail alignment, referred to as alternative design concepts, were identified and evaluated for the following specific areas:

- The east slope of the Highland Creek (Section 5);
- The pedestrian water crossing at Ellesmere Ravine (Section 6); and,
- The trail section along Chartway Boulevard (Section 6).

Like the evaluation of alternative trail alignments, the evaluation of alternative design concepts was completed using an objectives-based approach. The objectives remained consistent with those used previously, however the evaluation criteria were modified to be appropriate for the design concepts being considered (Table 7-1).

Highland Creek East Slope – Section 5

The preferred trail alignment crosses Highland Creek immediately north of Ellesmere Road and traverses a steep and heavily treed eastern slope that connects back into the hydro corridor west of Neilson Road. While consulting The City of Toronto Accessibility Design Guidelines (2004), two alternative design concepts were developed for this section (Figure 7-1):

- **Option A-1** – Approximately 680 m long trail that consists of several switch backs in order to maintain a grade of 5% or less; and,
- **Option A-2** – Approximately 440 m long trail that provides for a more direct connection, but maintains a grade of 8% or less in some areas.

Based on the evaluation (Table 7-2), Option A-2 was identified as the preferred as it met four of the five objectives. While Option A-2 will be slightly steeper than A-1 in some areas, it provides for a more direct route with a smaller footprint (i.e., shorter length with fewer switchbacks), reducing impact to slope vegetation at lower cost for construction. In order to improve user comfort and safety, Option A-2 will incorporate signage to acknowledge increased slope and trail distance as well as other features such as

rest areas and safety features throughout its length. As per the City of Toronto Accessibility Design Guidelines, Ellesmere Road can serve as an alternate route that does not exceed 5% grade.

Ellesmere Ravine – Section 6

The preferred trail alignment for Section 6 crosses Ellesmere Ravine just east of Neilson Road. Ellesmere Ravine is a deep, heavily treed valley with an approximate span of 80+ m that underlies existing power transmission infrastructure. A range of bridge types were evaluated due to the potential trade-offs associated with specific designs, including constructability, cost, impact to ravine vegetation, and conflict with existing transmission infrastructure (see Chapter 7.3):

- **Option 1 - Stress Ribbon Bridge** (Figure 7-2) **–** provides a single-span option that uses soil or rock anchors at each abutment and avoids construction of bridge piers on the valley slopes.
- **Option 2 - 3-Span Bridge** (Figure 7-3) – is a conventional bridge type that provides a mostly flat profile along the bridge deck. This structure arrangement requires construction of a concrete pier, one on each side of the watercourse within the ravine.
- **Option 3 - Deck-Arch Multi-Span** (Figure 7-4) – consists of a structural arch, piers, and spandrel columns constructed within the ravine, with the bridge deck built on top of the substructure elements.

Based on the evaluation (Table 7-3), Options 1 and 2 meet three of the five objectives. However, the relative advantages of Option 2 (i.e., a cost of about half that of Option 1, easier constructability, and ability to safely meet the crossing needs of all users) were determined to outweigh the relative disadvantages (i.e., simpler aesthetic with a slightly lower potential to give users a unique experience, and temporary disruption within the valley for construction of two piers). Overall Option 2, the 3-span bridge structure was selected as the preliminary preferred design concept for the pedestrian water crossing of Ellesmere Ravine.

Chartway Boulevard – Section 6

The preferred trail alignment for Section 6 runs through the UTSC north campus between Morningside Avenue and Conlins Road, in order to avoid Highway 401 that intersects with the hydro corridor. In coordination with UTSC staff and the future master plan, which includes redevelopment of the north campus that the preferred trail alignment crosses, two alignment design concepts were identified and evaluated (Figure 7-5):

- **Option A-1** – The multi-use trail crosses the north campus on a proposed off-street path/bike route noted in the UTSC Master Plan (2011) and utilizes Chartway Boulevard to connect to Conlins Road.
- **Option A-2** – The multi-use trail re-aligns the proposed off-site route noted in the Master Plan to the north of Chartway Boulevard, where it connects to Conlins Road.

Based on the evaluation (Table 7-4), Option A-2 met four of the five objectives and was identified as the preferred design concept. Key benefits of Option A-2 are the ability to create a positive user experience by maximizing interaction and connection to the natural environment and the ability to enhance user safety by fully separating users from vehicles and road infrastructure.

Preferred Alignment (Chapter 8)

Multi-use Trail General Route

The preferred alignment for the incomplete sections of The Meadoway includes the three preferred trail alignments identified in Chapter 6 (Option A – In Corridor) and the design concept refinements evaluated in Chapter 7. The preferred alignment for Section 3, 5, and 6 remains primarily within the hydro corridor, apart from the trail connection through the UTSC north campus in Section 6, and provides for approximately 7.9 km of new multi-use trail that includes three pedestrian water crossings and one pedestrian rail crossing. Key elements of the preferred alignments general route are shown in Figures 8-2 through 8-4, with a detailed summary provided in Chapter 8.1.

Trail Design

Trail design for the incomplete sections will follow the City of Toronto's Multi-use Trail Guidelines (2014) as a primary trail configuration (3.6 m width), which matches the already existing sections of The Meadoway multi-use trail and provides for two-way pedestrian and non-motorized uses under medium to high volume traffic conditions (Chapter 8.2). The surface of the multi-use trail will be and will not exceed a 5% grade. Where the multi-use trail cannot meet the 5% grade (e.g., at the east slope of Highland Creek), a nearby alternate accessible route will be provided.

Road Crossings

The preferred alignment will result in 11 new roadway crossings; three at intersections and eight at midblock locations. The configuration of each new crossing was reviewed based on the City of Toronto's Multi-Use Trail Design Guidelines and existing precedents elsewhere along the hydro corridor. Chapter 8.2.2 provides a detailed overview of existing and proposed crossings, including treatment recommendations and other design considerations.

Pedestrian Water and Rail Crossings

There are three pedestrian water crossings and one rail crossing proposed as part of the preferred alignment. A summary of each proposed crossing, including an analysis of water course impacts and bridge design and construction considerations, is provided in Chapters 8.4 through 8.6. Through detailed design and subsequent HONI approval process, should the structures or their locations change significantly from the preferred concept, the need for a formal Class EA addendum will be assessed (see Chapter 13).

Environmental Impacts and Mitigation

Due to the size and scope of The Meadoway, construction of multi-use trail and crossing infrastructure has the potential to result in impacts to the natural, socio-economic, and cultural environments. Chapter 9 provides a summary of the potential impacts and recommended approaches to managing and mitigating them. Specific areas of focus include:

- Natural environment, including terrestrial and aquatic vegetation and wildlife, erosion and water quality, flood risk, invasive species, and species of concern;
- Socio-economic effects, such as air quality and noise, impacts on existing trails, and safety;
- Cultural resources, including archaeological resources; and,

- Technical considerations, such property impacts and requirements, construction access and traffic, and existing infrastructure and utilities.

Future Work

Following completion of the 45-day review period, assuming there have been no Part II Order requests, the project will proceed to the detailed design phase. During detailed design, the preferred alignment (as outlined in Chapter 8) will be refined and finalized to address site-specific conditions as identified in this Class EA.

The detailed design phase involves the development of detailed drawings for the preferred alignment and construction standards and specifications, including a Construction Management Plan, Monitoring Plan, and the Operations and Maintenance Plan.

Specifically, the detailed design phase will include, at a minimum:

- Plan and profile drawings;
- Typical sections and details;
- Material specifications;
- Construction access route location;
- Construction sequencing and management plan;
- Tree protection, removal and restoration plans; and,
- Erosion and sediment control plan.

Other activities that will be undertaken during the detailed design phase include:

- Additional hydrology, hydraulics and fluvial geomorphology assessments to guide bridge placement and design;
- Stage 2 archaeological assessment;
- Apply the Ontario Wetland Evaluation System (OWES) developed by MNRF to the unevaluated wetland located to the east of Highland Creek in Section 5;
- Coordination with Parks Canada, who are developing a conceptual trail alignment from Meadowvale Road east into Rouge National Urban Park;
- Geotechnical work;
- Confirmation of utilities;
- Obtaining licenses under the secondary land use program from IO and HONI; and,
- Finalize and receive all necessary permits and approvals.

TRCA will continue to engage interested members of the public, Indigenous communities, stakeholders, agencies and local politicians throughout detailed design and construction.

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ACRONYMS AND ABBREVIATIONS

2041 RTP	2041 Regional Transportation Plan
ANSI	Areas of Natural and Scientific Interest
AODA	Accessibility for Ontarians with Disabilities Act
CEAA	Canadian Environmental Assessment Act
City	City of Toronto
CLC	Community Liaison Committee
CPTED	Crime Prevention Through Environmental Design
CycleTO	Cycle Toronto
EA	Environmental Assessment
EAA	Environmental Assessment Act
EMF	Electromagnetic Field
EMV	Emergency Medical Vehicles
ESA	Environmentally Significant Areas
ESR	Environmental Study Report
FAQ	Frequently Asked Questions
FLR	Field Liaison Representatives
GGH	Greater Golden Horseshoe
GTA	Greater Toronto Area
GTHA	Greater Toronto and Hamilton Area
HONI	Hydro One Networks Inc.
HWN	Huron-Wendat Nation
IBI	Index of Biotic Integrity
IO	Infrastructure Ontario
LRT	Light Rail Transit
LSA	Local Study Area
mASL	Metres Above Sea Level
MCEA	Municipal Class Environmental Assessment
MCFN	Mississaugas of the Credit First Nation
MECP	Ministry of Environment, Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry
MOI	Ministry of Infrastructure
MP	Members of Parliament
MPP	Members of Provincial Parliament
MTO	Ministry of Transportation Ontario
NAICS	North American Industry Classification System
PIC	Public Information Centre
PSLUP	Provincial Secondary Land Use Program
PSW	Provincially Significant Wetlands
PW Class EA	Public Works Class Environmental Assessment
PXO	Pedestrian Crossover
RDPA	Regulations Designating Physical Activities
RSA	Regional Study Area
SAR	Species at Risk
SCBT	Scarborough Centre Butterfly Trail
SOC	Species of Concern
SSE	Scarborough Subway Extension

TAC	Technical Advisory Committee
TCAT	Toronto Centre for Active Transportation
ToR	Terms of Reference
TPAP	Transit Project Assessment Process
TRCA	Toronto and Region Conservation Authority
TTC	Toronto Transit Commission
UTSC	University of Toronto Scarborough
WSE	Water Surface Elevation

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1.0 INTRODUCTION

The Toronto and Region Conservation Authority (TRCA), in partnership with the City of Toronto (City), has undertaken a Schedule C Municipal Engineers Class Environmental Assessment (Class EA) for The Meadoway – an active multi-use trail network and meadow restoration project within the Gatineau Hydro Corridor between the East Don Trail Gateway (at Bermondsey Road, south of Eglington Avenue) and Meadowvale Road, north of Sheppard Avenue.

1.1 Purpose of the Project

Building off the success of previous revitalization projects within the hydro corridor, such as the Scarborough Centre Butterfly Trail (SCBT), the overarching purpose of The Meadoway is to establish a complete active transportation route linking downtown Toronto and Rouge National Urban Park via a safe, accessible, and naturalized/ecologically diverse multi-use trail network.

Forming a key segment of Toronto's cycling network, The Meadoway will provide enhanced opportunity for and access to alternative modes of transportation in a rapidly urbanizing setting, facilitating connectivity within and between communities, as well as to the local environment through the restoration of naturalized greenspace throughout the hydro corridor. As one of the largest linear habitat restoration projects in Ontario, The Meadoway will serve as a model for how to successfully revitalize and repurpose hydro corridors across the Greater Toronto Area (GTA) and abroad.

1.2 Project Background

The Meadoway represents one of the most innovative approaches to revitalizing underutilized greenspace infrastructure anywhere in the world; however, the history of this initiative has firm roots in one of the oldest infrastructure challenges in Ontario – the generation and supply of electricity.

A Booming City Needs Energy

In the early 1920s, Ontario Hydro designated sections of land across the province for the transmission of electricity from major hydro-electric generating stations along the Ottawa River. A series of large hydro towers were constructed along these corridors in order to provide massive amounts of energy on a daily basis to a rapidly growing population. One of the most important of these transmission lines was the Gatineau Hydro Corridor, which stretched across the City of Scarborough connecting downtown Toronto to the hydroelectric power plants in the Gatineau region of Quebec.

Growth at the Expense of the Future

As Toronto continued to urbanize, the hydro corridors and by extension the land underneath them, remained a fixed landmark in a rapidly changing urban environment. As urbanization progressed, features like the Gatineau Hydro Corridor became one of the few open spaces remaining in Canada's largest urban region. Increased traffic congestion, limited park and recreational space, and the fragmentation of Toronto's natural heritage system were some of the impacts of development that began to have a profound impact on human and ecosystem health.

A Transformative Opportunity and a Path Towards Revitalization

With pressure mounting to find solutions to the impacts of rapid urbanization, hydro corridors appeared as an untapped, albeit unlikely candidate for improving the form and function of urban greenspace. What's more, these hydro corridors simultaneously could provide for enhanced connectivity across the City in the form of alternative, low-impact transportation, thereby reducing traffic congestion and improving community health.

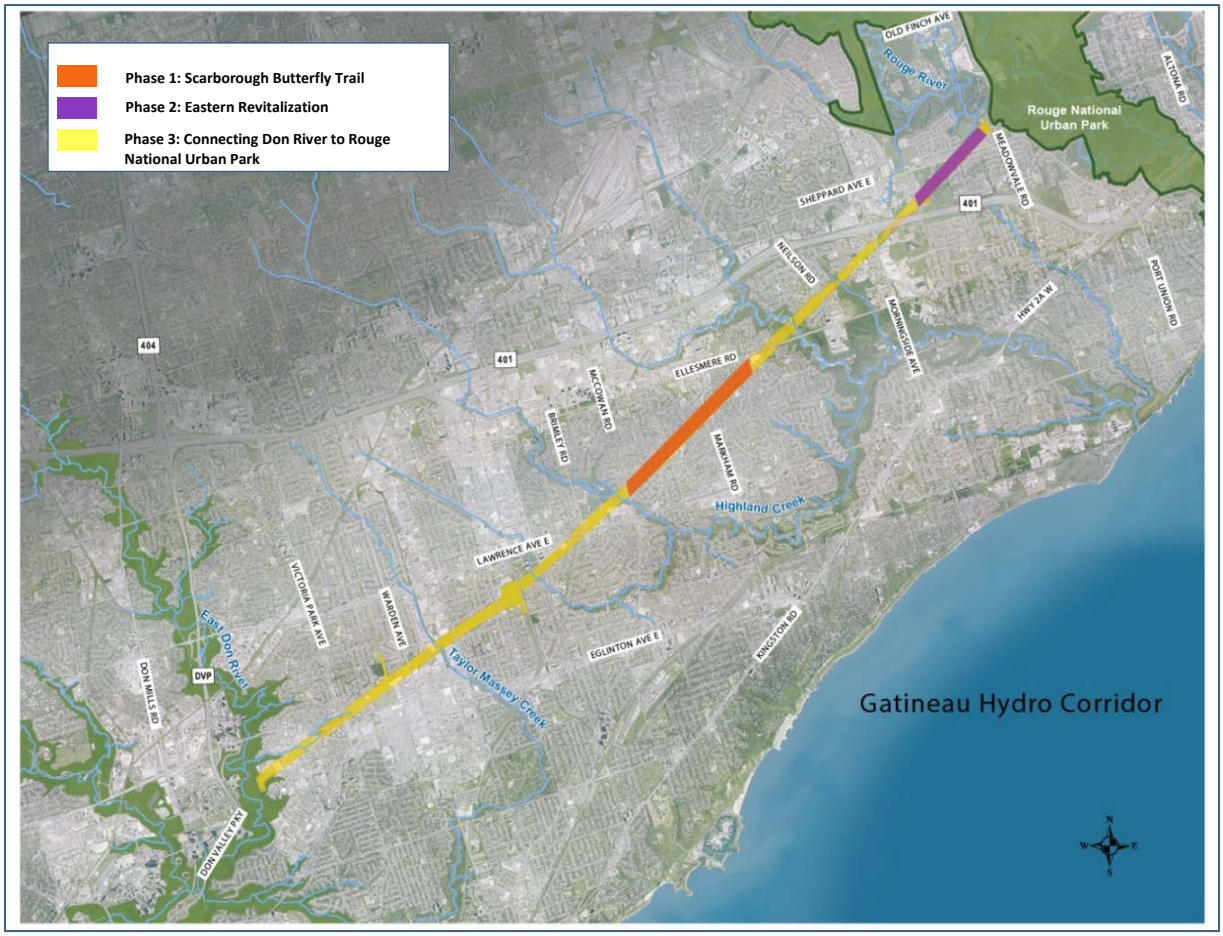

Figure 1-1. Gatineau Hydro Corridor Revitalization Project – beginning at Bermondsey Road (west) to Rouge National Urban Park (east)

Under its previous banner, the Gatineau Hydro Corridor Revitalization Project tested the viability of this transformational opportunity in the form of two revitalization pilots funded by The W. Garfield Weston Foundation (Figure 1-1). The first of these projects, the SCBT, was completed in 2015 and has been recognized as one of the most successful revitalization projects in Toronto. By transforming a 3.5 km section of the hydro corridor between McCowan Road and Scarborough Golf Club Road into a naturalized meadow habitat, active transportation route, and community gathering and educational space, the SCBT showcased the immense potential that the vision for revitalization had for Toronto and other urban areas around the world. The second pilot project, known as the Gatineau Site 2, was later expanded in the eastern portion of the corridor between Conlins Road and Meadowvale Road. Located between Conlins

and Meadowvale Road near Rouge National Urban Park, the Eastern End Revitalization represents yet another step towards establishing and protecting high-functioning greenspaces that integrates Toronto's target of developing a more connected transportation link across the City.

Encompassing over 200 hectares and spanning 16 linear km, The Meadoway will incorporate all the work completed as part of the Gatineau Hydro Corridor Revitalization Project and establish the full connection between downtown Toronto to Rouge National Urban Park, integrating existing greenspaces and transportation networks across eastern Toronto.

1.3 Project Study Area

Within the planning context, the Class EA is divided into two distinct areas of study – the Local and Regional Study Area (Figure 1-2). The Local Study Area (LSA) is the zone within which *local effects* are assessed (i.e., potential impacts that could occur in close proximity to the action where direct effects are anticipated). Following the margins of the hydro corridor in eastern Toronto, the LSA is bounded to the west by the future East Don Trail Gateway at Bermondsey Avenue and to the east by Meadowvale Avenue just west of Rouge National Urban Park. The LSA limits extend outside of the hydro corridor at locations where off-corridor trail routes currently exist (e.g., near Jack Goodlad Park east of Kennedy Road) or may be considered as part of The Meadoway Class EA (e.g., between Morningside Avenue and Conlins Road).

At a broader scale, the Regional Study Area (RSA) considers potential *cumulative effects*, both direct and indirect, that extend a certain distance from the immediate project footprint (i.e., the LSA). Spanning the Don River, Highland Creek, and Rouge watersheds, the RSA (and LSA) contains a tributary of Highland Creek and three river valley systems. Delineation of the RSA was based off neighborhood boundaries intersecting the LSA, as well as by natural features (e.g., river valleys) and the margins between major land uses.

Most of the Gatineau hydro corridor is owned by Infrastructure Ontario (IO) on behalf of the Province, with a statutory easement provided to Hydro One Networks Inc. (HONI) for the purposes of transmitting electricity through the space. The LSA intersects or overlaps with numerous right-of-ways and other land parcels owned by municipal, as well as private sources and contains a broad range of land uses across its 16 km stretch, including commercial, industrial, residential, park and recreational spaces, river valley corridors, and protected floodplains.

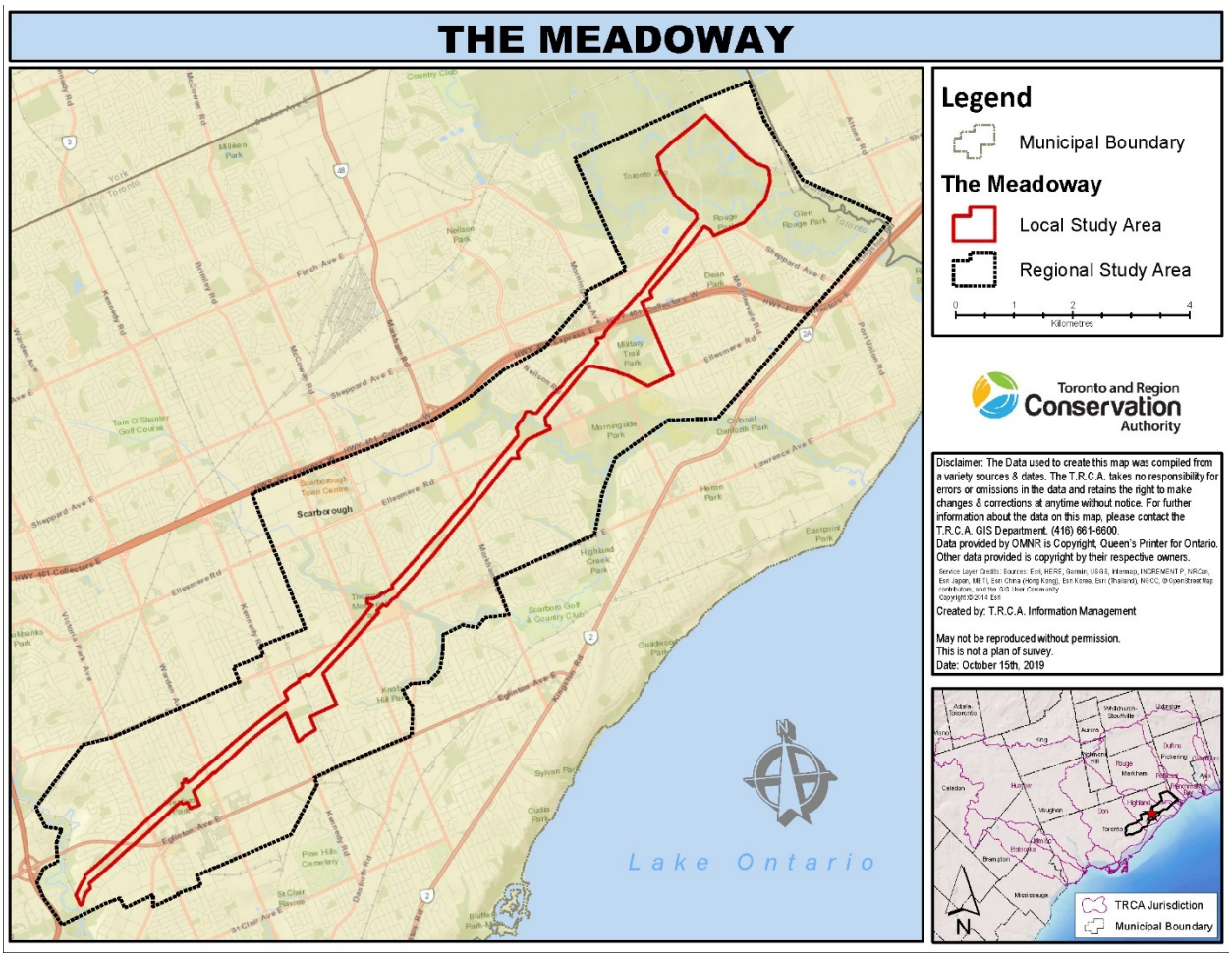

Figure 1-2. The Meadoway project study area

1.4 Key Planning Initiatives

1.4.1 City of Toronto

Official Plan

The City's Official Plan was developed to ensure that the City evolves, improves, and realizes its full potential to the year 2031 in areas such as transit, land use development, and the environment. Most pertinent to The Meadoway, the City's Official Plan sets out policies and frameworks for the implementation of active transportation infrastructure in Toronto. The development of trails in parklands, standards for implementation and maintenance of trail facilities, and the development of community planning initiatives that support active transportation are just some of the policies set out in the Official Plan that can be directly linked to the objectives of The Meadoway (City of Toronto, 2015b).

While the Official Plan itself is a comprehensive document that covers a wide range of city-building principles, some of the key policies and objectives that The Meadoway will achieve are outlined in Table 1-1.

Table 1-1. Key planning initiatives

Principle	Policy / Objectives
Building a More Liveable Urban Region	• Reduces auto dependency and improves air quality • Protects, enhances, and restores the region's system of green spaces and natural heritage
Integrating Land Use and Transportation	• Encourage walking and cycling for local trips • Facilitate social interaction, public safety, and cultural and economic activity • Improve air quality, energy efficiency, and reduce greenhouse gas emissions
Centres: Vital Mixed-Use Communities	• Develop a strategy for acquiring new and enhancing existing parkland • Create strong pedestrian and cycling linkages to transit stations • Establish a high-quality public realm featuring public squares, parks, and public art • Connect *Centres* with the surrounding City fabric through parks, trails, and bikeways
Employment Districts: Supporting Business and Employment Growth	• Create comfortable streets, parks, and open spaces for workers • Encourage walking and cycling by creating safer and more attractive conditions • Create safe and comfortable pedestrian conditions between places of work and transit stops
Enhancing Neighbourhoods and Greenspaces	• Improve and expand existing parks and recreation facilities
Toronto's Green Space System and Waterfront	• Improve public access and enjoyment of lands under public ownerships • Restore, create, and protect a variety of landscapes • Expand the Green Space System by linking parks and open spaces
A Progressive Agenda of Transportation Change	• Active forms of transportation will be encouraged by integrating and considering pedestrian and cycling infrastructure • Implement measures to reduce auto dependency and rush-hour congestion by actively pursuing measures that increase the proportion of trips made by walking, cycling, and transit • Implement policies, programs, and infrastructure that encourages people of all ages to cycle for everyday transportation and enjoyment via expanding the bikeway network • Create an urban environment that encourages and supports pedestrian movement through the City for people of all ages and abilities

Transportation Services Division

Toronto Bike Plan

Adopted by the Toronto City Council in 2001, the Toronto Bike Plan provided recommendations on improving cycling conditions in the City, as well as encouraging cycling in six key program areas: building bicycle friendly street policies; expanding the bikeway network; improving bicycle safety; promoting cycling for everyday travel; providing secure bicycle parking; and improving the links between cycling and transit.

In response to the experience of the first seven years of the Toronto Bike Plan's implementation, six new strategic directions for achieving its goals were presented in 2009, which included the goal of accelerating construction of the Bikeway Network (City of Toronto, 2009). As part of this accelerated construction, hydro corridors (the Gatineau and Finch) were identified as a significant opportunity to create almost 50 km of new bikeway trails and became a key priority for the allocation of funding, pre-engineering feasibility studies, and detailed design.

City of Toronto Walking Strategy

Adopted by the Toronto City Council in 2009, the Walking Strategy was developed through months of discussion with the public, external organizations, and relevant City divisions and agencies to make Toronto a great walking city (City of Toronto, 2017). The award-winning strategy is a 52-action blueprint that aims to build a physical and cultural environment that supports and encourages walking.

At its foundation, the Walking Strategy aims to develop a city where high-quality walking environments are seamlessly integrated with public transit, cycling and other sustainable modes of travel. Identified within the Walking Strategy was the need to integrate existing "physical barriers" into the pedestrian network and enhancing their functionality. Hydro corridors were specifically identified and highlighted as presenting "opportunities to create new walking routes and connections that will expand and complete the network" (City of Toronto, 2017).

Cycling Network 10-Year Plan

The Cycling Network Plan will serve as a comprehensive roadmap and workplan for the City and outlines planned investments in cycling infrastructure between 2016 and 2025 (City of Toronto, 2019b). While most of the downtown cycling routes identified in the 2001 Toronto Bike Plan have been installed, many of the recommended routes for Scarborough, North York, and Etobicoke remain incomplete. One of the main goals of the 2016 Cycling Network Plan is to identify lessons learned over the past 10 years and re-evaluate what can be done moving forward.

Environment and Energy Division

TransformTO Climate Action Strategy

A climate action strategy unanimously approved by the Toronto City Council in 2017, TransformTO defines a set of long-term, low-carbon goals and strategies that will reduce local greenhouse gas emissions, improve public health, grow the economy, and enhance social equity (City of Toronto, 2019e).

A key component of achieving the long-term 2050 target of an 80% reduction in greenhouse gas emissions (compared to 1990 levels) is a shift to low-carbon modes of transportation, with a focus on active transportation alternatives for "short-trips". The development of active transportation infrastructure, such as multi-use trail systems in hydro corridors, is identified in the TransformTO Climate Action Strategy as a critical component of achieving the modal shift necessary to reach the 2050 target.

Public Health Division

Healthy Toronto by Design

Prepared by Toronto Public Health in 2011, Healthy Toronto by Design outlines the major impacts of cities and their design on health and highlights the role local governments have in creating healthy, liveable, and prosperous cities (City of Toronto, 2011a). Transportation systems were highlighted as a major influence on health through its effect on physical activity, injuries, air pollution, noise, access to services, and social cohesion. Access to and use of active transportation has been linked to improved overall health. Canadians living in areas where alternative modes of transportation are available are less likely to report being overweight or obese compared to those living in neighborhoods where these services are poor or use of active transportation modes are low.

Parks, Forestry, and Recreation

Ravine Strategy

Ravines are fragile resources that provide many important ecological services and recreational opportunities for Toronto. With urbanization and population growth expected to increase significantly in the coming years, combined with increased pressures caused by climate change, the Toronto Ravine Strategy will guide future ravine management, use, enhancement, and protection.

Developed through a partnership between Parks, Forestry and Recreation, City Planning, and Toronto Water, the Ravine Strategy is built from five main principles: protect, invest, connect, partner, and celebrate Toronto's ravines as a signature feature and vital city asset (City of Toronto, 2019c).

1.4.2 Ministries of the Province of Ontario

Growth Plan for the Greater Golden Horseshoe, 2017 (Ministry of Municipal Affairs and Housing)

The Growth Plan for the Greater Golden Horseshoe (GGH) builds on the Provincial Policy Statement to establish a unique land use planning framework for the GGH that supports the achievement of complete communities, a thriving economy, a clean and healthy environment, and social equity (Ministry of Municipal Affairs and Housing, 2017).

The Growth Plan provides the framework to guide and prioritize infrastructure planning and investments in the GGH to support and accommodate forecasted growth. As part of this framework, municipalities will be required to prioritize the development of a comprehensive and continuous active transportation network that offers a viable alternative to the automobile. Further, the creation of publicly-accessible parkland and open space is to be based on a coordinated approach to trail planning and development.

#CycleON – Ontario's Cycling Strategy (Ministry of Transportation)

Ontario's Cycling Strategy provides a route map to support and encourage the growth of cycling over the next 20 years. Identified as a core part of Ontario's transportation system and integral to fostering healthier and more prosperous communities throughout the province, #CycleON is based on five strategic directions that will guide action by the government and partners across Ontario (MTO, 2013):

1. Design healthy, active and prosperous communities
2. Improve cycling infrastructure
3. Make highways and streets safer
4. Promote cycling awareness and behavioural shifts
5. Increase cycling tourism opportunities

#CycleON is being implemented through a series of multi-year action plans rolled out every five years, with the long-term objective of making Ontario the number one province for cycling in Canada.

Active 2010 Ontario Trails Strategy (Ministry of Health and Long-term Care)

The Ontario Trails Strategy is a long-term plan that establishes strategic directions for planning, managing, promoting, and using trails in Ontario. Developed in collaboration with other ministries and a wide range of stakeholders in the community, the Trails Strategy sets the challenges, visions, goals, and "framework for action" on building a healthier, more prosperous Ontario (Ministry of Health Promotions, 2005).

1.4.3 Federal Government

Rouge National Urban Park Management Plan 2019

Developed through extensive consultation and input, the first ever management plan for Rouge National Urban Park offers new and exciting opportunities to protect and celebrate the diversity of nature, agriculture and culture, and functions as a guiding document that connects visitors and residents in the nation's largest urban region to Canada's environment and heritage (Parks Canada, 2019). Some of the key initiatives to come out of the management plan include the new gateway welcome area east of Meadowvale Road at Zoo Road and an enhanced trail network that will provide critical north-south connections from The Meadoway to the Oak Ridge's Moraine and Lake Ontario.

1.4.3 Metrolinx

2041 Regional Transportation Plan

The 2041 Regional Transportation Plan (2041 RTP) outlines key strategies for providing more people with access to fast, frequent, and reliable transit while making it easier for travellers to use public transit, bicycles or travel by foot.

As a guide for the continuing transformation of the transportation system in the Greater Toronto and Hamilton Area (GTHA), the 2041 RTP serves as a blueprint for an integrated multimodal regional transportation system that puts the traveller's needs first.

One of the five key strategies outlined in the 2041 RTP includes the need to integrate transportation and land uses, the result of which is the development of connected and sustainable communities with a reduced dependence on automobiles and focus on public transit and active transportation. A few of the priority actions to achieve this strategy include (1) the planning and design of communities to support and promote the greatest shift in travel behaviour; (2) develop and implement a regional cycling network that connect areas with high cycling potential to rapid transit stations; and, (3) coordinate with stakeholders on the development of school travel programs to encourage future generations of pedestrians and cyclists (Metrolinx, 2018a).

1.4.4 Non-Governmental Active Transportation Initiatives

Scarborough Cycles

Scarborough Cycles was launched in 2015 as a collaborative project and today comprises three community bike hubs at AccessPoint on Danforth, Lawrence-Orton, and Birchmount Bluffs Neighbourhood Centre. These hubs provide the Scarborough community access to bicycles, tools, do-it-yourself repair clinics, workshops, group rides, and civic and engagement opportunities for residents (Scarborough Cycles, 2019).

Toronto Centre for Active Transportation

The Toronto Centre for Active Transportation (TCAT) was formed in 2006 as a grassroots coalition to give a unified voice to the many groups working for a better cycling and pedestrian environment in Toronto. TCATs mission is to advance knowledge and evidence to build support for safe and inclusive streets for walking and cycling, where active transportation plays a critical role in creating environmentally and economically sustainable cities (TCAT, 2019).

TCAT has played a critical role on several important active transportation projects in Toronto, including the Complete Streets for Canada website that functions as a "go-to" hub for Complete Streets policy, design, case studies, and research.

Cycle Toronto

Cycle Toronto (CycleTO) is a member-supported not-for-profit organization that works to make Toronto a healthy, safe, and vibrant cycling city for all. Through advocacy, education, and encouragement, CycleTO works to shape policy and infrastructure and build communities to transform the City's cycling culture. CycleTOs vision is that "Toronto is an outstanding cycling city. It embraces cycling as an essential mode of transportation. It upholds the principles that streets are for people, and that no traffic fatalities are acceptable" (CycleTO, 2019).

1.4.5 Toronto and Region Conservation Authority

East Don Trail

Led by TRCA and the City, the East Don Trail will connect The Meadoway at Bermondsey Road to the broader Don trail system and beyond to the downtown core. As part of the Don ravine management plan aimed at improving accessibility and ecosystem protection, the East Don Trail will provide safe and equitable access for a variety of trail users to the Don River ravine system.

Trail Strategy

TRCA Trail Strategy is a call to action to renew collective efforts to complete, expand, and manage the Greater Toronto Region Trail Network with the next generation of trails. The TRCA Trail Strategy serves as a framework to guide the planning, development, and management of regional trails in the current landscape of urban intensification, setting a vision for a complete regional trail network in greenspace that connects growing communities to nature and to each other, supporting active living and enhancing TRCAs conservation legacy (TRCA, 2019).

The Meadoway Visualization Toolkit

In parallel with The Meadoway Class EA, TRCA and its partners have developed a visualization toolkit that will demonstrate the potential "look and feel" of The Meadoway. The goal of the visualization toolkit is to amplify and celebrate The Meadoway through a compelling visual identity and narrative. The process included opportunities for meaningful public input and discussion, affirmed technical studies and other concurrent work underway for the Meadoway Class EA, and built consensus around The Meadoway's overall vision. The outcome of the visualization toolkit includes a set of conceptual renderings, sketches, and animations that set the stage for what is possible for hydro corridor revitalization in the GTA and beyond.

2.0 ENVIRONMENTAL ASSESSMENT PROCESS

TRCA, in partnership with the City of Toronto, has undertaken a Schedule C Municipal Engineers Class Environmental Assessment (Class EA) for The Meadoway – an active multi-use trail network and meadow restoration project within the hydro corridor between the East Don Trail Gateway (at Bermondsey Road, south of Eglington Avenue) and Meadowvale Road at Rouge National Urban Park

2.1 Class Environmental Assessment

The Ontario Environmental Assessment Act (EAA) requires conservation authorities, government ministries and agencies, and municipalities to undertake a complete EA process in order to identify a project's potential environmental effects. Within the context of an EA, the term "environment" includes the natural, social, cultural, and economic environments related to the project study area. A completed EA must be submitted to the associated Ministry before any decision to proceed can be made and are to include an evaluation and selection of a preferred solution that best meets the project objectives while minimizing effects on the environment (Municipal Engineers Association, 2015).

The EAA identifies two types of EAs: The Individual EA and Class EA. An Individual EA is undertaken for complex large-scale projects that have the potential for significant environmental effects and where public concern is high. A Class EA is carried out for more streamlined projects that have predictable and manageable environmental effects (Municipal Engineers Association, 2015).

Projects are classified based on their schedule, determined from their potential magnitude of environmental impacts:

- Schedule A projects: limited in scale, have minimal environmental effects, and include municipal maintenance and operational activities. Following the Class EA planning process, these projects are pre-approved;
- Schedule A+ projects: pre-approved projects; however, the public is advised prior to project implementation;

- Schedule B projects: some potential for environmental effects. The proponent is required to undertake a screening process which includes mandatory contact with directly affected public and applicable review agencies; and,
- Schedule C projects: have the potential for significant environmental effects. These projects must proceed under the full planning and documentation procedures as outlined in the EAA Class EA document. An Environmental Study Report (ESR) is required and must be filed for public and agency review (Municipal Engineers Association, 2015).

For the purposes of this document, The Meadoway ESR is being undertaken as a Municipal Class (Schedule C) EA in accordance with the requirements of a Municipal Class EA (MCEA) process.

The Class EA planning process consists of five phases (please also see Figure 2-1):

- **Phase 1**: Identify the problem (deficiency) or opportunity;
- **Phase 2**: Identify alternative solutions to address the problem or opportunity by taking into consideration the existing environment. Establish a preferred solution considering public and review agency input;
- **Phase 3:** Examine alternative methods of implementing the preferred solution, based upon the existing environment, public and review agency input, anticipated environmental effects, and methods of minimizing negative effects and maximizing positive effects;
- **Phase 4**: Document the project rationale, planning, design, and consultation process of the project and include it with the ESR. The document is placed on public record for a 45-day review period; and,
- **Phase 5**: Involves details, preparation, and completion of contract drawings and documents, construction, operations and appropriate monitoring and is not part of this study (Municipal Engineers Association, 2015).

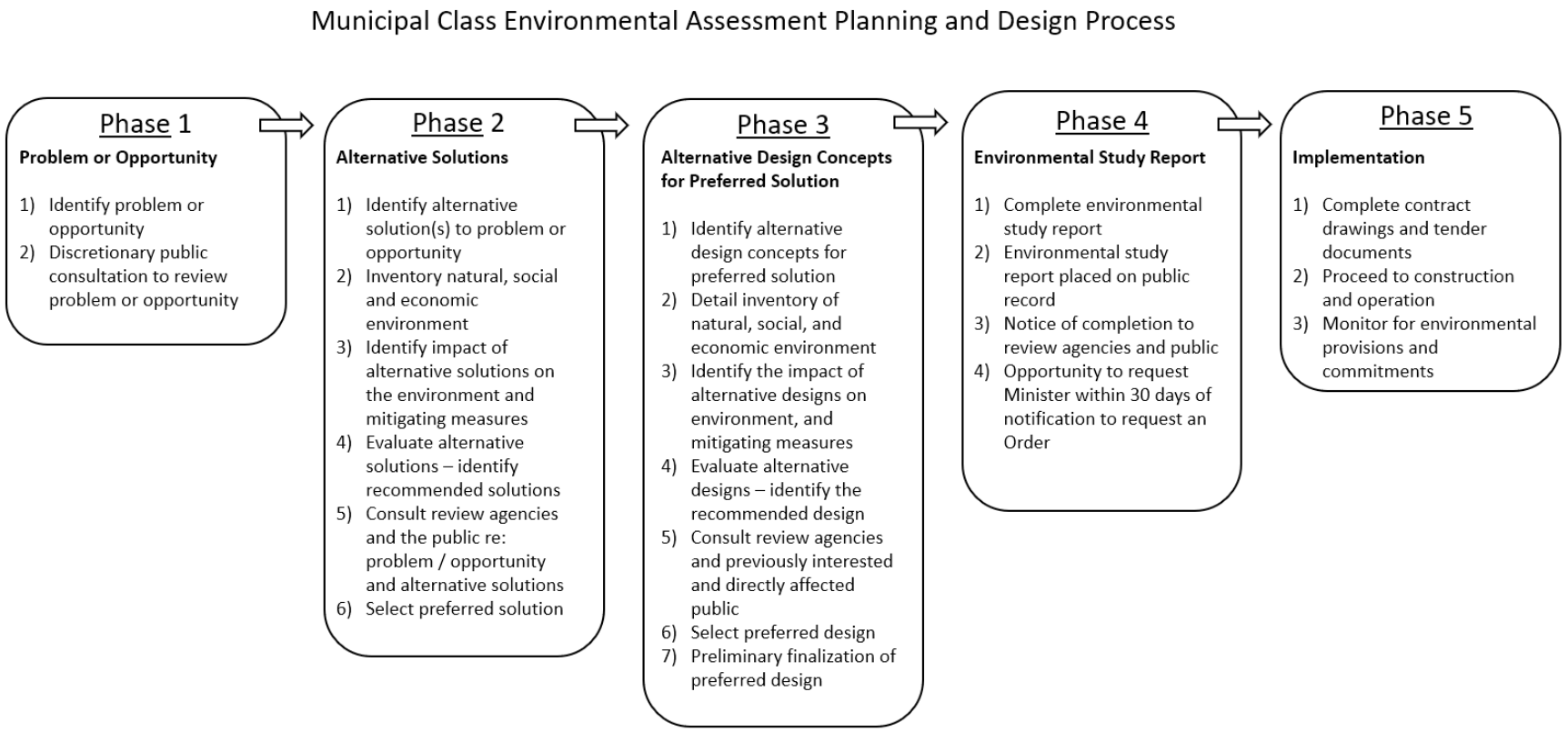

Figure 2-1. MCEA planning and design process (Source: Modified from Municipal Engineers Association, 2015)

2.2 Provincial Secondary Land Use Program

As a linear public use proposed on hydro corridor lands, The Meadoway falls within the Provincial Secondary Land Use Program (PSLUP) administered jointly by IO and HONI. The PSLUP operates based on a series of public use principles, which give priority to public uses over private ones on hydro corridor lands while considering the primary purpose of electricity transmission and distribution. This includes making sure all secondary land uses are compatible with HONI's existing and planned transmission and distribution installations from both a safety and overall operations/technical perspective.

The City of Toronto, in coordination with TRCA, will work closely with HONI in the preparation and submission of all technical materials required for the PSLUP.

2.3 Canadian Environmental Assessment Act

Municipal projects may be subject to the requirements of the Canadian Environmental Assessment Act (CEAA). CEAA regulations establish the legislative framework for a federal EA. A federal EA under the CEAA applies to specific projects that are described in the Regulations Designating Physical Activities (RDPA) or if the project is categorized as a 'designated project' by the federal Minister of the Environment and Climate Change Canada (Government of Canada, 2018).

For the purposes of this project, no federal EA is required according to the RDPA; however, the CEAA may potentially be triggered should the project require authorization under the federal Species at Risk Act or other federal permits and/or approvals (Government of Canada, 2018).

2.4 Environmental Study Report and Part II Order

An ESR is a traceable record of the proponents planning and decision-making process as it pertains to the project in question. An ESR generally includes: a description of the problem or opportunity and other project background information; rationale in the selection of the preferred solution, as well as preferred design concepts; mitigation and monitoring measures proposed to minimize or avoid potential environmental effects; and, a description of the consultation process and any concerns raised by the public or review agencies (Municipal Engineers Association, 2015).

As per the MCEA 2015 requirements, The Meadoway Class EA ESR has been prepared to include the project activities, correspondence, consultation, planning, and decision-making processes up to and including Phase 4 of the MCEA process. Members of the public, Indigenous communities, stakeholders, and government agencies were provided an opportunity to review, examine and provide feedback on the project's findings at each phase of the process. The consultation and engagement process has been documented in greater detail within Chapter 3 and Appendix A of this Class EA.

The Meadoway Class EA has been made available to the public, Indigenous communities, stakeholders, and government agencies for a review period in which written comments and/or questions pertaining to the proposed project can be provided digitally or in writing to TRCA. A Notice of Completion will be released to announce the commencement of the review period. Please address comments and/or

questions related to this project to the contact information provided below and title your correspondence as “The Meadoway Class EA – Comment on ESR”.

Contact: Corey Wells Project Manager, Project Management Services Project Management Office, Corporate Services Toronto and Region Conservation Authority	**Address:** 101 Exchange Avenue, Vaughan, ON L4K 5R6 **Email:** info@themeadoway.ca

A Part II Order can be requested to address outstanding issues with a project that have not been resolved in a Class EA process. Individuals can make a Part II Order request during the specified review period as well as after the proponent issues the Notice of Completion. In order to make a Part II Order request, a request form can be downloaded from the Ministry of Environment, Conservation, and Parks (MECP) website.

All completed Part II Order Request Forms should be sent to the Minister of MECP, the Director of Environmental Assessment and Permission Branch, as well as the project proponent (TRCA).

Minister
Ministry of the Environment, Conservation and Parks
Floor 11
77 Wellesley Street West
Toronto ON M7A 2T5
Minister.mecp@ontario.ca

Director, Environmental Assessment and Permissions Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto ON M4V 1P5
enviropermissions@ontario.ca

3.0 CONSULTATION STRATEGY

Consultation is a critical feature of the Class EA process. It provides two-way communication between the proponent and affected and/or interested stakeholders (e.g., general public, Indigenous communities, local interest groups, non-government organizations, government agencies, and ministries) and allows them the opportunity to participate and/or be involved in decision-making throughout the EA process, thereby generating meaningful discourse. Consultation allows for the exchange of ideas and questions pertaining to the proposed project throughout the EA process.

The subchapters below provide an overview of the consultation undertaken as part of The Meadoway Class EA; detailed information can be found in Appendix A. Key groups discussed are the general public (via general correspondence or through Public Information Centres (PIC)), Community Liaison Committee (CLC), Indigenous communities, Technical Advisory Committee (TAC), key stakeholders, politicians, and review agencies.

3.1 Public Consultation

In accordance with the MCEA 2015 EA consultation requirements, the following summary outlines key public consultation activities undertaken throughout the four Class EA phases (Table 3-1).

Table 3-1. Public consultation phases

Class EA Phase	Public Consultation Mechanisms Used
Phase 1 October 2018 to February 2019	• Public Notice of Commencement • CLC Meeting #1
Phase 2 March 2019 to June 2019	• PIC #1 and #2 • Public notifications for PIC #1 and #2 • CLC Meetings #2 and #3
Phase 3 July 2019 to October 2019	• PIC #3 • Public notification for PIC #3 • CLC #4 Meeting
Phase 4 November 2019 to December 2019	• Public Notice of Completion and 30-day review period

3.1.1 Consultation Mechanisms

There are several mechanisms proponents can follow to meet the mandatory public consultation requirements set forth for an EA process. For The Meadoway Class EA, the project team used several mechanisms that provided for meaningful engagement throughout the duration of the project (see Table 3-2).

Table 3-2. Summary of consultation mechanisms

Activity	Description
Community Liaison Committee	Four CLC meetings were held throughout the project. Each meeting included: • Presentations by the project and consultant teams • Question and answer period • Handout materials and workbooks • Seven-day review period for additional comment following meeting
Public Information Centre	Three PICs were held throughout the project. Each PIC included: • Display panels • Presentation and discussion (at PIC #1 and #3) • Handout materials (at PIC #1 and #3) • Registration table • Comment forms (at PIC #1 and #3) • Question and answer period with the project and consultant teams • Direct interaction between the public and the project and consultant teams • Interactive map display • Interactive restoration and education walks (at PIC #2) • Two-week review period for additional comment following meeting
Project Website	A website developed at the onset of the project maintained by TRCA (www.themeadoway.ca). The website included: • Project updates • FAQs • Visualization toolkit • Community and education learning • Restoration components • Notices • Event calendar
Frequently Asked Questions (FAQs)	A FAQ document was developed during Phase 1 in response to common questions heard from the CLC and other stakeholders. This document was made available on the project website and updated as required based on new information and/or questions received.
Notifications	Formal notices were used to inform members of the public, Indigenous communities, stakeholders, local politicians, and review agencies at key stages of the project. Notifications were used to advertise the Notice of Commencement, PICs, and Notice of Completion. Notifications were distributed using different mechanisms as required by the Class EA process and included: • Advertisements in the Scarborough and North York Mirror Newspapers • Local libraries and community centres • Emails • Mailing list • Social media (e.g., Twitter, Facebook)
Mailing List	A mailing listserv was created in which any person could register and receive project updates and notifications throughout the duration of the project. The mailing list was populated through a voluntary sign-up at public events, as well as through the project website.
Email Account	An email account was created for the project (info@themeadoway.ca) to provide an opportunity to submit questions and/or comments from members of the public.

3.2 Community Liaison Committee

To facilitate ongoing stakeholder involvement at the planning level, a CLC comprised of stakeholder representatives, community groups, and residents was formed. The purpose of the CLC was to assist TRCA in obtaining public and stakeholder input concerning the planning and design process for The Meadoway Class EA. The primary role of each member was to review and provide feedback throughout the planning process and assist in building consensus on The Meadoway's guiding principles (see Chapter 4.4).

For a list of CLC members and related materials, please see Appendix A.

3.2.1 Invitation and Information Package

The invitation and information package were sent to potential CLC members on October 15, 2018. The package included a formal letter of invitation and an information package that contained a project backgrounder and Terms of Reference (ToR). Invitees were asked to R.S.V.P. their interest to participate by email on or before October 31, 2018.

The ToR detailed the purpose and objectives of the CLC, as well as identified member requirements and responsibilities, meeting format, and agreement to participate. For the CLC invitation and information package including the ToR, please refer to Appendix A.

It was originally anticipated the CLC would meet three times throughout the project; however, given the level of input required to review project materials, the CLC met four times during the Class EA process (please refer to Table 3-3 below).

Table 3-3. CLC meeting overview

Meeting	Location	Date
CLC Meeting #1	Centennial College Event Centre (Progress Campus)	December 6, 2018
CLC Meeting #2	Centennial College (Ashtonbee Campus)	March 28, 2019
CLC Meeting #3	St. Richard Catholic School	June 11, 2019
CLC Meeting #4	Scarborough Civic Centre	October 2, 2019

Every effort was made to distribute CLC meetings evenly across the project study area. Materials were circulated at each meeting and digital copies were provided via an online file sharing account. Materials included presentations, meeting notes, and handouts for all CLC members regardless of their meeting attendance. Materials circulated for each meeting can be reviewed within Appendix A.

3.3 Indigenous Communities

Prior to the delivery of any notifications, the Ministry of the Environment, Conservation, and Parks (MECP) was approached for advice and information on the Indigenous communities that should be contacted during the Indigenous Engagement process. Additional Indigenous communities were also considered, including those nations who have previously expressed interest in TRCA projects.

The following communities were engaged:

- Curve Lake First Nation;
- Hiawatha First Nation;
- Huron-Wendat Nation;
- Mississaugas of Alderville First Nation;
- Mississaugas of the Credit First Nation;
- Mississaugas of Scugog Island First Nation; and,
- Williams Treaties First Nations Coordinator.

The project is located within the Traditional Territories and/or Treaty Lands of the above identified communities. They were engaged on this project to provide feedback on possible impacts on Traditional Land Uses, Aboriginal Rights, and/or Treaty Rights. There are no Indigenous reserves or communities within the project limits. Documentation of Indigenous engagement is provided in Appendix A.

3.4 Technical Advisory Committee

A TAC comprised of key stakeholders was formed for The Meadoway Class EA. For a full list of TAC members, refer to Appendix A. The purpose of the TAC was to provide critical feedback on working concepts, constraints, design solutions, and other material related to the project.

The TAC met a total of three times at major project milestones throughout the duration of the Class EA (Table 3-4). Each meeting included a presentation from the project and consultant teams, open discussion, review packages, and handout materials.

A full overview of each TAC, including presentations and review materials, can be found in Appendix A.

Table 3-4. TAC meeting overview

Meeting	Date
TAC Meeting #1	March 20, 2019
TAC Meeting #2	May 23, 2019
TAC Meeting #3	September 12, 2019

3.5 Key Stakeholders

A list of key stakeholders was identified whose projects and planning initiatives overlapped and/or were concurrent with The Meadoway Class EA:

- Crosslinx Transit Solutions - Eglinton Crosstown Light Rail Transit (LRT);
- City of Toronto – Golden Mile Secondary Plan and other projects;
- Metrolinx – Stouffville Expansion;
- Toronto Transit Commission (TTC) – Scarborough Subway Expansion;
- University of Toronto Scarborough (UTSC);

- HONI; and,
- Parks Canada - Rouge National Urban Park.

These key stakeholders were kept apprised of the project in the early stages. The following engagement mechanisms were used:

- Formal letters;
- Email updates;
- Conference calls; and,
- In person meetings.

Please refer to Appendix A for additional information and materials.

3.6 Local Politicians

All affected councillors, Members of Parliament (MPs) and Members of Provincial Parliament (MPPs) were kept apprised of the project and its progress throughout the duration of the Class EA.

Councillors, MPs, and MPPs were issued key project notices and invitations to all PICs, and opportunities for in-person project updates were provided. For a complete list of councillors, MPs, and MPPs engaged throughout the Class EA process and related materials, please refer to Appendix A.
It is noted that correspondence with MPs and MPPs during the 2019 federal election was subject to TRCA's Administrative By-law 1.7. As such, MP's and MPP's were not extended invitations to the final PIC#3 held in October of 2019.

3.7 Review Agencies

At a minimum, review agencies, such as government organizations, ministries, or public authorities, are to be informed at the mandatory points of contact (Municipal Engineers Association, 2015). The list of review agencies is attached in Appendix A.

4.0 PLANNING CONTEXT AND OPPORTUNITY STATEMENT (PHASE 1)

The first phase of the Class EA identifies and defines the existing conditions within the project area and results in a well-defined statement of the problem or opportunity that will be addressed via the Class EA process.

4.1 Problem and Opportunities Statement

Ontario's population is projected to grow by 38%, or approximately 5.4 million, over the next 24 years (Ministry of Finance, 2019). By 2046, over 50% of the provincial population will call the GTA home, which itself is projected to experience a population increase of just over 40% over the same period. Greater traffic volumes each year result in worsening road congestion and prolonged commute times, which contribute to greenhouse gas emissions and urban pollution in the form of smog. While the GTA ranks higher than many major North American cities in terms of parkland and greenspace availability, continuing

to provide for access to healthy outdoor amenities for all communities will become an ever-increasing challenge. As the City's population grows and urbanization continues, so too will the need to provide for alternative forms of transportation, as well as fair and balanced access to well-planned recreational services and green infrastructure.

New opportunities for developing ecologically diverse and publicly accessible greenspace and trail systems are few and far between in large, rapidly growing cities. However, hydro corridors have been recognized in recent years as untapped and underutilized open spaces, with significant potential for transforming the form and function of the urban setting they traverse. Several pilot studies have tested the feasibility of re-imagining hydro corridors as active transportation networks and enhanced greenspaces, including the popular SCBT, which transformed a 3.5 km section of the Gatineau Hydro Corridor into a naturalized habitat and multi-use trail. Building off lessons learned from these pilot projects, the implementation of a multi-use trail across a 16 km stretch of the hydro corridor will function as an east to west "link", connecting fragmented greenspaces and communities across eastern Toronto via an ecologically sustainable and active transportation network.

4.2 Identified Existing Problems and Opportunities

The following problems have been identified for The Meadoway Class EA RSA:

- Multi-use trail infrastructure connecting existing trails and communities is lacking within the LSA;
- The lack of a fully connected multi-use trail network across the LSA forces trail users to detour off-corridor, usually along busy roads or other suggested routes to reconnect to the existing trail network;
- Busy arterial roads and other off-corridor detours within the LSA limit the availability of safe active transportation routes;
- While several trails exist throughout the RSA (e.g., the Pan Am Path), including within the hydro corridor itself (e.g., the SCBT), they lack continuity and connectivity with the rest of the City's major multi-use trail network;
- Mid-trail access points (e.g., parking lots or other entrance features) to the existing trail network are limited within LSA;
- Some sections of the existing multi-use trail network are old and in need of resurfacing, repair, and realignment;
- Unmanaged and unauthorized use of informal trails and access points throughout the LSA pose safety risks to users and raise concern to land and utility owners;
- Safe access to and crossing of the various river valley systems that traverse the LSA are limited or non-existent; and,
- Access to and enjoyment of healthy, ecologically diverse greenspace that contributes to the City's climate resiliency are limited within the RSA.

The following opportunities have been identified for The Meadoway Class EA RSA:

- Provide a complete east-to-west multi-use trail connection between downtown Toronto and Rouge National Urban Park, while linking numerous local and regional trail systems and communities along the way;
- Develop a fully accessible active transportation network and naturalized greenspace for a variety of trail users to enjoy, including the elderly and those with mobility issues;
- Minimize the interaction between trail users and road vehicles by limiting off-corridor detours and connections to the greatest extent possible, thus improving user safety;
- Increase connections for multi-modal transportation options, such as the Eglington Crosstown LRT and the Scarborough Subway Extension;
- Convert and restore low quality grassland within the hydro corridor into healthy, ecologically diverse habitats, such as meadow and wetland;
- Provide for enhanced opportunities for the public to access, enjoy, and learn about the natural environment;
- Facilitate opportunities for improving community connection to the local environment, such as through the creation of dedicated garden and urban agricultural plots;
- Aligns with the City's TransformTO Climate Action Strategy through the development and improvement of active transportation networks, providing greater access to alternative commuting modes and reducing greenhouse gas emissions; and,
- Build on existing City of Toronto, TRCA, and Province of Ontario planning initiatives related to trail building.

4.3 Problem and Opportunity Statement

A complete active transportation system linking eastern Toronto to the downtown core is missing from the City's existing major multi-use trail network. Opportunities to expand and construct new multi-use trail networks are limited in urbanized environments; however, hydro corridors have the potential to be repurposed as accessible, ecologically diverse greenspaces that permit active trail use. The Meadoway will revitalize and restore the existing hydro corridor and establish a full connection between downtown Toronto and Rouge National Urban Park via an accessible multi-use trail network.

4.4 Guiding Principles

The development and selection of the preferred trail alternative will be guided by the following six main guiding principles:

Connections

- To provide a complete east-to-west multi-use trail network linking downtown Toronto to Rouge National Urban Park; and,
- To re-establish a portion of the naturalized east-to-west connections that once existed between the regions north-south oriented ravine systems.

Natural Environment & Education

- To increase access for a wide range of users to explore, learn, and enjoy urban greenspaces;
- To restore and enhance naturalized greenspaces through the creation of meadow habitat and provide for ecological diversity within the urban setting; and,
- To function as a platform for stewardship, education, community outreach, and research on natural habitats in the urban environment, integrating opportunities for habitat creation, "citizen science", student/community member action projects, and educator training, to name a few.

Recreation

- To develop safe and accessible trail and outdoor recreational opportunities for a wide range of users and communities.

Community and Public Realm

- To facilitate opportunities for improving connectivity within and between communities, as well as to the local environment; and,
- Provide for a range of public spaces for people to gather and socialize, support community events and enable artistic expression.

Transportation

- To provide greater opportunity for and access to alternative modes of transportation in the GTA; and,
- To advance the integration of multi-modal transportation options.

Blueprint for Revitalization

- To serve as a model for how to successfully revitalize and repurpose hydro corridors across the GTA and abroad.

5.0 EXISTING CONDITIONS

5.1 Overview

The existing conditions in the LSA and RSA shown on Figure 5-1 provide context for the proposed multi-use trail, as well as the necessary information to understand and assess which environmental components (physical, social, and economic) may be positively or negatively impacted.

The LSA, defined primarily by the pre-existing hydro corridor footprint, is the geographic area where direct effects of the project may occur. The RSA is a larger geographical area where there may be opportunities to connect to other existing or planned recreation and community initiatives and where indirect effects of the project may occur. The RSA ranges in distance from the hydro corridor and is based on input provided by technical experts and stakeholders.

The existing conditions are intended to help in the evaluation and selection of preferred alternative trail alignments and trail designs throughout the Class EA process. Areas of focus include:

- Transportation and existing trails;
- Physical environment;
- Biological environment;
- Cultural environment; and,
- Socio-economic environment.

5.2 Site Background

Historically, the lands that now comprise The Meadoway were forested until colonial times when they were cleared for settlement and agriculture. By the mid-19th century very little forest remained. The hydro corridor was first constructed across the then-agricultural landscape in the 1920s (Kettel, 2016). Starting in the 1950s at the west end of The Meadoway, the surrounding agricultural lands were urbanized. The urban envelope reached Morningside Avenue by the late 1970s. Portions of The Meadoway's eastern extent, particularly near Highway 401 east of Morningside Avenue, is still underdeveloped.

From the 1950s until 2012, The Meadoway was mostly maintained in manicured condition, with a few small landscaped trees planted for ornamental purposes. In 2012, meadow restoration began in the area east of McCowan Road. The plan is to expand this conversion of the hydro corridor into meadow habitat, with patches of shrub nodes placed throughout. Meadow, savannah and woodland type ecosystems would have been historically present in small areas along the Scarborough waterfront (e.g., East Point Park and the Toronto Hunt Club), but probably not on the lands that are now The Meadoway. However, technical restrictions related to the overlying transmission lines precludes reforestation of the site and provides an opportunity to provide a diverse open meadow habitat.

In addition to functioning as an active hydro corridor, current land uses include various recreational activities. A multi-use paved trail extends along the western and central Meadoway, although it is discontinuous. Hiking, cycling, and dog-walking are the main uses. There is also a formal off-leash dog area in The Meadoway at Thomson Memorial Park (east of Brimley Road). A few sports fields impinge on The Meadoway, notably at Wexford Park (between Pharmacy and Warden Avenues) and on the east side of Bellamy Road. Community garden plots can be found in The Meadoway west of Victoria Park Avenue, west of Kennedy Road, on the south side of Thomson Memorial Park, and west of Markham Road.

5.3 Transportation and Trails

5.3.1 Existing Multi-use Trails

The LSA and RSA contain a network of both paved and granular trails that are used by pedestrians, runners, cyclists, in-line skaters and others. There are also natural environment trails which create the informal natural-surface trail system through Toronto’s ravines and parklands (City of Toronto, 2013). These trails are frequented by hikers, dog walkers, camp groups, nature enthusiasts, mountain bikers, and

those looking for respite from the urban environment. The major "multi-use" trails in the LSA and RSA, defined as asphalt surfaced facilities separated from the roadway, are described below and shown on Figure 5-1.

Gatineau Corridor Trail

The Gatineau Corridor Trail is a non-continuous multi-use trail located primarily within the Gatineau Hydro Corridor. Approximately 7 km were constructed, and 3 km were upgraded in 2011. The Gatineau Corridor Trail runs easterly from Victoria Park Avenue to Orton Park Road and continues from Conlins Roads to Meadowvale Road. In 2018, the trail was extended from Victoria Park Avenue to Eglinton Avenue East. The trail connections between Eglinton Avenue East and Bermondsey will ultimately connect to the East Don Trail (City of Toronto, 2018a). These connections serve to fill in gaps in the future Meadoway multi-use trail system, which once complete will provide a continuous trail route across Scarborough from the Don Valley to Rouge National Urban Park. This trail is part of the TransCanada Trail network that runs through the City of Toronto.

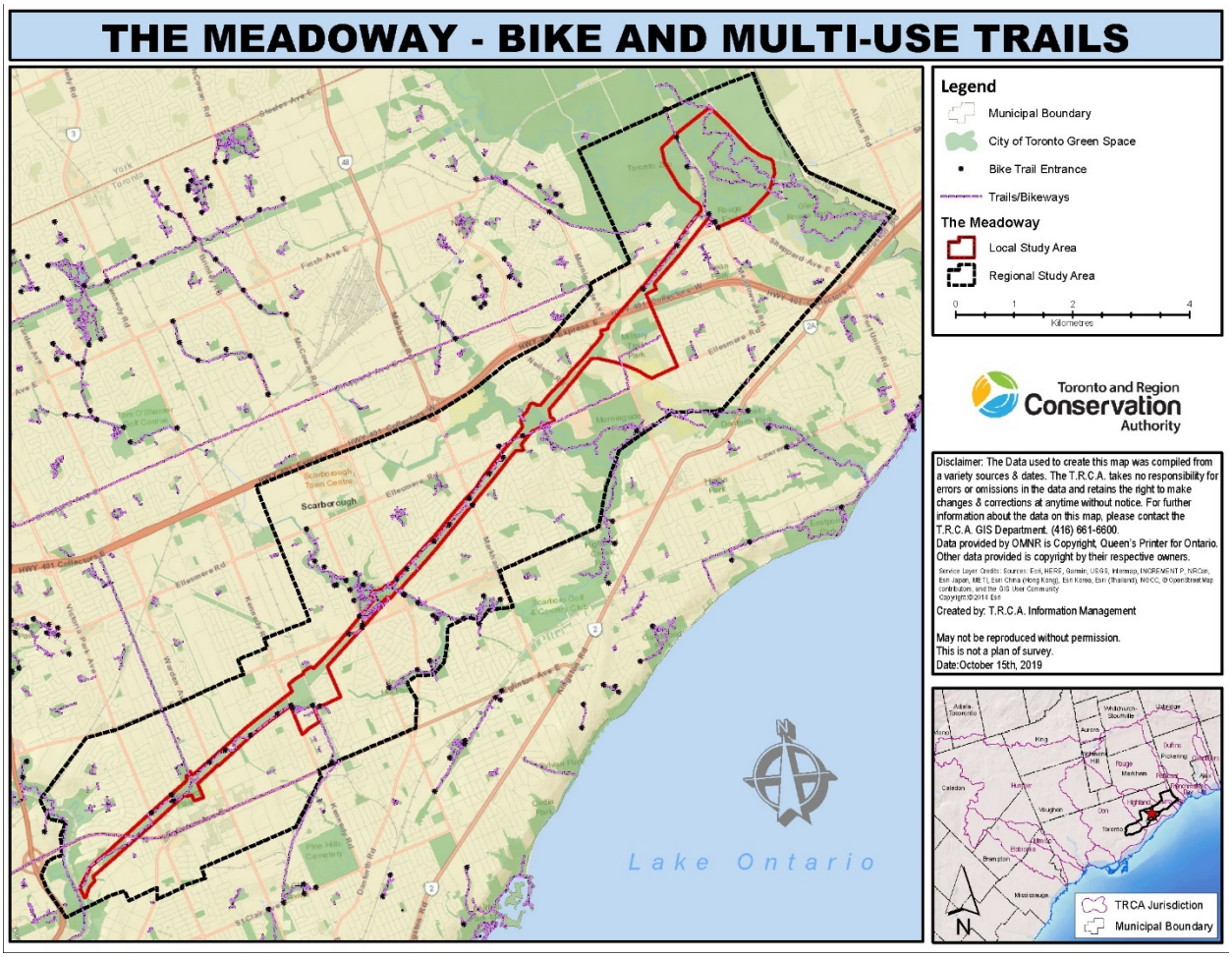

Figure 5-1. Bicycle and multi-use trail routes throughout The Meadoway RSA and LSA

Pan Am Path

The Pan Am Path (the Path) is a multi-use path that connects trails from Brampton to Pickering and is a legacy project of the 2015 Pan Am Games. The Path connects over 80 km of trails across Toronto. Within the LSA, the Pan Am Path runs along the Gatineau Corridor Trail (with on-road connections along Alder Road, Jack Goodland Park, and Orton Park) and follows Highland Creek to the Kingston overpass. The Path has access points within the LSA and RSA at Pharmacy Avenue, Jack Goodland Park, Thomson Memorial Park, Morningside Park, Colonel Danforth Park, and East Point Park. The path links diverse neighbourhoods and has brought together residents, organizations, artists and more to create the vibrant public spaces that reflect the communities along the route.

Highland Creek Trail

The Highland Creek multi-use trail is a 15.9 km loop within the LSA and RSA. The trail runs through Morningside Park, Colonel Danforth Park, and along a forest corridor near Lake Ontario. The trail goes through parts of the Highland and Morningside forests, both of which are recognized as Environmentally Significant Areas (ESA), and are home to diverse wildlife like white-tailed deer and red foxes (TRCA, 2016). A section of the trail is under construction near Ellesmere Road at Military Trail and Orton Park Road. A future section of this trail, known as the Upper Highland Creek Pan Am Path (Phase 1), intersects with The Meadoway near Ellesmere Road at Military Trail and Orton Park and is expected to be completed by 2020-2021.

Rouge National Urban Park Trail Network

Rouge National Urban Park contains an extensive park trail system that provides for sustainable four-season use. Linking to and from The Meadoway at Meadowvale Road, users can connect to park welcome areas, campgrounds, nearby attractions (e.g., Beare Hill Park and Locust Hill), as well as regional trail and cycling networks such as the Waterfront Trail, The Great Trail, Oak Ridge's Trail, and the Greenbelt Route.

5.3.2 Cycling Routes

Cycling routes include on-street dedicated cycling lanes or signed shared roadways. The Cycling Network 10 Year Plan sets out to connect, grow, and renew infrastructure for Toronto's cycling routes from 2016 to 2025. The Plan identifies 525 km of new infrastructure across the City including: 280 km of bicycle lanes along busy streets, 55 km of sidewalk-level boulevard trails, and 190 km of cycling routes along quiet streets (City of Toronto, 2016).

Existing Cycling Routes

From west to east, cycling routes currently intersect with the LSA at Victoria Park Avenue, Brimorton Drive, Conlins Road, and Sheppard Avenue East.

In the RSA, there are cycling routes along Sloane Avenue, Brimorton Drive, Confederation Drive, Givendale Road, Ranstone Gardens, Orton Park Road, Bald Eagle Avenue, Conlins Road, Shepard Avenue East, Rouge River, Pan Am Drive, and Port Union Road.

Proposed Cycling Routes

There are several proposed cycling routes in the LSA. From west to east these proposed routes intersect with The Meadoway corridor along Bermondsey Road, Eglinton Avenue East, Victoria Park Avenue, Midland Avenue, and Morningside Avenue.

Within the RSA, there are proposed cycling routes along the following streets: Railside Road, Curlew Drive, Lynvalley Crescent, Dewey Drive, Eglinton Avenue East, Green Belt Drive, Linkwood Lane, Doris Drive, St. Clair Avenue East, Victoria Park Avenue, Sloane Avenue, Midland Avenue, Dorcot Avenue, Progress Avenue, Borough Drive, Ellesmere Road, Bellamy Road North, Sheppard Avenue East, Malvern Street, McLevin Avenue, Morningside Avenue, Conlins Road, and Kingston Road. Several of the proposed cycling routes are extensions of existing routes.

5.3.3 Pedestrian Access Through the Corridor

Pedestrian activity is important for any community because it relates to human health, community building, public safety and quality of life. Efforts to improve the pedestrian conditions across the City are ongoing with the Toronto Walking Strategy, a blueprint for making Toronto a great walking city, and policies in the Toronto Official Plan that envision Toronto as “a city with attractive, tree-lined streets with shops and housing that are made for walking” (City of Toronto, 2015b). Pedestrian traffic in the LSA and RSA is associated with people going to local destinations, as well as utilizing the multi-use and informal trails and sidewalks along local road networks.

Within the LSA there are currently 32 road crossings, including 16 signalized pedestrian crossings. Table 5-1 provides a characterization of pedestrian access across the corridor within the LSA. These crossings are also shown on Figure 5-2**.**

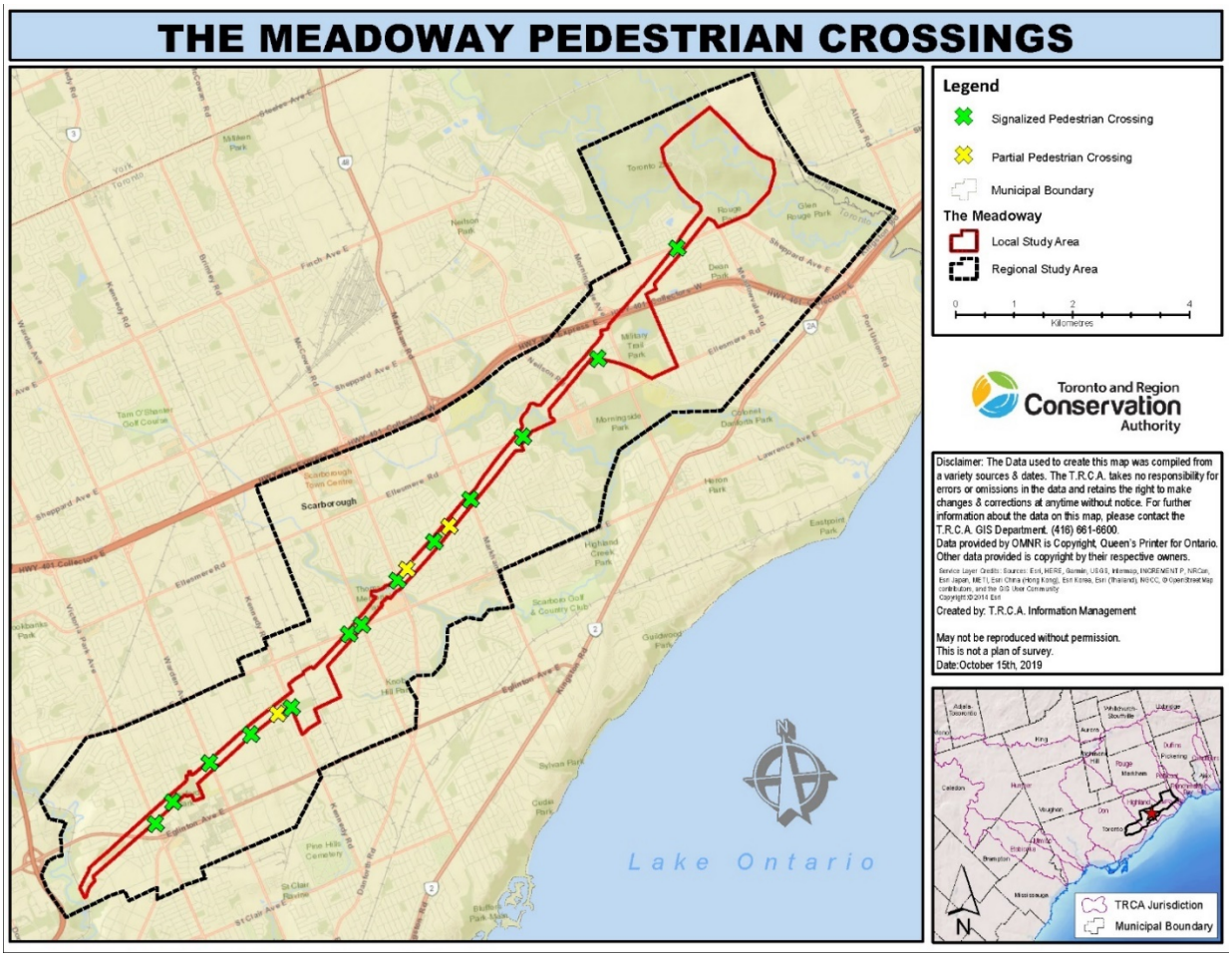

Figure 5-2. Pedestrian crossings within the LSA

Table 5-1. Characterization of roads and pedestrian access points to the hydro corridor within the LSA

Roads that Intersect with The Meadoway (from west to east)	Sidewalks	Type of Crossing Infrastructure	Lanes of Traffic
Bermondsey Road	Yes	No crossing	4
Eglinton Avenue East	Yes	No crossing	6
Victoria Park Avenue	Yes	Signalized pedestrian crosswalk	4
Pharmacy Avenue	Yes	Signalized pedestrian crosswalk	4
Warden Avenue	Yes	Signalized pedestrian crosswalk	5
Crockford Avenue	No	Marked as a crossing with road narrowing and pavement change; no lights	2
Birchmount Road	Yes	Signalized intersection	5
Givendale Road	No	Marked as a crossing; no lights	2
Kennedy Road	Yes	Signalized intersection immediately south of corridor at Jack Goodlad Park	5

Roads that Intersect with The Meadoway (from west to east)	Sidewalks	Type of Crossing Infrastructure	Lanes of Traffic
Rail Corridor	No	Pedestrian bridge at Tara Avenue south of corridor	N/A
Midland Avenue	Yes	No crossing within project study area; signalized intersection immediately north	4
Marcos Road	Yes	Stop sign at Lawrence allow for pedestrian crossing	2
Lawrence Avenue East	Yes	Signalized intersection at Lawrence and Brimley	7
Brimley Road	Yes	Signalized intersection at Lawrence and Brimley	5
St. Andrews Road	Yes	Signalized intersection	2
McCowan Road	Yes	Signalized intersection	5
Benshire Drive	Yes (one side only)	Marked as a crossing with pavement change; limited signage; no lights	2
Bellamy Road North	Yes	Signalized pedestrian crosswalk	4
Daventry Road	Yes	Marked as a crossing with pavement change; limited signage; no lights	2
Markham Road	Yes	Signalized pedestrian crosswalk	5
Brimorton Drive	Yes	No crossing	2
Scarborough Golf Club Road	Yes	No crossing	4
Ellesmere Road	Yes	Signalized intersection	6
Orton Park Road/Military Trail	Yes/no	Signalized intersection	3/2
Neilson Road	Yes	No crossing	4
Military Trail	Yes	No crossing (yellow crossing lights immediately south of project study area)	2
Morningside Avenue	West side only	No crossing	6 plus Highway 401 on ramp
Highway 401	No	No crossing	10+
Conlins Road (north of Hwy 401)	Yes	No crossing	4
Dean Park Road	Yes	Signalized intersection at Dean Park and Sheppard	2
Sheppard Avenue East	Yes	Signalized intersection at Dean Park and Sheppard	5
Meadowvale Road	West side only	No crossing	4 (plus lane for Toronto Zoo)

5.3.4 Public Transit

Public transit within the RSA is provided by TTC Bus Service, Subway Line 2 and Line 3, GO Transit, and VIA Rail.

The Eglinton Crosstown LRT, which will open as Line 5 Eglinton in 2021, will service communities along Eglinton Avenue from Mount Dennis to Kennedy Station. This Metrolinx project is an $8.4 billion investment and will run at surface with 8 out of the 25 new stop locations within the RSA, including Sloane, O'Connor, Pharmacy, Hakimi Lebovic, Golden Mile, Birchmount, Ionview, and Kennedy.

The Eglinton East LRT, once approved, will be an easterly extension of the Eglinton Crosstown LRT and will run from Kennedy station along Eglinton Avenue East to Kingston Road, north along Morningside, through UTSC and up to Malvern Town Centre. This LRT line will serve thousands of residents and employers and play a key role in the Scarborough Rapid Transit (RT) Plan. Of note is the proposed LRT stop at within the LSA at the UTSC. This stop presents partnership opportunities with UTSC, which has a Campus Master Plan that includes goals related to a renewed relationship with ravine lands and improved transportation linkages (UTSC, 2011).

5.3.5 Vehicular and Rail Transportation

Vehicular Network

The road network within the LSA includes major arterial, minor arterial, collector, and local roads. A provincial expressway, Highway 401, is also present in the northeastern section of the project study area near Conlins Road. Table 5-2 categorizes the streets that intersect The Meadoway corridor.

Table 5-2. Overview of road types found within the LSA (Source: City of Toronto, 2013)

Road Classification	Characteristics	Local Study Area
Provincial Expressway	• Traffic movement primary consideration; no property access • >40,000 daily motor vehicle volume (both directions) • Minimum of four lanes • Legal speed limit between 80-100km/h • Pedestrians prohibited • Cyclists prohibited	• Macdonald Cartier Freeway (Highway 401)
Major Arterial	• Traffic movement primary consideration; subject to property access control • >20,000 daily motor vehicle volume (both directions) • Minimum of four lanes • Legal speed limit between 50-60km/h • Sidewalks on both sides • Accommodate cyclists with a wide curb lane or special facility	• Eglinton Avenue East • Victoria Park Avenue • Warden Avenue • Birchmount Road • Kennedy Road • Midland Avenue • Lawrence Avenue East • Brimley Road • McCowan Road • Markham Road • Ellesmere Road • Morningside Avenue • Sheppard Avenue East
Minor Arterial	• Traffic movement primary consideration; some property access control • 8,000 to 20,000 daily motor vehicle volume (both directions) • Minimum of two lanes • Legal speed limit between 40-60km/h • Sidewalks on both sides • Accommodate cyclists with a wide curb lane or special facility	• Bermondsey Road • Pharmacy Avenue • Bellamy Road • Scarborough Golf Club Road • Orton Park Road • Neilson Road
Collector	• Traffic movement and property access of equal importance • 2,500 to 8,000 daily motor vehicle volume (both directions) • One (one-way streets) or two • Legal speed limit between 40-50km/h • Sidewalks on both sides • Accommodate cyclists with a special facility	• Crockford Boulevard • Brimorton Drive • Military Trail • Conlins Road • Dean Park Road • Meadowvale Road

As part of the Ministry of Transportation (MTO) rehabilitation of Highway 401, a Class EA study was undertaken for the eastbound core and collector lanes between Neilson Road and Whites Road, Durham Region. The purpose of the project is to rehabilitate the existing pavement surface, as well as ten bridges and two culverts, including the Morningside Avenue Underpass (Site 37-220) which falls within the LSA of

The Meadoway. Revisions to existing drainage structures and upgrading of underpass illumination and traffic signals are also part of this work. Construction is anticipated to be complete by Fall 2023.

Railway Activity

There are two rail corridors that intersect with the LSA.

The TTC Line 3 Scarborough runs north from Kennedy Station and heads east just south of Highway 401 with the terminal stop at McCowan Road. TTC Line 3 Scarborough has six stops in total: Kennedy, Lawrence East, Ellesmere, Midland, Scarborough Centre and McCowan. The LSA is situated in between the Kennedy and Lawrence East stops. According to TTC Operating Statistics, TTC Line 3 Scarborough carries 3,176,627 passengers each year (TTC, 2017).

There are two rail corridors that operate in the RSA. A Metrolinx rail corridor runs along the western border intersecting along the Don River. GO Transit Lakeshore East GO Train operates along the southern border of the RSA with stops located along Eglinton Avenue East at both Kennedy GO Station and Eglinton GO Station. The Lakeshore East Line has over 40,000 peak passengers on its two-way, all day service between Union Station and Oshawa and is the second busiest GO rail line (Metrolinx, 2018b).

In addition, there are three future transit plans for this area including SmartTrack, Scarborough Subway Extension and the Eglinton East LRT. SmartTrack refers to GO Expansion on the TTC/GO Stouffville line that will provide electrified train service and four new stations with transit connections. One of the proposed stations is located near Lawrence and Kennedy and will intersect with the LSA along Kennedy Road between Lawrence Avenue East and Eglinton Avenue East. It is anticipated that the number of weekly train users will increase by 400%, from 1,500 to 6,000 users per week. The expected year of completion for this project is 2025.

The Scarborough Subway Extension is a 7.8 km extension of Line 2 from Kennedy Station to McCowan Road/Sheppard Avenue. The three-stop extension will provide seamless travel for Scarborough residents heading into and out of the city with proposed stops at Lawrence East, Scarborough Town Centre, and McCowan Road/Sheppard Avenue.

The Eglinton East LRT is the easterly extension of the Eglinton Crosstown LRT from Kennedy Station along Eglinton Avenue East, Kingston Road and Morningside Avenue. The Eglinton East LRT will have up to 22 stops along approximately 15 km and serve over 40,000 people who live within walking distance of the route today. The proposed route would intersect with the LSA along Morningside Avenue between Military Trail and Highway 401.

5.4 Biological Inventory

In 2018, TRCA conducted a biological inventory of The Meadoway. The work was undertaken to assess the progress of the prairie restoration work that began in 2012, as well as to examine the existing natural cover and other potential areas for restoration. The natural system components assessed were vegetation communities, vascular plants (flora), birds, and frogs. Incidental observations of other fauna were also recorded. The information is of value for site management planning and regional biodiversity assessment.

This chapter represents an abridged version of the full terrestrial biological inventory report, which can be reviewed in Appendix B.

PSW, ANSI, and ESAs

Currently, there are no designated Provincially Significant Wetlands (PSW) or provincial Areas of Natural and Scientific Interest (ANSI) within The Meadoway; although the Rouge River Valley ANSI touches the northeastern end of the site. The Morningside Park Forest ESA crosses The Meadoway along the valley of the Milliken Branch of Highland Creek.

5.4.1 Landscape Analysis Regional Context

The 2013 ortho-photography shows that 26% of the land area in TRCA jurisdiction hosts natural cover, including 8% meadow. Historically, the region would have consisted of up to 95% forest cover with interspersed wetlands and very little meadow coverage; currently only 17.8% forest, successional habitat and wetland remains. Of the 74% non-natural cover, 48% is urban and 26% is rural/agricultural.

The regional analysis of habitat patches shows an average patch quality across TRCA jurisdiction of “fair” (L3) with an unbalanced distribution; forest and wetland cover are contained largely in the northern half of the TRCA jurisdiction, especially on the Oak Ridges Moraine. The existing natural system stands below the 30% quantity target set for the region (TRCA, 2007). Fauna Species of Concern are also largely restricted to the northern part of the jurisdiction and generally absent from the urban matrix.

5.4.2 Quantity of Natural Cover

The Meadoway spans three of TRCA’s nine watersheds. The majority of The Meadoway lies in the Highland Creek watershed (about 136 ha), while the western 70 ha is in the Don watershed. A small portion of the eastern end of The Meadoway (about 30 ha) is in the Rouge watershed. The whole project study area is 235.6 ha in size and contains 93.4 ha of natural habitat (i.e., forests, successional, meadow, wetland, and dynamic communities).

Approximately 40% of The Meadoway is currently natural cover. The remaining 60% (approximately 142.2 ha) is heavily managed: mostly manicured, with about 4 ha of community garden plots that are classified as agricultural. The total natural cover includes 13.8 ha of forest, 22.7 ha of successional, 4.1 ha of wetland, 1.5 ha aquatic, 2.9 ha dynamic and 48.4 ha meadow communities. Thus, over half of The Meadoway’s natural cover is meadow.

5.4.3 Quality of Natural Cover

The combination of size, shape, and matrix influence (i.e., influence of urban land use) yields a total score that provides an objective assessment of patch ecological potential; the potential to support species of regional conservation concern.

Most of The Meadoway's habitat receives a "poor" total score (L4). A few patches, mostly eastward, attain a "fair" total score (L3). The highest scores are found adjacent to Rouge National Urban Park and less-developed area near Highway 401; as well as associated with the Ellesmere Ravine and a couple of large restored meadow patches (approximately 8 ha) between McCowan Road and Ellesmere Avenue.

High scoring patches present the best potential for protecting/enhancing regional biodiversity. Site level decisions will determine the extent to which this potential is achieved. The ongoing Meadoway restoration projects that are converting manicured areas to meadow natural cover will increase the number, and size (and score) of habitat patches.

5.4.4 Vegetation Community Representation

The Meadoway has 74 different vegetation communities, three of which are found solely as an inclusion or complex within a larger community. Of the vegetation communities, forests, closely followed by successional are the most diverse (25 and 22 types, respectively). However, they cover a relatively small proportion of the natural cover (together 39%). Meadow communities, including the planted areas, take up 48.4 ha (52%) of the total natural cover. Wetland, aquatic, and dynamic (i.e., bluff, barren, bar) communities are relatively diverse but cover a tiny area (Table 5-3).

Table 5-3. Summary of vegetation communities in The Meadoway, 2018

Class	Number of Types	Total Area (hectares)	% of Natural Cover	Average Total Score (1–10 scale)	Average L-rank
Forest	25	13.8	15	2.9	L5
Successional	22	22.7	24	2.9	L5
Wetland	11	4.1	4	3.6	L4
Aquatic	2	1.5	2	2.8	L5
Dynamic	10	2.9	3	5.1	L3
Meadow	4	48.4	52	1.8	L5
Total	74	93.4	100	3.3	L4

Forest

Within The Meadoway, there are 12 natural forest vegetation types and 13 plantations that together occupy 13.8 ha and account for 15% of the total natural cover.

Natural forest stands are very restricted at The Meadoway because tall trees are not permitted to grow under the hydro transmission lines. They are found along some of the ravine corridors and in a couple of places where the boundary of the surveyed area includes patches of land immediately adjacent to the hydro lines but not under them (Figure 5-3).

Figure 5-3. Existing forest stands at the Milliken Branch of the Highland Creek

The only mature forest patches within The Meadoway are a Dry-Fresh Oak – Hardwood Deciduous Forest (FOD2-4) totaling 0.5 ha and a Dry-Fresh Sugar Maple – Norway Maple Deciduous Forest (FOD5-b) totaling 0.7 ha. The oak forest is in a small area of parkland on the north side of the hydro lines between Morningside Avenue and Military Trail. The maple forest is in a ravine leading to Morningside Park east of Neilson Road. However, there are extensive areas of mature forest in the ravine areas that are outside The Meadoway but connected to it, particularly in Morningside Park and along the Milliken Branch of Highland Creek. Wexford Woods, which lies north of the hydro lines between Pharmacy and Warden Avenues, is a tableland woodlot with old-growth characteristics, even though it is heavily disturbed by trails. Similarly, Lord Roberts Woods (never surveyed) lies a short distance south of The Meadoway, connected to it by the transportation right-of-way that includes the TTC/GO Stouffville rail corridor.

Some of the younger to mid-aged forests include Fresh-Moist White Cedar Coniferous Forest (FOC4-1), Dry-Fresh Poplar Deciduous Forest (FOD3-1), Fresh-Moist Poplar Deciduous Forest (FOD8-1), Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3), and Fresh-Moist Manitoba Maple Lowland Deciduous Forest (FOD7-a). These are characterized by species that are fast-growing and come back quickly after cutting (e.g., aspen, *Populus grandidentata* and *P. tremuloides*) and/or tend to attain relatively modest heights that don't interfere with the hydro transmission lines (e.g., white cedar, *Thuja occidentalis*). Overall, 1.8 ha is coniferous forest (all cedar), 0.2 ha is mixed forest, and 4.7 ha is deciduous forest. The cedar forests occupy northeast-facing slopes and a few bottomland areas along the Bendale and Milliken Branches of Highland Creek. Deciduous forests occur on southwest-facing slopes, riparian areas, and a few tableland locations.

The forest understorey varies according to age, topography, soil moisture, canopy composition and degree of disturbance. Most of the forest patches in The Meadoway are highly fragmented and the understorey is either sparse or has a high component of invasive species such as dog-strangling vine (*Cynanchum rossicum*). However, the small patches of upland forest west of Morningside Avenue have native sedges, wildflowers and shrubs. This is particularly true of the oak forest patch mentioned above. Plantations constitute 52% (7.2 ha) of The Meadoway's 13.8 ha of forest cover. They are distributed in small fragments across the landscape and functionally would barely qualify as forest. Plantations include two broad groups: older (but still mid-aged or young) stands and the recent restoration plantings. The first group would mostly have been planted between the 1960s and 1990s and had a largely aesthetic purpose. Ornamental and exotic tree species are prevalent, such as Austrian pine (*Pinus nigra*), Norway maple (*Acer platanoides*), black locust (*Robinia pseudo-acacia*) and ornamental crabapples (derived largely from *Malus toringo*). Some examples include Austrian Pine Coniferous Plantation (CUP3-b), Norway Maple – Conifer Mixed Plantation (CUP2-c), and Black Locust – Conifer Mixed Plantation (CUP 2-b).

The understorey of these established planted areas tends to be intensely weedy, with dog-strangling vine and buckthorn (*Rhamnus cathartica*). Norway maple is also regenerating quite abundantly. In some places, restoration activities have targeted the invasive regeneration in these ornamental plantations, and the understorey has been cut and/or treated with herbicide. The more recent plantations, generally assigned a "pioneer" age class, have been planted since 2012. They are nodes of generally native species planted to diversify the restored meadow areas. Those planting beds that were shrub-dominated are treated as thicket (CUT1) under successional habitat, while those that include trees are generally Restoration Deciduous Plantation (CUP1-A) and Restoration Mixed Plantation (CUP2-A). Representative tree species include basswood (*Tilia americana*), silver maple (*Acer saccharinum*), and white pine (*Pinus strobus*). No plantation type at The Meadoway occupies more than 1.8 ha.

The average total score of forest community occurrences across the site was 2.9 on a 1-10 scale, corresponding to an L-rank of L50 (Table 5-3). This average is in part due to the large proportion of the forest that is plantation. The highest score of 4.5 belongs to the Dry-Fresh Red Oak – Hardwood Deciduous Forest (FOD2-4) and Fresh-Moist White Cedar – Sugar Maple Mixed Forest (FOM7-1).

Successional

Successional communities are classified into 22 types and provide approximately 24% (23 ha) of the total natural cover within The Meadoway. Communities of this class form as dense thickets or as semi-open woodland and savannah areas. Thicket (11.6 ha) occupies more than half of the successional community cover and is largely composed of planted shrub beds, though some are natural regeneration along stream corridors and the edges of the hydro corridor. A blend of shrubs was usually planted, though Sumac Deciduous Thicket (CUT1-1) occupies the largest share at 5.3 ha. Other thickets include Red Osier Dogwood Deciduous Thicket (CUT1-E), Ninebark Deciduous Thicket (CUT1-H), and Raspberry Deciduous Thicket (CUT1-5). In some cases, unusual shrubs not native to TRCA were planted inadvertently, such as smooth sumac (*Rhus glabra*) in addition to staghorn sumac (*R. typhina*); or domestic raspberry (*Rubus idaeus* ssp. *idaeus*) in addition to wild red raspberry (*R. idaeus* ssp. *strigosus*). Exotic Deciduous Thicket (CUT1-c) consisting of exotic shrubs particularly buckthorn, shrub honeysuckle *(Lonicera* x *bella)*, and common lilac *(Syringa vulgaris)* totals an area of 1.7 ha. Semi-open or partially treed communities (i.e., woodland, savannah and treed hedgerow) accounted for 11.1 ha and are mostly associated with stream corridors. Exotic Successional Savannah (CUS1-b) (3.7 ha), Native Deciduous Successional Woodland (CUW1-A3) (2.8 ha) and Exotic Successional Woodland (CUS1-b) (1.7 ha) have the largest share. White mulberry *(Morus alba)*, buckthorn, Russian-olive (*Elaeagnus angustifolia*), crack willow (*Salix* x *fragilis*), Norway maple, and Siberian elm (*Ulmus pumila*) are frequently occurring exotic successional species, while white elm (*Ulmus americana*), ash (*Fraxinus* spp.) and black walnut *(Juglans nigra)* are among the natives. The prevalence of exotic successional vegetation types (outside of shrub plantings) along with the weak native presence in the understorey of forest and successional communities generally, shows how altered and disturbed The Meadoway's habitats are. There is little seed source for native species to spontaneously regenerate and hence, regeneration is poor.

The average total score of successional community occurrences was 2.9, corresponding to an L-rank of L5 (Table 5-3). The score would be even lower if it were not for the presence of shrub bed plantings that correspond to thicket types that are rare in the TRCA jurisdiction (e.g., Serviceberry Deciduous Thicket (CUT1-2) and Ninebark Deciduous Thicket (CUT1-H)).

Wetland and Aquatic Communities

The Meadoway has 11 wetland communities covering just 4.1 ha. These occur in two topographic situations: wetlands resulting from surface runoff in swales in low-lying poorly-drained areas; and seepage zones along the two main Branches of Highland Creek (Bendale and Milliken Branches). All wetland areas are very small. The distribution of cattail marsh corresponds to the placement of wetlands in general across the site. It can be found along a swale that originally drained into Wilson Brook near the west end of The Meadoway; a few pockets near the Dorset Park Branch of Highland Creek between Midland Avenue and Kennedy Road; in an inaccessible area southeast of the Highway 401/Morningside Avenue interchange, and at the outlet of a couple of seeps along the Bendale and Milliken Branches of Highland Creek. The invasive exotic Common Reed Mineral Meadow Marsh (MAM2-a) occurs near Wilson Brook at

the west end of The Meadoway and in the Highway 401/Morningside Avenue interchange area to the east.

A patch of thicket swamp occurs just west of the TTC/GO Stouffville rail corridor, east of Kennedy Road and is one of the larger wetland patches in The Meadoway. It includes Willow Mineral Thicket Swamp (SWT2-2) and Red-osier Mineral Thicket Swamp (SWT2-5). The main shrub species are red osier dogwood (*Cornus stolonifera*), sandbar willow (*Salix interior*), and narrow heart-leaved willow (*Salix eriocephala*). Just east of the TTC/GO Stouffville rail corridor at Arsandco Park can be found a wetland with Willow Mineral Deciduous Swamp (SWD4-1), Reed Canary Grass Mineral Meadow Marsh (MAM2-2), Broad-leaved Cattail Mineral Shallow Marsh (MAS2-1A), and the Duckweed Floating-leaved Shallow Aquatic community (SAF1-3). This wetland patch seems to correspond to the old course of the Dorset Park Branch of Highland Creek that existed before the creek was straightened sometime in the early to mid-20th century. It also supports beaver and chimney crayfish.

Seepage along the main valley corridors of Highland Creek supports White Cedar Mineral Coniferous Swamp (SWC1-1) and White Cedar – Hardwood Mineral Mixed Swamp (SWM1-1). The cedar swamps that specifically lie within The Meadoway are tiny (0.2 ha) but extend beyond the boundary of the survey along the valley corridors. Seepage areas support trees such as white cedar (*Thuja occidentalis*) and balsam poplar (*Populus balsamifera*), along with ground covers such as sensitive fern (*Onoclea sensibilis*), Joe Pye weed (*Eutrochium maculatum*) and skunk cabbage (*Symplocarpos foetidus*). They support several flora species of conservation concern.

Aside from the small area of duckweed community, aquatic communities are all Turbid Open Aquatic (OAO1-T), demarcating the streams that cross The Meadoway, as well as a storm water pond at Arsandco Park. These aquatic communities add up to 1.5 ha. The average total score of wetland community occurrences was 3.6, corresponding to an L-rank of L4 (Table 5-3). Wetland communities in the jurisdiction score higher on average than forests, with the various native wetland types ranging from 3.5 to 10.

Dynamic

Ten dynamic communities, with a combined area of 2.9 ha, represent 3% of natural cover in The Meadoway. These communities are maintained through natural disturbances such as erosion and fire and are largely open in character. The Forb Sand Barren (SBO1-D), occupying 2.0 ha, is a temporary community on sites undergoing preparation for prairie plantings near Sheppard Avenue. The other dynamic communities are associated with streambanks and ravine slopes, for example, various bluffs and riparian bars. Willow Shrub Riparian Bar (BBS1-2B) and Open Riparian Sand/Gravel Bar (BBO1-A) each occupy 0.2 ha; while bluffs: Mineral Open Bluff (BLO1), Sumac – Willow Shrub Bluff (BLS1-A), and Deciduous Treed Bluff (BLT1-B) cover 0.2 ha. Similarly, small areas of Open Clay Barren (CBO1) and Shrub Clay Barren (CBS1) can be found on exposed slopes where topsoil is missing.

Tallgrass prairies are usually also included as dynamic communities, because original tallgrass communities such as those at High Park are maintained by burns (either random or prescribed). However,

the prairie communities at The Meadoway are planted, maintained by mowing and herbicide spot treatment of invasive species, and closely resemble structurally and functionally diverse meadows than prairies. Therefore, they are discussed as meadows.

The mean total score of dynamic community occurrences was 5.1, corresponding to an L-rank of L3 (Table 5-3). Dynamic communities are rare regionally and score between 4.0 and 10.0.

Meadow

Four types of meadows are found in The Meadoway. Fresh-Moist Tallgrass Prairie Plantings (TPO2-A) function as high-quality meadows and are the centre-piece of The Meadoway project (Figure 5-4). So far, 36.0 ha of formerly manicured land has been converted, all of which lies east of Brimley Road. Smaller areas are more conventional meadows that arise spontaneously in unmowed areas. These occupy 12.4 ha, with Exotic Forb Meadow (CUM1-c) having the largest share (8.1 ha).

Figure 5-4. Fresh-moist tallgrass prairie plantings in The Meadoway

Prominent among the planted meadow species are tall sunflower (*Helianthus giganteus*), ox-eye (*Heliopsis helianthoides*), tall coreopsis (*Coreopsis tripteris*), cup-plant (*Silphium perfoliatum*), big bluestem grass (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), and switch grass (*Panicum virgatum*). Numerous other species, some of which are not native to Toronto (but are native to the south and west), were included in the planting. The seed source is mostly from far southwestern Ontario, seed zone 37 (Rural Lambton Stewardship, 2018).

Forb species that are naturally-present in the meadow areas, especially those that arose spontaneously, include the native tall and Canada goldenrods (*Solidago altissima* and *Sambucus canadensis*), with only small populations of asters (New England aster – *Symphyotrichum novae-angliae*, heath aster – *S. ericoides*, and panicled aster – *S. lanceolatum*). Exotic species are more prominent. Dog-strangling vine is abundant, as is creeping thistle (*Cirsium arvense*), dandelion (*Taraxacum officinale*) and various clovers (*Trifolium* spp.) Common European cool-season grasses are abundant in the meadows that have not been converted to plantings; for example, Kentucky blue grass (*Poa pratensis*), timothy (*Phleum pratensis*), meadow fescue (*Lolium pratense*) and quack grass (*Elymus repens*). Many of these species, such as Kentucky blue grass, dandelion, and the clovers, are indicative of manicured lawn areas. On the other hand, some of the manicured areas have low-growing native meadow species in them such as wild strawberry (*Fragaria virginiana*) and blue-eyed grass (*Sisyrinchium montanum*).

The mean score of meadow community occurrences was 1.8 corresponding to an L-rank of L5. Regionally, meadow community types are low scoring, between 1.0 and 1.5. The average score for The Meadoway was increased slightly by the presence of the prairie plantings, which are not common in the TRCA jurisdiction. Additional meadow restoration within The Meadoway will focus heavily on native species local to Toronto and seed zone 34 to help increase the meadow community score.

5.4.5 Flora

Floristic surveys conducted by TRCA in 2017 identified 579 species of vascular plants (Table 5-4). The Meadoway includes many planted species. There were 500 (86%) naturally-occurring species and 79 (14%) that occurred only through plantings. Exotics account for 48% of the total species in The Meadoway. If one excludes the planted species, exotics are the majority: 219 are native (44%) and 281 are exotic (56%). The long history of disturbance at The Meadoway, including decades under lawn turf, explains the majority rule of exotic species.

The greatest densities of species are associated with high quality habitats *(as represented by a high proportion of L1-L4 species and native species richness)*. These are the small areas of forest, wetland, and barren that occur along the various stream corridors. The ravine of the Milliken Branch of Highland Creek in particular, has 6 of the 14 naturally-occurring L1-L3 species found at The Meadoway. In general, native species richness increases eastwards as The Meadoway approaches Morningside Park and Rouge National Urban Park. Forest patches in the eastern half of The Meadoway support native woodland sedges, spring ephemerals, ferns and shrubs. Wetlands, moist meadows, and even some of the damper manicured areas support sedges and native forbs.

Table 5-4. Summary of flora species in The Meadoway, 2018

Summary Category	Count	Percentage
Total number of species	579	100
Naturally-occurring species	500	86
Planted Species	79	14
Native (naturally-occurring) species	219	44
Exotic species (established)	281	56
Number of L1 to L3 species (excludes planted)	14	3
Number of L4 species (excludes planted)	57	11

The average of the total scores for naturally-occurring native flora species found in 2018 was 8.8, corresponding to an L5 rank. Invasive plants are a serious threat to some of the latter, and the invasives have long been favoured by the land use history of the site.

5.4.6 Fauna

Table 5-5 summarizes the fauna species counts for the 2009 to 2018 period. Fauna species richness (number of species) in The Meadoway project study area stands at 61 species for the entire 236 ha site. Species richness per unit area in natural cover generally increases with increasing patch size, habitat quality, and increasing habitat diversity (e.g., of vegetation communities and of physical structure) (Arrhenius, 1921; Rybicki & Hanski, 2013).

Table 5-5. Fauna species and Species of Regional and Urban Concern (SOC) counts for The Meadoway project study area, 2009 - 2018

Group	Species Count 2018 Survey	SOC Count 2018 Survey	Species Count 2009-2018	SOC Count 2009-2018
Birds	46	22	46	22
Frogs	1	1	1	1
Other Herpetofauna*	1	1	2	2
Mammals*	11	5	11	5
Chimney* crayfish	1	1	1	1
Total	60	30	61	31

**Observations of other herpetofauna and mammals are incidental to the protocols*

The average of the total scores for native fauna species observed in 2018 was 10.1, corresponding to an average L-rank of L4 (Table 5-3). The size of the habitat and ongoing restoration of meadow habitat within the project study area offers the potential for this average to increase over time.

5.4.7 Fish and Aquatic Habitat

Within TRCA's jurisdiction, broad scale fish and fish habitat management is done on a watershed basis. The RSA includes several streams and rivers across three distinct watersheds: the Don River, Highland Creek, and Rouge watersheds.

The Don River watershed covers an area of approximately 36,000 ha, flowing from its headwaters on the Oak Ridges Moraine to the Keating Channel where it empties into Lake Ontario. As one of the most urbanized watersheds in Canada, the Don River watershed suffers from excessive stormwater runoff and poor water quality due to the limited number of stormwater management controls and extent of paved surfaces. The Lower East Don River subwatershed comprises The Meadoway footprint between the Don River and Warden Avenue and is defined as a cool-warmwater system dominated by tolerant, generalist minnow species common throughout the watershed. Species distribution is relatively uniform throughout, suggesting that barriers may be seasonally passable by non-jumping species (TRCA, 2009a).

The Taylor Massey Creek subwatershed east of Warden Avenue to Kennedy Road has a cool water thermal regime and is highly modified with only four tolerant fish species present: longnose dace, blacknose dace, white sucker, and creek chub. Historical records indicate that fish abundance and biodiversity has been low within this subwatershed, with poor water quality cited as the most significant impairment to the presence of a diverse fish community (TRCA, 2009a).

Approximately 60% of The Meadoway footprint is located within the Highland Creek watershed, which contains a fish community typical of a degraded urban system supporting both warmwater, as well as migratory coldwater fish communities (TRCA, 2011). Settlement and subsequent urbanization have resulted in the channelization, filling, piping, or general alteration of watercourses in the watershed, resulting in a resident fish community dominated primarily by pollution tolerant species (TRCA, 1999).

Today, brown trout and chinook salmon are known to use downstream reaches while historically, Atlantic salmon were a top predator species within Lake Ontario and the Highland Creek watershed. In recent years, renewed efforts such as the Lake Ontario Atlantic Salmon Restoration Program are striving to bring back healthy and self-sustaining Atlantic salmon populations to Lake Ontario and its tributaries.

The Rouge River fish community is currently most diverse in the upper reaches of the watershed, spanning true coldwater species, such as brook trout, in comparison to warmwater species which are more characteristic of large order streams (e.g., largemouth bass). Within the Lower Main Rouge and Morningside Tributary that intersects with the eastern most portion of The Meadoway at Meadowvale Avenue, the main branch is warmwater habitat with a progression towards habitat impairment in the downstream portion, coincident with urbanization species (TRCA, 1999). Recent surveys of fish community structure point to a trend towards generalist species and tolerant invasives (e.g., carp) with species such as rainbow darter nearing their habitat threshold.

The Index of Biotic Integrity (IBI) is a measure of fish community structure, used to identify the health of aquatic ecosystems. Based on an eight-year assessment of fish communities within TRCAs jurisdiction, the Highland Creek and Don River watersheds received an IBI of “poor”, both containing the lowest percentage of sites with an IBI score within the “good” range (TRCA, 2011). The Rouge River scored an IBI above the jurisdictional mean and in the “fair” range.

5.4.8 Flora Species of Concern

There are 14 naturally occurring vascular plant species of regional conservation concern (rank L2 to L3) and 57 of urban conservation concern (L4) in The Meadoway. Three of these plants are regionally rare. Burnweed was found in a barren area and occasionally shows up widely dispersed in the jurisdiction. Great Lakes panicled aster (*Symphyotrichum lanceolatum* var. *hirsuticaule*) is a rare variety of a very common species distinguished by its hairiness. It is characteristic of areas close to the lower Great Lakes. Hairy aster (*S. pilosum* var. *pilosum*) was also tentatively identified near the eastern end of The Meadoway.

Butternut (*Juglans cinerea*) is a provincial and federal Species at Risk (SAR) and is considered Provincially Rare (S3). It has been designated as Threatened due to butternut canker (*Sirococcus clavigignenti-juglandacearum*) which has caused a rapid loss of this species. Butternut was found in the ravines of the Bendale and Milliken Branches of Highland Creek; however, identification was based on visible characters (not genetics), so the possibility of back-crossing with Japanese walnut (*J. ailantifolia*) cannot be completely ruled out.

Those most sensitive are wetland species which depend on specific hydrological conditions to persist; any change in wetland hydrology would be reflected by a shift in species composition. Examples of hydrologically sensitive species observed include: marsh fern (*Thelypteris palustris* var. *pubescens*), great blue lobelia (*Lobelia siphilitica*) and marsh pennywort (*Hydrocotyle americana*).

Many forest ground layer species have delicate stems and root systems and are not able to withstand trampling and soil compaction. These include species such as Christmas fern (*Polystichum acrostichoides*), Canada May-flower (*Maianthemum canadensis*), and white trillium (*Trillium grandiflorum*). Trillium, found in one wooded area, is also vulnerable to picking and collecting.

5.4.9 Fauna Species of Concern

The 2018 fauna surveys recorded 22 bird species, 2 herpetofauna species and 5 mammal Species of Regional and Urban Concern for a total of 29 (Table 5-5). Chimney crayfish (*Fallicambarus fodiens*) – the only invertebrate fauna species included in the terrestrial inventories – was also recorded on site in 2018. Only one species can be added from recent years (Dekay's snake, *Storeria dekayi*, from 2017); together this species and crayfish bring the total to 31 species for the 10-year period.

Regionally Rare Species

Regionally rare species are those reported as probable or confirmed breeders in fewer than 10 of the forty-four 10x10 km UTM grid squares in TRCA jurisdiction (TRCA, 2017). The 2018 surveys did not document any regionally rare fauna in The Meadoway; the total is unchanged when the entire current 10-year period is considered. Chimney crayfish, recorded in The Meadoway in 2018, scores the highest local occurrence score for any species at the site scoring 2 points.

Fauna Sensitive to Development

All 5 of the L1-L3 ranked species found at the project study area score highly on sensitivity to development, as do 15 of the 26 L4 ranked fauna species. Of the 13 development sensitive bird species recorded in the project study area, 5 are ground- or low-nesting species with 3 of those being meadow-associated species (eastern meadowlark (*Sturnella magna),* savannah sparrow (*Passerculus sandwichensis)* and spotted sandpiper (*Actitis macularius*)), and two forest-edge/successional habitat associates (brown thrasher (*Toxostoma rufum)* and indigo bunting (*Passerina cyanea*)).

Although very few archival records exist for the area, a survey that included a small portion of The Meadoway just to the west of Birchmount Road in 2001 reported 4 eastern meadowlark territories. Similarly, a survey in 2000 that included a small eastern section of The Meadoway – the stretch just to the north of Morningside Park – recorded 2 eastern meadowlark territories. Both patch size and area of trail-free habitat is positively associated with ground-nesting bird density (Thompson, 2015).

Ground-nesting bird species associated with open meadow habitats are particularly susceptible to ground-borne disturbances. Several are showing considerable continental declines, including eastern meadowlark which is listed as a SAR, with a Threatened status (Natural Heritage Information Centre, 2018). Meadow habitat in the region is declining and is therefore valuable as a component of conservation lands.

All herpetofauna are sensitive to development, and all but the hardiest species have disappeared from the more urbanized landscapes, such as the City of Toronto. This is certainly apparent from the fauna inventory conducted in The Meadoway in 2018 when only very small numbers of American toad (*Anaxyrus americanus*) and eastern gartersnake (*Thamnophis sirtalis*) were encountered.

5.5 Physical Environment

5.5.1 Physiography

The Meadoway is located within the South Slope (drumlinized till plains) and Iroquois Sand Plain physiographic regions (Figure 5-5). The South Slope region in The Meadoway comprises predominantly sandy silt to sand glacial till and river deposits of mainly sand and gravel. The soils in the Iroquois Sand Plain region are composed mostly of sandy loam, with some loam closer to Lake Ontario where the underlying soils are finer grained. Available mapping (TRCA, 1999) indicates the bedrock geology in the vicinity of The Meadoway Trail System which generally consists of weathered shale.

5.5.2 Surface Water

The RSA includes tributaries of the Don River, Highland Creek, and Rouge River watersheds. Covering an area of approximately 36,000 ha, the Don River watershed is one of the most urbanized river systems in Canada and comprises the western most portion of The Meadoway to just west of Kennedy Road. The Don River, Wilson Brook, and Taylor Massey Creek are all found within the LSA.

The Highland Creek watershed covers approximately 10,000 ha and is heavily urbanized. The large amount of paved, impermeable surfaces in the watershed means that during large rain storms there's a higher risk for a high volume of water, potentially at high speed, to cause flooding and erosion damage. The LSA includes tributaries within the West and East Highland Creek subwatersheds, including the South West Tributary, the West Branch, Milliken Branch, and Ellesmere Ravine.

East of Meadowvale Road, The Meadoway falls within Rouge River watershed. Comprising an area of around 33,000 ha (35% of which is considered "urbanized"), the southern third of the watershed is protected by the Rouge National Urban Park, the first of its kind in Canada.

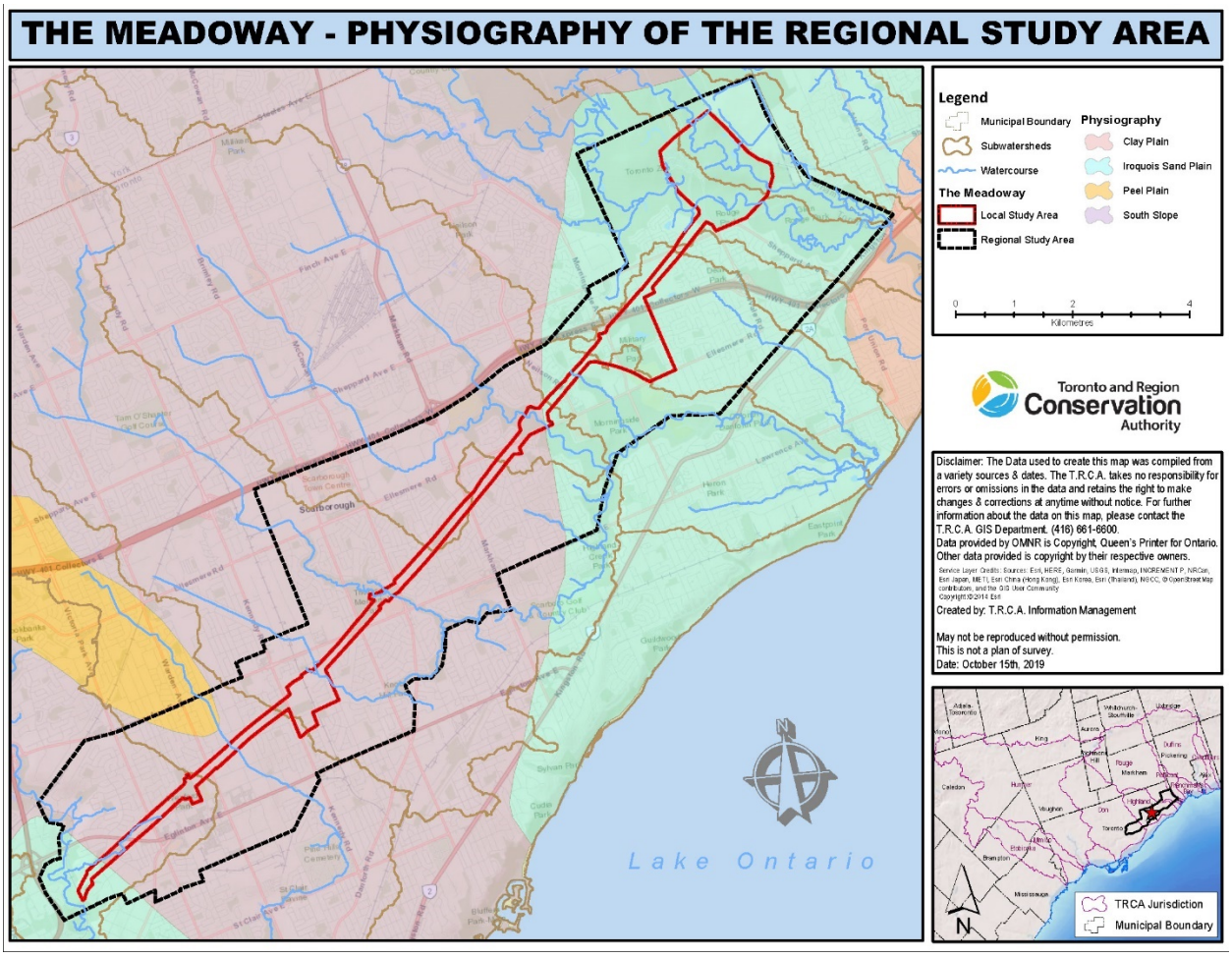

Figure 5-5. Physiography of The Meadoway RSA

5.5.3 Geomorphology

Preliminary fluvial geomorphic assessments were undertaken at each of the proposed water crossings along Section 3, 5, and 6 of The Meadoway. The purpose of these assessments was to characterize the existing geomorphological conditions and processes acting within the channel and to identify opportunities and constraints for the placement of the water crossings. These constraints are generally related to locations of channel instability associated with excess erosion and deposition. Water crossing locations have also been identified, to the benefit of long-term channel stability and to mitigate adverse erosion or deposition at the structures themselves.

Below is a summary of the existing conditions, the preliminary geomorphic assessments and constraints, opportunities and recommendations for each of the potential water crossings. A detailed report is included within Appendix C.

Existing Geomorphic Conditions

The LSA is divided into seven sections based on major roads, water crossings, and existing trail infrastructure. The sections of The Meadoway and the associated water crossings discussed within this chapter of the ESR are summarized in Table 5-6.

A field investigation was undertaken for each potential water crossing, which included a visual inspection of the watercourse and valley setting (fluvial audit), and a rapid geomorphic assessment. Detailed descriptions of the existing conditions included photographic inventories, mapping and representative channel and valley cross-sections are included in Appendix C.

Table 5-6. Incomplete sections and associated limits and watercourses

Section	Section Limits	Associated Watercourse
3	Kennedy Road to Gatineau Hydro Corridor Trail in Thomson Memorial Park	Southwest Tributary of Highland Creek
5	Scarborough Golf Club Road to Neilson Road	Highland Creek (Milliken Branch)
6	Neilson Road to Conlins Road	Ellesmere Ravine

Preliminary Geomorphic Assessment

Geomorphic resiliency, or stability, refers to a watercourse's ability to absorb changes to inputting watershed conditions that influence geomorphic processes, such as changes to hydrology or sediment supply, while remaining functional. When introducing a new change to the watercourse such as a bridge or culvert, it is important to take into consideration the resiliency and inherent dynamic nature of the system. Understanding the existing channel migration and erosion rates helps provide insight into the placement and span of these structures, which in turn can help reduce the risk of erosion to the structures and to watercourse destabilization. This preliminary geomorphic assessment identified key factors related to channel stability, identified opportunities and constraints and provides mitigation solutions (where applicable) for avoiding negative impacts to the pedestrian water crossing from erosion which will help

avoid scour, increase the design lifespan of the structures and will reduce harmful impacts to the creeks. The preliminary geomorphic assessment investigated the channel planform, valley characteristics and channel stability to gain an understanding of the existing fluvial geomorphic processes. Several different channel characterization and assessment tools were used to assess the channel and valley stability. A summary of the preliminary geomorphic assessment for each of the study reaches is provided in Table 5-7. Details describing the analysis methodologies and results are provided in Appendix C.

Table 5-7. Summary of geomorphic assessment for each river crossing

Section	River	Morphologic Characteristics	Valley Characteristics	Channel Stability
3	SW-HC Tributary	Trapezoidal, channelized	Incised, no floodplain access.	Some deposition and bank erosion. Limited channel migration due to concrete reinforcement.
5	Highland Creek	Sinuous, riffle-pool channel. Constructed channel at Ellesmere Road.	Confined valley. Channel makes localized contact valley walls. Good access to wide floodplain within valley.	High lateral mobility anticipated. Channel currently in a state of planform adjustment.
6	Ellesmere Ravine	Steep system, with limited defined morphology. Failed treatments and woody debris have a large impact on the channel form.	Confined, steep valley, with excessive active erosion. Channel makes frequent contact with valley walls. Limited floodplain.	Channel is in a state of adjustment and resulting in active erosion; both widening and degradation (incision).

Recommendations

Based on the preliminary geomorphic assessment, the following prioritized recommended crossing options should be considered:

- **Southwest Tributary of Highland Creek** – a single span bridge that is placed downstream of the confluence with drainage ditch
- **Highland Creek** – a single span bridge within the armoured channel immediately upstream of Ellesmere Road.
- **Ellesmere Ravine** – a bridge to fully span the Ellesmere Ravine in order to avoid placement of trail and bridge infrastructure within the unstable alley and channel.

A detailed mapping of constraints, opportunities, and recommendations are included within Appendix C.

5.5.4 Hydraulic Design Considerations for Potential Watercourse Crossings

The introduction of trails and structures around a watercourse creates the potential for new obstructions or 'footprints' that can alter not only flow paths of a watercourse, but also what areas may be affected by flooding during storm events. As identified by TRCA's Crossing Guidelines (TRCA, 2015), the purpose of hydraulic performance input to trail and structure design at early planning stages is to understand flooding risks and to identify design criteria to be used during engineering design of the water crossings to minimize potential risks. This section represents a brief summary of the relevant existing conditions and design considerations for the three potential new water crossings, with the full report provided under Appendix D**.**

Existing floodplain mapping, provided by TRCA, was reviewed to develop a high-level inventory of risk considerations based on the proximity of essential services (e.g., hospitals, fire and police) to the floodplain.

Section 3 – Southwest Tributary of Highland Creek

Within Section 3 just east of the TTC/GO Stouffville rail corridor there are two channels: a drainage pond outlet and the tributary of Highland Creek. To avoid crossing two channels, constructing The Meadoway in this section is recommended to occur downstream of their confluence.

The floodplain of the southwest tributary of Highland Creek is over 100 m wide. Comparing the 1:50 and 1:100-year flood levels does not translate to a significant change in water elevation (0.1 m). The Midland Avenue culvert on the Tributary to Highland Creek is understood to be an existing hydraulically limited structure. The existing area of The Meadoway is regularly inundated under the 1:25 year and greater events. The 1:100 year is recommended as the design event to avoid backwater effects.

A structure spanning the concrete channel infrastructure may result in minimal impact to the existing hydraulics compared to other water crossing location possibilities if the existing channel infrastructure can be maintained. A clear span structure outside the floodplain may not be practical given the width of the Regional Floodplain.

Sections of the Tributary to Highland Creek south of the confluence are lined with concrete. There is opportunity for general channel rehabilitation in this area.

Section 5 – Highland Creek

Some road structures on this watercourse upstream of the hydro corridor are predicted to overtop at the regional event (rainfall volume and soil conditions that match with what occurred during Hurricane Hazel in 1954). There is no critical infrastructure in the immediate floodplain. However, hydraulically it is recommended to design using a 1:100-year storm event for the soffit clearance to avoid backwater effects.

The Highland Creek is characterized as being highly unstable and there are significant erosion risks in this corridor. It is easily observed on aerial photography the evidence of active migration and slumping on the east slope in the northern quadrant of the corridor.

The reach of Highland Creek in proximity to the Ellesmere Road provides stable, reinforced banks from recent previous bank stabilization works creating an area well suited for placement and the long-term protection of trail bridge infrastructure.

Section 6 – Ellesmere Ravine

No constraint from a hydraulic perspective is anticipated with establishing a structure with enough clearance or span. The regional event has a maximum flow width of approximately 10 m within the river valley. Velocities present are within a range such that standard engineering measures would be able to address protection of a structure. Rather, the larger geotechnical and geomorphological stability of the ravine will be the focus of review for determining the water crossing location.

There is extensive and ongoing channel erosion and instability within the Ellesmere Ravine which would pose constructability constraints to a bridge crossing within the ravine in this section. A bridge to fully span the ravine is recommended.

5.5.5 Soils

The project activities are not expected to have a major impact on the local subsurface conditions. As a result, a detailed investigation will not be carried out, except for geotechnical analysis at the proposed river and rail line crossing locations to inform detailed design.

5.5.6 Drinking Water Source Protection

The Meadoway is located in the Toronto and Region Source Protection Area and transects three types of vulnerable areas (Highly Vulnerable Aquifers, Event Based Areas, Significant Groundwater Recharge Areas) identified under the Clean Water Act, 2006 (Figure 5-6):

- A Highly Vulnerable Aquifer can be easily changed or affected by contamination from both human activities and human process as a result of its intrinsic susceptibility (as a function of the thickness and permeability of overlaying layers), or by preferential pathways to the aquifer;
- A Significant Groundwater Recharge Area supplies a community or private residence with drinking water and is characterized by porous soils, which allow water to seep easily into the ground and flow to an aquifer; and,
- An Event Based Area is delineated if numerical modelling demonstrates that a spill from a specific activity may be transported to an intake and represents an activity that poses a significant threat to drinking water (Government of Ontario, 2019).

Under the Clean Water Act, 2006, a “prescribed threat” (hereafter referred to as “threat”) is defined as “an activity or condition that adversely affects or has the potential to adversely affect the quality or

quantity of any water that is or may be used as a source of drinking water, and includes an activity or condition that is prescribed by source protection regulation as a drinking water threat" (Government of Ontario, 2019).

The Province has identified 22 activities that, if they are present in vulnerable areas, now or in the future, could pose a threat. Twenty of these activities are relevant to drinking water quality threats and therefore, could result in a moderate or low drinking water threat in either a highly vulnerable aquifer or significant groundwater recharge area. Since none of the prescribed threats are likely to occur during the establishment of The Meadoway, no policies in the Credit Valley – Toronto and Region – Central Lake Ontario Source Protection Plan would apply. Similarly, none of the activities determined to result in a significant drinking water threat to an intake on Lake Ontario are expected to take place during the development and operation of The Meadoway.

Given the nature of The Meadoway Project and the intended revitalization of the terrestrial environment, this initiative should further the protection of those sensitive water resources identified through the Drinking Water Source Protection Program.

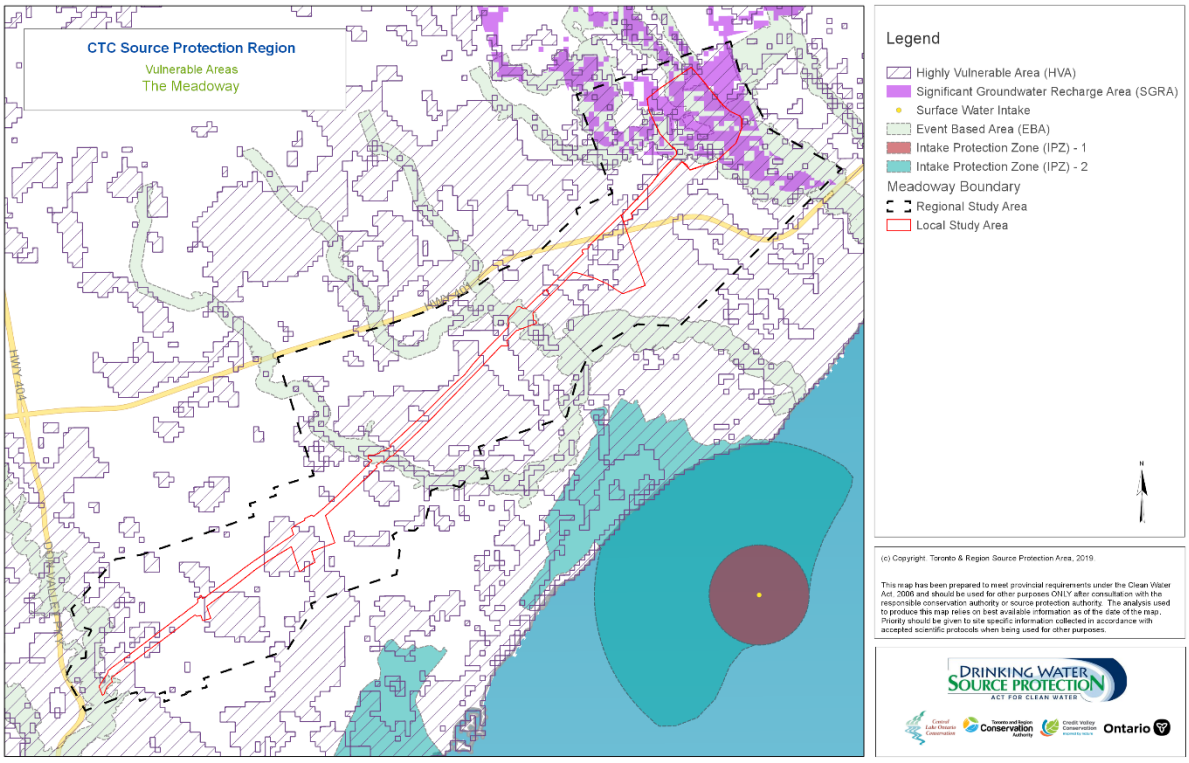

Figure 5-6. The Meadoway is located in the Toronto and Region Source Protection Area and transects three types of vulnerable areas (Highly Vulnerable Aquifers, Event Based Areas, Significant Groundwater Recharge Areas) identified under the Clean Water Act, 2006

5.5.7 Noise

The main sources contributing to the environmental noise climate (i.e., background sound) within the RSA include the local road traffic, Highway 401 Expressway, TTC Line 3 Scarborough, and Metrolinx rail lines. Additionally, there are contributions from maintenance activities at local public parks, as well as other existing industrial or commercial activities.

As the RSA is located within the City, local municipal by-laws are in effect with respect to noise (i.e., unwanted sound) regulation. By-law No. 476-2002 restricts the time and place of construction and other activities that produce unwanted sound if it is clearly audible at a point of reception located within a given regulated area (City of Toronto, 2002).

5.5.8 Electromagnetic Fields

Electromagnetic Fields (EMFs) are physical fields produced by electrically charged materials and can be viewed as a combination of electric fields and magnetic fields. Electric fields are created by differences in voltage while magnetic fields are created due to the flow of electric current. Typically, electric fields can be blocked by trees, fences, and other materials, while magnetic fields can pass through most objects. EMFs can be a result of natural sources and human-made sources. EMFs emitted from man-made sources can include home appliances, computers, and electric power facilities. Electric power facilities include both the substations, and transmission and distribution power lines.

As part of the City's Prudent Avoidance Policy regarding children's exposure to EMFs, an assessment of the exposure to power frequency magnetic fields is required for all developments or recreational uses planned within hydro corridor. The hydro corridor runs in the east-west direction through the LSA and contains a transmission station along with distribution power lines which transmit EMFs as a result of the alternating current flowing through the lines. A section of the LSA between the East Don Trail and Bermondsey Road was assessed in October of 2015 as part of the East Don Trail project.

The study found that for children using the trail daily for nine months of the year, the increase in their annual average magnetic field exposure was only 9% of the City's maximum annual average increase of 2 milligauss. A more comprehensive EMF study for The Meadoway will be undertaken during the detailed design phase for the multi-use trail.

5.5.9 Climate and Climate Change

The LSA experiences a continental climate moderated by the Great Lakes and is influenced by warm, moist air masses from the south, and cold, dry masses from the north, resulting in a wide range of weather conditions (TRCA, 2009b). Summer is characterized by temperatures ranging between the mid-20s and high 30s (°C). During the winter, daytime highs normally fall a few degrees below 0 °C but can fluctuate between approximately -30 and +10 °C (TRCA, 2009b).

Since the Industrial Revolution, significantly greater volumes and concentrations of carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbons have been released into the Earth's atmosphere (TRCA, 2009b). These gases not only impact air quality but also trap outgoing radiation and raise the

temperature of the lower atmosphere by creating a "greenhouse effect," which could result in dramatic climate changes. There is reputable evidence to suggest that climate change is already occurring, resulting in shorter winters, warmer annual average temperatures, shorter duration of lake ice cover, and more frequent heavy rainstorms in the Great Lakes basin (TRCA, 2009b).

Although specific changes cannot be accurately predicted, climate change models show that, overall, the average temperature in southern Ontario could increase by 5 – 10 °C by 2080 (TRCA, 2009b). The impact that such a warming trend would have on weather patterns is unclear; some experts extrapolate that precipitation could increase by up to 10%, while others expect a decrease in rain and snowfall. Despite the differing interpretations of climate model outputs, climatologists generally agree that the weather in southern Ontario and the GTA would become more unpredictable, with an increasing incidence of temperature extremes, severe storms and periods of drought (TRCA, 2009b).

In turn, the changes in regional climate and local weather would affect the hydrological cycle in the Don River, Highland Creek and Rouge River watersheds, resulting in a cascade of changes throughout the ecosystem (TRCA, 2009b). Changes in the mean and seasonal distribution of precipitation would alter the current water balance, groundwater levels, and stream flow patterns. In addition, channel and stream bank stability may be affected. Terrestrial and aquatic habitats may change as a result of warmer temperatures and shifting weather patterns. Non-native species may occupy the watershed while some native species may decline and disappear (TRCA, 2009b).

The Meadoway is a large project containing high-functioning meadow habitat at a scale never seen in Toronto. As such, there is a significant opportunity to contribute to climate change resiliency through natural infrastructure improvements. Converting existing turfgrass to natural meadow will aid in improving climate change resiliency via:

- Replacing shallow-rooted turf grass with deep-rooted drought-tolerant native meadow grass and wildflower species;
- Creating wildlife corridors so that species can move and adapt;
- Reclaiming more carbon into the soil by planting deep-rooted meadow species;
- Increasing the water holding capacity of the soil by increasing organic matter content and plant biomass to help with flood attenuation;
- Reducing fossil fuel emission via significantly less mowing (from eight times a year to one mow every three years);
- Reducing ground surface temperatures when turfgrass is converted to meadow cover; and
- Reducing greenhouse gases in our atmosphere and promoting low carbon transportation alternatives.

5.6 Cultural Environment

5.6.1 Indigenous Communities

As reported in the Stage 1 Archaeological Assessment (Appendix E), TRCA's jurisdiction encompasses the overlapping traditional territories and Treaty areas relating to the Anishinaabe, Haudenosaunee, Huron-Wendat, and Métis Nations. TRCA lands contain hundreds of known ancestral archaeological sites, as well as the high potential to discover more. TRCA has Engagement Guidelines that provide guidance on stewardship and management decisions within land management processes.

5.6.2 Archaeology

To date, a total of thirteen archaeological sites have been discovered within 1 km of The Meadoway. This number is quite low within the context of over 10,000 years of human occupation within the Toronto region, and is likely due to the destruction of archaeological resources in the wake of rapid urbanization during the twentieth century. It is only in recent times that cultural resources have been recognized as important connections to the past and need documentation and preservation.

A Stage 1 archaeological assessment was undertaken as part of The Meadoway project. It identified portions of the study area that retain archaeological potential. Further archaeological assessment (i.e., Stage 2) will be required for those areas prior to any ground disturbing activity. For more information on the archaeological assessment for The Meadoway, please refer to Appendix E.

5.6.3 Cultural Heritage

The background research conducted for the Stage 1 archaeological assessment included a search of designated or otherwise recognized cultural heritage properties and resources. The City of Toronto's Heritage Register indicates a number of listed or designated properties in the vicinity of The Meadoway; however, none are within the LSA (see Appendix E). The hydro corridor runs adjacent to Thomson Memorial Park, home of the Scarborough Historical Museum, which was founded to commemorate and preserve some of the historical homes of the Thomson Family, who were the first settlers of Scarborough in the 1790s.

5.7 Socio-Economic Environment

5.7.1 Surrounding Neighbourhoods and Communities

The RSA spans sections of Wards 16, 19, 20, 21, 24 and 25 in the City of Toronto. Table 5-8 describes the wards and associated neighbourhoods (see Figure 5-7) within the RSA.

Table 5-8. Wards and neighbourhoods within the RSA

2019 Wards	Neighbourhoods in Regional Study Area
16 – Don Valley East	43 - Victoria Village
19 – Beaches East York	53 - O'Connor Parkview
20 – Scarborough Southwest	120 - Clairlea-Birchmount
21 – Scarborough Centre	119 - Wexford-Maryvale 126 - Dorset Park

2019 Wards	Neighbourhoods in Regional Study Area
	125 - Ionview 127 - Bendale 138 - Eglinton East
24 – Scarborough-Guildwood	137 - Woburn 135 - Morningside 132 - Malvern
25 – Scarborough-Rouge Park	134 - Highland Creek

Regional Study Area Overview

As of 2018, the RSA has a population of 172,273 people and a total of 59,348 households. The median age is 54 and average household income is $83,918. While 56% drive to work, 34% take public transit. The area is also diverse, with 69% of the population identifying as a visible minority and 53% identifying as immigrants. The most commonly spoken languages at home are English (61.2%) followed by Tamil (6.9%) and Tagalog (3.0%).

The top three social values of the population are:

- **Attraction to Nature**: how close people want to be to nature;
- **Ethical consumerism**: willingness to base consumer decisions on the perceived ethics of the company making the product; and,
- **Confidence in advertising**: tendency to trust and use advertising as a source of reliable information.

In addition, the top fitness preferences of the population include fitness walking, jogging, and home exercise.

Wards

The western portion of the RSA is primarily within the southwestern area of Ward 16 – Don Valley East. The RSA also extends to the northeastern area of Ward 19 – Beaches-East York. Within Ward 16 the RSA primarily covers the Victoria Village neighbourhood (City of Toronto, 2018d). Victoria Village is a quiet, middle-income neighbourhood bordered by the East Don River Valley and the Canadian Pacific Railway line, among other light industries. Most residents (44%) live in 5+ storey buildings and 55% rent their residence. The most common type of household composition is a couple with children.

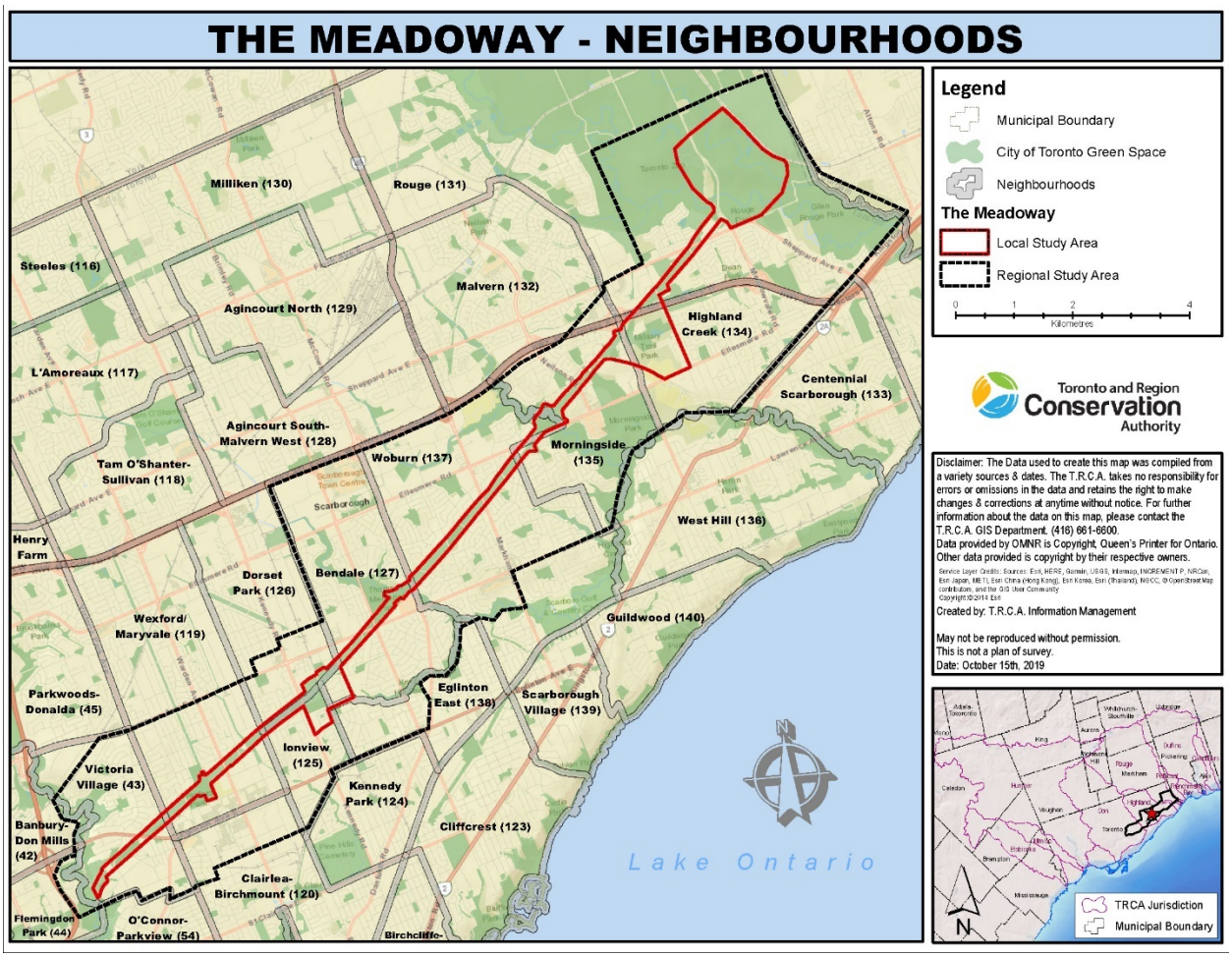

Figure 5-7. Neighbourhoods within The Meadoway RSA

East of Ward 16 is Ward 20 – Scarborough Southwest and the neighbourhood of Clairlea-Birchmount. Ward 20 has an aging population with 30% of the population falling within the ages of 45 and 64 (City of Toronto, 2018e). The most common occupied dwelling in this neighbourhood is the single-family detached structure. Most residents own their dwelling and the most common family composition is a couple with children at 48%. Immigrants make up 46% of the population.

The RSA runs through the southern portion of Ward 21 – Scarborough Centre. Nearly 50% of the population in Ward 21 is within the ages of 25 and 44, and 85% of residents live in 5+ storey buildings (City of Toronto, 2018f). The most common family composition is a couple without children. The immigrant population makes up 34% of the population. Ward 21 includes the neighbourhoods Wexford/Maryvale, Dorset Park, Ionview, Bendale, and Eglinton East. Bendale is the largest geographic neighbourhood that is culturally diverse, middle-income and located near public transit, Scarborough Town Centre and landmark parks.

To the east of Wards 20 and 21 is Ward 24 – Scarborough-Guildwood. The neighbourhoods within this ward include Woburn, Morningside and Malvern (City of Toronto, 2018g). Ward 24 has a median age of 38, and 47% of residents live in 5+ storey buildings. The most common family composition type is couple with children. Immigrants make up most of the population at 54%.

Ward 25 – Scarborough-Rouge River is the easternmost ward in the City. The RSA is in the middle of Ward 25 which extends south to Lake Ontario and north to Finch Avenue East with an eastern boundary that borders Rouge National Urban Park and the City of Pickering. The Highland Creek neighbourhood of Ward 25 is surrounded by the RSA. Ward 25 has a median age of 41, with most occupied private dwellings being single families (55%), and 80% of residents own their dwelling (City of Toronto, 2018h). The most common household size is four people and 53% of households are composed of a couple with children.

Regional Study Area Neighbourhood Improvement Areas

As part of the Toronto Strong Neighbourhoods Strategy 2020, thirty-one neighbourhood improvement areas have been identified as priority areas in need of stronger social, economic, physical, participatory and healthy living conditions (City of Toronto, 2011b). Neighbourhood Improvement Areas need additional investment to overcome local challenges such as prevalent crime or lack of services. There are five neighbourhood improvement areas within the RSA: Victoria Village, Ionview, Eglinton East, Woburn, and Morningside.

5.7.2 Land Uses and Growth Pressure

The LSA land uses include the hydro corridor, industrial, residential (low to medium density), road rights-of-way, conservation lands, and transportation. Surrounding the LSA, the primary land use designations are residential (low to medium density), institutional, park, open space and industrial.

The RSA is located within the City which had 2,731,571 residents in 2016, according to the 2016 Census. The City's population grew by 4.5% (11,511 residents) between 2011 and 2016 (Statistics Canada, 2016). According to the Ministry of Finance, the City's population is projected to grow by 38%, or approximately 5.4 million, over the next 24 years (Table 5-9).

Table 5-9. Overview of ward, population, recent growth, and density within The Meadoway RSA

Ward	Ward Population	Growth between 2011-2016 (%)	Density (people/hectare)
16 – Don Valley East	94,580	1.7	41
20 – Scarborough Southwest	110,280	3.3	39
21 – Scarborough Centre	28,665	3.5	40
24 – Scarborough-Guildwood	102,390	0.5	39
25 – Scarborough-Rouge Park	102,275	-0.4	19

5.7.3 Infrastructure, Support Services and Facilities

Existing infrastructure within the RSA includes the HONI utility corridor and associated facilities, Enbridge natural gas pipeline, Toronto Water infrastructure and access routes, Solid Waste Management Services and the City's operational facilities. There are also several ambulance stations, fire stations, cultural spaces, places of worship, police stations, schools, retirement homes, and homeless shelters/drop-in centres.

5.7.4 Land Ownership

The majority of the land within the LSA is owned by IO on behalf of the Province of Ontario, with a license agreement provided to HONI (Figure 5-8). Within the RSA, most of the land is owned by private landowners. There are also several instances where land is owned by the City, the Toronto District School Board (11 schools), or the Toronto Catholic District School Board (3 schools). TRCA owns three sizable parcels of land covering the Charles Sauriol Conservation Area, Morningside Park and Rouge National Urban Park. The MTO owns the segment of land where Highway 401 intersects with the hydro corridor. Finally, there are three major institutions: Scarborough General Hospital, the UTSC, and Centennial College Progress and Ashtonbee Campuses.

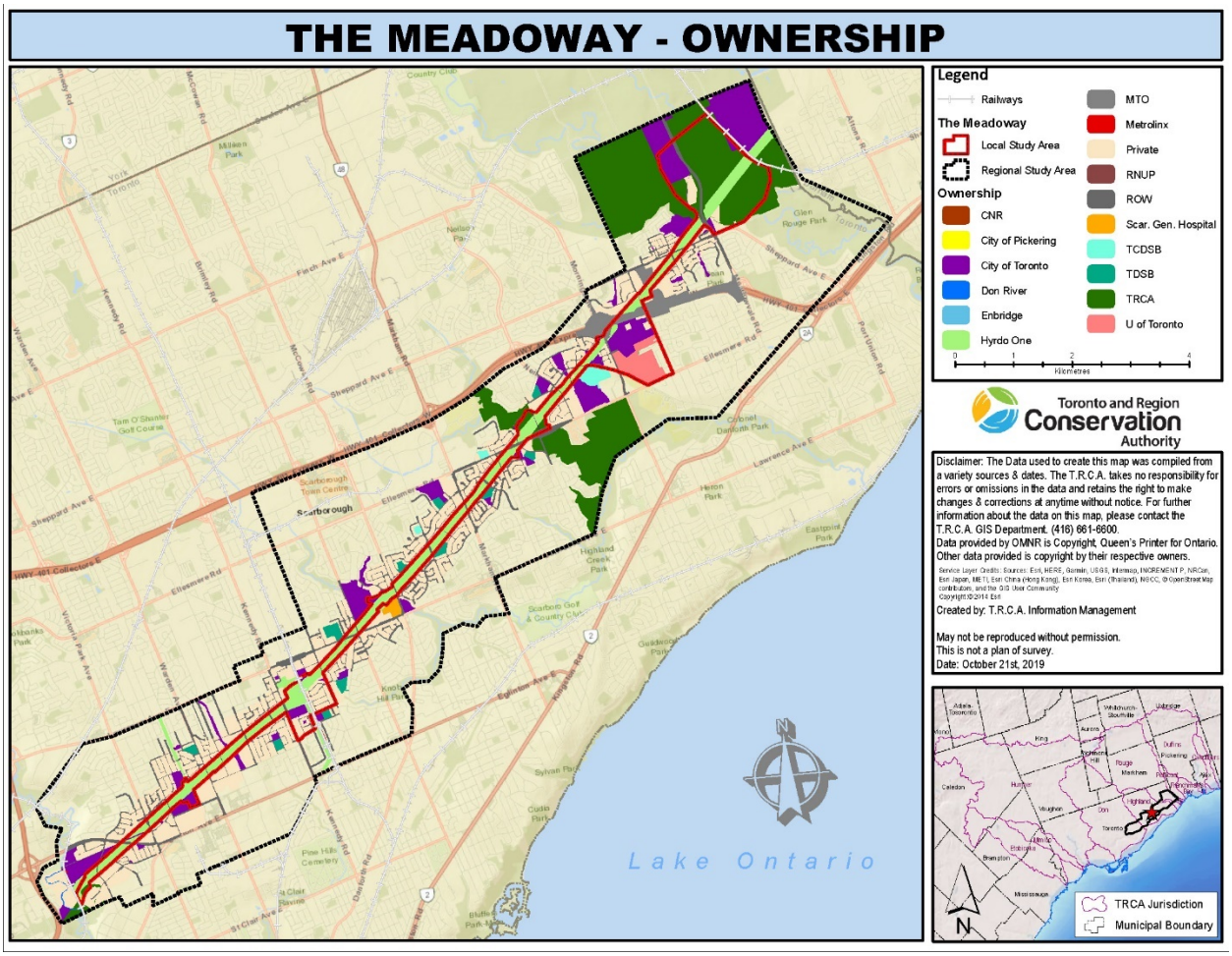

Figure 5-8. Land ownership within the LSA and RSA

5.7.5 Economy

The RSA is located exclusively within the City. Toronto is Canada's business capital and accounts for 18% of Canada's GDP. As of 2018, the number of employed persons in Toronto was over 1.5 million with part-time jobs outpacing full-time jobs and self-employment the highest it has been in 30 years (City of Toronto, 2018b).

According to the North American Industry Classification System (NAICS) standardized sectors, the three major sectors that make up Toronto's economy include service-based industries (77.5%), government and institutional industries (13.9%), and goods producing industries (8.6%) (City of Toronto, 2018c).

The RSA has an average household income of $83,918 (Environics Analytics, 2018). Of the 58.4% of the population in the labour force, the most common occupations are as follows (Table 5-10).

Toronto contains five urban growth centres. The Scarborough Civic Centre is a growth centre that falls within the RSA. Urban growth centres are defined as an existing or emerging downtown area with targets of achieving minimum densities of 400 residents and jobs combined per hectare by 2031. The Scarborough Centre is the second largest centre in Toronto with 23,450 jobs, or 1.5% of the City's total (City of Toronto, 2018c). Most of Scarborough's growth between 2016 and 2018 was in office (1,070 jobs), retail (240 jobs), service (70 jobs), and institutional (50 jobs).

According to the Ontario Trails Strategy, multi-use trails play a vital role in the well-being of people and communities. Trail users often need to buy equipment such as athletic wear, bicycles, hiking boots and accessories for getting active. Trails also attract tourists who may visit a local restaurant or shop while in the area. The Ontario Trails Council estimates that trails contribute more than $2 billion a year to the provincial economy (Ministry of Tourism, Culture and Sport, 2010).

Table 5-10. Most common labour force within the RSA

Labour Force by Occupation	Regional Study Area Population (%)
Sales and Service	15.9
Business Finance Administration	10.2
Trades and Transport	6.3
Education, Gov't, Religion, Social	6.2
Sciences	4.7
Manufacturing and Utilities	3.9
Management	3.8
Health	3.5
Art, Culture, Recreation, Sport	1.4
Natural Resources and Agriculture	0.3

5.7.6 Points of Interest and Recreational Spaces

The City receives over 40 million visitors annually (City of Toronto, 2019d). The City hosts several tourist attractions that range from the performing arts to culture and heritage to professional sports teams.

Key points of interest that intersect with or are near the LSA include:

- **Rouge National Urban Park** – The Rouge National Urban Park Act states the park is "*established for the purposes of protecting and presenting, for current and future generations, the natural and cultural heritage of the Park and its diverse landscapes, promoting a vibrant farming community and encouraging Canadians to discover and connect with their national protected heritage areas*" (Government of Canada, 2019, pg. 3).
- **Golden Mile Secondary Plan Study** – The Golden Mile refers to Eglinton Avenue East between Victoria Park Avenue and Birchmount Road. The Golden Mile currently consists of large-format retail buildings and surface parking with low-rise commercial and industrial buildings. The vision for the Golden Mile is to create a connected, accessible, and diverse mixed-use community and a destination that is a key driver of the economy in east end Toronto. The Golden Mile Secondary Plan Study develops a vision and comprehensive planning framework for the Golden Mile area, which will form the foundation for the Secondary Plan, Urban Design Guidelines, and other planning tools.
- **Toronto Zoo** – The Toronto Zoo is a major tourist attraction in Toronto that 1.3 million people visit per year. It is also an employer with 273 full-time employees and 330 part-time or seasonal employees and 516 year-round volunteers. The Toronto Zoo is surrounded by Rouge National Urban Park and falls within the RSA.
- **Morningside Park** – Morningside Park is a recreational nature park located in Scarborough and is Toronto's largest municipal park by area. Morningside Park is connected to The Meadoway via the Milliken Branch of the Highland Creek and Ellesmere Ravine.
- **Toronto Pan Am Sports Centre** – The sports centre is a legacy from the 2015 Pan Am games and is co-owned by the City and UTSC. The facility offers numerous amenities and is open to the community.
- **University of Toronto Scarborough** – UTSC is a public research university and satellite campus of the University of Toronto. With over 14,000 students, the campus is currently undergoing a master planning process to address change over the next 25 to 50 years and intersects with The Meadoway east of Morningside Avenue.
- **Thomson Memorial Park and Scarborough Museum** - Thomson Memorial Park is a 42 ha greenspace that follows the West Highland Creek, with trails through dense wooded ravines and a wide variety of park amenities such as dog parks, fitness equipment, and a wading pool. The Scarborough Museum is situated within Thomson Memorial Park, which intersects with The Meadoway at McCowan Road.
- **Centennial College, Ashtonbee and Progress Campuses** – Adjacent to the hydro corridor the Ashtonbee and Progress Campuses are two of five Centennial College campuses. The Centennial College of Applied Arts and Technology is a diploma and degree granting college with two

campuses located in Scarborough. The Ashtonbee Campus is regarded as one of the largest transportation technology training centres in North America, while the Progress Campus functions as the college's largest campus.

- **Flemingdon Park Golf Club** - Flemingdon Park Golf Course is located within the RSA at 155 St. Dennis Drive and was established in the early 1960's. The Golf course is privately owned and offers recreational golf opportunities near downtown Toronto.
- **Beare Road Landfill Redevelopment** – Plans are underway to transform the Beare Road Landfill into Beare Hill Park. This Park will provide opportunities for active and passive recreation, including a recently completed trail network that provides impressive panoramas of the GTA, and is surrounded by Rouge National Urban Park.
- **Allotment Gardens** – There are three allotment garden locations within the project study area:
    - Jonesville Allotment Gardens which has approximately 169 allotments, located between Eglinton Avenue and Victoria Park Avenue;
    - Givendale Allotment Gardens located just west of Kennedy Road, with approximately 99 allotments; and,
    - Daventry Allotment Gardens just east of Daventry Road, which has approximately 100 allotments.

Outside of the RSA, other nearby attractions include the Scarborough Bluffs, Ontario Science Centre, Scarborough Golf and Country Club, shops at Don Mills retail centre and the Don Valley Brick Works.

5.8 Phase 1 Consultation

Major consultation touchpoints for Phase 1 of The Meadoway Class EA is summarized in Table 5-11. For a more detailed breakdown of consultation for all phases of the Class EA, including notifications, advertisements, correspondence, and other materials, please refer to Appendix A.

Table 5-11. Summary of major consultation touchpoints for Phase 1

Date	Consultation
October 16, 2018	CLC invitations and information package emailed
October 25, 2018	Notice of Commencement to public, review agencies, politicians, and key stakeholders
October 25, 2018	TAC invitations emailed to key stakeholders
November 21, 2018	Meeting with Golden Mile Secondary Plan Project Team
November 23, 2018	Meeting with MP Erskine-Smith
November 26, 2018	Meeting with TTC staff regarding Scarborough Subway Extension
November 27, 2018	Meeting with Eglinton East LRT Project Team (City of Toronto)
December 6, 2018	CLC meeting #1
December 7, 2018	Meeting with UTSC
December 7, 2018	Meeting with MP Ratansi
December 12, 2018	Meeting with Eglinton East LRT Project Team (Metrolinx)
December 17, 2018	Meeting with Parks Canada, Rouge National Urban Park
December 18, 2018	Meeting with MPP Begum
February 11, 2019	CLC newsletter #1 circulated

5.8.1 Public Consultation

Public Events

The first PIC for The Meadoway Class EA was held during Phase 2 of the EA process (see Chapter 6.7) on April 24, 2019 and included both Phase 1 (existing conditions and problem/opportunity statement) and Phase 2 (alternative solutions) components. Please refer to Appendix A for additional information.

Community Liaison Committee - Meeting #1

The first CLC meeting took place on December 6, 2018 at the Centennial College Event Centre in Scarborough. The meeting was attended by six TRCA staff, one City of Toronto staff, one consultant, and 16 CLC members.

The meeting took place between 6:30 p.m. and 8:30 p.m. and included the following agenda items:

- Opening remarks and introduction to Project Team;
- CLC introduction and ice breaker;
- Overview of CLC purpose and objectives;
- Presentations to CLC; and,
- Project next steps and question and answer period.

A material package was circulated to attendees following the meeting, with all members encouraged to provide additional review and feedback. A project update newsletter was circulated to all CLC members on February 11, 2018. All documentation related to CLC Meeting #1 can be found in Appendix A.

5.8.2 Indigenous Communities

A formal Notice of Commencement package was sent on October 26, 2018 to the Indigenous communities identified in Chapter 3 to inform them of the initiation of The Meadoway Class EA. Any interested Indigenous communities were invited to contact Kathryn Brown, Archaeologist and Indigenous Engagement Coordinator at TRCA. Enclosed within the notification was: a letter introducing the project and the formal Notice of Commencement.

Follow up emails were conducted if a response to the Notice of Commencement was not received in order to ensure each Indigenous community received the notification and to answer any questions that would help communities evaluate interest in the project.

MCFN indicated that they would like to be involved at all stages of archaeological assessments, including having Field Liaison Representatives (FLRs) on site for all archaeological field work. Additional information is provided in Appendix A.

5.8.3 Review Agencies

All potentially affected review agencies were confirmed in consultation with the MECP in October of 2018 and included:

- Department of Fisheries and Oceans;
- Ministry of Natural Resources and Forestry (MNRF);
- MECP;
- MTO;
- Ministry of Heritage, Sport, Tourism and Culture Industries; and,
- IO.

Each review agency was emailed a formal Notice of Commencement and a project backgrounder. For more information on materials and correspondence as it relates to the review agencies, please refer to Appendix A**.**

5.8.4 Key Stakeholders

All key stakeholders were identified at the beginning of Phase 1 and notified of the project via email. A Notice of Commencement, project backgrounder, and opportunity to hold an in-person meeting was provided to each key stakeholder. A brief summary of these meetings is provided in Table 5-12. All key stakeholder documentation and correspondence can be found in Appendix A.

5.8.5 Technical Advisory Committee

The first TAC meeting for The Meadoway Class EA was held during Phase 2 on March 20, 2019 and included both Phase 1 and Phase 2 components. Please refer to Chapter 6.

Table 5-12. Meeting summary of key stakeholders

Key Stakeholder	Summary Discussions
City of Toronto – Golden Mile Secondary Plan	*Meeting held on November 21, 2018* • Overview of The Meadoway project • Purpose and objectives of the Class EA • Synergies between The Meadoway multi-use trail and pedestrian/cycle planning for the GMSP • TAC participation by both parties
Toronto Transit Commission – Scarborough Subway Extension (SSE)	*Meeting held on November 26, 2018* • Overview of The Meadoway project • Purpose and objectives of the Class EA • Update on current state of design for the SSE • Details on location of substation within The Meadoway project study area and the emergency exit on McCowan • Substation to include a 3 m set back between edge of property line and existing multi-use trail. Potential for meadow habitat restoration post construction • Offer of TAC participation

Key Stakeholder	Summary Discussions
City of Toronto – Eglinton East LRT	*Meeting held on November 27, 2018* • Overview of The Meadoway project • Purpose and objectives of the Class EA • Potential trail alignments and their interactions with the proposed LRT through the UTSC campus and along Morningside Avenue • TAC participation
University of Toronto Scarborough	*Meeting held on December 7, 2018* • Overview of The Meadoway project • Purpose and objectives of the Class EA • Potential alignment of multi-use trail through the UTSC north campus • Overview of the campus master plan and secondary plan underway TAC participation
Metrolinx – Eglinton East LRT	*Meeting held on December 12, 2018* • Overview of The Meadoway project • Purpose and objectives of the Class EA • Potential trail alignments and their interactions with the proposed LRT through UTSC and long Morningside Avenue • TAC participation
Parks Canada – Rouge National Urban Park	*Meeting held on December 17, 2018* • Overview of The Meadoway project • Purpose and objectives of the Class EA • Trail connections to future welcome centre • TAC participation • Brief discussion on potential CEAA triggers depending on trail alignment

5.8.6 Local Politicians

Local councillors, MPs, and MPPs were notified of The Meadoway Class EA via email. A formal Notice of Commencement and project background was included, along with the opportunity to meet in-person to discuss the project. In-person meetings were held with MP Erskine Smith, MP Ratansi, and MPP Begum (see Table 5-11).

All documentation related to engagement with local politicians throughout all phases can be found in Appendix A.

6.0 ALTERNATIVE SOLUTIONS (PHASE 2)

6.1 An Objectives-Based Evaluation Approach

The Meadoway Class EA is following an objectives-based approach to evaluating alternative trail alignments within the incomplete sections of the hydro corridor.

Significant effort went into developing the project objectives, which included input from the TAC, CLC, key stakeholders, and the public. The objectives were developed to ensure they considered all aspects of the environment as required in the Class EA process. This approach carries the objectives through the full EA,

using them to set the framework for the decision-making process. It allows for the consideration of advantages and disadvantages for alternative trail alignments relative to their ability to accomplish the objectives that TRCA, together with stakeholders and the community, set out for The Meadoway project. The project objectives are:

1. Provide a positive user experience;
2. Protect and enhance natural features;
3. Provide connections;
4. Maintain a safe environment for all potential trail users;
5. Be good neighbours; and,
6. Be cost effective.

For each objective, the alternative trail alignments were compared against a set of specific evaluation criteria in order to identify a preferred trail alignment. The project objectives and associated evaluation criteria are presented in Chapter 6.2 below.

An important part of the Class EA process is to confirm that the advantages of the project outweigh the potential impacts. This confirmation is typically addressed through the consideration of a "Do-Nothing" alternative. For this project a "Do Nothing" alternative would consist of no action. While the existing trails would remain, a fully connected multi-use trail from the Don River to Rouge National Urban Park would not be completed. As the development of the multi-use trail is anticipated to have several benefits and minimal negative impact on the environment, and since a "Do-Nothing" alternative does not address the opportunity statement and objectives established for this project, it was not considered further.

6.2 Alternative Trail Alignments

The alternative trail alignments explore different ways to achieve a continuous multi-use trail between the Don River and Rouge National Urban Park. To identify the preferred trail alignments, the following steps were taken:

Step 1 – Develop the Alternative Trail Alignments - The 16 km stretch of hydro corridor was divided into seven manageable sections based on the location of the existing trail within the LSA. The complete sections currently consist of Sections 1, 2, and 4. Section 7[1] (see Figure 6-1) is also considered complete based on existing multi-use trail infrastructure between Conlins Road and Zoo Road/Rouge National Urban Park.

The focus of this Class EA was on the incomplete sections of the hydro corridor.

[1] Section 7 was initially identified as an incomplete section at early meetings with the TAC and CLC. At the time it was noted that parts of Section 7 were on federal land and would be further subject to a Parks Canada Environment Impact Analysis. Prior to PIC #1 on April 24, 2019 it was decided that Section 7 would be removed from this Class EA process and form part of the completed portions of The Meadoway. Section 7 includes an existing trail within the hydro corridor, as well as an existing separated multi-use path along Meadowvale Road providing access to Rouge National Urban Park.

Specifically:

- **Section 3** - extends just west of Kennedy Road towards Lawrence Avenue East and Brimley Road. Within the LSA this section includes the TTC/GO Stouffville rail corridor and the Southwest Tributary of Highland Creek.
- **Section 5** - extends from Scarborough Golf Club Road just south of Ellesmere Road to Neilson Road near Military Trail. Within the LSA this section includes the Milliken Branch of Highland Creek and connects to the Upper Highland Creek Pan Am Path.
- **Section 6** – extends from Neilson Road, south of Military Trail, to Conlins Road north of Highway 401. A portion of this section is routed south of the hydro corridor due to the presence of Highway 401. Within the LSA this section includes Ellesmere Ravine and the UTSC north campus.

In the incomplete sections described above, the following types of alternative trail alignments were considered:

- **Option A (In-Corridor)** – trail alignment remains within the hydro corridor as much as is feasibly possible;
- **Option B (Maximize Existing Infrastructure)** – trail alignment navigates the existing street network; and,
- **Option C (Hybrid)** – the trail alignment is strategically placed both in the hydro corridor and on existing streets.

Preliminary alternative trail alignments within each section were reviewed with the TAC, CLC, and the public and revised to address comments raised. An example of feedback received from the review of alternative trail alignments was the recommendation to relocate the multi-use trail closer to the north or south edge of the hydro corridor, as opposed to the centre, to maximize the meadow restoration opportunities and avoid habitat fragmentation. This change was reflected in Sections 3, 5, and 6. Further information on Phase 2 consultation can be found within Chapter 3 and Appendix A.

Step 2 – Evaluate the Alternative Trail Alignments - For each incomplete section, alternative trail alignments were assessed against evaluation criteria developed for each of the six Class EA project objectives. The criteria developed under these objectives (shown in Table 6-1) enabled the team to consider both the benefits of the proposed alternative trail alignments, as well as potential environmental, socio-economic, and cultural impacts. All criteria and objectives were considered equally important in the evaluation.

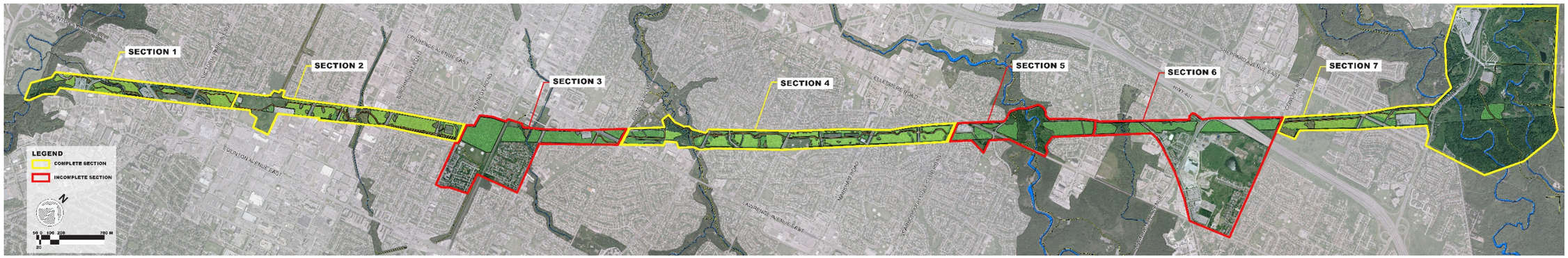

Figure 6-1. The Meadoway LSA is divided into 7 sections. The three incomplete (red outlined) sections are the focus of the Class EA

Table 6-1. Objectives and evaluation criteria for the alternative trail alignments

Objectives	Evaluation Criteria
Provide a positive user experience	• Maximizes interaction and connection to urban greenspace (e.g., restored meadow and natural ravine systems in the hydro corridor); provides opportunity for education and stewardship
Protect and enhance natural features	• Capacity to maximize and ensure the success of naturalization/restoration of the meadow • Minimizes impact to watercourses and aquatic habitat • Minimizes potential for impacts to valley slope (e.g., erosion) and vegetation/habitat
Provide connections	• Extent of linkages to multi-modal transportation • Extent of linkages to other trails or key amenities • Length of new trail connection (related to travel distance and time)
Maintain a safe environment for all potential trail users	• Minimizes potential for concern regarding personal safety (e.g., maintenance vehicles, road traffic, intersections, human conflict, safe trail design) • Extent of trail that can meet and/or exceed Accessibility for Ontarians with Disabilities Act (AODA) for trail design • Minimizes potential for flood risk to trail users
Be good neighbours	• Minimizes potential for operation and maintenance impacts on the hydro corridor and meadow • Minimizes potential for impact on neighbours adjacent to the hydro corridor, as well as road users • Extent of support/leverage for local communities and infrastructure initiatives
Be cost effective	• Constructability • Capital cost • Operating and maintenance costs

The alternative trail alignments for each section were assessed against the above project objectives and associated evaluation criteria. For each criterion, the alternative trail alignments were ranked as:

- Most preferred – having the greatest potential to meet the project objectives based on the criterion;
- Less preferred – having a moderate potential to meet the project objectives based on the criterion; or,
- Least preferred – having the lowest potential to meet the project objectives based on the criterion.

The results of the evaluation were summarized to show which alternative trail alignment best met each of the six project objectives and was therefore considered as the *preferred* trail alignment. The preliminary evaluation results were reviewed and informed by the TAC, CLC, and the public to confirm the preferred trail alignment.

6.3 Alternative Trail Alignment Evaluation - Section 3

6.3.1 Description of Section 3 Alternative Trail Alignments

Section 3 is the most western of the incomplete sections, located between Kennedy Road and Thomson Memorial Park east of Brimley Road. This section falls within Ward 21 – Scarborough Centre. Two alternative trail alignments (Figure 6-2) were identified for this section and are described below (from west to east):

- **Section 3 Option A** – The "In-Corridor" option remains within the hydro corridor for its entire length west of Kennedy Road to Thomson Memorial Park east of Brimley Road. This option is approximately 2,575 m in length and requires a new pedestrian rail crossing at the TTC/GO Stouffville rail corridor and pedestrian water crossing over the Southwest Tributary of Highland Creek. New at-grade pedestrian crossings at Kennedy Road, Midland Avenue, and Marcos Boulevard will also be required.
- **Section 3 Option B** – The "Maximize Existing Infrastructure" option routes along local streets, including Tara Avenue, Fitzgibbon Avenue, and Midland Avenue. East of Midland Avenue, the alignment routes back into the hydro corridor where it connects to the existing trail just west of Brimley Road and Lawrence Avenue. This option is approximately 2,468 m in length and requires improvements to the local roads in order to accommodate a multi-use trail and a new pedestrian crossing at Marcos Boulevard.

The alternative trail alignments and preliminary evaluation results were presented at the TAC #1 and #2, CLC #2 and #3, and PIC #1 and #2 meetings and made available online. Based on feedback received, the following revisions were made to develop the Section 3 alternative trail alignments shown on Figure 6-2:

- The multi-use trail was realigned to overlap with the existing HONI access road east of Kennedy Road;
- A potential opportunity to connect to Arsandco Park was noted; and,
- The In-Corridor (Option A) alignment was relocated closer to the north or south edge of the hydro corridor to maximize meadow biodiversity and minimize habitat fragmentation.

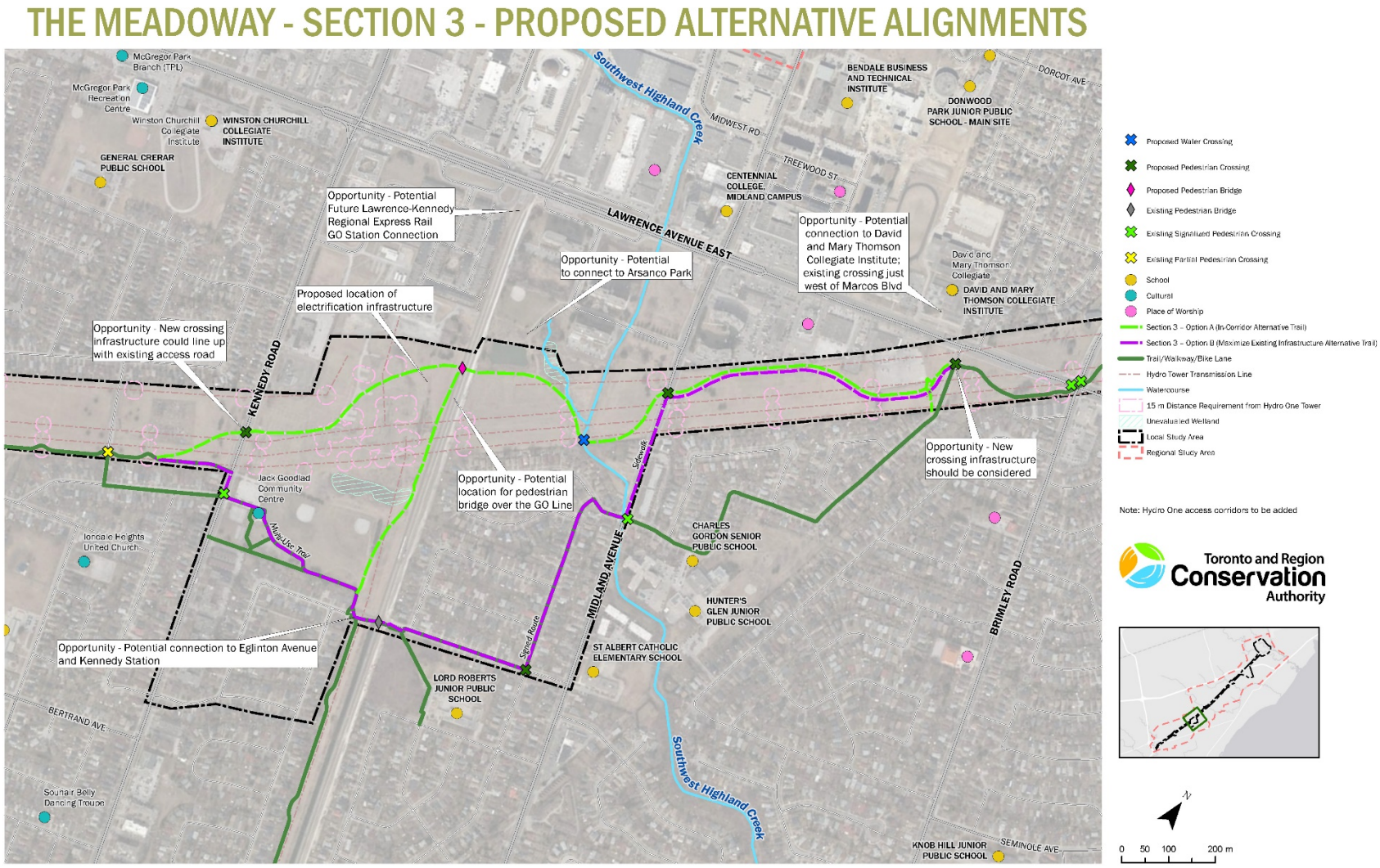

Figure 6-2. Section 3 alternative trail alignments

6.3.2 Evaluation of Section 3 Alternative Trail Alignments

Table 6-2 summarizes the evaluation of alternative trail alignments for Section 3. Checkmarks reflect the option that was identified as preferred for that objective based on a set of established criteria. A more detailed evaluation providing an assessment of the alternative trail alignments for each of the criteria is provided in Appendix F.

Option A is preferred for five of the six project objectives, except for "be cost effective". While both options require capital to add new trails and pedestrian road crossings, and improve existing roads to accommodate a multi-use trail, the two bridge structures required for Option A are anticipated to result in greater infrastructure costs as compared to Option B. Key advantages of Option A include its capacity to provide for a safer, more direct route that immerses users into the restored meadow habitat. This alignment also provides local connections to existing trails, major transit stations (i.e., Kennedy Station and Lawrence-Kennedy Regional Express Rail GO Station), and schools including Centennial College Midland Campus. As noted, there is a significant level of complexity associated with crossing the TTC/GO Stouffville rail corridor while maintaining appropriate setback requirements from the surrounding power transmission infrastructure.

Table 6-2. Alternative trail alignments evaluation – Section 3

Objectives	**Option A – In-Corridor**	**Option B – Maximize Existing Infrastructure**	**Rationale**
Provide a positive user experience	✔		Option A maximizes interaction with the natural environment.
Protect and enhance natural features	✔	✔	Option A will have temporary impacts to watercourses associated with construction of the water crossing. Option B does not provide formal infrastructure for meadow maintenance.
Provide connections	✔		Option A is shortest, most direct route and provides more connections to local trails and destinations.
Maintain a safe environment for all potential trail users	✔		Option A is not proximal to vehicles and road infrastructure.
Be good neighbours	✔		Option A accommodates HONI design requirements, minimizes impact on neighbours and provides equitable access to both north and south of the hydro corridor.
Be cost effective		✔	Option B leverages existing infrastructure and therefore does not require as much capital cost.
	Proposed Preferred		

Based on the evaluation, Option A was identified as the proposed preferred trail alignment for Section 3.

6.4 Alternative Trail Alignment Evaluation - Section 5

6.4.1 Description of Section 5 Alternative Trail Alignments

Section 5 is located between Scarborough Golf Club Road and Neilson Road and includes the Milliken Branch of Highland Creek. Section 5 is in Ward 24 – Scarborough-Guildwood. Three alternative trail alignments (shown on Figure 6-3) identified for this section are described below (from west to east):

- **Section 5 Option A** – The "In-Corridor" option is primarily within the hydro corridor. From Scarborough Golf Club Road, the alignment meanders through the hydro corridor to the intersection of Ellesmere Road and Military Trail/Orton Park Road. Eastward, the alignment mirrors the route of the Upper Highland Creek Pan Am Path on the north side of Ellesmere Road and down into the Highland Creek ravine. The alignment crosses Highland Creek on a new pedestrian water crossing and routes up the ravines east slope, returning to the hydro corridor which it follows to Neilson Road. This option is approximately 2,026 m in length and requires the construction of new trail within the hydro corridor, new at-grade pedestrian crossings at Scarborough Golf Club Road and Neilson Road and a new pedestrian water crossing over Highland Creek.
- **Section 5 Option B** – The "Maximize Existing Infrastructure" option follows the existing road network, utilizing Ellesmere Road to connect users between Scarborough Golf Club Road and Military Trial at Neilson Road. A small section of the existing multi-use trail along Ellesmere Road, between Scarborough Golf Club Road and Military Trail/Orton Park Road, would be utilized. This option is approximately 2,283 m in length and would require significant improvements to Scarborough Golf Club Road, parts of Ellesmere Road, and Neilson Road to accommodate trail infrastructure.
- **Section 5 Option C** – The "Hybrid" option is located within the hydro corridor between Scarborough Golf Club Road and the intersection of Ellesmere Road and Military Trail/Orton Park Road. Moving east, it follows the same alignment as Option B, but includes an additional trail segment to the north of Ellesmere Road that brings trail users into the Highland Creek ravine. Option C is approximately 2,318 m in length and requires the construction of new multi-use trail within the hydro corridor for the east portion of the alignment, as well as improvements to Ellesmere and Neilson Road. A new at-grade pedestrian crossing is required at Scarborough Golf Club Road. No pedestrian water crossing is proposed for Option C.

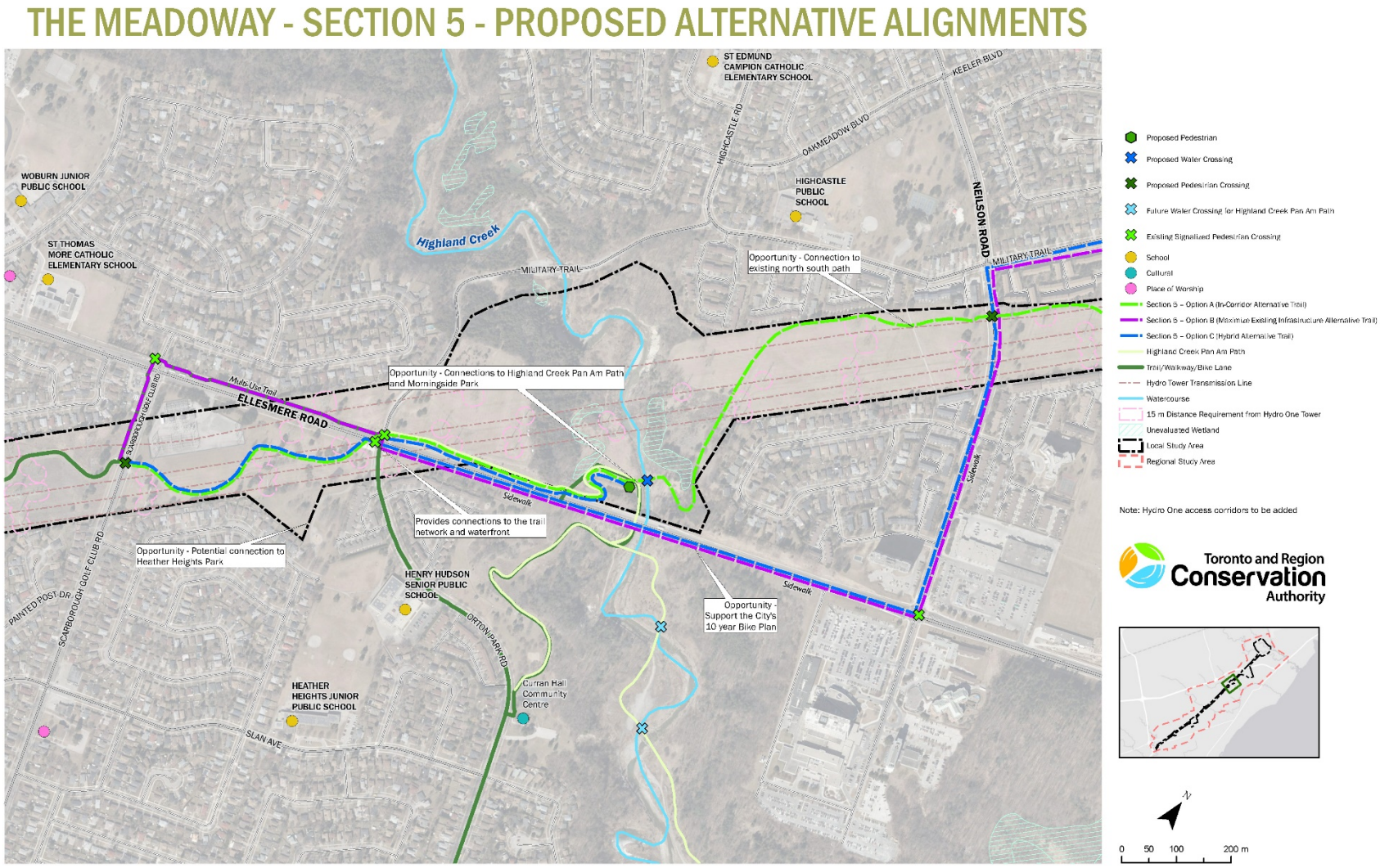

Figure 6-3. Section 5 alternative trail alignments

The alternative trail alignments and preliminary results were presented at the TAC #1 and #2, CLC #2 and #3, and PIC #1 and #2 meetings and made available online. Based on feedback received, the following revisions were made to develop the Section 5 alternative trail alignments shown on Figure 6-3:

- Option A was relocated closer to the north or south edge of the hydro corridor to maximize meadow restoration potential and minimize habitat fragmentation; and,
- Re-alignment of the additional segment of trail to the pedestrian viewing node for Option C to create a better connection to the Upper Highland Creek Pan Am Path and remove the need for a new at-grade midblock pedestrian crossing of Ellesmere Road.

6.4.2 Evaluation of the Section 5 Alternative Trail Alignments

Table 6-3 summarizes the evaluation of alternative trail alignments for Section 5. Checkmarks reflect the option that was identified as preferred for that objective based on a set of established criteria. A more detailed evaluation providing an assessment of the alternative trail alignments for each of the criteria is provided in Appendix F.

In Section 5, Option A is preferred for four of the six project objectives. Regarding costs, Option A is anticipated to have greater costs associated with the proposed pedestrian water crossing over Highland Creek and two new signalized at-grade pedestrian crossings. In addition, the east side of Highland Creek ravine is steep, with densely wooded areas and an unevaluated wetland which would likely be impacted to some extent by the construction of a multi-use trail.

Key benefits of Option A include its opportunity to provide the most immersive and educational experience of the three options due to its location within the hydro corridor and ravine. Option A is also a more safe, direct route that provides users with a trail that minimizes interaction with vehicular traffic as compared to Options B and C. Several members of the TAC, CLC, and public expressed safety concerns with this proposed alignment along Ellesmere Road (Option B and C), which is known for high-speed vehicles and congestion during rush hour. Based on the evaluation and these key benefits, it was determined that Option A (In-Corridor) was the preferred trail alignment for Section 5.

Table 6-3. Alternative trail alignments evaluation – Section 5

Objectives	Option A – In-Corridor	Option B – Maximize Existing Infrastructure	Option C – Hybrid	Rationale
Provide a positive user experience	✔			Option A maximizes interaction with the natural environment.
Protect and enhance natural features		✔		Option B does not present potential impacts to watercourses and aquatic habitat or valley slope.
Provide connections	✔			Option A is shortest, most direct route and provides more connections to local trails and destinations.
Maintain a safe environment for all potential trail users	✔			Option A is not proximal to vehicles and road infrastructure.
Be good neighbours	✔			Option A accommodates HONI design requirements, minimizes impact on neighbours, and provides equitable access to both north and south of the hydro corridor.
Be cost effective		✔	✔	Option B and C leverage existing infrastructure. Option B presents significant level of complexity due to modifications required for major arterial roads. Option C requires the construction of some trail segments in the hydro corridor.
	Proposed Preferred			

Based on the evaluation, Option A was identified as the proposed preferred trail alignment for Section 5.

6.5 Alternative Trail Alignment Evaluation - Section 6

6.5.1 Description of Section 6 Alternative Trail Alignments

Section 6 is located between Neilson Road and Conlins Road and intersects with Ellesmere Ravine and Highway 401. Given the significant challenges associated with crossing Highway 401, for the purposes of this Class EA all alternative trail alignments route south of the hydro corridor and cross the highway via the existing bike lanes on Conlins Road. Section 6 falls within Ward 24 – Scarborough-Guildwood and Ward 25 – Scarborough-Rouge Park. Three alternative trail alignments (Figure 6-4) were identified for this section and are described below (from west to east):

- **Section 6 Option A** – The "In-Corridor" option routes through the hydro corridor between Neilson Road and Morningside Avenue, where it turns south on Morningside Avenue and crosses Tams Road/Pan Am Drive. The alignment follows Pan Am Drive for a few hundred metres, then travels east to join Chartway Boulevard across the north campus of UTSC. At Conlins Road, the alignment routes north and reconnects with the existing multi-use trail in the hydro corridor just north of the 401. This option is approximately 3,329 m in length and requires three new at-grade pedestrian crossings at Military Trail, Pan Am Drive, and Conlins Road (within the hydro corridor). A new pedestrian water crossing over Ellesmere Ravine would also be required, along with improvements to sections of Morningside Avenue, Pan Am Drive, and Chartway Boulevard to accommodate a multi-use trail. Conlins Road already includes both sidewalks and on-street bike lanes.
- **Section 6 Option B** – The "Maximize Existing Infrastructure" option utilizes existing road networks. From Neilson Road, the alignment travels southeast along Military Trail where it intersects with Ellesmere Road. At Ellesmere Road, the alignment routes for a short distance east and then north along the existing bike lane on Conlins Road. Improvements would be required on Military Trail and Ellesmere Road to accommodate trail infrastructure. This alternative is approximately 3,807 m in length and requires a new at-grade pedestrian crossing at Conlins Road (just north of the 401).
- **Section 6 Option C** – The "Hybrid" option routes along Military Trail between Neilson Road and Bonspiel Drive, then along Tams Road to Morningside Avenue. From here, it follows the same route as Option A through the UTSC north campus, then north along Conlins Road to the hydro corridor. This option is approximately 3,067 m in length and requires two new at-grade pedestrian crossings at Pan Am Drive and Conlins Road (within the hydro corridor). Some improvements would be required to Military Trail, Bonspiel Drive, Tams Road, Pan Am Drive, and Chartway Boulevard to accommodate trail infrastructure.

The alternative alignments and preliminary evaluation results were presented at the TAC #1 and #2, CLC #2 and #3, and PIC #1 and #2 meetings and made available online. Based on feedback received, the following revisions were made to develop the Section 6 alternative trail alignments shown on Figure 6-4:

- Option A initially left the hydro corridor at Military Trail. Based on input received it was revised to continue within the hydro corridor to Morningside Avenue; and,
- Option A alignment was relocated closer to the north or south edge of the hydro corridor to maximize meadow benefit and minimize habitat fragmentation.

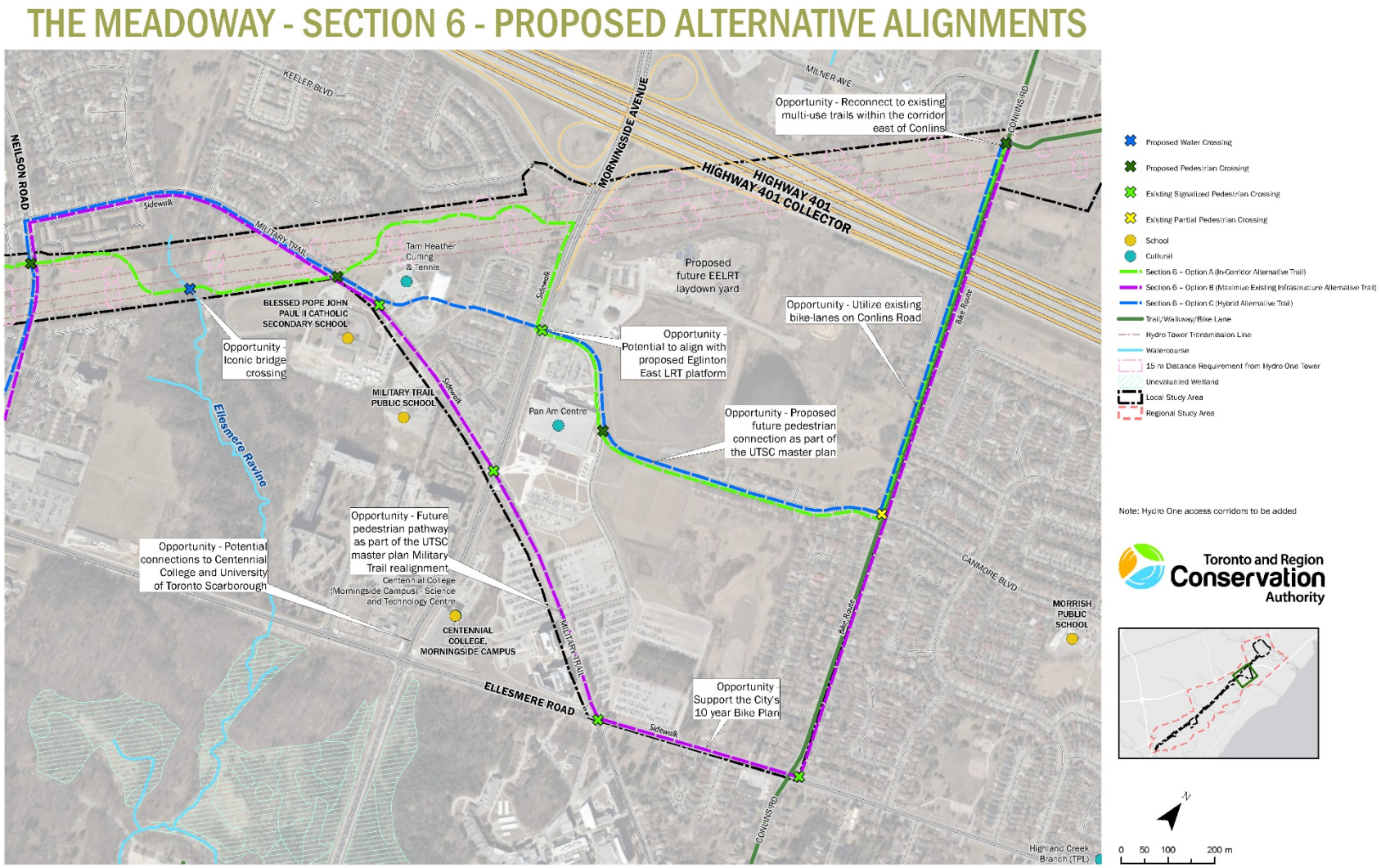

Figure 6-4. Section 6 alternative trail alignments

6.5.2 Evaluation of Section 6 Alternative Trail Alignments

Table 6-4 summarizes the evaluation of alternative trail alignments for Section 6. Checkmarks reflect the option that was identified as preferred for that objective based on a set of established criteria. A more detailed evaluation providing an assessment of the alternative trail alignments for each of the criteria is provided in Appendix F.

In Section 6, Option A met five of the six project objectives, not including cost effectiveness. While all Options involve some cost to build new trail segments, install pedestrian crossing infrastructure, and upgrade existing roads to accommodate multi-use trails, the Ellesmere Ravine pedestrian water crossing proposed in Option A will be the most expensive infrastructure component. Key benefits of Option A include the positive user experience provided by being near the restored meadow, naturalized Ellesmere Ravine, and UTSC north campus. It provides the shortest and most direct route with the longest extent of trail that is removed from vehicular traffic. Based on the evaluation, Option A was identified as the preferred alignment for Section 6.

Table 6-4. Alternative trail alignments evaluation – Section 6

Objectives	Option A – In-Corridor	Option B – Maximize Existing Infrastructure	Option C - Hybrid	Rationale
Provide a positive user experience	✔			Option A maximizes interaction with the natural environment.
Protect and enhance natural features	✔	✔	✔	Option A maximizes meadow restoration and reduces meadow trampling. Options B and C have no impact on watercourses or aquatic habitat. None of the Options have potential impacts to valley slopes.
Provide connections	✔			Option A is shortest, most direct route and provides more connections to local trails and destinations.
Maintain a safe environment for all potential trail users	✔			Option A is not proximal to vehicles and road infrastructure.
Be good neighbours	✔		✔	Option A and C accommodate HONI design requirements, minimize impact on neighbours and provide equitable access to both north and south of the hydro corridor.

Objectives	Option A – In-Corridor	Option B – Maximize Existing Infrastructure	Option C - Hybrid	Rationale
Be cost effective		✔	✔	Option B and C leverage existing infrastructure and do not require major capital cost associated with constructing the water crossing over Ellesmere Ravine.
	Proposed Preferred			

6.6 Preferred Alternative Trail Alignment Summary

A preferred trail alignment was selected for each incomplete section of The Meadoway through the alternative trail alignment evaluation process. The preferred trail alignment consists of the Option A (In-Corridor) alignment in Sections 3, 5, and 6.

The preferred trail alignment was developed, evaluated, and revised over the course of five months with several in-person and online contributions from the TAC, CLC, and public. The Option A alignments will need new pedestrian water crossings over Southwest Highland Creek, Highland Creek, and Ellesmere Ravine and a new pedestrian rail crossing over the TTC/GO Stouffville rail corridor. While the crossings will result in additional capital costs, it was determined that these costs did not preclude the feasibility of their construction. Further, immersing trail users within the restored meadow via a dedicated multi-use trail provided significant benefits to user safety and overall experience. Due to the presence of the Highway 401 in Section 6, Option A is temporarily routed south of the hydro corridor between Morningside Avenue and Conlins Road via the UTSC north campus. A separated bike lane on Conlins Road connects user back into the existing multi-use trail within the hydro corridor.

The preferred “In-corridor” trail alignment for the three incomplete sections provides the following advantages:

- Immerses trail users within the restored meadow, as well as existing environmental features associated with pedestrian water crossings (e.g., ravines);
- Can be constructed to minimize impacts on existing natural features and watercourses;
- Provides a continuous and direct multi-use trail, as well as connections to existing secondary paths and local community features;
- Provides a safe path for all ages and abilities that meets AODA for most of its length;
- Can be constructed with minimal impact on existing HONI infrastructure;
- Leverages local initiatives where possible, including the UTSC Master Plan (Section 6);
- Can be constructed with minimal impact on those who live in the project vicinity; and,
- Can be constructed at a cost that is considered reasonable relative to the project benefits.

6.7 Phase 2 Public Consultation

Major consultation touchpoints for Phase 2 of The Meadoway Class EA are summarized in Table 6-5. For a more detailed breakdown of consultation for all phases of the Class EA, including notifications, advertisements, correspondence, and other materials, please refer to Appendix A.

Table 6-5. Summary of major consultation touchpoints for Phase 2

Date	Consultation
March 13, 2019	Meeting with Toronto Zoo
March 20, 2019	TAC meeting #1
March 28, 2019	CLC meeting #2
April 8, 2019	Meeting with HONI and IO
April 18, 2019	Meeting with Councillor McKelvie
April 24, 2019	PIC meeting #1
May 23, 2019	TAC meeting #2
June 5, 2019	Meeting with Councillor Minnan-Wong
June 11, 2019	CLC meeting #3
June 13, 2019	Meeting with HONI and IO
June 19, 2019	Meeting with MCFN
June 26, 2019	PIC meeting #2

6.7.1 Public Consultation

Public Events

Public Information Centre #1

PIC #1 for The Meadoway Class EA was held on April 24, 2019 at Centennial College, Progress Campus. The purpose of PIC #1 was to introduce and seek feedback on Phase 1 and 2 progress, namely, the project objectives and opportunity statement, existing conditions for the project study area, preliminary alternative trail alignments developed for the incomplete sections of the hydro corridor, proposed evaluation criteria, and the preliminary visualization toolkit.

The public were notified of the PIC via social media announcements, email (to subscribers), newspaper advertisements, and flyers circulated at community centres and libraries. A total of 49 attendees participated, including MP McKay and representation from Councillor Thompson and MPP Thanigasalam's offices. Overall, the project and proposed alternative trail alignments were well received and the community expressed an eagerness to see the project completed. Key opportunities identified by the public included additional programming, such as community gardens and seating areas. Valuable feedback was provided regarding design considerations for crossings in order to prioritize both safety and efficiency to travel. Based on the alternative multi-use trail alignments proposed for each incomplete section, the overwhelming consensus was to keep trail users within the footprint of the naturalized hydro corridor.

Opportunities for public feedback were provided during the PIC event, as well as through an online form via the project website. A sample of feedback received from PIC #1 is included in Table 6-6. A full summary of all feedback received can be found in Appendix A.

Table 6-6. Representative sample of comments received from PIC #1

Topic	Comment	TRCA Response (where appropriate)
Community building	I would like to take this time to say it was very exciting to meet all of you tonight! I would also like to say how I appreciate your time and hard-earned efforts to put together The Meadoway initiative, with all its dynamics! Thank you immensely for allowing me the opportunity to share our children's sub-committee's initiative with everyone…our group is very interested and know how vital for the schools to participate and will speak more on how we can also establish this correlation for the success of students living and playing in the surrounding areas.	NA
Trail alignments	I attended the information session on April 24th and have reviewed the material online. I am very impressed with the quality and thoroughness of the planning and presentation. As per the presentation, as much of the trail as is possible should be located within the corridor. Please consider tunneling under highway 401 and the railway tracks, if not initially, then in the future. Example: rainbow tunnel, Don Valley.	Tunneling will be considered if/when a feasibility study is undertaken to explore crossing options over the 401. This is not part of the scope of work for this Class EA.
Allotment gardens and access	Try to include more allotment gardens along The Meadoway as more and more people would like to grow their own vegetables. Also, add parking lots close to those gardens and along the path so that people can access it easily.	Additional opportunities for urban agriculture in the Meadoway will be held in consultation with the City and HONI.
Trail alignments	The trail should extend across Scarborough Golf Club road and continue through the hydro field and into Heather Heights Park before emerging onto Orton Park or Ellesmere. This would allow the trail to connect with the newly completed trail in Heather Heights and eliminate the dangerous (traffic) route north on Scarborough Golf Club Rd and east on Ellesmere.	The proposed preferred multi-use trail alignment for this section (Option A) does satisfy this and remains within the hydro corridor.
Trail design	Will bridges adequately accommodate cyclists and foot traffic? Some on the Don trail are too narrow.	Yes. All bridge infrastructure will be designed to accommodate cycle and pedestrian traffic and will match the existing trail widths where possible.
User experience	Security and safety should also be a consideration here. How to balance with quiet areas?	Security and safety are explicitly factored into the evaluation process for all alignments.

Public Information Centre #2

PIC #2 for The Meadoway Class EA was held on June 24, 2019 at Thomson Memorial Park. The purpose of PIC #2 was to introduce and seek feedback on the results of Phase 2, namely, the completed evaluation and identification of the preferred alternative trail alignment for each incomplete section of the hydro corridor. Updates on meadow restoration works were also provided, along with guided tours of the nearby restored meadow.

The public was notified of the PIC via social media announcements, email (to subscribers), newspaper advertisements, and flyers circulated at community centres and libraries. Approximately 50 attendees participated at PIC #2, with several guided walks that were well attended. Excellent critical feedback was received on the proposed alternative trail alignment, with the consensus pointing favourably to the 'In-Corridor' options selected through the evaluation process (see Table 6-7). One community member expressed concern regarding the potential impact of a proposed alternative trail alignment on the undisturbed vegetation of Highland Creek (Section 5). Concerns around the cost of trail infrastructure in such a location was also expressed. An extensive in-person discussion was held with the community member both in-person and via email, within which it was discussed that as part of the EA process, the alternatives (trail alignment and design concepts) are evaluated to ensure the final route selected best meets all the project objectives while considering potential impacts. Once the preferred trail alignment is selected, potential environmental impacts are identified and mitigation measures determined, such as opportunities for restoration and enhanced plantings in the area where the preferred trail alignment is constructed.

Opportunities for public feedback were provided during the PIC event, as well as through an online form via the project website. A sample of feedback received from PIC #2 is included in Table 6-7. A full summary of all feedback received can be found in Appendix A.

Table 6-7. Representative sample of comments received from PIC #2

Topic	Comment	TRCA Response (where appropriate)
Design	Have you considered simplifying the proposed bridges? There are instances in other city parks where the crossing is made up of wood planks and ropes. These don't need to be elaborate. Cyclists can go out of the hydro corridor and pedestrians could take the bridge. That would save on costs.	While we want to consider all potential designs, ensuring The Meadoway trail network remains fully accessible for all users is a key priority. As such, alternative bridge designs that are not accessible will not be considered.
Maintenance	How will you prevent the spread of invasives within The Meadoway? What's the point of planting all this meadow if it will be destroyed by dog strangling vine and others? This is already a major issue for adjacent neighbours.	TRCA has implemented a comprehensive invasive species management program that will continue as more meadow is established.

Topic	Comment	TRCA Response (where appropriate)
Design	Would function better as a true transportation corridor if the trail was less windy (i.e., prefer if it were straighter).	Trail sinuosity adds character and functions as a safety mechanism by regulating speed. The multi-use trail needs to consider and be planned for a wide variety of users.
Design	Will there be a crossing of Don to better connect The Meadoway to East Don?	A connection between East Don and The Meadoway west of Bermondsey is planned as part of the East Don Trail Class EA.
Naturalization	I'm seeing birds I haven't seen in 30 years in the restored areas - Brown Creepers, Blue Jays, Yellow swallowtails.	NA
General	I'm excited to travel the full trail network!	NA
Programming	I would like to have additional vegetable garden areas throughout the corridor.	Additional opportunities for urban agriculture are being explored through the visualization toolkit planning process and will require careful coordination with City of Toronto Staff and members of the public.

Community Liaison Committee

CLC Meeting #2

CLC Meeting #2 took place on March 28, 2019 at Centennial College, Ashtonbee Campus. The meeting was attended by five TRCA staff, three consulting staff, and 15 CLC members. The meeting took place between 6:30 p.m. and 8:30 p.m. and included the following agenda items:

- Update to The Meadoway Class EA;
- Technical reporting, preliminary alternative trail alignments, and evaluation framework;
- Overview of the visualization toolkit;
- Review of public meeting materials – mock PIC; and,
- Mock debrief and open question and answer period.

A material package was circulated to attendees following the meeting, with all members encouraged to provide additional review and feedback. All documentation related to CLC Meeting #2, including feedback and general correspondence, can be found in Appendix A.

CLC Meeting #3

CLC Meeting #3 took place on June 11, 2019 at St. Andrews Catholic School in Scarborough. The meeting was attended by six TRCA staff, three consultant staff, and 13 CLC members. The meeting took place between 6:30 p.m. and 8:30 p.m. and included the following agenda items:

- Update to The Meadoway Class EA and visualization toolkit;
- Evaluation of alternative alignments;
- Existing conditions report;
- Upcoming PIC #2; and,
- Open discussion.

A material package was circulated to attendees following the meeting, with all members encouraged to provide additional review and feedback. All documentation related to CLC Meeting #3, including feedback and general correspondence, can be found in Appendix A.

6.7.2 Indigenous Communities

Notification of PIC #1 was circulated to all Indigenous communities on April 3, 2019. The notification included a letter and a public event flyer.

Circulated on June 10, 2019, notification of PIC #2 was sent to all identified Indigenous communities. The notification included a letter and a public event flyer.

TRCA and MCFN met at the Department of Consultation and Accommodation (DOCA) office on June 19, 2019 to discuss The Meadoway project. MCFN reiterated that they are interested in the project and see opportunities for their involvement. TRCA committed to meeting at DOCA in Spring 2020 to discuss MCFN participation in further detail, such as during the Stage 2 archaeological assessment. Copies of environmental studies and reports undertaken to-date, including biological inventories and the draft existing conditions report, were circulated to MCFN following the June 19 meeting.

Please refer to Appendix A for additional engagement information.

6.7.3 Review Agencies

All review agencies were notified and updated on the status of The Meadoway Class EA via email approximately two weeks before each PIC. An informational flyer was included within each correspondence and an opportunity was provided for an in-person update. The confirmed review agency list is below:

- Department of Fisheries and Oceans;
- MNRF;
- MECP;
- MTO;

- Ministry of Heritage, Sport, Tourism and Culture Industries; and,
- IO.

The only response received was from the Ministry of Heritage, Sport, Tourism, and Culture Industries requesting an update on the status of any archaeological assessments underway, as well as a copy of the draft existing conditions report prepared in Phase 1. These items were circulated and all documentation and correspondence as it relates to review agencies can be found in Appendix A.

6.7.4 Key Stakeholders

Following the circulation of the Notice of Commencement and in-person meetings with each key stakeholder in Phase 1, a representative was selected to participate on The Meadoway Class EA TAC. Thus, the TAC was used as the primary mechanism for providing updates to and receiving input from key stakeholders.

Two meetings with HONI and IO were held in Phase 2 (Table 6-5) in order to discuss and provide updates to the Class EA.

6.7.5 Technical Advisory Committee

Meeting #1 – March 20, 2019

TAC Meeting #1 was held on March 20, 2019 at the TRCA Head Office in Vaughan. The meeting was attended by twelve TAC members, ten TRCA technical staff, and four consultant staff. A list of TAC participates can be found in Appendix A.

An information package was distributed to all TAC members and a guided presentation was provided by the project team, with questions and discussion held throughout the duration of the meeting. Key topics included:

- Brief project overview and update;
- Visualization toolkit for The Meadoway;
- Technical reporting on pedestrian water crossing locations;
- Preliminary alternative multi-use trail alignments;
- Draft evaluation framework; and,
- Open dialogue and closing remarks.

The information was circulated digitally to all TAC members and a one-week period was provided for feedback. All feedback was catalogued and incorporated into the Phase 2 deliverables where appropriate. All documentation and correspondence related to the TAC can be found in Appendix A.

Meeting #2 – May 23, 2019

TAC Meeting #2 was held on May 23, 2019 at the TRCA Head Office in Vaughan. The meeting was attended by nine TAC members, eight TRCA technical staff, and three consultant staff.

An information package was distributed to all TAC members and a guided presentation was provided by the project team, with questions and discussion held throughout the duration of the meeting. Key topics included:

- Completed evaluation of the preliminary alternative trail alignments;
- An overview of the preferred trail alignment selected for each incomplete section;
- Discussion on key technical considerations; and,
- Open dialogue, next steps, and closing remarks.

The information was circulated digitally to all TAC members and a one-week period was provided for feedback. All feedback was catalogued and incorporated into the Phase 2 deliverables where appropriate. All documentation and correspondence related to the TAC can be found in Appendix A.

6.7.6 Local Politicians

Local councillors, MPs, and MPPs were notified and updated on the status of The Meadoway Class EA via email approximately two weeks before each PIC. An informational flyer was included within each correspondence and an opportunity was provided for an in-person update.

In-person meetings were held with Councillor McKelvie and Minnan-Wong. All documentation related to engagement with local politicians throughout all phases can be found in Appendix A.

7.0 ALTERNATIVE DESIGN CONCEPTS FOR PREFERRED TRAIL ALIGNMENTS (PHASE 3)

7.1 Alternative Design Concepts Approach and Evaluation Criteria

Once the preferred trail alignments were selected for the three incomplete sections of The Meadoway in Phase 2, some areas required further detailed assessment in order to confirm the appropriate method of providing the continuous multi-use trail between the Don River and Rouge National Urban Park. These alternative methods for implementing the preferred trail alignment, referred to as alternative design concepts, were identified and evaluated for the following specific areas:

- The east slope of the Highland Creek ravine (Section 5);
- The pedestrian water crossing at Ellesmere Ravine (Section 6); and,
- The trail section along Chartway Boulevard (Section 6).

Similar to the evaluation of alternative trail alignments in Phase 2, the evaluation of alternative design concepts (Phase 3) was completed using an objectives-based approach. The objectives remained consistent with those used previously, however the evaluation criteria were modified to be appropriate for the design concepts being considered. Table 7-1 presents the objectives and evaluation criteria for the evaluation of alternative design concepts.

Table 7-1. Objectives and evaluation criteria – alternative design concepts (Phase 3)

Objectives	Evaluation Criteria
Provide a positive user experience	• Maximizes interaction and connection to urban greenspace (e.g., natural ravine systems in the hydro corridor, materials used, immersion into the valley); provides opportunity for education and stewardship • Establishes a unique and recognizable look-and-feel that is congruent with the rest of the trail design • Flexibility to address the desired experience of all users
Protect and enhance natural features	• Capacity to maximize and ensure the success of naturalization/restoration of the meadow • Minimizes impact to watercourses and aquatic species, communities and/or habitat • Minimizes potential for impacts to valley slope (e.g., erosion) and vegetation/habitat
Maintain a safe environment for all potential trail users	• Ability to accommodate emergency response, city, and utility maintenance vehicles/activities • Minimizes potential for concern regarding personal safety (e.g., maintenance vehicles, road traffic, intersections, human conflict, safe trail design) • Ability to meet and/or exceed AODA for trail design (slopes should not exceed 1:20/5% grade (refer to Chapter 7.2.1)) • Minimizes potential for flood risk to trail users
Be good neighbours	• Minimizes potential for operation/maintenance impacts on the hydro corridor infrastructure and restored meadow • Minimizes potential for impact on neighbours adjacent to the hydro corridor as well as trail/road users • Minimizes impacts to utility infrastructure
Be cost effective	• Constructability (i.e., feasibility, level of design, construction and operation complexity) • Capital cost • Operating and maintenance costs

To identify the preferred design concepts, the following steps were taken:

- **Step 1—Develop the Alternative Design Concepts -** Based on the preferred trail alignments identified in Chapter 6 (Phase 2), alternative design concepts were developed for specific sections of trail; and,
- **Step 2—Evaluate the Alternative Design Concepts -** The alternative design concepts were assessed against evaluation criteria in Table 7.1.

The following subchapters describe the alternative design concepts and evaluation results for the three areas where alternative design concepts were considered. The alternative design concepts and preliminary evaluation results were reviewed with the TAC, CLC, and the public. Further information on Phase 3 consultation can be found within Chapter 7.6 and Appendix A.

7.2 Highland Creek East Slope – Alternative Design Concepts

7.2.1 Description of the Design Concepts

The preferred trail alignment crosses Highland Creek immediately north of Ellesmere Road and traverses a steep and heavily treed eastern slope with an unevaluated wetland that connects back into the hydro corridor west of Neilson Road. For the multi-use trail to remain accessible for a wide range of user types, ages, and abilities within this terrain, the following documents and standards were referred to in developing the alternative design concepts for the Highland Creek east slope:

- **The City of Toronto Accessibility Design Guidelines (2004) –** This document identifies specific city standards for indoor and outdoor routes, special areas, and amenities. Policy 1.3.14 within the Guidelines requires that trails be laid out with accessible pedestrian paths and footbridges that are suitable for persons using various mobility aids, and that slopes greater than 1:20 (5%) require alternative routes where possible (City of Toronto, 2004); and,
- **Ontario Regulation 191/11 Integrated Accessibility Standards** – This is a regulation under the AODA (2005). Within the Regulation, exceptions to requirements for recreational trails (80.15) are provided in instances where it is not possible to comply due to the potential for significant negative impacts to ecological integrity and/or where existing physical or site constraints do not allow for modifications (Government of Ontario, 2016).

Based on the above guidelines and standards, two alternative design concepts were developed for the Highland Creek east slope (Figure 7-1):

- Option A-1 - maintains a grade of 5% or less. This design concept consists of several switchbacks, creating a longer (approximately 680 m), more circuitous route up the valley slope. A retaining wall may be necessary for slope stabilization along steeper portions of the alignment (see Figure 7-1); and,
- Option A-2 - maintains a grade of 8% or less and complies with other City trail configurations within similar terrain. While this alternative design concept exceeds a 5% grade in some sections (totaling less than 50% of its entire length), it can meet AODA requirements through the provision of appropriate signage, rest areas, and safety barriers. An alternative route that maintains a grade of 5% or less is also provided along Ellesmere Road. Option A-2 provides for a shorter (approximately 440 m), more direct route that has a significantly reduced impact on ravine vegetation. A retaining wall may be necessary for slope stabilization along steeper portions of the alignment (see Figure 7-1).

The valley slope alternatives and preliminary evaluation results were presented at the TAC #3, CLC #4, and PIC #3 meetings and made available online. Based on feedback received, the following revisions/additional steps were made to develop alternative design concepts shown on Figure 7-1:

- The grade of Option A-2 was adjusted to reflect other trails that exist within the City trail network and changed from originally a 10% grade to 8%;
- The unevaluated wetland that runs parallel to Highland Creek along the eastern bank is to undergo a formal wetland evaluation process; and,
- TRCA will meet with the City of Toronto Community Disability Steering Committee to obtain feedback and recommendations on the enhancing the proposed alignment.

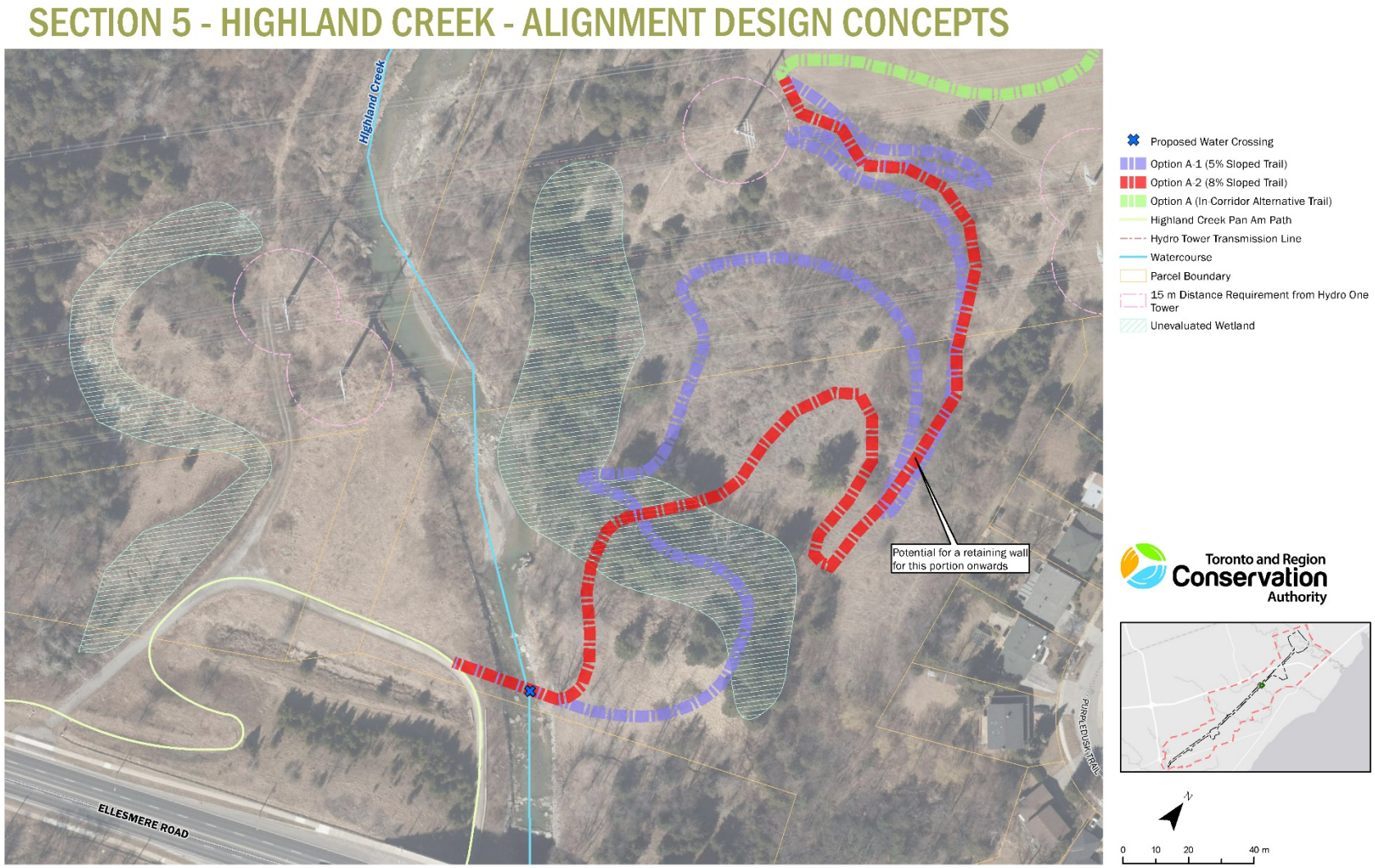

Figure 7-1. Highland Creek east slope alternative design concepts

7.2.2 Evaluation of Design Alternatives

Table 7-2 summarizes the results of the alternative design concept evaluation for the Highland Creek east slope. Checkmarks reflect the option that was identified as preferred for that objective based on a set of established criteria. A more detailed evaluation assessing the alternative design concepts is provided in Appendix G.

Option A-1 is preferred for three of the five project objectives while Option A-2 is preferred for four of the five objectives. Both options can provide a positive user experience and result in minimal impacts to neighbours, operations, and maintenance within the hydro corridor.

While Option A-2 will be slightly steeper than A-1 in some sections, it provides for a more direct route with a smaller footprint (i.e., shorter length with fewer switchbacks), reducing impact to the wetland and slope vegetation at lower cost for construction. In order to improve user comfort and safety, Option A-2 will incorporate signage to acknowledge increased slope and trail distance, as well as other features such as rest areas and safety fencing. As per the City of Toronto Accessibility Design Guidelines, Ellesmere Road would serve as an alternate route for Option A-2.

Based on the evaluation assessment, Option A-2 was selected as the preliminary preferred design concept for the Section 5 Highland Creek east slope.

Table 7-2. Summary evaluation of Highland Creek east slope design concepts

Objectives	**Option A-1: 5% grade**	**Option A-2: 10-20% grade**	**Rationale**
Provide a positive user experience	✔	✔	Both options maximize interaction and connection to greenspace providing a positive user experience.
Protect and enhance natural features		✔	Option B has a smaller footprint and would require the removal of less vegetation.
Maintain a safe environment for all potential trail users	✔		Option A provides for a gentler trail slope
Be good neighbours	✔	✔	Both options can be constructed with minimal impact on neighbours and hydro corridor operations.
Be cost effective		✔	The smaller footprint of Option B results in lower cost.

7.3 Ellesmere Ravine Pedestrian Water Crossing – Alternative Design Concepts

7.3.1 Description of the Design Concepts

The preferred trail alignment identified in Phase 2 crosses Ellesmere Ravine within Section 6, just east of Neilson Road. Ellesmere Ravine is a deep, heavily treed valley with an approximate span of 80+ m that underlies several existing power transmission lines. A range of bridge types were evaluated due to the potential trade-offs associated with specific designs, including constructability, cost, impact to ravine vegetation, and conflict with existing transmission infrastructure. All proposed bridge concepts are aligned with the recommended location identified through the Phase 1 fluvial geomorphological assessment (Chapter 5.5.3, Appendix C) and are low profile designs that require minimal vertical activity (e.g., cranes and falsework) for construction. In all cases, the bridge abutments are located outside of the HONI 15 m clearance zone around the existing hydro towers.

Three different bridge design concepts were identified for the Ellesmere Ravine pedestrian water crossing:

- **Option 1 - Stress Ribbon Bridge** (Figure 7-2) – a single-span option that avoids construction of bridge piers on the valley slopes. This structure type consists of a slender, post-tensioned concrete deck that, when constructed, has a sagged profile. The slender deck provides a sleek, clean, and unique aesthetic. The bridge is constructed using soil or rock anchors at each abutment to support the main support and post-tensioning cables. Support cables are draped across the ravine, then precast concrete panels are placed on the support cables and winched into place. Post-tensioning cables are passed through the concrete panels and anchored to the abutments. The precast panels are grouted together and then the structure undergoes post-tensioning to achieve the desired strength. Pedestrian barriers and aesthetic deck finishes are added as a final step during construction;
- **Option 2 - 3-Span Bridge** (Figure 7-3) – a conventional bridge type that provides a mostly flat profile along the bridge deck. This structure arrangement requires construction of a concrete pier, one on each side of the watercourse within the ravine. Scour protection will be provided at the base of the piers. Construction of temporary access routes to the proposed pier locations are required for construction. The bridge girders or trusses would be assembled on one side of the ravine on a roller system. Once the piers are in place, the girders would be launched onto the piers and over the ravine. The deck and pedestrian barriers are then constructed in place; and,
- **Option 3 - Deck-Arch Multi-Span** (Figure 7-4) – consists of a structural arch, piers, and spandrel columns constructed within the ravine, with the bridge deck built on top of the substructure elements. This structure type requires the construction of two arch footings and two bridge piers on the valley slopes within the ravine. Scour protection may be provided at the base of the arch footings. Construction of temporary access routes to the footing and pier locations are required to construct the substructure components. The structural arch is built by starting construction at each footing and working towards mid-span. Temporary construction towers at each abutment may be needed as support during construction of the arch. Like Option 2, the bridge girders would be assembled on one side of the ravine on a roller system and would be launched into place over the ravine. The bridge deck and pedestrian barriers are then constructed in place.

The Ellesmere Ravine pedestrian water crossing alternative design concepts and preliminary evaluation results were presented at the TAC #3, CLC #4, and PIC #3 meetings and made available online. Based on feedback received, the following revisions were made:

- It was suggested that an inset map be added to the PIC panel to show the location of the Ellesmere Ravine crossing within the greater context of The Meadoway.
- Based on maintenance costs for each structure, the design team was to refine the assessment of Option A-1 based on a potential change in load requirements (i.e., not designed for vehicular use). The scenario may show that Option A-1 and A-2 may be equally preferred if costs are not significantly different. It is noted that the outcome of this scenario still highlighted Option A-2 as the more cost-effective structure.

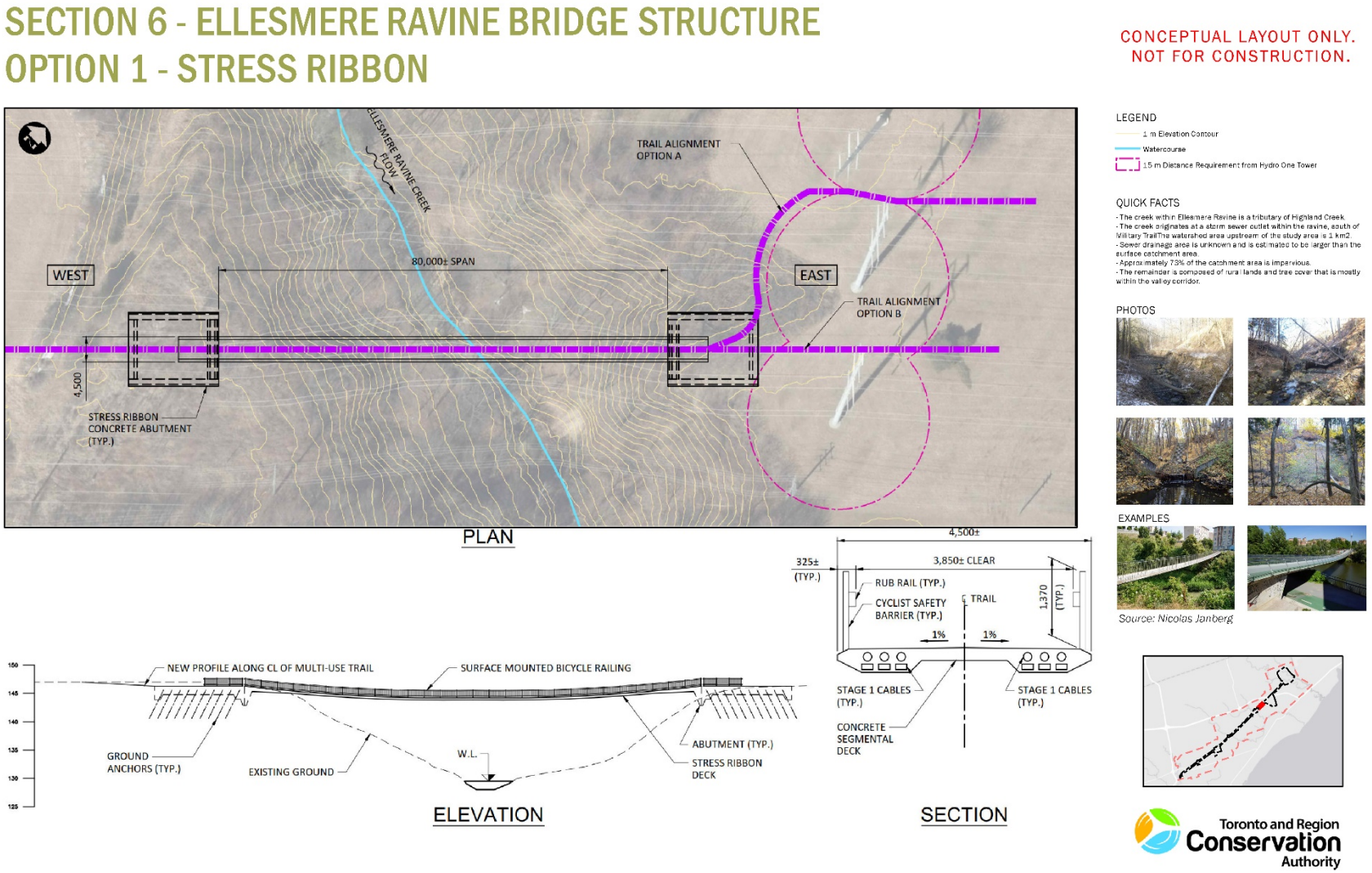

Figure 7-2. Ellesmere Ravine bridge Option 1 – stress ribbon

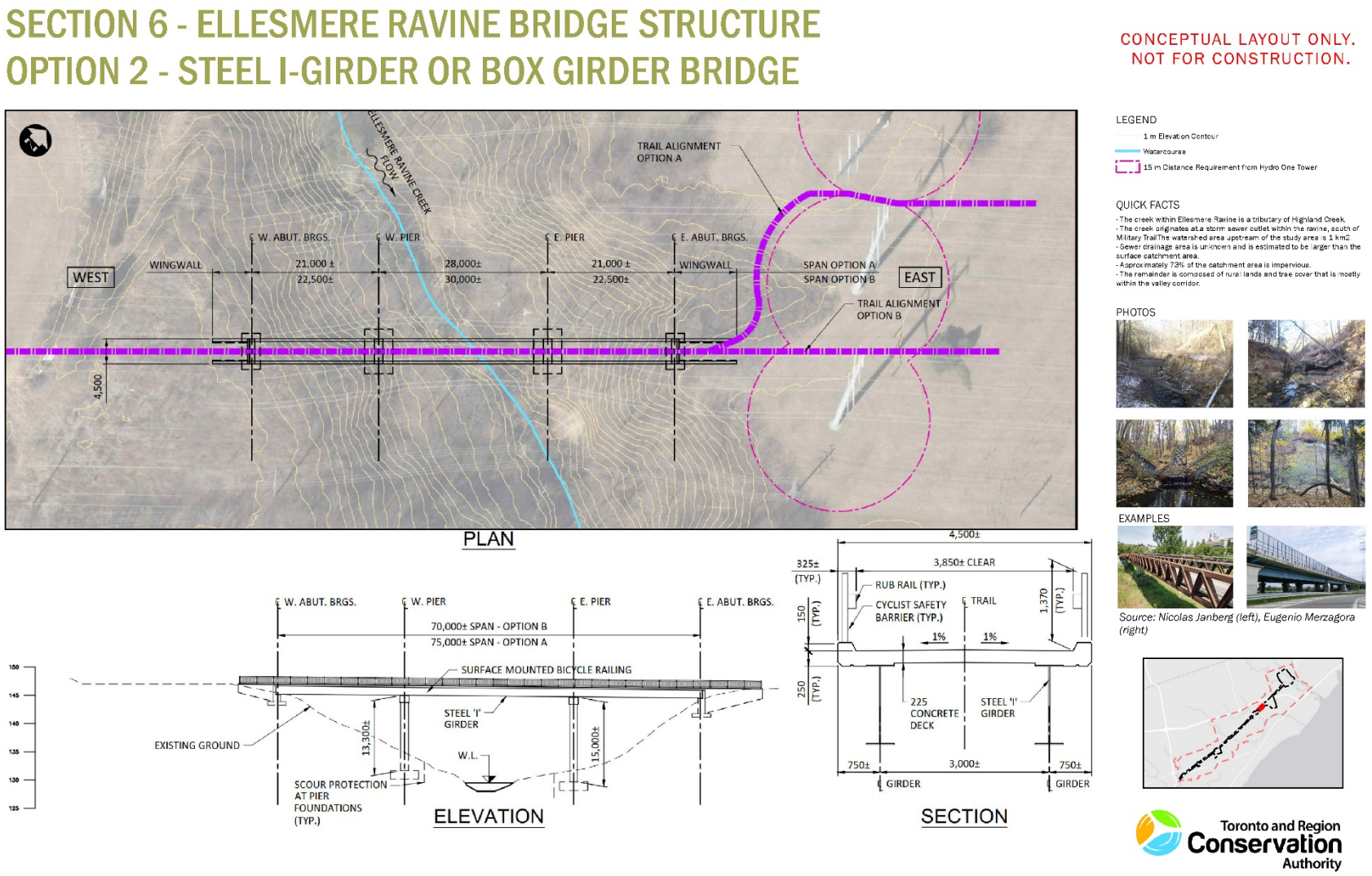

Figure 7-3. Ellesmere Ravine bridge Option 2 – 3-span bridge

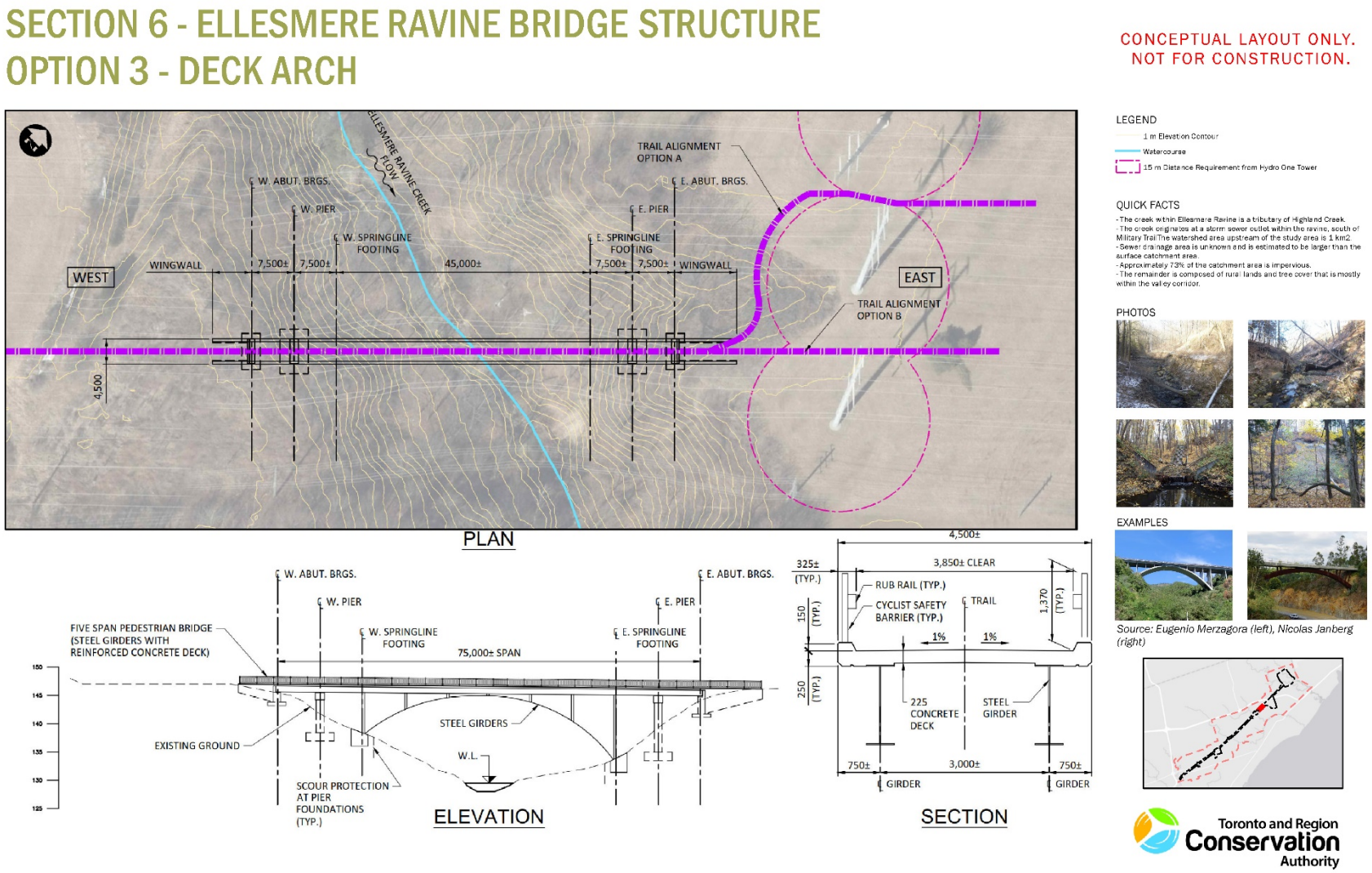

Figure 7-4. Ellesmere Ravine bridge Option 3 – deck arch multi-span

7.3.2 Evaluation of Alternative Design Concepts

Table 7-3 summarizes the evaluation of the alternative design concepts for the Ellesmere Ravine pedestrian water crossing. Checkmarks reflect the option that was identified as preferred for that objective based on a set of established criteria. A more detailed evaluation assessing the alternative design concepts is provided in Appendix G.

Option 1 was preferred for three of the five objectives. Option 2 was preferred for three of the five objectives. Option 3 was preferred for one of the five objectives and was thus eliminated from further consideration.

Option 1, the stress ribbon bridge, achieves the objective of providing a positive user experience. With its unique profile, the catenary (curved downward) structure profile will bring trail users lower into the ravine, when compared to the other structure types. This option requires no piers in the valley and as such has minimal impact on the vegetated slopes of Ellesmere Ravine. It is less preferred in terms of cost-effectiveness. The construction of stress ribbon bridges is highly complex, and its feasibility is largely dependent on geotechnical findings. Moreover, these bridges are not common in North America, and even less common in Canada. Consequently, local contractors and designers have limited experience with this structure type and, in comparison to the other options, has relatively higher capital costs. Due to the catenary structure, Option 1 requires users to travel uphill to exit the structure, which may feel uncomfortable to some users and make it difficult to meet AODA requirements for trail slope and grade. It is anticipated that it would be possible to structure the ‘sag’ design to comply with accessibility requirements for inclined walkways. If accessibility requirements cannot be met, variance of the design may be required.

Option 2 achieves the objective of maintaining a safe environment for potential trail users as the bridge would meet AODA requirements, and its flat profile would be comfortable for all users. It is also less expensive than the stress ribbon bridge at approximately half the cost to construct. Option 2 does require construction in the ravine and associated removal of vegetation. Except for the area immediately adjacent to the piers themselves, the vegetation impacts would be temporary and restoration efforts would be implemented.

Based on the results of the evaluation assessment, both Options 1 and 2 meet three of the five objectives. However, the relative advantages of Option 2 (i.e., a cost of about half that of Option 1, easier constructability, and the ability to safely meet the crossing needs of all users) were determined to outweigh the relative disadvantages (i.e., simpler aesthetic with a slightly lower potential to give users a unique experience, and temporary disruption within the valley for construction of two piers). Overall Option 2, the 3-span bridge structure, was selected as the preliminary preferred design concept for the pedestrian water crossing of Ellesmere Ravine.

Table 7-3. Summary evaluation of the Ellesmere Ravine pedestrian water crossing alternative design concepts

Objectives	Option 1 – Stress Ribbon	Option 2 – 3-Span	Option 3 – Deck Arch	Rationale
Provide a positive user experience	✔			The catenary design of Option 1 provides a unique experience and maximizes interaction with the ravine.
Protect natural features	✔			Option 1 does not require piers and thus has a reduced impact on ravine vegetation.
Maintain safe environment for potential trail users		✔	✔	Options 2 and 3 are more conservative bridge designs with limited slope that best meet AODA requirements.
Be good neighbours	✔	✔		Options 1 and 2 have the lowest profile during construction reducing the potential to impact hydro operations.
Be cost effective		✔		Option 2 is the lowest cost option at approximately half the cost of Option 1.

7.4 Chartway Boulevard - Alternative Design Concepts

7.4.1 Description of the Design Concepts

Subsequent to the evaluation of alternative trail alignments identified in Phase 2 (Chapter 6), TRCA met with representatives from the UTSC to discuss the preferred trail alignment in Section 6 east of Pan Am Drive and how it could be better integrated into the ongoing campus master planning process. At this meeting the opportunity to consider using the UTSC north campus lands immediately north of Chartway Boulevard was discussed. The alignment design concepts are depicted on Figure 7-5 and described as:

- **Option A-1** – The multi-use trail crosses the north campus on a proposed off-street path/bike route noted in the UTSC (2011) Master Plan and utilizes Chartway Boulevard to connect to Conlins Road; and,
- **Option A-2** – The multi-use trail re-aligns the proposed off-site route noted in the Master Plan to the north of Chartway Boulevard and connects to Conlins Road.

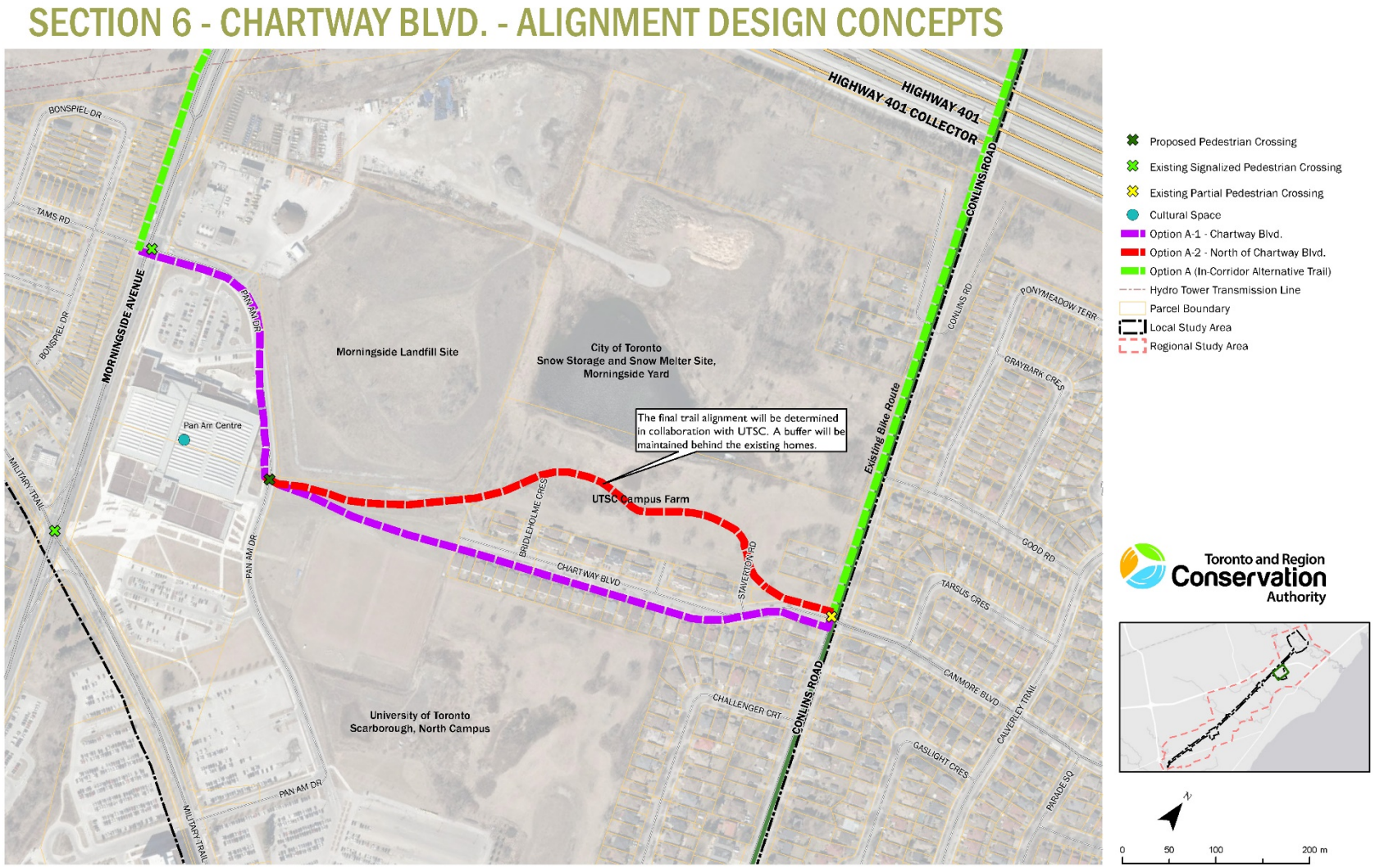

Figure 7-5. Alternative design concepts – Chartway Boulevard

The Chartway Boulevard alternative design concepts and preliminary evaluation results were presented at the TAC #3, CLC #4, and PIC #3 meetings and made available online. Based on feedback received, the following revisions were made to the alternative design concepts:

- As part of the Chartway design concept, the design team was to undertake an assessment of the existing and future capacity along Morningside Avenue between the hydro corridor and Pan Am Path (see Chapter 8.2.1).

7.4.2 Evaluation of Alternative Design Concepts

Table 7-4 summarizes the evaluation of the alternative design concepts for Chartway Boulevard. Checkmarks reflect the option that was identified as preferred for that objective based on a set of established criteria. A more detailed evaluation assessing the alternative design concepts is provided in Appendix G.

Option A-1 was preferred for three of the five objectives while Option A-2 was preferred for four of the five objectives. Option A-2 was considered as having a greater cost due to the extent of new multi-use trail required as compared to Option A-1, which utilizes Chartway Boulevard. Key benefits of Option A-2 are the ability to create a positive user experience by maximizing interaction and connection to the natural environment and the ability to enhance user safety by fully separating users from vehicles and road infrastructure.

Based on the results of the evaluation assessment, Option A-2 was selected as the preliminary preferred design concept for the section from Pan Am Drive to Conlins Road.

Table 7-4. Summary evaluation of the Chartway Boulevard alternative design concepts

Objectives	Option A-1 Chartway Boulevard	Option A-2 North of Chartway Boulevard	Rationale
Provide a positive user experience		✔	Option A-2 takes users through an area that will receive landscape treatment.
Protect and enhance natural features	✔	✔	Both options have minimal impact on natural features.
Maintain a safe environment for all potential trail users		✔	Option A-2 separates the multi-use trail from road traffic, improving safety.
Be good neighbours	✔	✔	Both options are expected to have minimal impact on neighbours and no impact on hydro corridor operations.

Objectives	Option A-1 Chartway Boulevard	Option A-2 North of Chartway Boulevard	Rationale
Be cost effective	✔		Additional infrastructure for Option A-2 increases capital costs.

7.5 Preferred Alternative Design Concepts Summary

Preferred design concepts were selected for three segments within Sections 5 and 6 of The Meadoway. The preferred design concepts were developed, evaluated, and revised with contributions from the TAC, CLC, and the public.

The preferred design concepts and their key advantages are summarized below:

- **Option A-2** – A trail with an intermittent maximum 8% grade up the east slope of the Highland Creek ravine (Section 5)
  - Provides for a more direct route to address the desired experience of most users, with opportunities for signage, rest areas, and other features to accommodate less abled users;
  - Smaller footprint that reduces impact to wetland and ravine vegetation;
  - Minimal impact on neighbours or hydro corridor operations; and,
  - Lowest anticipated cost to construct.

- **Option 2** – A 3-Span bridge structure for the pedestrian water crossing at Ellesmere Ravine (Section 6)
  - Meets AODA requirements with minimal slope across the ravine;
  - Minimal impact on neighbours and hydro corridor operations relative to other options; and,
  - Simple to construct with a cost in the lower range relative to the other alternatives.

- **Option A-2** – A trail section north of Chartway Boulevard within the UTSC north campus (Section 6)
  - Provides for a positive user experience through a greenspace area where additional landscaping is planned;
  - Will not negatively impact existing natural features;
  - Provides a safe multi-use trail experience separated from traffic; and,
  - Minimal impact on neighbours or hydro corridor operations.

7.6 Phase 3 Public Consultation

Major consultation touchpoints for Phase 3 of The Meadoway Class EA are summarized in Table 7-5. For a more detailed breakdown of consultation for all phases of the Class EA, including notifications, advertisements, correspondence, and other materials, please refer to Appendix A.

Table 7-5. Summary of major consultation touchpoints for Phase 3

Date	Consultation
July 25, 2019	Meeting with UTSC
September 11, 2019	Meeting with HONI and IO
September 12, 2019	TAC meeting #3
October 2, 2019	CLC meeting #4
October 21, 2019	Meeting with HONI and IO
October 23, 2019	PIC meeting #3

7.6.1 Public Consultation

Public Events

Public Information Centre #3

PIC#3 for The Meadoway Class EA was held on October 23, 2019 at the Latvian Canadian Cultural Centre. The purpose of PIC#3 was to introduce and seek feedback on the results of Phase 3, namely, the completed evaluation and identification of the proposed preferred trail design concepts for each incomplete section of the corridor. Updates on next steps in the planning process were provided, as well as an overview of the final visualization toolkit.

The public were notified of PIC#3 via social media announcements, email (to subscribers), newspaper advertisements, and flyers circulated at libraries. A targeted “flyer-drop” was also completed for residents living on Chartway Boulevard. A total of 30 attendees participated at PIC#3 and excellent critical feedback was received on the proposed preferred trail alignments and design concepts, with the consensus pointing favourably to the in-corridor options selected through the evaluation process. One community member expressed concern regarding the proposed design concept for the eastern slope of Highland Creek (Section 5), indicating that its sinuous nature may slow down cyclists who are primarily commuting. A discussion of the potential health related impacts of electromagnetic frequencies in hydro corridors was also held.

Opportunities for public feedback were provided during the PIC event, as well as through an online form via the project website. A sample of feedback received from PIC#3 is included in Table 7-6. A full summary of all feedback received can be found in Appendix A.

Table 7-6. Representative sample of comments received from PIC#3

Topic	Comment	TRCA Response (where appropriate)
Recreation opportunities	Interest in additional recreational opportunities throughout The Meadoway.	N/A
Trail connections	Happy that a connection is being made to the East Don Trail, and that through this people will be able to travel to the Lower Don.	N/A
Property	Will home value increase as a result of The Meadoway and how might that change the dynamic of the surrounding community? Would the culture over time start to change and would there be affordable housing/renting?	It is unclear at this time what the economic impact of The Meadoway will be, though as a significant community asset there will be benefits to the adjacent communities.
Health and Safety	Do you have any data that speaks to the health and safety aspects of constructing a trail under power lines?	Studies have been undertaken throughout Toronto, including a portion of The Meadoway, to learn about the patterns and potential health effects of hydro corridors. These studies, by the Toronto Board of Health have concluded that based on normal activities in and around corridors, increases in your average exposure to electro-magnetic frequencies are negligible and well below the city guideline and international restrictive limits. The benefits of physical activity by way of using the trail, far outweigh any potential health concerns. Toronto Public Health also provides EMF guidelines that describe the acceptable range of exposure. To help minimize exposure, the City requires that an EMF management plan be undertaken for any new multi-use trails proposed in hydro corridors. As part of the East Don Trail Environmental Assessment project, TRCA undertook an EMF study which confirmed the data and information found in the City of Toronto's studies. EMF studies will be completed for the sections of The Meadoway where new trail infrastructure is proposed.
Regional connections	Looking into the future and long-term use of the trail, can this same project plan be implemented in other hydro corridors?	TRCA has had discussions with other regions who are interested in this project. Technically, The Meadoway could extend to Ottawa; however, we are focusing on 16 km of trail in the City of Toronto at this time. We have received a lot of project support in Durham Region and will continue to work with other stakeholders moving forward. The Meadoway can act as a model or blueprint in other jurisdictions.

Community Liaison Committee

CLC Meeting #4

CLC Meeting #4 took place on October 2, 2019 at the Scarborough Civic Centre. The meeting was attended by five TRCA Staff, two Consulting Staff, and 11 CLC members. The meeting took place between 6:30 PM and 8:30 PM and included the following agenda items:

- Update to The Meadoway Class EA;
- Technical reporting, preliminary design concepts, and evaluation framework;
- Overview of the visualization toolkit;
- Discussion on upcoming public meeting; and,
- Next steps.

A material package was circulated to attendees following the meeting, with all members encouraged to provide additional review and feedback. All documentation related to CLC Meeting #4, including feedback and general correspondence, can be found in Appendix A.

7.6.2 Indigenous Communities

Notification of PIC #3 was circulated to all Indigenous communities on October 4, 2019. The notification included the public notice and a public event flyer.

Please refer to Appendix A for additional engagement information.

7.6.3 Review Agencies

All Review Agencies were notified and updated on the status of The Meadoway Class EA via email approximately two weeks before each PIC. An informational flyer was included within each correspondence and an opportunity was provided for an in-person update. The confirmed Review Agency list is below:

- Department of Fisheries and Oceans;
- MNRF;
- MECP;
- MTO;
- Ministry of Heritage, Sport, Tourism and Culture Industries; and,
- IO.

These items were circulated and all documentation and correspondence as it relates to Review Agencies can be found in Appendix A.

Two meetings with HONI and IO were held in Phase 2 (Table 7-5) in order to discuss and provide updates to the Class EA.

7.6.4 Key Stakeholders

Key stakeholders were notified of the key project milestones via the TAC. An individual meeting was held with UTSC staff on July 25, 2019 to discuss the preferred trail alignment and design concepts within their north campus.

7.6.5 Technical Advisory Committee

Meeting #3 – September 12, 2019

TAC Meeting #3 was held on September 12, 2019 at the TRCA Head Office in Vaughan. The meeting was attended by 10 TAC members, 9 TRCA technical Staff, and one Consultant Staff. A list of TAC participants can be found in Appendix A.

An information package was distributed to all TAC members and a guided presentation was provided by the Project Team, with questions and discussion held throughout the duration of the meeting. Key topics included:

- Brief project overview and update;
- Preliminary design concepts for preferred multi-use trail alignments;
- Draft evaluation framework for design concepts;
- Update on pedestrian bridge crossings; and,
- Preliminary high-capacity trail assessment.

The information was circulated digitally to all TAC members and a one-week period was provided for feedback. All feedback was catalogued and incorporated into the Phase 3 deliverables where appropriate. All documentation and correspondence related to the TAC can be found in Appendix A.

7.6.6 Local Politicians

Local Councillors were notified and updated on the status of The Meadoway Class EA via email approximately two weeks before each PIC. An informational flyer was included within each correspondence and an opportunity was provided for an in-person update.

It is noted that correspondence with MPs and MPPs during the 2019 federal election was subject to TRCA's Administrative By-law 1.7. As such, MP's and MPP's were not extended invitations to the final PIC#3 held in October of 2019.

All documentation related to engagement with local politicians throughout all phases can be found in Appendix A.

8.0 PREFERRED ALTERNATIVE ALIGNMENT DESCRIPTION (PHASE 4)

This chapter details the preferred alignment for the incomplete sections of The Meadoway, which includes the three preferred trail alignments identified in Chapter 6 and the design concept refinements evaluated in Chapter 7. The preferred alignment completes the existing gaps in The Meadoway network creating a multi-use trail that connects the Don River to Rouge National Urban Park while remaining almost entirely within the hydro corridor. The trail provides recreational and transportation opportunities and connects users to local landscapes and destinations including ravines, rivers, meadows, parks, and other trails.

This chapter provides a description of the preferred alignment and crossings as follows:

- Multi-Use Trail General Route;
- Trail Design and Cross Sections;
- Aesthetics and Design Elements;
- Pedestrian Water Crossings;
- Hydrology and Hydraulics;
- Pedestrian Rail Crossing;
- Infrastructure/Utilities;
- Property Requirements;
- Construction Phasing; and,
- Preliminary Cost Estimates.

8.1 Multi-Use Trail General Route

The preferred alignment for the incomplete sections of The Meadoway includes the three preferred trail alignments identified in Chapter 6 (Option A – In Corridor) and the design concept refinements evaluated in Chapter 7 (Figure 8-1). The preferred alignment remains primarily within the hydro corridor (apart from the trail connection through the UTSC north campus in Section 6) and provides for approximately 7.9 km of new multi-use trail that includes three pedestrian water crossings and one pedestrian rail crossing.

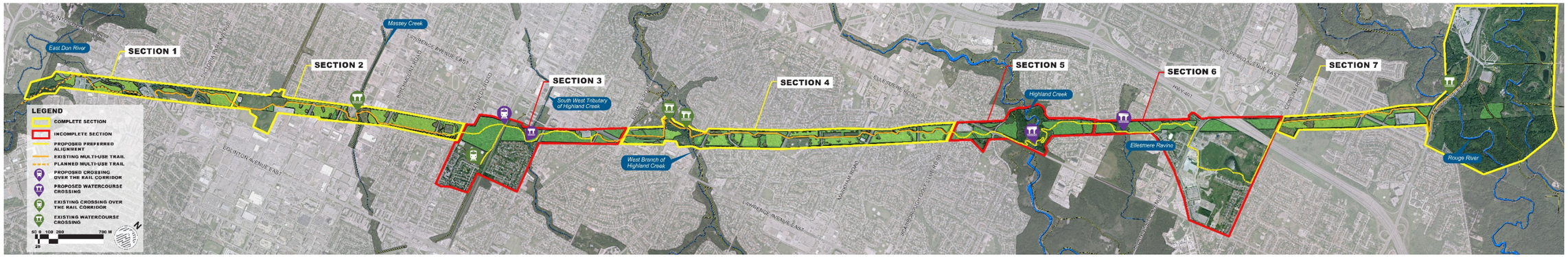

Figure 8-1. The full 16 km local study area of The Meadoway, showing complete (yellow boundary) and incomplete (red boundary) trail sections. The preferred alignment selected through this Class EA is shown for each incomplete section, placed within the broader context of the existing trail network. Existing, as well as proposed rail and water crossings are also shown

Key elements of the preferred alignment are shown in Figures 8-2, 8-3, and 8-4. A summary of each section is provided below.

Section 3

- The preferred alignment begins west of Kennedy Road mid-way between Eglinton Avenue East and Lawrence Avenue East. This is the most western incomplete section of The Meadoway multi-use trail. The preferred alignment connects to the existing trail just west of Brimley Road and Lawrence Avenue;
- The trail requires the construction of a pedestrian rail crossing over the TTC/GO Stouffville rail corridor. The design and setback requirements for this crossing will be determined in consultation with HONI and Metrolinx;
- The Southwest Tributary of Highland Creek intersects The Meadoway just west of Midland Avenue. This tributary drains an area of approximately 7 km^2 between Warden Avenue and Brimley Road, extending to Highway 401. The pedestrian water crossing will be within the floodplain and will need to be designed to minimize the potential for upstream flooding; and,
- This section of The Meadoway is relatively flat and the trail will follow a curvilinear design in order to provide a 15 m buffer around the existing hydro towers. In addition, there are several opportunities to connect to local transit stations, parks, and schools (Figure 8-2).

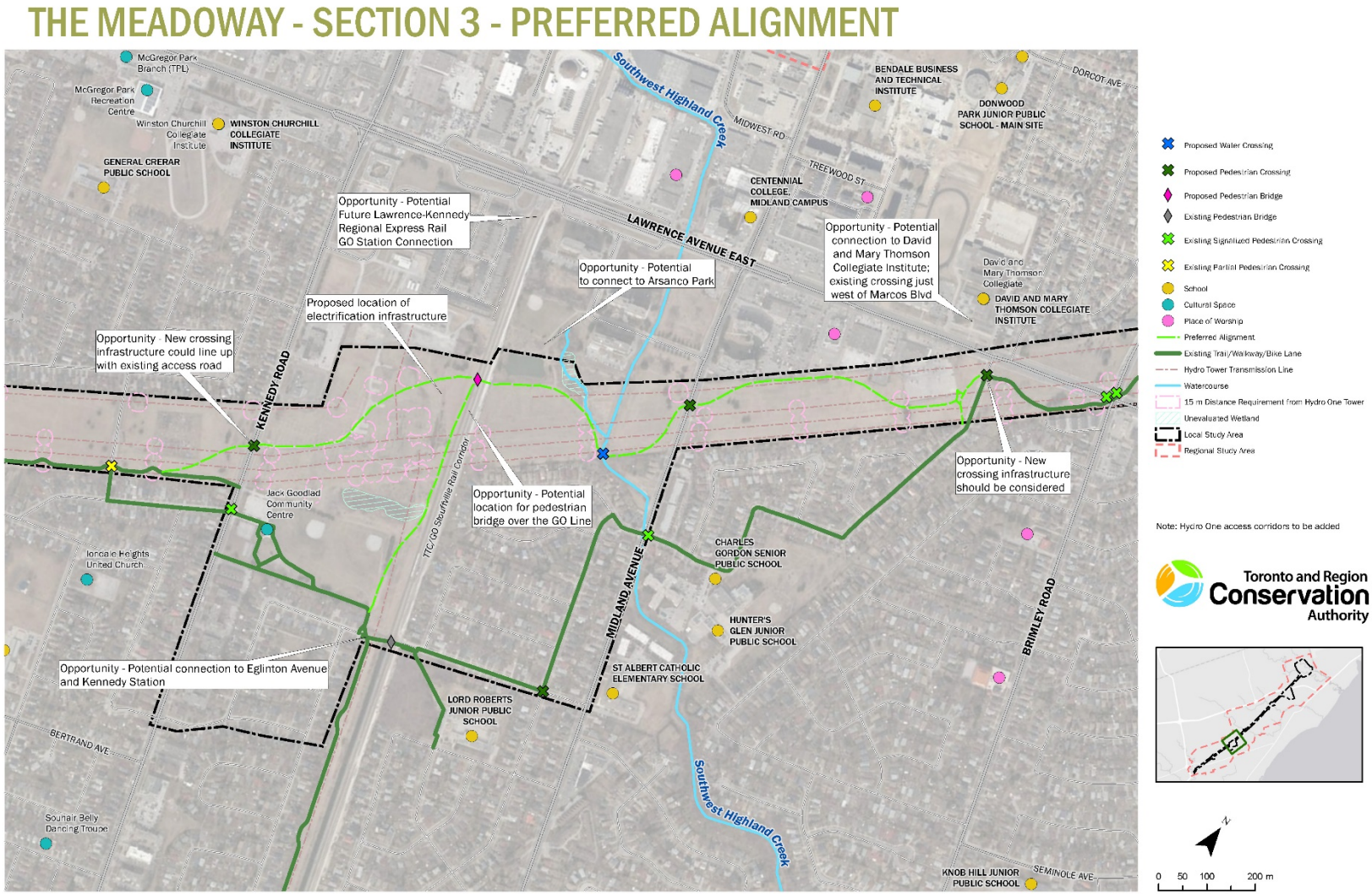

Figure 8-2. Proposed preferred alignment for Section 3 (dashed green line)

Section 5

- The preferred alignment connects with the existing trail network east of Scarborough Golf Club Road and extends eastward through the hydro corridor at Neilson Road;
- The trail crosses to the north side of Ellesmere Road to reach Highland Creek and is aligned with the Upper Highland Creek Pan Am Path at this segment;
- The Highland Creek pedestrian water crossing is in an area where previous work has been undertaken to stabilize the bank of the creek;
- The Highland Creek valley is confined on the east side by a steep, heavily vegetated slope that shows evidence of erosion and frequent sediment mobility. While over 50% of the trail will be a grade of 5% or less, this challenging location requires a maximum of 8% grades at some sections;
- During detailed design, opportunities to reduce grades at steeper sections will be explored, and mitigation measures such as mild switchbacks, resting nodes, and fencing will be implemented where feasible/appropriate.[2] Signage will be posted that characterizes the trail section (e.g., length, slope, resting node locations) and directions will be provided for an alternative route along Ellesmere Road;
- Trail placement within the corridor maintains the 15 m buffer requirement around hydro towers; and,
- Key destinations and connections within Section 5 include parks, multi-use trails, cycling infrastructure, and schools (Figure 8-3).

[2] An alternative trail (Option A-1) was considered by the project team and members of the CLC, TAC, and public (see Chapter 7). This alternative was not selected due to the extent of vegetation removal and the cost of constructing several switchbacks to obtain 5% grade.

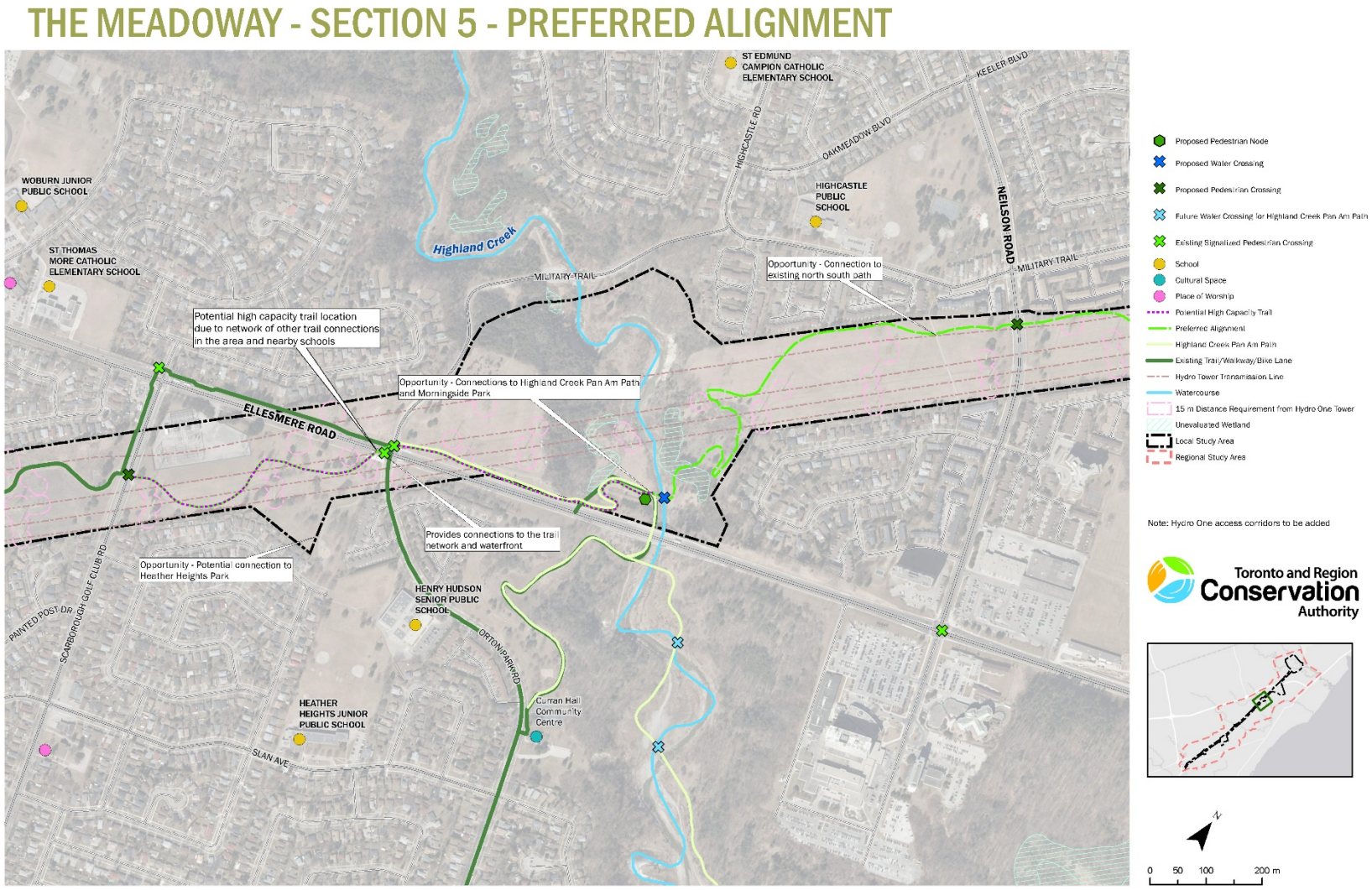

Figure 8-3. Proposed preferred alignment for Section 5 (dashed purple and green line). Note the dashed purple segment between Scarborough Golf Club Road and Highland Creek has been identified as a potential future high capacity trail.

Section 6

- The preferred alignment extends from Neilson Road to Conlins Road and includes a segment outside of the hydro corridor in order to navigate Highway 401;
- Ellesmere Ravine, a tributary of Highland Creek, intersects The Meadoway between Neilson Road and Military Trail. The valley spans more than 80 m and requires significant crossing infrastructure. The evaluation of the alternative design concepts resulted in the selection of a Steel I-Girder or Box Girder Bridge design, but detailed design is subject to HONI technical review, permitting, and approvals;
- The preferred alignment connects between Morningside Avenue and Conlins Road via the north campus of the UTSC. The alignment follows a proposed route identified in the UTSC master plan;
- The preferred alignment to the west of Morningside Avenue will require modifications to the existing sidewalk in order to accommodate a multi-use trail and sidewalk. Consultation with the City and MTO on planning and design for this section will take place in detailed design;
- Through the evaluation of the alternative design concepts (see Chapter 7), the preferred alignment runs north of Chartway Boulevard through what is currently the UTSC campus farm. A buffer will be provided between the multi-use trail and adjacent neighbours along Chartway Boulevard to ensure privacy for adjacent properties;
- The trail heads connect with and head north along existing bike lanes on Conlins Road, returning to the hydro corridor south of Milner Avenue where it re-connects to the existing trail network; and,
- Key destinations and connections within Section 6 include the Pan Am Centre, UTSC, Centennial College, and existing cycle infrastructure along Conlins Road (Figure 8-4).

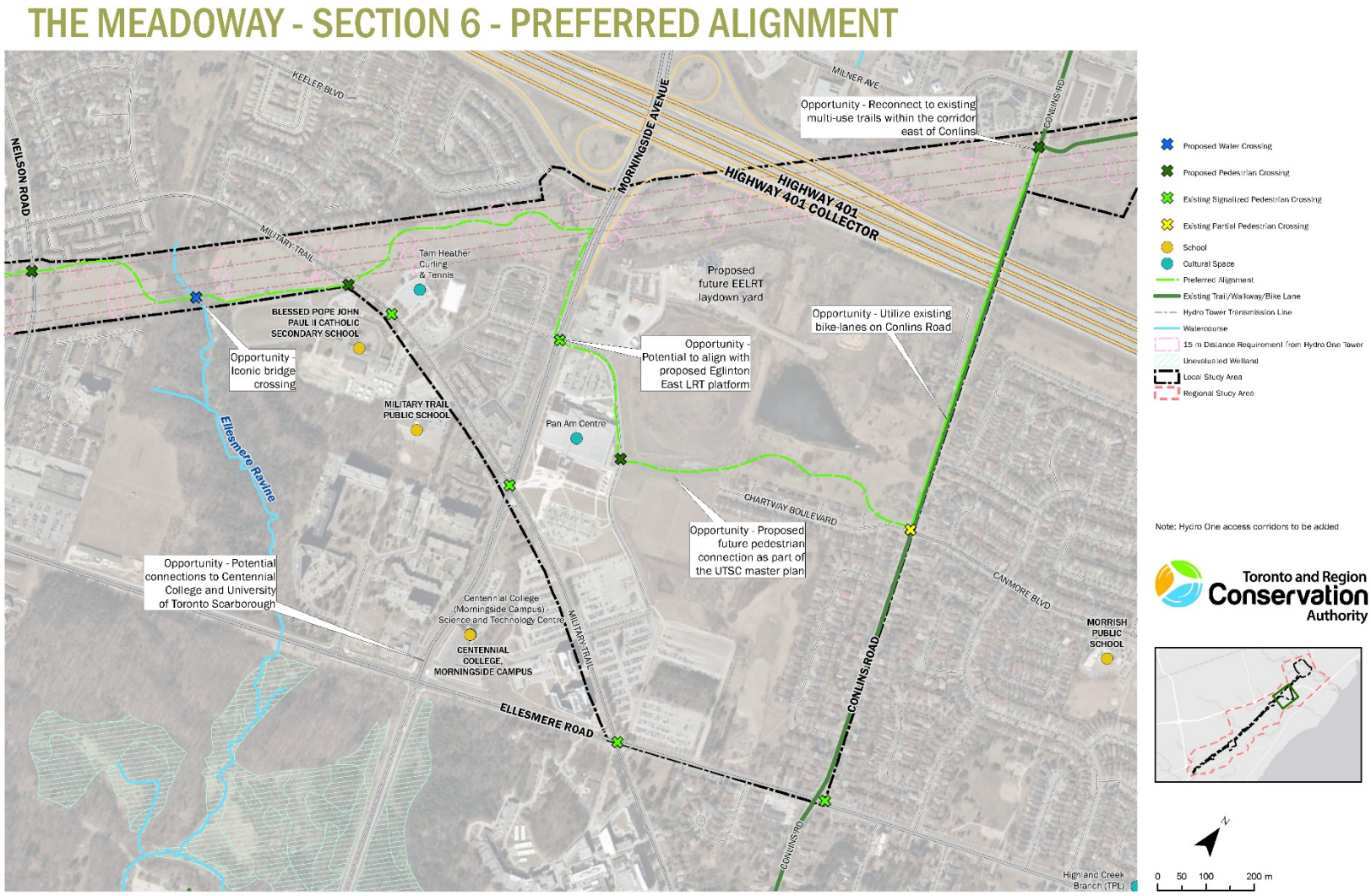

Figure 8-4. Proposed preferred alignment for Section 6 (dashed green line)

8.2 Trail Design and Cross Sections

The new sections of The Meadoway multi-use trail will be designed as a primary trail following the City of Toronto Multi-Use Trail Guidelines, 2015. The Guidelines (2015b) state that *"primary trails connect between destinations in different parts of the City, and will often connect with each other, providing perhaps the most significant level of connectivity among the three [trail] types. They are similar to arterial roads in the road classification system, or to community and district parks in the parks network. The majority of multi-use trails in Toronto are in this category".* The preferred alignment will match the already existing sections of The Meadoway multi-use trail and will accommodate two-way pedestrian and non-motorized uses. The multi-use trail will also be able to accommodate the City's maintenance and Emergency Medical Vehicles (EMV).

The Guidelines provide the following principles to be achieved where possible:

- **Consistency and Excellence** – meet and exceed best practices and use of evolving technologies;
- **Safety, Security, and Comfort** – primary consideration for all trail users;
- **Accessibility** – universal design for all people and abilities;
- **Sustainability** – sustainable building and maintenance technologies; and,
- **Environmental Protection** – minimize impacts to the adjacent trail corridor.

The trail configuration for The Meadoway has been developed based on the parameters that are defined by the City of Toronto Guidelines for primary trails and includes:

- A trail width of 3.6 m;
- A maximum grade of 5% with sustained grades limited to 2-3%. Where a 5% grade is not possible, such as along the east slope of Highland Creek, a maximum of 8% will be used with additional resting nodes included;
- Surface is usually cross-sloped in the same direction as adjacent grades, to 2% maximum; crowned paths may occasionally be appropriate;
- Widened areas along the steeper sections in the Highland Creek valley to accommodate resting and passing maneuverability;
- A 3.25 m mowed strip on either side of the trail to provide separation from the adjacent meadow habitat and additional area for maneuverability and passing;
- A 0.6 m to 1.0 m lateral clearance from the edge of the trail to any signage, site furnishings, or any other obstructions in order to provide fall protection for trail users; and,
- Where appropriate a minimum 10 m turning radius is provided with a potential for a 20 m radius given possibility of greater speeds; the 10 m turning radius is based upon 20 km/hr cycling speed.

The surface of the multi-use trail will be made of asphalt, which is the preferable surface for multi-use trails due to its durability and stability on slopes and curves. Asphalt is highly preferred to native soils or compacted aggregate trails in these conditions as it will not erode. Asphalt is also able to support light motorized uses such as City maintenance vehicles, and in emergency situations, EMVs.

The Meadoway multi-use trail will meet accessibility requirements as outlined in the City of Toronto Accessibility Design Guidelines, 2014. With the exception of a small segment along the east slope of Highland Creek, the multi-use trail will not exceed a 5% grade and will include accessible pedestrian paths and footbridges that are suitable for persons using various mobility aids. Through the evaluation of alternative design concepts for the eastern slope of Highland Creek, a trail segment with a maximum grade of 8% in some sections was selected due to physical site constraints and the need to avoid potentially significant impacts to sensitive ravine vegetation (see section 7.2.1). Mitigation measures, such as rest areas, signage, and fencing, will be included as part of the design and signage will be provided to redirect users to Ellesmere Road for an accessible alternate route, if required.

8.2.1 Multi-use Trail Cross Sections

The preferred alignments will follow the primary trail width of 3.6 m, with a mowed buffer of 3.25 m on either side (Figure 8-5). Within the mowed buffer, a 0.6 m to 1.0 m lateral clearance/furnishing zone will be provided. While trail width will remain fixed at 3.6 m, the width of the lateral clearance zone may vary and is determined by the proximity of the multi-use trail to hydro towers. According to HONI Secondary Land Uses, a 15 m clear working radius around transmission structures is required in order to maintain access for vehicles carrying out routine maintenance.

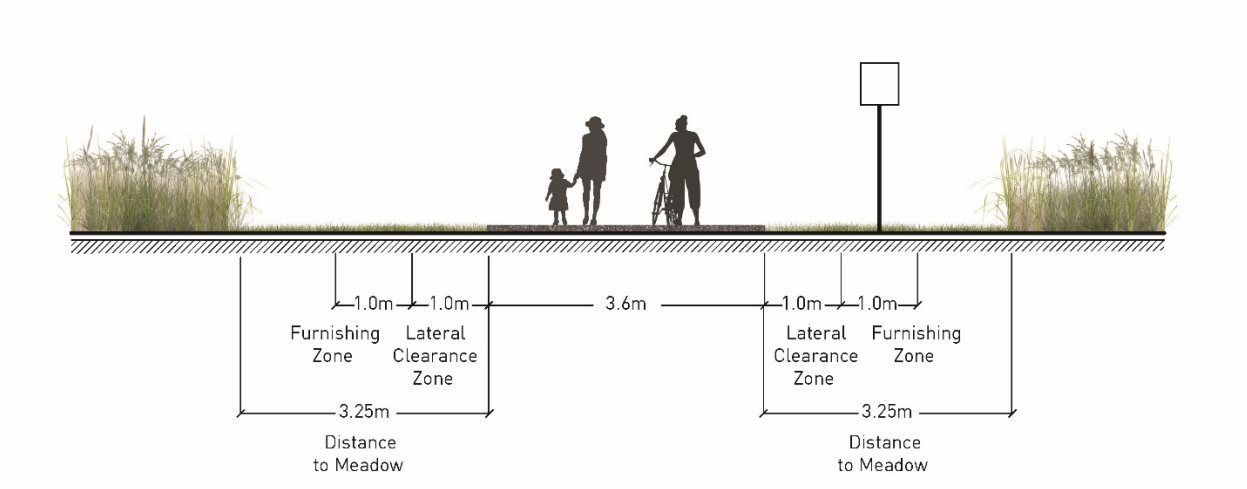

Figure 8-5. Conceptual cross-section of the multi-use trail – primary configuration

A limited number of trails in the City are designed as high capacity trails. Set at a default width of 4.1 m, high capacity trails accommodate the greatest number of users and can be compared to expressways in a road network, connecting significant destinations within the City. A typical cross-section for an in-corridor high capacity trail is shown in Figure 8-6.

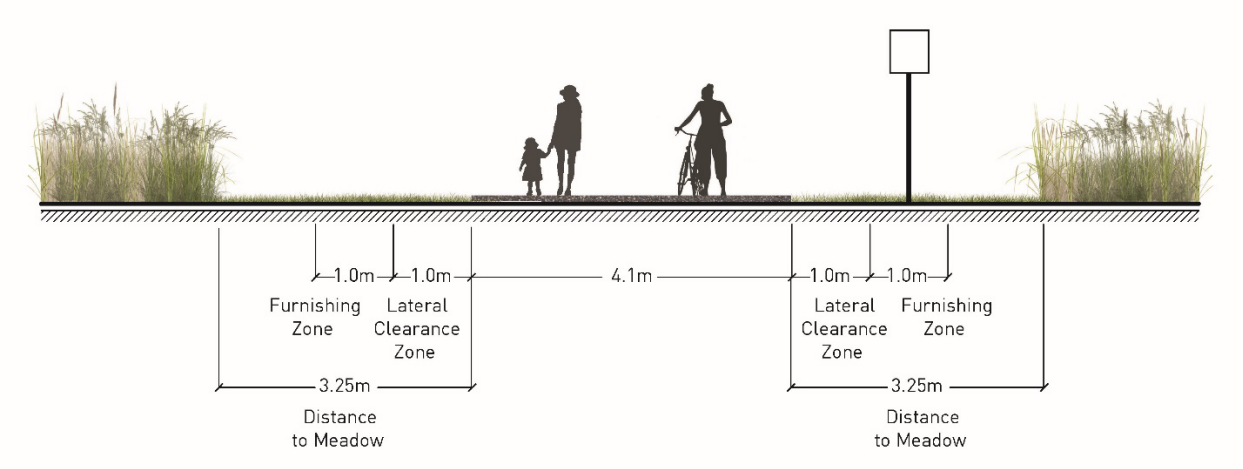

Figure 8-6. Conceptual cross-section of the in-corridor multi-use trail – high capacity configuration

It is unclear at the time of preparing this ESR what the anticipated trail volumes and user types will be once complete based on several unknown factors such as: trends and changing perceptions related to active transportation, changes to population density or demographics of catchment area, and alternative trail options (how users will change their pedestrian or cycling routes once The Meadoway is built). As such, a high capacity trail is not appropriate for Sections 3, 5 and 6 of The Meadoway at this time. In the future, high capacity segments could be considered based on trail use characteristics. Included in Appendix H is a preliminary list of areas where activity may warrant consideration of a high capacity trail in the future. A public use assessment at key points along the existing trail is planned for spring 2020, which will provide a baseline that can be used to demonstrate growth in trail use over time.

Three additional trail configurations will be implemented within the incomplete sections of The Meadoway multi-use trail network:

1. Highland Creek Ravine – The east slope of the Highland Creek valley is a steep, heavily forested slope that also may comprise a wetland crossing. Based on the evaluation, the preferred alignment will have an approximate maximum grade of 8% in some sections and will include a narrower clearance zone on either side of the trail. Retaining walls will be needed and the trail will have a slight slope across the width of the trail to improve drainage. Figure 8-7 shows a representative cross-section of the trail up the Highland Creek ravine east slope, which will be adjusted as required during the detailed design given site specific conditions.

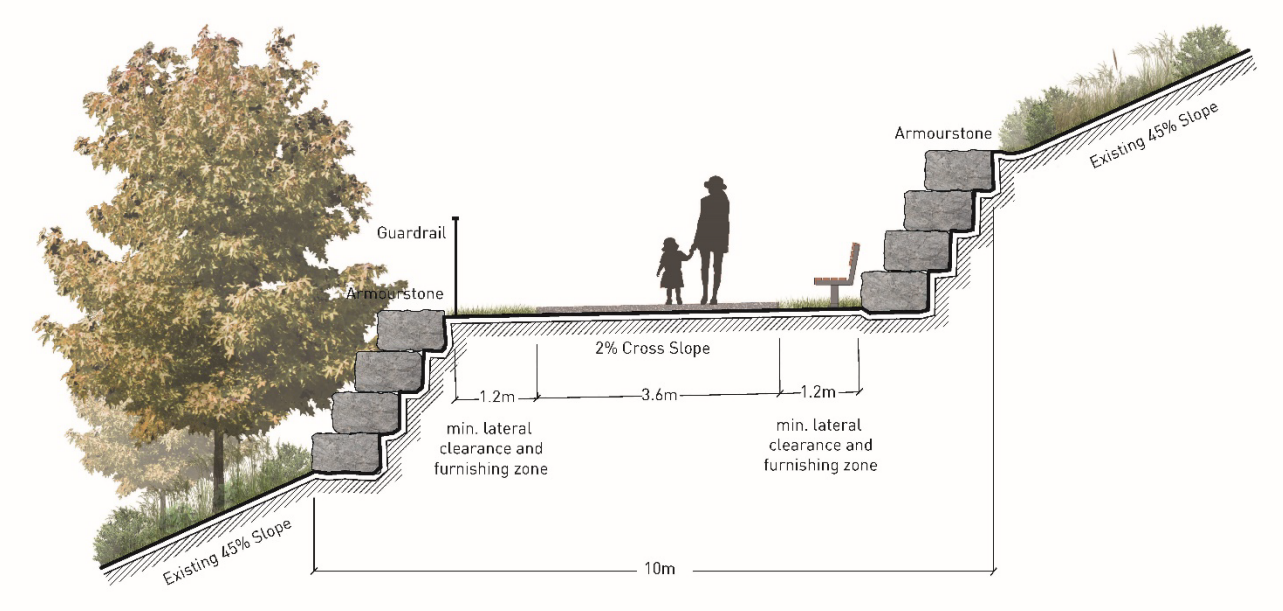

Figure 8-7. Conceptual cross-section of the Highland Creek east slope multi-use trail

2. Existing Infrastructure – The following existing infrastructure will be leveraged for The Meadoway multi-use trail (from west to east):
    - Section 5 - Ellesmere Road from Orton Park Road east to the hydro corridor entrance: This section will align with the planned improvements to the Upper Highland Creek Pan Am Path along Ellesmere Road and into the Highland Creek ravine;
    - Section 6 - Morningside Avenue to Pan Am Drive: Morningside Avenue has a sidewalk but no existing bike lane. Alternative configurations that can provide for a multi-use trail and pedestrian sidewalk will be explored during the detailed design phase in discussion with the City of Toronto and MTO;
    - Section 6 - Pan Am Drive between Morningside Avenue and Chartway Boulevard: This section has an existing sidewalk, on-street bike lane and no infrastructure improvements are anticipated; and,
    - Section 6 - Conlins Road between Canmore Boulevard and the hydro corridor (north of Highway 401): Conlins Road in this section has a sidewalk on the east side and an existing bicycle lane both north and south. The City is planning improvements to Conlins Road via the installation of dedicated one-way cycle tracks that are physically separated from traffic (City of Toronto, 2019a).

3. Through UTSC – The multi-use trail will go through UTSC property between Pan Am Drive and Conlins Road (Chapter 7.4). The multi-use trail may be modified in consultation with UTSC in order to meet their requirements for student trails on their property.

8.2.2 Road Crossings

There are 16 road crossings that are part of the incomplete sections of the trail. Table 8-1 identifies the crossing, whether there is existing crossing infrastructure, and what is being proposed (see also Figure 5-2).

Table 8-1. Overview of roads that intersect The Meadoway within the three incomplete sections

Roads that intersect with The Meadoway (from west to east)	Are there sidewalks on the road?	What type of crossing infrastructure exists?	How many lanes of traffic to be crossed?
Givendale Road	No	Marked as a crossing; no lights	2
Kennedy Road	Yes	Signalized intersection immediately south of hydro corridor at Jack Goodlad Park	5
Rail Corridor	No	Pedestrian bridge at Tara Avenue south of hydro corridor	N/A
Midland Avenue	Yes	No crossing within study area; signalized intersection immediately north	4
Marcos Road	Yes	Stop sign at Lawrence allow for pedestrian crossing	2
Lawrence Avenue East	Yes	Signalized intersection at Lawrence and Brimley	7
Brimley Road	Yes	Signalized intersection at Lawrence and Brimley	5
Scarborough Golf Club Road	Yes	No crossing	4
Ellesmere Road	Yes	Signalized intersection	6
Orton Park Road/Military Trail	Yes/No	Signalized intersection	3/2
Neilson Road	Yes	No crossing	4
Military Trail	Yes	No crossing (yellow crossing lights immediately south of project study area)	2
Morningside Avenue	West side only	No crossing	6 plus Highway 401 on ramp
Chartway Boulevard	No	No crossing	2
Conlins Road (at Canmore Boulevard)	Yes	No crossing	2
Conlins Road (north of Hwy 401)	Yes	No crossing	4

The preferred alignments for the three new sections of trail will result in 11 new roadway crossings; three at intersections and eight at midblock locations. The configuration of each crossing was reviewed based on the City of Toronto's Multi-Use Trail Design Guidelines and existing precedents elsewhere along the

hydro corridor. The following sections document the recommended treatment and other relevant considerations for each crossing.

Crossings at Existing Intersections

Ellesmere Road at Military Trail – Section 5

This is an existing signalized intersection with a combined crossride on the north approach (accommodating a multi-use trail along the north side of Ellesmere Road) and crosswalks on the other three approaches (Figure 8-3).

The trail will cross diagonally from the southwest to northeast corners. At a minimum, the west side of the intersection should be modified to provide a north-south crossride to complete the diagonal connection. Consideration should be given to providing crossrides across the south and east sides to reduce delay for cyclists following the trail and to better match the anticipated use. Because of the size of the intersection and the long signal cycle length, cyclists approaching from the southeast (for example) are more likely to cycle across the south crosswalk if they arrive at the intersection just as the east-west signals turn green, than to wait for the northbound bicycle signal on the west side of the intersection. The additional crossrides on the south and east approaches would give cyclists the ability to legally travel around the intersection in either direction without riding through the crosswalk and conflicting with pedestrians.

Morningside Avenue and Tams Road/Pan Am Drive – Section 6

This is an existing signalized intersection with crosswalks on all four approaches (Figure 8-4). North of this intersection, the trail will be an off-street multi-use path along the west side of Morningside Avenue. East of this intersection, the trail will travel along Pan Am Drive, with cyclists using existing on-street bicycle lanes and other users following an existing sidewalk on the south side of the road.

Because an off-street trail is not proposed on the east side of the intersection, the existing east-west crossing treatment would continue to be applicable. Conversion of the west leg crosswalk to a combined crossride would be appropriate to match the multi-use trail proposed on the west side of the road, north of the intersection.

Conlins Road and Chartway Boulevard / Canmore Boulevard – Section 6

This is an existing all-way stop controlled intersection with crosswalks on all legs (Figure 8-4). West of this intersection, the trail will be off-street to the north of Chartway Boulevard. North of this intersection, the trail will travel along Conlins Road, with cyclists using on-street bicycle lanes[3] and other users following

[3] The City of Toronto has plans to convert the existing bicycle lanes on Conlins Road to cycle tracks, which would likely entail the installation of flex-posts or precast concrete between the bicycle lanes and the general traffic lanes.

the sidewalk on the east or west side (the east sidewalk would be preferable since it connects more directly to the easterly continuation of the trail north of Highway 401).

Pedestrian movements are already accommodated at this intersection. A separated crossride is recommended on the north leg to accommodate cyclists traveling between the trail and the northbound bicycle lane on Conlins Road (and vice versa).

Midblock Crossings

The new trail will involve eight midblock roadway crossings. The type of midblock crossing is sensitive to traffic and roadway characteristics. Table 8-2 lists the traffic and roadway characteristics for each midblock crossing and recommendations for each crossing are discussed below. Further discussions with the City and HONI will be required at the detailed design stage to confirm all crossing locations and design.

Table 8-2. Roadway and traffic characteristics at midblock crossing locations

Crossing Road	Road Classification	Roadway Width (m)	# of Lanes	Posted Speed Limit (km/h)	Traffic Volume (veh/day)	Nearest Controlled Crossing
Kennedy Road	Major arterial	15.2	4 + two-way left turn lane	60	High (28,500)	155 m to the south (traffic signals at Ranstone Gardens)
Midland Avenue	Major arterial	15.2 (approx.)	4	50	High (24,000)	105 m to the north (traffic signals at Prudential Drive)
Marcos Boulevard	Local	8.5	2 (unmarked)	40	Low (assumed)	25 m to the north (two-way stop control at Lawrence Avenue)
Scarborough Golf Club Road	Minor arterial	15.2	4	50	Moderate to High (11,000)	180 m to the north (traffic signals at Ellesmere Road)
Neilson Road	Minor arterial	15.2	4	50	Moderate to High (15,000)	95 m to the north (traffic signals at Military Trail)
Military Trail (east of Neilson Road)	Collector	9.8	2 + bicycle lanes	40	Moderate (6,000)	105 m to the east (pedestrian crossover at Blessed Pope

Crossing Road	Road Classification	Roadway Width (m)	# of Lanes	Posted Speed Limit (km/h)	Traffic Volume (veh/day)	Nearest Controlled Crossing
						John Paul II Catholic Secondary School / Tam Heather Curling and Tennis Club)
Pan Am Drive	Private roadway (maintained by UTSC)	10.0	2 + bicycle lanes	40	Low to Moderate (depending on events at Pan Am Aquatic Centre)	310 m to the west (traffic signals at Morningside Avenue); painted but uncontrolled crosswalk 30 m to the south
Conlins Road (north of Highway 401)	Minor arterial	14.2	2 + bicycle lanes	50	Moderate (7,000)	465 m to the north (traffic signals at Sheppard Avenue)

Kennedy Road – Section 3

A signalized crossing is recommended at the location where the preferred alignment intersects with Kennedy Road (Figure 8-2).

Midland Avenue – Section 3

A signalized crossing is recommended at the location where the preferred alignment intersects with Midland Avenue (Figure 8-2).

Marcos Boulevard – Section 3

Marcos Boulevard is a lower-volume local road and as such would not typically require any special accommodation for trail crossings (Figure 8-2). The crossing location 25 m south of the intersection with Lawrence Avenue is governed by an existing trailhead on the east side of the roadway. Opportunities for realigning the trail heads both to the east and west of Marcos Boulevard will be explored at the detailed design phase.

Although the trail crosses Lawrence Avenue 250 m to the east (at Brimley Road), a short spur leading to an existing midblock pedestrian signal 60 m west of Marcos Boulevard would provide an opportunity for added connectivity to the surrounding community to the north.

Scarborough Golf Club Road – Section 5

A signalized crossing is recommended at the location where the preferred alignment intersects with Scarborough Golf Club Road (Figure 8-3).

Neilson Road – Section 5

A signalized crossing is recommended at the location where the preferred alignment intersects with Neilson Road (Figure 8-3).

Military Trail (east of Neilson Road) – Section 6

A pedestrian crossover (PXO) would be an appropriate crossing treatment at this location. It would be consistent with other crossings along Military Trail and would serve as a likely "desire line" for pedestrians traveling between the adjacent secondary school and the neighbourhood to the northwest (Figure 8-4). However, cyclists are not legally permitted to use a PXO (unless dismounting). The province is considering as a pilot measure a modified PXO that would also allow bicycle crossings. If this measure has not been introduced by the time of detailed design, an uncontrolled crossing would be appropriate. Alternately, a standard PXO could be installed with signage instructing cyclists to dismount before crossing.

If a PXO is installed, consideration should be given to relocating the crossing farther to the west to achieve greater separation to another existing PXO to the east. Further discussions with City of Toronto and HONI will be required at the detailed design stage to confirm the crossing location.

Pan Am Drive – Section 6

The Pan Am Drive crossing forms the transition between the off-street trail east of the crossing and the on-street facilities along Pan Am Drive to the west/north (bicycle lanes; sidewalk on the west side). Pan Am Drive is a private roadway within the UTSC (Figure 8-4).

The general roadway and traffic characteristics would normally be conducive to either an uncontrolled (and unmarked) crossing or the installation of a PXO (subject to the same considerations as noted for Military Trail, related to current regulations prohibiting cyclists from riding in a PXO). The feasibility is complicated by the presence of another painted crosswalk[4] approximately 30 m to the south. This existing crosswalk corresponds to a pedestrian desire line between the Pan Am Aquatic Centre and a set of sports fields on the east side of Pan Am Drive. Further discussions with UTSC are recommended at the detailed

[4] Marking uncontrolled crossings is typically discouraged in Ontario because of the risk of falsely conveying to pedestrians that they have the right of way over roadway traffic. The City of Toronto does not apply pavement markings at uncontrolled crossings on public roads. However, Pan Am Drive is not a public road and not subject to City of Toronto policies.

design stage to rationalize crossing locations along Pan Am Drive, with consideration to UTSC's Master Plan.

Conlins Road (connection to existing trail north of Highway 401) – Section 6

The existing multi-use trail within the hydro corridor currently ends as it connects with the northbound bike lane on Conlins Road (Figure 8-4). Westbound cyclists within the corridor are unable to cross and connect with the southbound bike lane on Conlins Road at this time.

The trail is not proposed to change at this location, but the usage of the trail may change with increased connectivity to the west. Consideration can be given to modifying this crossing to provide a refuge island to mitigate the wide roadway cross-section, as well as providing connections to the west sidewalk and adding applicable signage on Conlins Road. This location may also be a candidate for a modified PXO treatment should this be introduced by the province before trail construction is completed. Alternately, a standard PXO could be installed with signage instructing cyclists to dismount before crossing.

8.3 Aesthetics and Design Elements

Alongside the development of the trail, aesthetic and design improvements will be implemented to create a successful and aesthetically pleasing environment for trail uses. Trail design will include a unifying language of design elements that will help orient users. The design will also address unique site opportunities and constraints along the length of the trail. These improvements will include:

- Mitigation of negative impacts on existing vegetation and habitat due to trail and bridge construction;
- Meadow planting alongside the trail to improve natural cover, increase water infiltration, decrease maintenance cost, reduce carbon footprint, contribute to habitat linkages, foster biodiversity, and provide education and stewardship opportunities;
- Design for user comfort and overall experience;
- Design for user safety and security;
- Preparation of a visualization toolkit (see Chapter 1.4.5) to unify aesthetic language along the length of the trail; and,
- A unique wayfinding strategy and interpretive narrative along the length of the trail.

Materials to be used for the trail and bridge structures may include concrete, asphalt, natural stone, and naturally weathering steel (corten steel). Specific materials will be confirmed during detailed design.

Key amenities include resting and observation nodes placed strategically along the trail network. Nodes will be located within the furnishing zone to minimize conflict with passing traffic. These furnishing zones may include elements such as waste disposal, benches, and signage. Major access points and trail connections may also include signage, benches, and bicycle racks. Interpretive signage is anticipated to be located at key points along the trail to provide users with site specific information. A creative system

of linked interpretive signage will help to enhance user experience. All trail amenities will be subject to HONI technical review and approvals, which will take place during the detailed design phase.

The trail will be designed to enhance public safety for all users (e.g., avoid blind spots and corners) and will adhere to the principles of Crime Prevention Through Environmental Design (CPTED, 2019). Signage and pavement markings will notify and guide users to upcoming intersections, crossings, and other conditions such as changes in trail slope. The trail will be designed to improve accessibility using the Guide to the Integrated Accessibility Standards Regulation, 2014 (Access Ontario, 2014).

8.4 Pedestrian Crossings

There are four pedestrian crossings within the limits of the scope of this ESR. A summary of each proposed crossing, including bridge design and construction considerations, is provided below. The specific location and design for these crossings are subject to further discussion with and approval from HONI and other agencies during detailed design. Should the structures change significantly in design or location from what is presented within this ESR, a Class EA addendum will be prepared, and a 30-day review period will be provided for all affected parties following a formal Notice of Filing of Addendum (see Chapter 13).

General arrangement drawings for the preliminary design of each structure can be found in Appendix I.

8.4.1 Southwest Tributary of Highland Creek

The proposed crossing of the Southwest Tributary of Highland Creek is located between the center and south hydro towers within The Meadoway, and will consist of a single-span structure with an approximate clear span of 40 m. The structure has an overall width of 4.5 m, which has been selected in order to satisfy HONI's recommended minimum building setback for overhead power lines (HONI, 2018).

The proposed structure arrangement and elevation provides enough hydraulic capacity to convey 50-year flood levels. To achieve this structure elevation, embankments at both approaches are required. In order to minimize both hydrologic impacts to the flood plain, and the grading impacts within the 15 m clearance area around the hydro towers, the structure span was increased. The increase in the span reduces the elevation difference between the structure ends and the existing grade, which in turn reduces the size of the graded approaches that are required. Conflicts with an existing concrete structure, located at the approximate location of the proposed crossing, are also avoided with the increased span length.

A bowstring truss is the proposed structure type for this crossing. The main structural truss components can be fabricated off-site and erected on the east side of the crossing with minimal overhead crane usage, which is ideal to reduce potential impacts to the existing overhead transmission lines located to the north and south of the proposed structure alignment. The bowstring truss also provides an aesthetically appealing appearance for the trail users. Once the abutments are constructed in place, and the main truss components are assembled to the east of the final structure location, the superstructure can be 'launched' into place from the east embankment. This erection method also allows for minimal overhead crane usage, again reducing the potential for impacts to the overhead transmission lines. Once the truss structure is in place, assembly of the deck, cyclist safety barriers (which have a taller minimum height

guard than pedestrian safety barrier requirements), and any landscape architecture features can be completed.

Clearing and grubbing of the tributary in the area around the existing concrete structure will be required. No impacts to trees or other vegetation are anticipated at this crossing. There will be no work required within the tributary itself.

8.4.2 Highland Creek

The proposed crossing of Highland Creek is located to the south of the hydro corridor, adjacent to the existing Ellesmere Road Bridge, and consists of a single-span structure with an approximate clear span of 40 m. The proposed structure arrangement and elevation provides sufficient hydraulic capacity to convey 25-year flood levels. Consideration was given to raising the structure elevation to increase the hydraulic capacity of the water crossing, but it was determined that the sizable approaches and embankments that would be required to accommodate the heightened elevation would have a more severe impact on the hydrology of the area.

This structure is not in the vicinity of any overhead transmission lines so the horizontal setback requirements to active hydro lines, which were considered when designing structure widths at the other two pedestrian water crossings within The Meadoway, do not apply to the Highland Creek pedestrian water crossing. To take advantage of the unrestricted location and the aesthetic sightlines within the Highland Creek area, an overall structure width of 6 m has been proposed. Construction methods and equipment (i.e., overhead cranes) are also less restricted for this crossing, due to the separation between the bridge location and nearest HONI infrastructure. The Highland Creek crossing can be erected using conventional bridge construction methods.

A bowstring truss structure was chosen for this crossing for its aesthetic appeal and its ability to maximize the hydraulic opening below the structure.

The selection of the location of the Highland Creek crossing was highly dependent on the geomorphology of Highland Creek. While the natural section of Highland Creek upstream of Ellesmere Road is highly unstable, there is an existing armoured section of Highland Creek that extends for approximately 50 m upstream of Ellesmere Road. This area was determined to be the preferred location for placement of the new crossing, as it minimizes risk of impacts to the structure from erosion while also being positioned to provide opportunity to integrate with the future Upper Highland Creek Pan Am Path to the south of Ellesmere Road.

At the proposed location for the west abutment, limited clearing and grubbing will be required to accommodate the new structure. It is not expected that removal of any large trees will be required on the west side of the Highland Creek. Removal of approximately 5-10 small trees will be required to construct the east abutment for the Highland Creek crossing. Further removals may be required in order to provide construction access to the east abutment. However, effort can be made to restrict removals to accommodate construction access to the areas along the proposed new trail alignment. Alternatively,

smaller equipment and supplies can be delivered to the east abutment via overhead crane from the west abutment. Refer to Chapter 9 for more information on environmental impacts and associated mitigation measures.

8.4.3 Ellesmere Ravine

The proposed crossing of Ellesmere Ravine is located between the center and south hydro towers within the hydro corridor, and consists of a three-span structure with an approximate total span of 75 m. The span is divided into a center span of 30 m and two approach spans of approximately 22.5 m each and is constructed on concrete piers. The proposed structure arrangement and elevation provides sufficient hydraulic capacity to convey the Regional Event flood levels in Ellesmere Ravine. The proposed structure has an overall deck width of 4.5 m. The structure width has been selected to satisfy HONI's recommended minimum building setback for overhead power lines.

Feasible structure types and construction methods are limited for this pedestrian water crossing due to the presence of the overhead hydro lines and the desire to minimize the potential for impact to HONI infrastructure during temporary (construction) and permanent (final configuration) conditions. Structure types requiring tall superstructures (through-arch), or towers (suspension or cable-stayed bridge) were avoided to maximize structure setback (horizontal and vertical) from the overhead lines. The steel girder structure type is proposed because of the following reasons:

- It offers a low-profile solution that minimizes long-term impacts to nearby HONI infrastructure;
- The main structural components can be fabricated off-site, and the assembled structure can be launched into its final position, minimizing the use of overhead cranes on-site, and the potential for short-term impacts to nearby HONI infrastructure; and,
- The main structural components are confined below the bridge deck, out of sight from trail users. This arrangement provides a large degree of freedom to customize the appearance of the structure at the deck surface, from an architectural and aesthetic standpoint.

Access for construction of the concrete piers is expected to require significant tree removals and construction of temporary access routes on each embankment of Ellesmere Ravine. To minimize the total impact of the access route construction, attempts shall be made to maintain the access route alignment within the ultimate footprint of the pedestrian water crossing (see Chapter 9 – Mitigation Measures). Based on the available topographic information, it is anticipated that the west embankment can accommodate this approach (approximate 2-3:1 slope) more readily than the east embankment (1.5-2:1 slope). For construction of the east pier, it is anticipated that access to the location of the pier footing will be achieved by constructing an access route that enters the ravine to the north of the center hydro tower. This route will require partial excavations of the existing embankment in some areas and backfill and compaction along the existing embankment in other areas.

8.4.4 Pedestrian Rail Crossing

A pedestrian bridge, spanning the Metrolinx right-of-way with an approximate clear span of 37 m, has been proposed in the hydro corridor. It is understood that there are plans to electrify the Metrolinx rail lines in the future. In order to accommodate the rail electrification infrastructure, the proposed pedestrian rail crossing has been set at an elevation that provides at least a 12.0 m vertical clearance between the rail line and the bottom of the bridge structure. This clearance corresponds to the maximum height of electrification structures, according to the 2017 GO Rail Network Electrification Transit Project Assessment Process report (TPAP). Ongoing discussions with Metrolinx and HONI are required during detailed design to further develop this crossing and finalize both the clearance requirements, and proposed structure location.

Switchback ramp structures are required at each abutment of the rail crossing to make up the grade difference between the on-grade Meadoway trail and the bridge surface of the railway crossing. A similar structure serves as the eastern access point to the existing pedestrian structure on Tara Avenue that crosses the Metrolinx rail lines, to south of the hydro corridor. The switchback structures will be required to satisfy AODA requirements for slope, landing sizes, locations and frequency, width and vertical clearance.

8.5 Hydrology and Hydraulics

The pedestrian water crossings proposed for the South West Tributary of Highland Creek (also known as Dorset Park) (Section 3), Highland Creek (Section 5), and Ellesmere Ravine (Section 6) were analyzed for potential impacts to the water courses they cross. The introduction of trails and structures around a watercourse creates the potential for new obstructions or ‘footprints’ that can alter not only flow paths of a watercourse but also what areas may be affected by flooding during storm events. The primary objective of a hydraulic assessment is to evaluate the impacts of the proposed multi-use trail on the surface water systems.

Flood hazard assessment (the combination of hydrologic and hydraulic assessments) in coordination with geomorphic assessment of risk of scour, erosion, and long-term watercourse bed movement helps to inform the effects of the proposed crossings on the environment. Full details of the hydraulic analysis and geomorphological impacts can be found in the Hydrology and Hydraulics Report (Appendix J).

8.5.1 Southwest Tributary of Highland Creek

The proposed crossing for the South West Tributary of Highland Creek is a bridge with a total span of 41 m, a width of 4.5 m, and a maximum soffit elevation of 156.4 metres above sea level (mASL) and minimum soffit elevation of 156.1 mASL. The abutments are protected by a concrete lining already present within the channel, which minimizes the erosion limits of the watercourse. The hydraulic assessment results conclude that there is no significant increase in water surface elevation (WSE) as a result of the proposed crossing. However, the robustness of the existing concrete channel at the proposed crossing should be re-evaluated during the detailed design stage to ensure adequate protections are maintained for the bridge abutments in the long-term.

8.5.2 Highland Creek

The proposed crossing at Highland Creek is a bridge with a total span of 30 m, a width of 6 m, and a soffit elevation of 123 mASL. The bridge has been placed at a highly armoured section of Highland Creek. The hydraulic assessment results concluded that there is no significant increase in WSE as a result of the proposed crossing. However, during detailed design the existing channel stabilization should be re-assessed to ensure that it provides adequate protection for the bridge abutments.

8.5.3 Ellesmere Ravine

The proposed crossing of Ellesmere Ravine is a bridge with a total span of 75 m, a width of 4.45 m, and a soffit elevation of 144.75 mASL. There are two piers that are 3.5 m wide that sit on either side of the watercourse. The hydraulic assessment results concluded that there is no significant increase in WSE as a result of the proposed crossing. During the detailed design stage, the locations of the piers and abutments should be reviewed in order to confirm that they are properly protected against potential erosion and slope failure.

8.6 Infrastructure/Utilities

The hydro corridor in Sections 3, 5, and 6 contains HONI electric power facilities (i.e., transmission power lines, distribution power lines, transmission station). Other key existing infrastructure includes the TTC/GO Stouffville rail corridor, Toronto Hydro power lines, and Toronto Water utilities. The presence of other utilities will be confirmed during detailed design.

The following outlines the discussions with infrastructure/utility owners that will be completed during detailed design.

8.6.1 Metrolinx

Metrolinx owns and operates the rail corridor that intersects the hydro corridor parallel and to the east of Kennedy Road. Based on GO Rail Network Electrification Environmental Project Report – Volume 1, any crossing must have a minimum vertical clearance of 7.584 m (Morrison Hershfield Ltd. & Gannett Fleming Canada ULC, 2017). Ongoing discussions with Metrolinx will be required during detailed design to further develop this crossing.

8.6.2 Hydro One Network Inc.

HONI has a provided technical guidance in the development of design parameters for the new sections of The Meadoway. The following are some of these conditions related to trail design and implementation in hydro corridors:

- Mowed buffers between trail and adjacent meadows to be set at a 3.25 m width;
- Property line mowed buffer set at 5 m between adjacent residence and meadow to allow for site lines, public walking and comfort of surrounding neighbours to be buffered from meadow;
- Only grasses and wildflowers are permitted to be planted directly beside hydro towers. HONI approved shrubs must be 15 m away from hydro tower base to allow for HONI staff to complete maintenance; and,

- HONI requires 15 m clearance on all sides around its transmission structures as measured from the hydro tower legs in order to carry out maintenance operations. This clearance must always be maintained, and no storage or staging activities should occur within this area during construction.

All multi-use trail and bridge infrastructure designs require technical review by HONI and are subject to HONIs permits and approvals process before implementation.

8.6.3 Toronto Water

Toronto Water manages a number of facilities and assets that cross through and/or intersect with The Meadoway LSA. A non-exhaustive list of key pieces of infrastructure include an 825 mm gravity sewer line that runs immediately east and parallel to the Southwest Tributary of Highland Creek (Section 3), and a 1,200 mm sanitary sewer line that runs underneath the Highland Creek in close proximity to the proposed water crossing (Section 5).

All applicable Toronto Water assets will be incorporated into the detailed design process.

8.6.4 Other Utilities

As noted above, during detailed design it will be confirmed whether other agencies and utility companies such as Toronto Water and Enbridge, have existing infrastructure within the hydro corridor. Discussions will be undertaken as appropriate to understand the location of existing infrastructure and minimize impacts.

8.7 Property Requirements

It is anticipated at the EA stage that a property purchase will not be required for this project. Licenses will be required by IO for all new trail sections within the hydro corridor (refer to Chapter 2.2.1). Modifications to the existing sidewalk along Morningside Avenue in order to permit a multi-use trail between the hydro corridor and Pan Am Drive will require consultation with City staff and MTO. Easement may also be required from UTSC for the section of the trail that is on their property.

8.8 Construction Phasing

Implementation of a trail at the scale of The Meadoway is generally completed in phases in order to prioritize sections, secure funding, and reduce risks in tendering and construction. The construction of The Meadoway will begin with Section 5 as the first phase.

The Highland Creek construction phase will involve the implementation of the Highland Creek pedestrian water crossing, and trail infrastructure between Scarborough Golf Club Road and Neilson Road. It is anticipated that this work will begin in 2020, subject to approvals. The remainder of the new trail sections will be completed as funding becomes available.

8.9 Preliminary Cost Estimate

Table 8-3 provides a preliminary cost estimate to complete the missing trail segments in Sections 3, 5, and 6. It is noted that costs associated with water and rail crossings are subject to change pending approvals from HONI on structure design and location. The preliminary costs will be reviewed and refined during the detailed design phase.

Table 8-3. Overview of preliminary cost estimate for constructing the multi-use trail

Trail Design and Construction	
Section	Cost
Section 3	$ 2,800,000.00
Section 5	$ 2,300,000.00
Section 6	$ 2,800,000.00
Bridge Design and Construction	
Section	Cost
Section 3*	$ 3,700,000.00
Section 5	$ 1,000,000.00
Section 6	$ 2,500,000.00
Road Crossings, Amenities, Signage, and Restoration	
Section	Cost
Section 3	$ 600,000.00
Section 5	$ 570,000.00
Section 6	$ 580,000.00
Estimated Total Cost	**$ 16,800,000.00**

**Includes both the Southwest Tributary of Highland Creek crossing and the TTC/GO Stouffville crossing*

8.10 Phase 4 Public Consultation

Major consultation touchpoints for Phase 4 of The Meadoway Class EA are summarized in Table 8-4. For a more detailed breakdown of consultation for all phases of the Class EA, including notifications, advertisements, correspondence, and other materials, please refer to Appendix A.

Table 8-4. Summary of major consultation touchpoints for Phase 4

Date	**Consultation**
November 18, 2019	Meeting with HONI and IO
November 20, 2019	Meeting with Toronto Water
November 21, 2019	Presentation to the City of Toronto Community Disability Steering Committee
December 12, 2019	Notice of Completion to public, review agencies, politicians, Indigenous communities, and key stakeholders

8.10.1 Public Consultation

The Notice of Completion and initiation of the 45-day ESR review period was circulated to the public on December 12, 2019 via the Scarborough and North York Mirror, the project website mailing list, and social media. A follow up reminder was circulated via the methods noted above on December 19, 2019. An electronic copy of the ESR was placed on the project website and physical copies were distributed at the TRCA Head Office, The City of Toronto Clerks Office, and the Bendale Branch of the Toronto Public Library.

8.10.2 Community Liaison Committee

The CLC was sent an electronic copy of the Class EA Notice of Completion on December 12, 2019. All CLC documentation and correspondence can be found in Appendix A.

8.10.3 Indigenous Communities

The Notice of Completion was circulated to all Indigenous communities as identified in Chapter 3 on December 12, 2019. All documentation and correspondence can be found in Appendix A.

8.10.4 Review Agencies

All potentially affected review agencies were sent the ESR and Notice of Completion on December 12, 2019:

- Department of Fisheries and Oceans;
- MNRF;
- MECP;
- Ministry of Heritage, Sport, Tourism and Culture Industries;
- MTO; and,
- IO.

For more information on materials and correspondence as it relates to the review agencies, please refer to Appendix A.

8.10.5 Key Stakeholders

One meeting with HONI and IO was held in Phase 4 in order to discuss and provide updates to the Class EA.

A meeting was held with Toronto Water on November 20, 2019 to provide an overview of The Meadoway project and highlight all future considerations as it pertains to Toronto Water assets and the proposed water crossings (see Chapter 8.6.3). Future meetings will be held with Toronto Water during the detailed design stage.

A meeting with the City of Toronto Community Disability Steering Committee was held on November 21, 2019. At the meeting, the multi-use trail alignment was reviewed, and input was requested on considerations for accessibility, particularly for the Option A-2 design concept selected for Highland Creek (see Chapter 7.2). TRCA confirmed to the Committee that opportunities to refine the conceptual alignment (i.e., reduce the grades below 8% wherever possible) will be explored during the detailed design phase. TRCA committed to meeting with the Committee again during detailed design to provide an update and seek further input.

All key stakeholders were sent an electronic copy of the Class EA Notice of Completion on December 12, 2019. All key stakeholder documentation and correspondence can be found in Appendix A.

8.10.6 Technical Advisory Committee

The TAC was sent an electronic copy of the Class EA Notice of Completion on December 12, 2019. All TAC documentation and correspondence can be found in Appendix A.

8.10.7 Local Politicians

Local Councillors, MPs, and MPPs were notified of the Class EA Notice of Completion on December 12, 2019. All documentation related to engagement with local politicians throughout all phases can be found in Appendix A.

9.0 ENVIRONMENTAL IMPACTS AND MITIGATION

When complete, The Meadoway will provide 16 km of continuous multi-use trail and will connect to and intersect with additional trail networks along its length. This creates an extensive active transportation network in the City's east end. Active transportation projects represent a small proportion of transportation infrastructure costs yet present opportunities for notable health and economic benefits. The health benefits of active transportation are well known; physical inactivity and obesity are major contributors to illnesses such as Type 2 diabetes, heart disease and high blood pressure. People who live close to trails are reportedly 1.5 times more likely to meet physical activity guidelines (Pierce et al., 2006) and have a 73-80% higher likelihood of cycling (Lindsey et al., 2004). Physical activities like walking and cycling have been shown to help maintain a healthy body weight and decrease the risks of chronic diseases.

There are also economic advantages to healthier communities. Toronto Public Health has estimated that levels of walking and cycling activity in 2006 prevented about 120 deaths in the Toronto population with an associated economic value between $130 million and $478 million (Toronto Public Health, 2012). Most of the spending (more than 60-70%) by active transportation users stays in the local economy compared to only 16% for car users (Wang et al., 2005).

The Meadoway also provides a commuting opportunity for users to cycle directly to local destinations, transit, and eventually downtown Toronto. Connection to local destinations via informal side trails, as well as the potential to serve as a local meeting place and area for community activities (e.g., community gardening) are also key benefits of The Meadoway.

Re-naturalizing the hydro corridor into native meadow habitat will also provide numerous benefits to the ecology and local communities that it crosses. By converting over 200 ha of previously mown grass into native meadow, the quantity and quality of wildlife habitat will be improved, carbon emissions will decrease, stormwater runoff into nearby streams will be reduced, and the City's overall resiliency to climate change will be improved.

It must also be recognized that due to the location and scale of the project, construction of The Meadoway has the potential to result in impacts to the natural, socio-economic, and cultural environments. Minimizing or eliminating environmental impacts is an important objective for this project. This chapter of the ESR documents the potential for positive or negative impacts associated with the trail and mitigation that is proposed to minimize these impacts. Table 9-1 provides a summary of the potential impacts and proposed mitigation. The mitigation will be incorporated in the detailed design and/or of the trail where appropriate.

Table 9-1. Environmental impacts and mitigation

Environmental Feature	Potential Impacts	Proposed Mitigation
Natural Environment		
Terrestrial Features/Vegetation	• Tree removal along trail and construction staging areas • Tree injury as a result of construction activities • Impact to wetlands (Section 5 only)	• Appropriate staging areas and access site location in order to minimize impact/removal of vegetation • Site restoration (and consideration given to site enhancements) will be carried out following construction. All tree protection, removals, injuries, and replacement planning requirements subject to City of Toronto Ravine and Natural Feature Protection By-law and/or the TRCA Guideline for Determining Ecosystem Compensation (July 2018) • Undertake a wetland evaluation process following MNRF guidelines to inform land use planning and protect wetlands from development and alteration
Erosion, Sediment, and Water Quality	• Potential increase in erosion and sediment run-off as a result of trail watercourse crossing work and/or necessary in-stream works • Fuel spills/leaks	• Appropriate sediment and erosion control measures (e.g., TRCA's Erosion and Sediment Control Guideline for Urban Construction) • Employ best practices for source control and pollution protection • Define construction setbacks, secondary drainage measures • Construction activities adjacent to aquatic resources will be controlled to prevent runoff into wetland/watercourse • Develop plans for spill control and containment with efficient reporting • Include locations for refueling/maintenance operations (TRCA specifies min. 30 m from watercourse)

Environmental Feature	Potential Impacts	Proposed Mitigation
		• Cover or stabilize stockpiled excavated and construction material to reduce the potential for runoff • Ensure all equipment in good working order, define refueling requirements (refueling to take place away from the watercourse/wetland) and monitor for leaks in equipment and any above and below grade servicing
Scour and Erosion	• Geomorphology indicates varying levels of erosion risk to supporting and stabilizing soils at the abutments and piers at all three watercourse crossings	• Construction of the bridge abutments within embankment limits that have pre-existing armouring of slope stabilization solutions in place • Protection of bridge substructures using rip-rap/round stone, bioengineering (vegetated buttress, etc.) or sheet piling • Constructing bridge substructures outside of the 50-year erosion limit
Surface Water Quantity and Flood Risk	• Impacts on upstream flooding and floodplain in and around water crossings	• Flood hazard and geomorphic assessments to be undertaken during the EA and detailed design phase in order to guide design criteria for proposed crossings • All proposed bridge structures will be evaluated and designed following TRCA Crossings Guidelines (2015), the MTO's Drainage Design Standards, and the Canadian Highway Bridge Design Code
Invasive Exotic Species	• Potential to disturb, disperse, and/or create new opportunities for the spread of invasive species (e.g., dog strangling vine)	• Minimizing importing and/or moving fill/soil, where possible • Retain as much existing vegetation as possible during site preparation and construction • Avoid transplanting vegetation to minimize the spread of invasive species from infested to non-infested areas • Employ restoration practices (e.g., Ontario Invasive Plant Council Clean Equipment Protocol) that contribute to the prevention of invasive species spread (e.g., use site-appropriate native plants and invasive-free

Environmental Feature	Potential Impacts	Proposed Mitigation
		materials for post-construction restoration) • Removal, restoration and adaptive management of invasive species in and around preferred trail alignment
Species at Risk (SAR) & Species of Concern	• Disturbance to Butternut trees identified as a SAR found in the Milliken Branch of Highland Creek (Section 5) • Species of concern such as Bank Swallows and Eastern Meadowlark may be present in the study area	• During detailed design, conduct tree survey's at potential impact areas to confirm the presence of butternut trees and other species prior to construction and mitigation measures • Potential habitat for species of concern will be identified and all efforts made to avoid or minimize impacts
Wildlife and Wildlife Habitat	• Disturbance to wildlife and wildlife habitat during construction	• Design the trail and configure construction access and staging areas to ensure minimal vegetation removal, grading and filling, where possible • Follow guidelines to reduce risk to migratory birds as per the Migratory Bird Act. • Post-construction site restoration using native species and considering inclusion of habitat enhancements where appropriate
Fish and Aquatic Habitat	• Impacts on water quality such as increased turbidity, as a result of sediment run-off and physical land alterations. Equipment oil and/or fuel spills may be a contributing factor	• Appropriate sediment and erosion control measures (e.g., TRCA's Erosion and Sediment Control Guideline for Urban Construction) • Minimal bank vegetation removal, as appropriate • Regular construction equipment inspections and spill control measures • Follow the applicable Department of Fisheries and Oceans Measures to Avoid Causing Harm to Fish and Fish Habitat (e.g., worksite isolation to contain suspended sediment, dewatering if required will be discharged to sediment bag at a minimum of 30 m from water course) • Comply with applicable timing windows for necessary in-water work

Environmental Feature	Potential Impacts	Proposed Mitigation
		• Develop contingency procedures in the event of a significant increase in turbidity and/or fuel spill, with consideration given to turbidity monitoring to be conducted during necessary in-water work
Socio-Economic		
Air Quality, Noise, and Vibration	• Potential increases in noise and vibration levels as result of construction activities and equipment operation; anticipated to be of relatively short duration, minimal and localized • Potential impacts related to possible increases in dust/particulate matter/emissions as a result of construction activities and construction equipment operation	• Conform to the City of Toronto Noise By-law (591) • Construction to take place during hours specified in the Noise By-law; an exemption from the noise by-law will be required for work outside of this time window • Regular equipment inspections • Comply with the City of Toronto Idling Control By-law • Dust suppression in dry and windy weather conditions
Existing Trail Use	• Potential for temporary disruption to existing trails at new connection points	• Temporary construction fencing and signage will be used to delineate construction zones and direct users to alternate routes (where possible)
Safety	• Potential impact to local area residents, adjacent multi-use trail and/or valley land users due to proximity to construction access/staging area(s)	• Timely public notification and appropriate signage • Security measures such as construction site fencing to prevent unauthorized access to construction area(s) by members of the public • Develop appropriate traffic plan(s) when using public roadway(s) for construction access
Cultural Resources		
Archaeological Resources	• Potential impacts to archaeological resources during construction	• During detailed design, conduct a Stage 2 archaeological assessment of the areas impacted by trail placement and construction • If during Stage 2 archaeological resources are uncovered, then further assessment may be necessary • Contact Ministry of Heritage, Sport, Tourism, and Culture Industries, if archaeological remains are found

Environmental Feature	Potential Impacts	Proposed Mitigation
Technical Considerations		
Property Requirements	• Licensing from IO and HONI will be required	• TRCA and the City will continue to liaise with HONI and IO during detailed design via the PSLUP mechanism
Construction Access and Traffic	• Potential short-term disruption to traffic along existing streets that intersect Sections 3, 5, and 6	• A traffic management plan will be developed as required to minimize disruptions to traffic
Existing Infrastructure and Utilities	• Potential negative impact on existing infrastructure that may be affected during trail and/or crossing construction • Potential temporary access restrictions to Toronto Water trunk sewer • Potential temporary closure of TTC/GO Stouffville rail corridor during construction of pedestrian crossing	• During detailed design, additional investigation into other potential utilities within the corridor will be completed and consultation with all utilities will take place to ensure minimal impacts to existing infrastructure. Utility input will be incorporated into the detailed design of the trail as appropriate • Discussions with Metrolinx and TTC concerning appropriate design and timing of rail line crossing construction to minimize disturbance • Discussions with Toronto Water and HONI concerning the appropriate timing of trail construction • Discussions with City of Toronto and MTO concerning the potential modifications along Morningside Avenue
EMFs	• Potential safety concerns regarding EMF from high voltage transmission lines within the corridor	• During detailed design, an EMF Management Plan will be undertaken to characterize EMF within the corridor and guide the design and layout of the trail to reduce exposure

10.0 PERMITS AND APPROVALS

TRCA, in coordination with the consultants and contractors responsible for trail implementation, will secure necessary permits and approvals for the implementation of The Meadoway multi-use trail, which may include, but are not limited to those listed in Table 10-1.

Table 10-1. Overview of permits and approvals

Permit, Approval or Notice	Rationale	Administering Agency
Tree removal/injury permit	Will be required during trail construction prior to the removal of existing trees	City of Toronto
Ontario Regulation 166/06	Will be required during trail implementation	TRCA
Temporary road closures and/or road occupancy	May be required during construction if access and/or staging on municipal roads is required	City of Toronto
Fisheries Act	May be required during implementation if in-water work is necessary	Department of Fisheries and Oceans
Fish and Wildlife Conservation Act	May be required during construction if in-water work is necessary	MNRF
Endangered Species Act	May be required should Butternut Trees need to be removed	MECP
Railway Safety Act	Notice to be provided during implementation for rail line crossing works	Transport Canada
Ontario Heritage Act	Stage 2 Archaeological Assessment to be conducted during detailed design/prior to implementation of trail	Ministry of Heritage, Sport, Tourism and Culture Industries
Occupational Health and Safety Act	May be required for construction of crossings	Ontario Ministry of Labour
Provincial Secondary Land Use Program	Technical review and approval of detailed design to allow construction of the trail within the hydro corridor right-of-way	HONI and IO

Additional approvals from key stakeholders and relevant property owners will need to be obtained in order to proceed with project implementation. These may include, but are not limited to the following:

- Metrolinx;
- TTC;
- HONI;
- IO;
- MTO;
- Enbridge Gas;
- Toronto Hydro; and,
- Toronto Water.

The following acts and regulations may also need to be adhered to during trail construction:

- Migratory Birds Convention Act;
- Species at Risk Act;
- Lakes and Rivers Improvement Act;
- Planning Act, Provincial Policy Statement 2014; and,
- Conservation Authorities Act.

11.0 FUTURE WORK

This ESR is subject to a 45-day public and agency review period. Following completion of this review period, assuming there have been no Part II Order requests, the project will proceed to the detailed design phase. During detailed design, the preferred alignment (as outlined in Chapter 8) will be refined and finalized to address site-specific conditions as identified in this Class EA.

The detailed design phase involves the development of detailed drawings for the preferred alignment and construction standards and specifications, including a Construction Management Plan, Monitoring Plan, and the Operations and Maintenance Plan.

Specifically, the detailed design phase will include, at minimum:

- Plan and profile drawings;
- Typical sections and details;
- Material specifications;
- Construction access route location;
- Construction sequencing and management plan;
- Tree protection, removal and restoration plans; and,
- Erosion and sediment control plan.

Other activities that will be undertaken during the detailed design phase include:

- Additional hydrology, hydraulics and fluvial geomorphology assessments to guide bridge placement and design;
- Stage 2 archaeological assessment;
- Apply the Ontario Wetland Evaluation System (OWES) developed by MNRF to the unevaluated wetland located to the east of Highland Creek in Section 5;
- Coordination with Parks Canada, who are developing a conceptual trail alignment from Meadowvale Road east into Rouge National Urban Park;
- Geotechnical work;
- Confirmation of utilities;
- Obtaining licensing under the secondary land use program from IO and HONI; and,
- Finalize and receive all necessary permits and approvals.

TRCA will continue to engage interested members of the public, Indigenous communities, stakeholders, agencies and local politicians throughout detailed design and construction.

12.0 RECOMMENDATIONS FOR FUTURE WORKS

Throughout the Class EA process, many opportunities that were outside of the project scope were discussed with stakeholders and members of the public. These opportunities are listed below as recommendations to be pursued and implemented if funding becomes available in the future.

Recommendations for future works:

- Develop and implement a wayfinding strategy for The Meadoway multi-use trail;
- Assess and, where appropriate, resurface and upgrade existing trail sections within The Meadoway;
- Undertake a trail user assessment of The Meadoway, collecting information on user type, frequency, and volume at peak periods of use;
- Assess the need to implement a high capacity trail within certain sections of The Meadoway;
- Explore the possibility of a crossing over Highway 401 so that users do not have to detour from The Meadoway; and,
- Explore secondary connections to local amenities and features (e.g., Eglinton LRT, connections to the UTSC Master Plan pedestrian path along Military Trail, etc.).

13.0 POTENTIAL FOR AMENDMENT

In the event that a significant modification to the preferred alignment and/or preliminary bridge design (e.g., the proposed crossing over the TTC/GO Stouffville rail corridor and Ellesmere Ravine) occurs after filing of the ESR, a formal addendum shall be written.

The addendum shall describe the circumstances necessitating the change, the environmental implications of the change, and the associated mitigation measures required. The addendum will be filed with the ESR and the Notice of Filing of Addendum will be given immediately to all affected parties outlined in the consultation strategy (Chapter 3). A period of 30 days following the Notice of Filling of Addendum will be provided for review and response. The opportunity for a Part II Order will also be provided (see Chapter 2.4). If no request is received by the Minister or delegate, the proponent is free to proceed with implementation and construction.

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15.0 GLOSSARY

Abutments: Support structures found at the ends of bridges that connect the deck of the bridge to an embankment. Help support and distribute the weight of a bridge.

Allotment Garden: An area of land, or otherwise referred to as an 'allotment', that is available for public or individual use for non-commercialized food production or gardening activities.

Alternative Solutions: Feasible alternative ways of solving an identified problem (deficiency) or addressing an opportunity, from which a preferred solution is selected. Note: alternative solutions include the "Do Nothing" alternative.

Arterial Roads: High-capacity urban roads that act as major traffic corridors delivering traffic from major collector roads such as highways.

At-grade mid-block pedestrian crossing: A marked crosswalk that is between two intersections at street level, usually in the form of white horizontal stripes along the length of the crossing. May include safety features such as pedestrian islands, yield lines, bulb-outs, and may be signalized.

At-grade pedestrian crossing: Pedestrian crossing that is at street level, which may or may not be signalized and include other safety features.

Biodiversity: A term describing the variety of species, both flora and/or fauna, contained within an ecosystem.

Crossrides: The markings that carry trail or cycling facilities across roadways and through intersections. There are four basic options: mixed crossride, combined crossride, separated crossride, asymmetrical separated crossride.

Easement: A legal right to use another's property/land for a specific limited purpose. The easement might restrict use of the property/land and require formal permission from the legal property/landowner.

Environment: As defined in the Environmental Assessment Act subsection 1.(1), "environment" means:

a) air, land or water,
b) plant and animal life, including human life,
c) the social, economic and cultural conditions that influence the life of humans or community,
d) any building, structure, machine or other device or thing made by humans,
e) any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities, or
f) any part or combination of the foregoing, and the interrelationships between any two or more of them, in or of Ontario.

Environmental Effects: Any effects resulting in a change to the biophysical environment, adverse or beneficial, wholly or partially resulting from human activity.

Environmental Study Report (ESR): The documentation for a specific project planned in accordance with the procedures for Schedule C projects for Ontario's Class Environmental Assessment process. The ESR sets out the planning and decision-making process, including consultation practices, which has been

followed to arrive at the preferred solution. The ESR also sets out the mitigating measures proposed to avoid or minimize environmental impacts.

Environmentally Significant Area: An area which contains significant natural features, ecosystems and/or ecological functions which warrant identification, conservation, and protection in the long-term interest of the environment and the public at large.

Erosion: A term used in this document collectively referring to:

a) The wearing away of the land surface by running water, wind, ice or other geological agents;
b) Detachment and movement of soil or rock fragments by water, wind, ice or gravity; and,
c) Instability of a slope.

Fauna: A collective term for animal species present in an ecosystem.

Flora: The collective term for the plant species present in an ecosystem.

Fluvial: The features (morphology) and process related to flowing water. Fluvial processes, including the movement of sediment due to erosion, transportation and deposition, and the formation of river channel features (morphology) such as (but not inclusive of): sediment bars, banks, channel sinuosity, floodplains, pools, riffles, and islands.

Geomorphology: The physical features of the earth and ongoing processes which shape landforms.

Grade: The degree of incline (or steepness) of a slope; represented as a percentage.

Greenspace: Land covered with grass, trees or other vegetation that may be used or created for recreation, education, or aesthetic purposes in an urban environment.

Habitat: The place or site where an animal or plant community naturally or normally lives. The environment in which the life needs of a plant or animal organism, population, or community are supplied.

High Capacity Trail: Trails that accommodate the highest number of users and address a broader concept of 'capacity' than simply greater size or volume; however, and they do not imply greater speed. They connect to significant destinations and can be utilized to accommodate a wider range of unusual distribution of user-types, to perform special functions, or to address site conditions. The default with of a high capacity trail is 4.1 m.

Hydraulic: Relates to a liquid moving in a confined space under pressure (in this instance an open channel).

Hydro Corridor: A large and often linear piece of land with transmission lines and towers used to transmit electricity. With respect this to project, the land is owned by IO on behalf of the Province of Ontario, with a license agreement provided to HONI for the purposes of transmitting electricity through the space.

Hydrology: The science of water on and beneath the Earth's surface and its relationship with the environment.

Local Study Area: The zone within which *local effects* are assessed (i.e., potential impacts that could occur near the action where direct effects are anticipated).

Meadow: A community dominated by grasses, herbs, and other non-woody plants such as wildflowers, with tree and shrub cover of 25% or less. In the absence of natural disturbance, meadows will typically succeed into forest communities. To ensure native seed establishment and promote biodiversity, meadow restoration projects require a maintenance regime that is appropriate to the site and project objectives.

Multi-modal Transportation: Combination of two or more modes of transportation (e.g., bicycle, vehicle, train, subway).

Multi-use Trail: Facilities separated from the roadway, which support a number of non-motorized uses such as walking, running, cycling, inline skating, wheelchair users, and dog walking, amongst others. In order to accommodate these uses, the multi-use trail must be approximately 3.5 to 4 m in width with an asphalt surface. Where possible, the trail will meet accessibility requirements and provide access for emergency and maintenance vehicles.

Objectives-based Evaluation: An approach that considers the advantages and disadvantages for alternative solutions, relative to their ability to accomplish project goals, or objectives, developed through community and stakeholder input.

Part II Order: An order to comply with Part II of the EA Act. This is an appeal provision whereby a person or party with outstanding concerns may request the Minister to make an order requiring a proponent to comply with Part II of the EA Act before proceeding with a proposed undertaking to which the Class EA would otherwise apply.

Proponent: The entity that has the responsibility to carry out the project.

Regional Study Area: The broader zone that considers potential *cumulative effects*, both direct and indirect, that extend a certain distance from the immediate project footprint (i.e., the Local Study Area).

Regulations: Statutory controls, enacted through legislation, for the purpose of controlling land and water use.

Resting Nodes: An area designated for resting which may include benches or other sitting structures.

Restoration: To repair or re-establish functioning ecosystems; the process of altering a site to establish a defined, native, historic ecosystem; the goal is to emulate the structure, function, diversity and dynamics of a specified ecosystem.

Review Agencies: Means government agencies, ministries or public authorities or bodies whose mandates require them to have jurisdiction over matters affected or potentially affected by projects planned under this Class EA. This includes municipalities other than the proponent.

Slope: The degree of deviation of a surface from horizontal, measured in a numerical ratio, percent or degrees.

Soffit: An exterior or interior architectural feature, generally the horizontal underside of any construction element such as a bridge deck.

Successional: A progressive change in an ecological community where species composition and ecological community processes change over time. Some species may become more abundant while others fades out.

Switchback: A portion of a trail that zig-zags or switches back and forth up a steep ravine, slope, or mountain, often creating a longer route.

Visualization Toolkit: A set of conceptual maps, renderings, sketches, and animations that set the stage for what is possible for The Meadoway.

Watercourse: Flowing water, though not necessarily continuous, within a defined channel and with a bed and banks which usually discharges itself into some other watercourse or body of water.

Watershed: The area drained by a river or lake system. A drainage area, drainage basin, or catchment area.