TAYLOR MASSEY CREEK SUBWATERSHED MASTER PLAN UPDATE

REPORT

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Executive Summary

Parks, Forestry and Recreation (PFR) is leading an initiative to carry out a planning process for parkland and natural areas situated within the ravine lands of the Taylor Massey subwatershed. The process has been divided into three phases: (i) Status Report, (ii) Taylor Massey Creek Subwatershed Master Plan Update and (iii) Taylor Creek Park Management Plan. Details regarding the development of this process are provided in this document and can be found on the City's website at:

https://www.toronto.ca/city-government/planning-development/construction-new-facilities/taylor-massey-sub-watershed-master-plan/

Reports and Studies developed from this planning process are being undertaken by the members of the Taylor Massey Working Group, which is led by Parks, Forestry and Recreation (PFR) and includes Toronto Water, City Planning, Cycling Infrastructure and Programs, Solid Waste Management, and the Toronto and Region Conservation Authority (TRCA). The process also includes extensive public and stakeholder consultation.

The Master Plan has been developed with the Ravine Strategy as its foundation and respects the interdivisional roles and responsibilities of vested departments at the City of Toronto and the TRCA, a key partner in the Study.

The Study Area has been defined as that portion of the subwatershed denoted by the City's Ravine and Natural Feature Protection By-law Boundary, extending from Highway 401 in the north to the Don River Valley in the south and west of the Study.

The Status Report for the Study Area was completed in January 2016, and includes an inventory and assessment of existing assets, a summary of past and current reports, and a list of recently completed and planned projects. Ecological Land Classification (ELC) and a comprehensive Flora and Fauna Survey was completed in September 2016, concurrent with the preparation of the Status Report. These detailed assessments provide an up-to-date snapshot of current conditions, and provide a baseline for evaluating future conditions.

The Master Plan Update utilizes the baseline information and, through a systems approach to site assessment and additional field work, proposes a suite of high level subwatershed-wide management recommendations and area-specific management recommendations. The recommendations focus on the enhancement of the natural and cultural heritage system as well as improvements to the geomorphic and trail circulation systems within and, linking beyond, the Study Area boundaries.

The recommendations were evaluated and feedback was solicited from stakeholders and the public through an on-line survey. They were subsequently refined and will form a springboard to guide future management decisions in various parts of the Study Area beginning first with Taylor Creek Park.

Lastly, the Master Plan Update also includes guidance on implementation with a focus on coordination, communication, execution, operation and monitoring of the system over time.

1.0 Introduction

Building upon the existing *Taylor/Massey Creek Geomorphic Systems Master Plan*, the *Taylor Massey Creek Subwatershed Master Plan Update* (herein noted as the TMCSMPU or Master Plan) is a subwatershed-scale plan to guide the preservation, improvement, on-going and future management, maintenance, and public use of the parkland open space system within the Taylor Massey Creek subwatershed.

The Master Plan was developed through a Consultation Program that featured contact with agency stakeholders and City departments as well as with the local community. The Plan considers the Study Area's diversity of features and functions and their interconnectedness, including natural areas, park infrastructure, recreational amenities, trails, stormwater facilities and other utilities.

The Master Plan comprises the second of three steps in the Taylor Massey Creek planning process, as approved by Parks & Environment Committee on June 22, 2015 and City Council on July 7, 2015. Based on preliminary discussions with stakeholders, the Taylor Massey Creek planning process has been divided into three phases: Status Report, Taylor Massey Subwatershed Master Plan Update and Taylor Creek Park Management Plan.

The purpose of the Master Plan "arises from concerns about water, sewer and landfill facilities; stream bank erosion; protection of environmentally significant habitats and spread of invasive species; disrepair of bridges, trails, picnic facilities, benches, signs, washrooms and water fountains". The Master Plan provides direction for appropriate use and protection of sensitive features and will help to coordinate interests among stakeholders, across the five municipal Wards, and to plan future capital investment.

The next step is a Management Plan that will build upon the Master Plan to provide guidelines and direction for division staff and operations personnel to improve facilities and protect natural environment features within Taylor Creek Park, with potential for additional Management Plans in other parts of the TMCSMPU Study Area in the future.

1.1 Subwatershed Overview

The Taylor Massey Creek Subwatershed is bounded to the east and south by Metrolinx rail lines, to the north by Highway 401 and to the west is roughly defined by Don Mills Road and Victoria Park Avenue. Although referred to as a Subwatershed Study, for the purposes of this Master Plan process, the Study Area has been defined as that portion of the subwatershed denoted by the City's Ravine and Natural Feature Protection (RNFP) By-law Boundary, as illustrated by the red outline on Figure 1.

A large proportion of the subwatershed is comprised of industrial, commercial and employment uses. Comprised largely of hard surface area, drainage from these areas is directed to the ravine system and, at least in part, contributes to the "flashy" downstream nature of Creek flows which can be erosive in nature to the Creek banks in peak storm events.

In the early 2000s the natural headwaters in the upper reaches of the subwatershed were removed to make way for Macdonald–Cartier Freeway (Highway 401) widening and were piped eastward within the Ministry of Transportation of Ontario (MTO) right of way to Highland Creek. Sixteen hectares worth of highway drainage were directed to a new system of stilling basins, ponds and infiltration basins beneath soccer fields in the redevelopment of Terraview and Willowfield Gardens Parks. From there flows discharge into the Taylor Massey Creek system.

A number of Hydro Corridors, railways and rail spurs criss-cross the subwatershed. The utilities are in some ways a barrier to trail connectivity, however, the corridors also offer opportunities to make trail connections, many of which are identified in the City's *10 Year Cycling Network Plan*. Successful implementation will depend on a cooperative working relationship with each utility.

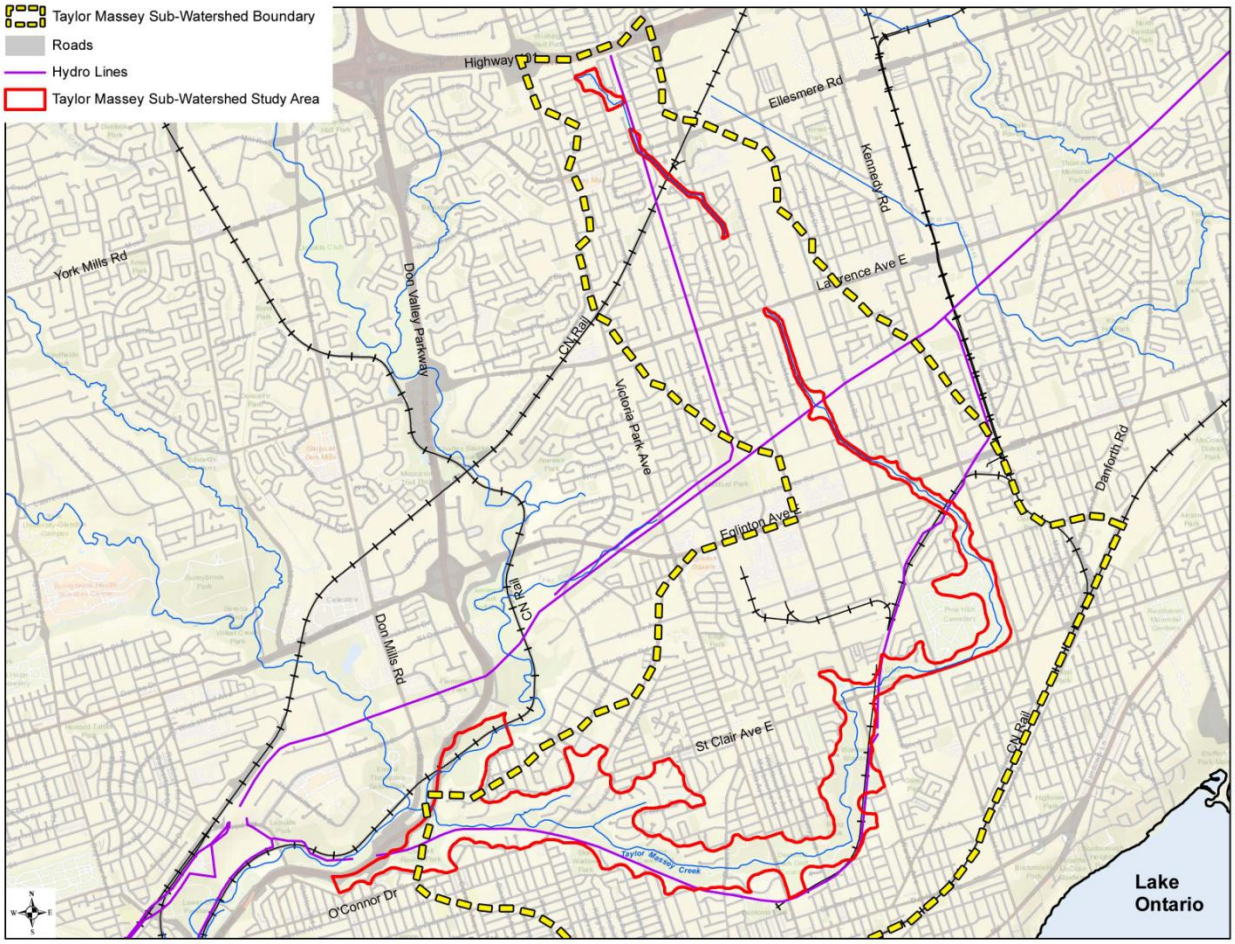

Figure 1: Taylor Massey Creek Study Area

1.2 Study Area Context

The Study Area is almost entirely surrounded by roads and urban residential and industrial uses. Refer to Appendix B for a detailed review of specific land uses. For decades, commercial and industrial users and residents have enjoyed unabated access to the ravine system and this situation has contributed to encroachment issues along the edges of the ravine system. In very narrow parts of the ravine Creek

flows are contained within concrete channels or underground pipes and there are issues of dumping, invasive species proliferation and poor water quality including accumulation of algae due to stagnation of base flows.

1.3 General Description of Study Area

The Study Area is defined as the ravine lands along the entire length of Taylor-Massey Creek, extending from its headwaters south of Highway 401 to where it connects to the East Don River just west of the Don Valley Parkway. The Study Area measures approximately 128 hectares and is located on property owned by the TRCA, City of Toronto, Province of Ontario, Toronto Transit Commission and Canadian Pacific Railway, as well as several private properties.

The Creek corridor extends 10 km along naturalized, as well as piped and channelized sections of the City's Taylor, Massey and Ferris Creek systems. Although there is only one Creek system the name historically of the Creek had two names: Taylor Creek in Toronto and Massey Creek in Scarborough. Victoria Park Avenue was the dividing line. For the purpose of this Study the Creek is referred to as Taylor Massey Creek. Curity Creek is a tributary that feeds into Taylor Massey Creek south of Curity Avenue.

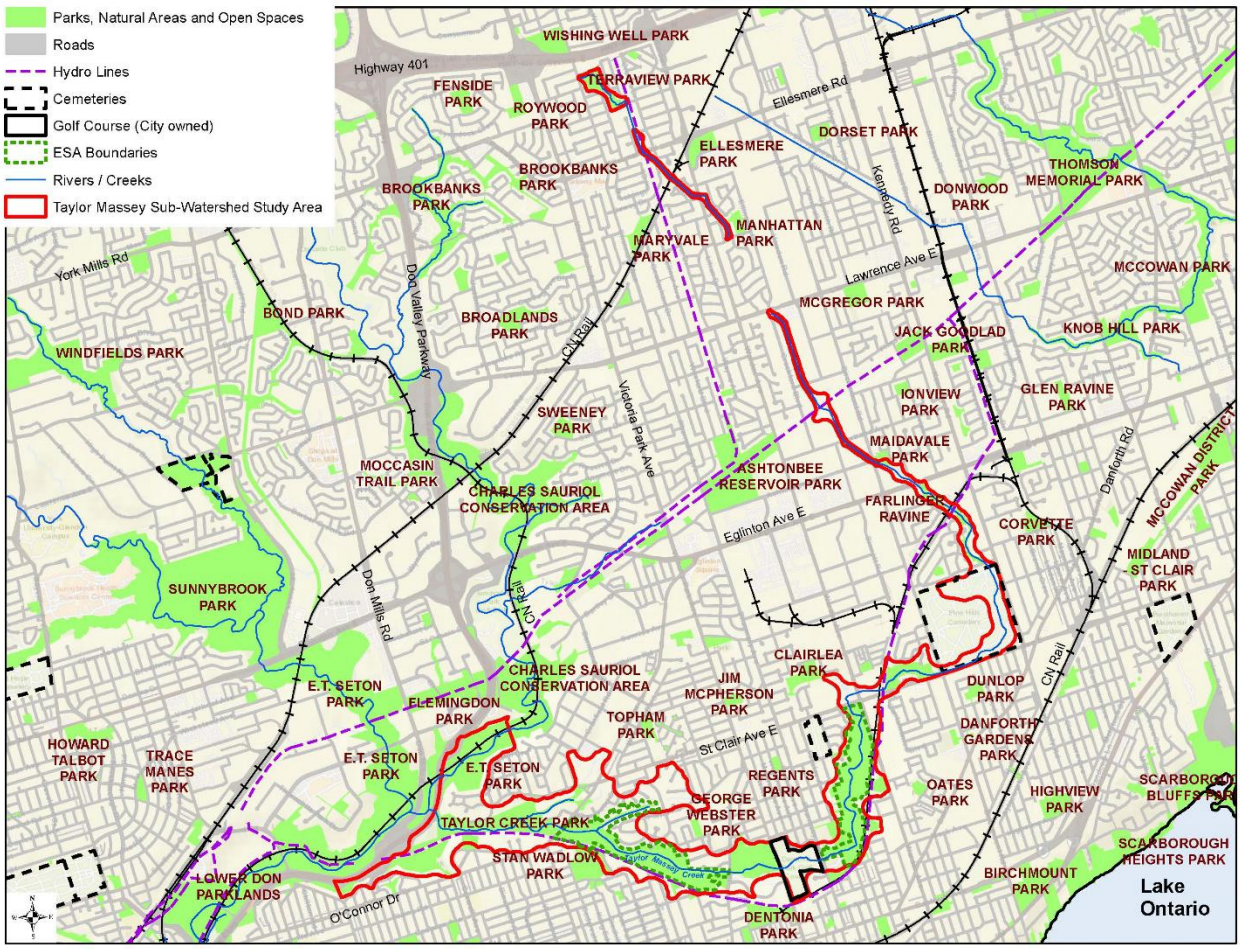

Figure 2: Parks System and Environmentally Significant Area Designation Map Source: City Open Data

Together these watercourses total nearly 17 km in length and drain an area of 2,863 ha. The Study Area encompasses parkland, meadowland and forested landscapes with pockets of wetlands and high quality woodlots totalling 424 ha. Four hydro corridors cross the ravine system and several former landfill sites are located within the Study Area.

Most of the Park land has also been included in the Official Plan as Natural Area, with the exception of the Dentonia Park Golf Course and the Pine Hills Cemetery.

Approximately 52% of the ravine system (excluding hydro corridors) comprises manicured landscape. Of the landscape 41% is comprised of parkland encompassing 22 parks that are either partially or wholly located within the ravine system. The parks are subject to intensified seasonal use. Another 28% of the Study Area is forested. Portions of forested areas are located within parkland areas. Over half of the Study Area's land area is encompassed by floodplain. Many trails and other infrastructure are located within the floodplain and susceptible to seasonal high flows in the Creek.

1.4 Alignment with the Toronto Ravine Strategy

Parks, Forestry and Recreation, City Planning and Toronto Water have developed the *Toronto Ravine Strategy* in consultation with other City divisions, the TRCA and stakeholders. The draft strategy received Council approved on October 2, 2017. The strategy sets out a vision and set of principles and actions to represent the core ideas and values that will guide the City of Toronto in future decision-making related to ravines and address the challenges and opportunities in the city's ravine system. These guidelines will be important to consider throughout the future management planning processes for the Taylor Creek Master Plan Study Area.

Similar to this Master Plan, the *Toronto Ravine Strategy* takes account of various related strategies, regulations and by-laws applicable to ravine lands in the city and identifies stewardship opportunities and priorities for investment.

The five guiding principles of the *Toronto Ravine Strategy* are as follows: Protect, Invest, Connect, Partner and Celebrate. These form the foundation that will guide the City of Toronto in the future decision-making process related to ravine management.

Figure 3: Toronto Ravine Strategy Management Framework

The guiding principles developed as part of the *Taylor Massey Creek Subwatershed Master Plan Upda*te reinforce the principles the *Toronto Ravine Strategy* is built upon and embodies a similar structure and approach to management.

1.5 Land Ownership

Much of the southern sections of the Taylor Massey subwatershed, including Taylor Creek Park and Warden Woods, is owned by TRCA, and maintained by Parks Forestry & Recreation (PFR) under a 1972 Land Management Agreement. TRCA has regulatory authority over the floodplain areas of the parkland under Ontario Regulation 166/06, and are partners with the City in managing impacts of flooding and erosion.

With the exception of the Pine Hills Cemetery, Provincially-owned hydro electric corridors and private utilities such as transportation and railway corridors, the remainder of the ravine and parkland areas are within public ownership. The ravine lands are regulated by the TRCA as well as the City of Toronto. Dentonia Golf Course, a City-operated course, is located between the Warden Woods and Taylor Creek Park Environmentally Significant Areas (ESA). Other public facilities partially within the Study Area include:

- Parkside Elementary School
- East York Memorial Arena
- Providence Healthcare
- Warden Avenue Public School
- Manhattan Park Junior Public School
- Our Lady of Wisdom Separate School
- Terraview-Willowfield Public School
- Pharmacy Adult Learning Centre

The jurisdiction of Taylor Massey Creek is divided amongst many divisions and agencies and across five municipal Wards. The TMCMPU is therefore, an important tool to provide strategic direction at the subwatershed scale to guide the appropriate use and protection of sensitive features, to recommend improvements to the current systems in place to carry out various management regimes, to coordinate interests and to plan future capital investments.

1.6 Community Engagement Process

The Project Team, comprised of members from several City of Toronto divisions, including: Parks, Forestry & Recreation, Toronto Water, Solid Waste Management, City Planning and Cycling Infrastructure and Programs; provided guidance in developing the Community Engagement Plan.

Led by Lura Consulting, a third-party community engagement specialist, the Community Engagement Plan was prepared based on the following set of Guiding Principles:

- **Accessibility** – Provide information and communication that are easy to find and understand;
- **Transparency** – Establish a process that is open, understandable, transparent and inclusive, aiming to reach, involve and hear from all those who are directly and indirectly affected;
- **Mutual Respect and Inclusion** – Listen and respect different opinions, be flexible in methods of interaction and be open to considering alternatives; and
- **Responsiveness** – Listen and respond to concerns in a timely manner, ensuring that outcomes and next steps are communicated.

The Community Engagement Plan focussed on achieving two fundamental engagement objectives throughout the process:

- To provide opportunities for both individuals and groups to be engaged in meaningful discussion about the subwatershed Master Plan; and
- To inform the Master Plan through a collaborative and participatory process.

The following engagement activities were carried out during the Master Plan process. These activities contributed to an iterative process of refinement to generate the Master Plan.

Table 1: Consultation Meeting Schedule

Consultation Milestone		Duration									
		2017									
		Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Data Collection and Analysis	Project Team Meeting No. 1										
Consultation and Coordination	Project Team Meeting No. 2										
	Stakeholder Meeting No. 1										
	Public Consultation Meeting										
	Project Team Meeting No. 3										
Alternative and Preferred Options	Stakeholder Meeting No. 2										
	Project Team Meeting No. 4										
	Project Team Meeting No. 5										
Implementation and Management	Online Survey										
	Project Team Meeting No. 6										

Stakeholder Meetings: Two Stakeholder meetings were held to engage with both internal (City departments) and external stakeholders (partner agencies such as TRCA and community group representatives) in the development of the Master Plan. The focus of the meetings was as follows:

1. **Opportunities, Constraints and Policies** - The first meeting discussion included:
    a. Introductions;
    b. Sharing of the purpose of the project and scope; and
    c. Brainstorming opportunities, constraints and related policy changes.

2. **Preliminary Alternative Concepts** – The second meeting involved identifying preliminary issues and plan options.

Community Meeting: The Taylor Massey residents and community groups were invited to participate in a public meeting to review the opportunities and constraints and help develop guiding principles for the Master Plan. The meeting was held on Wednesday June 21st, 2017 at a location central to all five wards around the Creek. The community meeting was widely publicized through email distribution of a notice to the project mailing list, promotion on the City's website, social media, and promotion through City Councillors' offices.

The public meeting was organized into six stations with separate questions for participants and with each station covering a different topic related to the Master Plan. At each station, participants could answer the question(s) posted using an "Idea Ranking Sheet". The meeting successfully gathered feedback from the public regarding opportunities and constraints within the watershed. The Ranking Sheet system demonstrated the public's understanding of, concerns about, and ideas for Taylor Massey Creek. The outcome of the community meeting is captured in the Public Meeting Consultation Summary Report, available on the City's website for the project, as well as Appendix A of this report.

Online Survey: The community was invited to review the preliminary recommendations, and high level implementation and management considerations and provide feedback via an online survey. A snapshot of the feedback provided through the online survey has been integrated into this report; the

detailed outcomes of the public survey are captured in the *Online Survey Summary Report*, available in Appendix A of this report.

1.7 Data Sources

The data set for the project was obtained from four sources including: Dougan & Associates Ltd., North-South Environmental Inc., the City of Toronto and the TRCA.

The majority of the data set was provided in Arc GIS, and is georeferenced to actual site locations. The Geographic Information Systems (GIS) data gathered includes stored databases that can be regularly updated. A key recommendation emerging from this Master Plan process is the standardization of data gathering, sharing and updating amongst agencies and divisions in the City of Toronto going forward. Data management is a valuable tool for monitoring and tracking management activities and trends.

Some TRCA inspection sites of erosion areas and of Toronto Water assets are illustrated for information purposes in Appendix E. The information is from the TRCA database of inspections provided to the Study Team on September 12, 2017. The inspection sites and potential new sites identified over time, will be subject to further inspection and classification of the risk in a manner which represents a continuous service improvement effort.

The inventory and analysis phase of the Master Plan process included verification of the data set through a review of aerial imagery, ground-truthing and a visit to the Trail Forks website to obtain desire lines for cycling and pedestrian circulation patterns.

The information included flora and fauna survey data updated in 2016. For reasons of confidentiality only L2 – L3 ranked flora and fauna species considered to have relatively low Coefficients of Conservatism (floristic quality assessment – an indicator of habitat quality) are illustrated on mapping within this report. The highest ranked species (L1) and Species-at-Risk were used internally to determine sites of the highest environmental sensitivity and constraint, but have been excluded from the mapping, due to the sensitivity of the data. An example of the constraint map prepared for the northern-most section of the Study Area (Terraview and Willowfield Gardens Parks) is provided in the next section. A Natural Heritage System sensitivity analysis map for the entire Study Area is provided in Appendix B. The analysis was completed by North-South Environmental Inc. as part of the inventory and assessment phase of the Master Plan process.

1.8 Background Review

Available drawings, reports and collected environmental and geomorphological data were reviewed to gain an understanding of the functional attributes of the Creek system. Background documents included:

- Third party trail use count data
- Land use planning and policy documents
- Cultural heritage and recreational information
- Existing patterns of use
- Local demographics, patterns and trends
- Existing site services and planned infrastructure improvements

- Utilities information plans/ details of former landfill operations
- Community context
- Community context
- Stormwater management/ drainage plans
- Flood mapping, flood mitigation structures

1.8.1 Description of the Natural Heritage System and Sensitivity Analysis

Ecological Land Classification (ELC) mapping and a comprehensive Flora and Fauna Survey was completed by Dougan & Associates in September of 2016. The findings from the detailed assessment was integrated into the data set, provides an up-to-date snapshot of current conditions and a baseline for evaluating future conditions.

What is a Natural Heritage System?

- A Natural Heritage System (NHS) is defined by the Province of Ontario as: "connected systems of natural features and areas and the lands and waters that link them together, including: wetlands, fish habitat, significant woodlands, significant wildlife habitat and habitat of endangered and threatened species.
- Natural Heritage Systems enable ecological processes to continue across the landscape by reducing habitat fragmentation and allowing for the movement of plants and animals. Where natural features are limited in size or are widely dispersed, Natural Heritage Systems will include lands without natural features but with the potential to be restored to enhance habitat and connectivity. These lands may also be identified as working landscapes that enable ecological functions to continue.

The following provides a brief characterization of the natural heritage features that are found throughout the Study Area:

Northern Study Area (north of Lawrence Avenue)

- The northern part of the Study Area is narrow, and surrounded by urban development. However, wider habitat nodes contribute substantially to the diversity of flora and fauna, including the hydro corridor, which supports grassland bird species;
- Many dead ash and elm trees along the northern part of the Study Area contribute to habitat for Species at Risk bats;
- The northern part of the Study Area includes a higher proportion of non-native species in the vegetation community, including canopy, sub-canopy and ground layers; however, some non-native species contribute to migratory stopover habitat for a high diversity of songbirds; and
- Observations of migratory birds identified during the assessment phase of the Study, along the ravine at the confluence with the Gatineau Hydro Corridor, represents some opportunities for enhancement of a habitat node.

Southern Study Area (south of Lawrence Avenue)

- The southern Study Area provides a greater range of habitat types, in a wider corridor that is connected directly to the Don River;

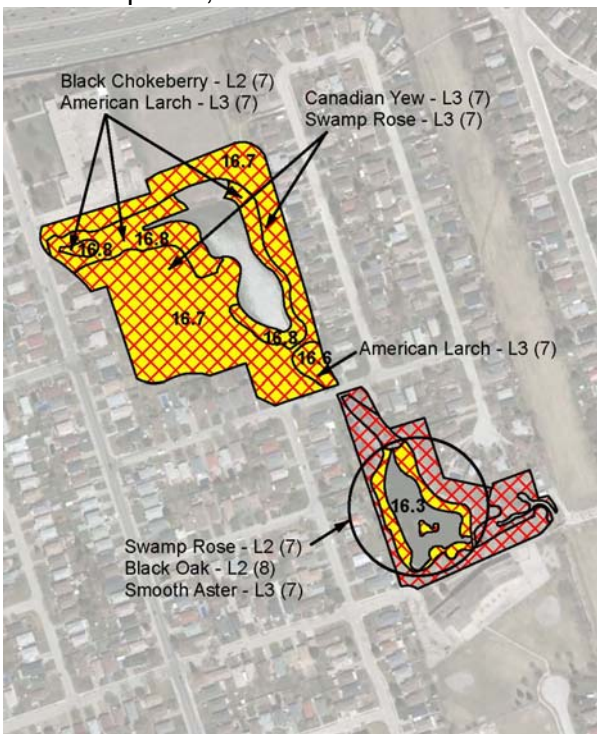

Figure 4: Sensitivity Map for Terraview and Willowfield Gardens Parks

- Warden Woods and Taylor-Massey Creek Environmentally Significant Areas (ESAs) are present in the southern part of the Study Area;
- The Pine Hills Cemetery provides some mature deciduous forest habitat that supports Species-at-Risk such as Eastern Wood-Pewee and a relatively high native flora diversity, as well as a surrounding semi-natural matrix that provides foraging habitat for birds and small mammals;
- Many seepage areas along the south slopes of the valley within the Taylor Creek ESA have a cover of native flora species not found in other parts of the Study Area, and support some species that are indicative of rare fen habitats. These sensitive habitats depend on groundwater discharge though they are also largely dominated by non-native species;
- Vernal pool habitats throughout the southern part of the Study Area provide breeding habitat for amphibian species such as Green Frog, Leopard Frog and American Toad; sensitive species such as Gray Treefrog, which are rare in the Toronto area, have also been recorded in one location though in very low numbers;
- A wide diversity of bird species found in the southern part of the Study Area includes many common species of several bird guilds such as wetlands (e.g. Common Yellowthroat, Red-winged Blackbird), forests (e.g. several woodpecker species, Northern Cardinal, Red-eyed Vireo, Great Crested Flycatcher) and successional habitats (e.g. Gray Catbird, Cedar Waxwing) ;
- The southern part of the Study Area also supports breeding bird species that are less common in urban habitats such as Cooper's Hawk, Sharp-shinned Hawk, Veery and Scarlet Tanager (forest habitats), Green Heron, Spotted Sandpiper and Swamp Sparrow (wetlands) and Northern Mockingbird and Blue-gray Gnatcatcher (successional habitats); and
- Dead ash and elm in this area provide habitat for Species-at-Risk bats.

Significant Wildlife Habitat assessment (conducted as part of preparing ecological sensitivity mapping) is an important tool that can be used as an indicator of the quality of habitat health. Regular (bi-annual or seasonal) investigations (i.e. breeding bird surveys) should be on-going to track and monitor the conditions that contribute to ecological health. An understanding of the status of ecological quality enables decision-making with regard to the degree of intervention that may be necessary to ensure protection or mitigation through avoidance or restoration of natural heritage resources in any given area.

1.8.2 Taylor Massey Creek Water Quality and Aquatic Biota

Fisheries data (Parish Geomorphic, 2015) indicate that Creek Chub, White Sucker, Longnose Dace, and Blacknose Dace are the dominate species found within the subwatershed. These species are termed "tolerant fish species", meaning that they tolerate warm water environments and oxygen impairment. The biodiversity within this aquatic system is low, and has been for quite some time. In 1949 urbanization was not the dominate land cover as it is today, however, the lack of biodiversity at that time was due to the seasonal drying of the stream and nutrient inputs from both sewage and agricultural lands, which likely contributed to pre-urban impairment (TRCA, 2009b). Presently, "poor water quality has been cited as the most significant impairment to the presence of a diverse fish community within Taylor Massey Creek" (TRCA, 2009b).

Taylor-Massey Creek has the worst water quality in the Don River Watershed (MTRCA, 1994), due to two issues specific to the tributary: combined sewer overflows (CSOs) and historic landfills. In TRCA's, *Regional Watershed Monitoring Program* in 2002-2005, Taylor Massey Creek had the lowest percent of samples that met established guidelines for chloride, copper, and iron compared to three other stations located in the Don Watershed (TRCA, 2009f). Macroinvertebrates density sampling in Taylor Massey Creek, are dominated by fair to poor water quality, caused by significant organic pollution and low dissolved oxygen in stream sediments.

The *Outfall Monitoring Program*, initiated in Taylor Massey Creek in 2005 (City of Toronto Water, 2007), identifies and eliminates sources of contamination, primarily cross connections, that are discharged from the storm sewer outfalls. A 2013 update indicates that 25 priority outfalls have been delisted in Taylor Massey Creek since the start of the program, and 29 outfalls remain on the priority list (City of Toronto Water, 2014).

The major project that will improve water quality is the Don River and Central Waterfront (DR&CW) Project. The DR&CW project integrates wet weather flow management systems to capture and treat stormwater discharges and CSOs from all the combined sewer outfalls to the Lower Don River, Taylor-Massey Creek and Toronto's Inner Harbour (MMM, 2012). The DR&CW is currently in detailed design, and is phased to be constructed in four phases over the next two or three decades. Upon its completion, it will have the most profound effect on instream water quality in Taylor Massey Creek.

1.8.3 Cultural Heritage and Archaeological Potential

Areas of archaeological potential are mapped and available through the City's Open Data sharing website. Based on a range of factors that include slope, forest cover and landscape typology, areas are pre-screened for their potential for archaeological interest. Some areas have been field verified by various archaeologists. Proposals for development within lands that have archaeological potential trigger Stage 1 and 2 archaeological assessments.

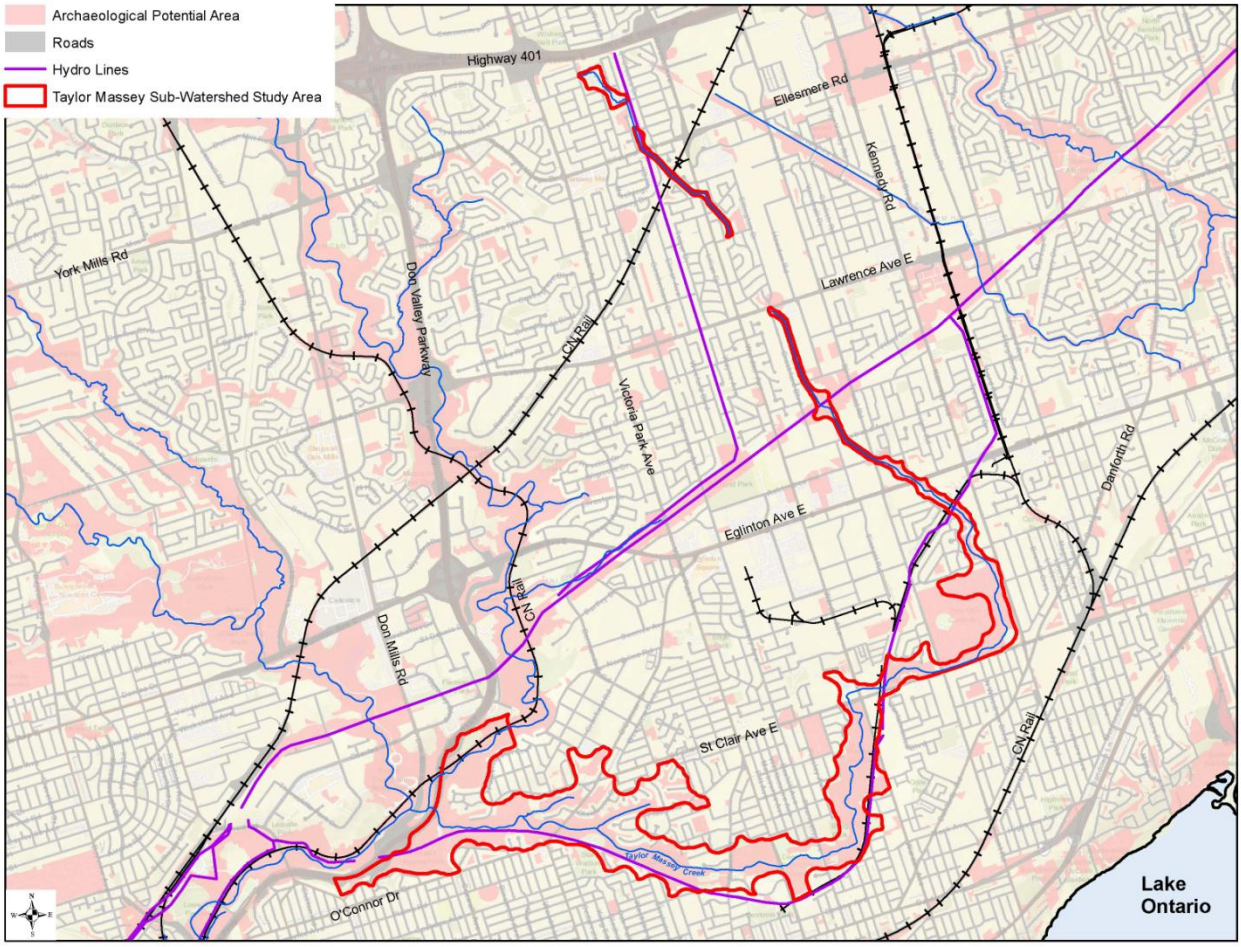

Figure 5: Areas of Archaeological Potential

Map Source: City Open Data

Although there are relatively few culturally significant features within the Study Area, there are a number of cultural facilities and points of interest that include:

- Goulding Estate/ Dentonia Farm Park
- Children's Outdoor Peace Theatre
- Cultural Centers, Schools and Social Services Facilities
- Pinewood Cemetery
- Murals and Sculptures
- Iroquois shoreline (through Taylor Creek Park)

Some anecdotal narratives that were uncovered during the consultation process and may represent opportunities for narration could include:

- Taylor and Massey families who lived in the area and whom the Creeks are named after;
- The devastating effects of Hurricane Hazel in 1954 on the Taylor Massey Creek ravine system; much of the landscape in the ravine today has evolved as a direct result of the impact from that event;
- The old railway line that ran up the Creek at one point called "The Milk Run" connecting Toronto to satellite communities east of the City all the way to Lindsay, Ontario; and
- First Nations' daily life within and use of the subwatershed.

1.8.4 The Taylor Massey Creek Channel and Its Geomorphic Condition

The present Taylor Massey Creek alignment was based on a 1958 design Study for Metropolitan Toronto. The Creek was straightened, channelized and lined, mainly with gabion basket structures, to ensure that the channel remained straight. This accommodated urban development and a new sanitary trunk sewer. Channel construction is estimated to have been phased over the period of 1959 to 1970.

There are numerous erosion control structures and outfalls that outlet into the Taylor Massey Creek system. Over 250 outfalls and more than three dozen sections of gabion retaining walls line the Creek banks and are in various states of disrepair. Toronto Water has conducted detailed assessments of many of these structures and rehabilitation is planned through the division's forecasted capital works plans. Detailed geomorphic assessment of the Taylor Massey Creek is captured in the *Geomorphic Systems Rehabilitation Study* prepared by Parish Engineering in 2013. The report consisted of:

- Reach-by-reach assessment (12 reaches) of existing geomorphic conditions;
- Recommendations proposed for the rehabilitation to mitigate further stream bank and bed erosion, reduce stream erosion risk to infrastructure, and improve aquatic ecological conditions; and
- Limited evaluation of aquatic habitat.

As identified in the Status Report, project coordination for other reaches of Taylor Massey Creek will occur, on a go forward basis, based on the City of Toronto Staff Report "Coordinated Watercourse Management Plan" (CoT, 2014c).

As with the City, the TRCA's clear priority is to manage risks associated with water infrastructure, trails and public safety. Therefore, the TRCA also conducts its own individual assessment of structural condition and erosion hazards separately to the City of Toronto. Regarding Toronto Water infrastructure, TRCA field crews assign a priority ranking to each asset inspected as a starting point. The actual assessment and ranking is then finalized by Toronto Water staff.

Typical infrastructure regularly investigated by TRCA staff include: channelized sections of the Creek, culverts, footbridges, retaining structures, revetments and flow deflectors. TRCA also investigates and responds to storm damage hazard sites as a matter of high priority. Under the Toronto Water Program, sanitary sewer crossings, manholes and outfalls are routinely monitored. In addition to the regular inspection and monitoring TRCA performs, TRCA inspects infrastructure on behalf of Toronto Water. TRCA inspection work of Toronto Water assets is funded by the City of Toronto. TRCA prioritizes its capital works in collaboration with the City as part of the "Coordinated Watercourse Management Plan."

Currently, the TRCA is actively monitoring 17 constructed erosion control structures. It also is addressing 10 known erosion hazard sites within the subwatershed. Detailed watercourse inventories of Toronto Water infrastructure are implemented in 5-year cycles, to capture changes in structure conditions, identify new erosion hazards, and risks to infrastructure due to erosion and slope instability. This monitoring data has been used to inform previous plans and reports, and are considered as part of this Master Plan.

1.8.5 Infrastructure and Utilities

The Taylor Creek Hydro Corridor extends nearly 5 km along the southern and eastern edges of the Study Area from the confluence of the Lower Don River to St. Clair Avenue East. A desire line through the corridor may provide an opportunity for trail development. Some sections of trail implementation are already complete through the Gatineau Hydro Corridor. Some further opportunities for trail linkages are identified in the City of Toronto *10 Year Cycling Network Plan* and are illustrated in Figure 6. They include the Warden Hydro Corridor through Wexford Park and the Scarborough Hydro Corridor, which could provide a potential alternate trail link around Pine Hills Cemetery.

Northward from this section the Taylor Creek Hydro Corridor deviates from the Study Area. However, as identified in the City's *10 Year Cycling Network Plan* there may be an opportunity to extend the trail network through the corridor making a connection with the ravine system and further on to Kennedy Rd. subway station.

The Gatineau Hydro corridor north of Eglinton Avenue is a major east-west utility corridor that extends from Toronto to Quebec. The corridor is wide, comprises an extensive multi-use trail and provides opportunities for meadow restoration and community gardens, dependant on future cooperation with the utility.

Two parallel sanitary sewers run throughout much of the Taylor Massey Creek stream valley, crossing the Creek in multiple locations. A number of sewers with manholes also exist parallel to the Creek. Numerous stormwater outfalls, which service either the separated storm sewer system or combined sewer overflows, are present in the valley. The water main crosses in several locations below the Creek. Pedestrian trails and pathways were built subsequent to the construction of the sewer systems and channelization works, often using the valley land construction access routes as a basis for alignment. As further infrastructure-related work is anticipated within the valley, opportunities for future trail connections may be realized through coordination.

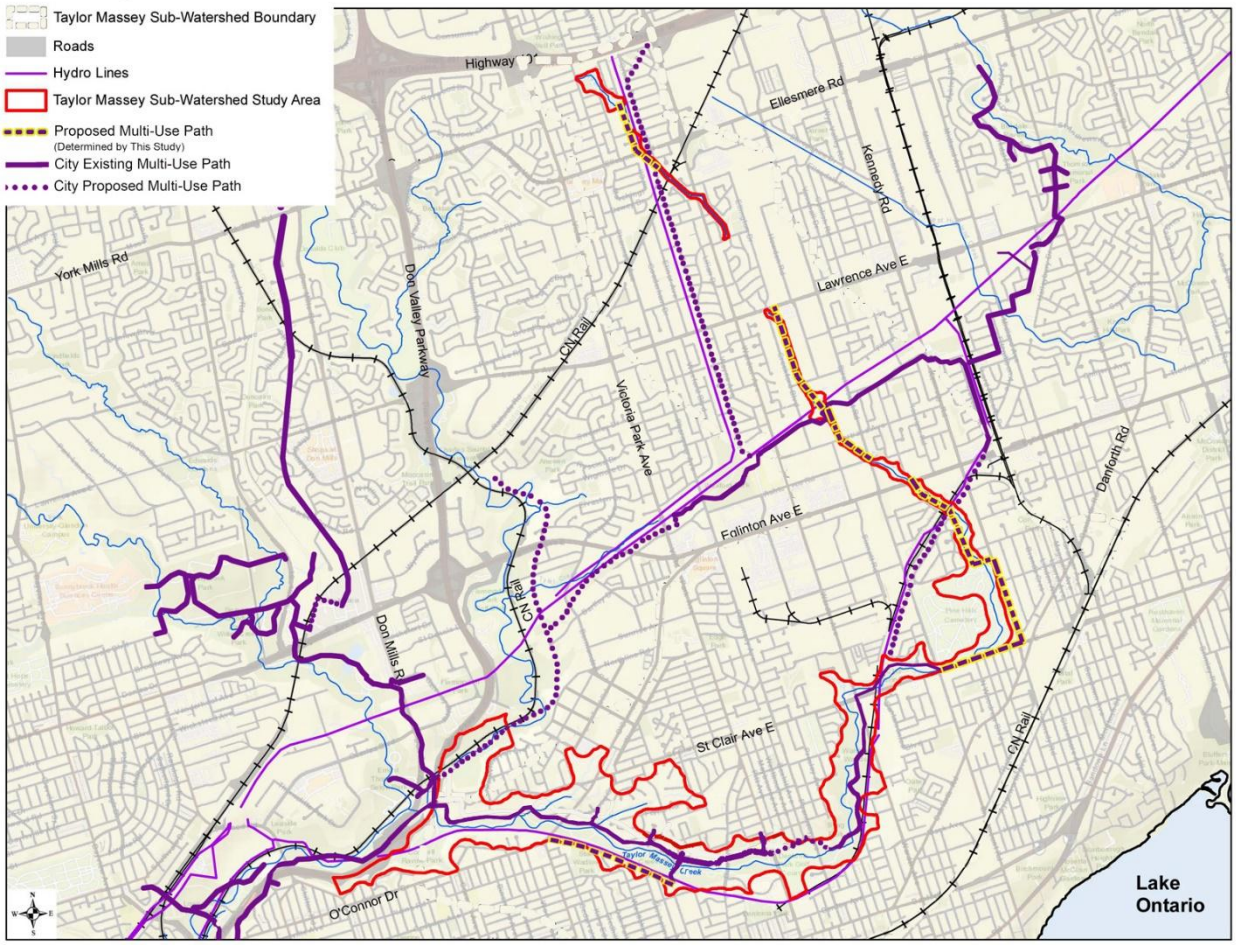

Figure 6: Existing and Proposed Trail Opportunities Map Source: City Open Data and City's Cycling Network Plan

1.8.6 Recreational Facilties

There are nearly 7 km of asphalt paved multi-use trails in the southern portion of the Study Area. Another 5 km of connecting routes provide cross-connections and parallel routes in the ravine. Conversely, there are almost no trails in the north portion of the Study Area where much of the Creek flows are contained within concrete channels or controlled underground through pipes.

In some cases, the duplicated routes are incompatible with the geomorphic conditions of the Creek system. This has led to erosion issues and safety concerns that should be addressed in detail, in the future management plans. Further detailed explanation of the issues, and location of the concerns, were identified in the *Geomorphic Master Plan and Rehabilitation Study* completed prior to this Master Plan. It should also be recognized that TRCA assesses structural and erosion issues separately to the City of Toronto and, through the "Coordinated Watercourse Management Plan" with the City, prioritizes and implements restoration projects.

Pine Hills Cemetery and Dentonia Park Golf Course are part of the city's open space system, but are gaps in the connected trail network. Through potential coordination efforts, a multi-use trail may be possible, at defined times of the day or year, through the Golf Course and Cemetery. Alternatively, a

boulevard route on the periphery of the Golf Course and Cemetery may provide another option to making this connection. A route through the Scarborough Hydro Corridor provides a third possibility.

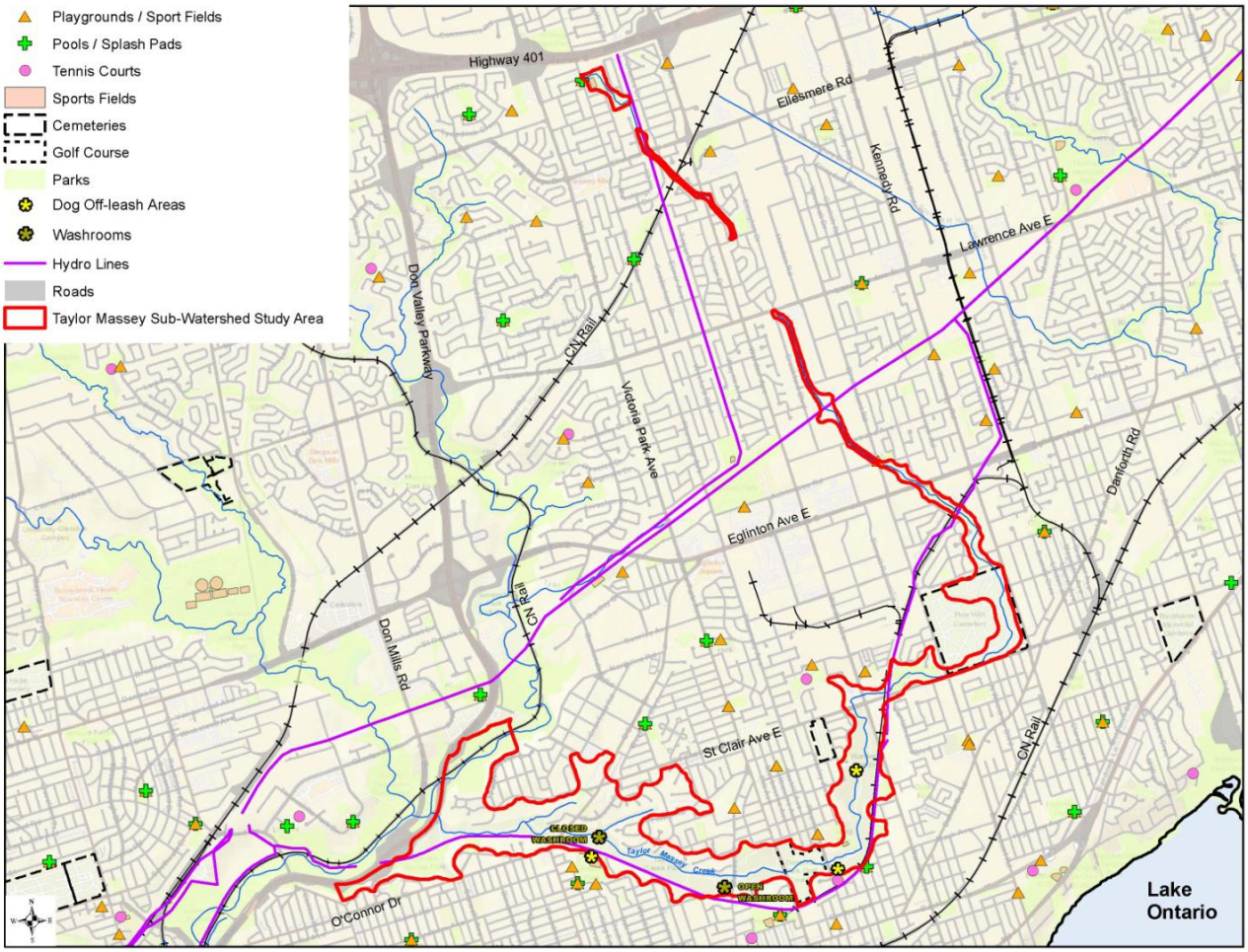

Figure 7: Recreational Facilities Map Source: City Open Data and City GIS Data

Although there are some playing fields within the parks in the ravine system, there are no planning mechanisms, nor would it be technically appropriate, to enable expansion or addition of active sporting facilities within the floodplain. Other than existing fields in tableland parks adjacent to the ravine, there is little to no available tableland for expansion of similar facilities. However, the existing playing field at Byng Park may provide an opportunity for Low Impact Development or stormwater management best practice retrofits in order to find additional flood storage capacity in the valley. These initiatives can contribute to a reduction in flash flooding in other parts of the geomorphic system. The potential for this opportunity would be subject to further study.

1.8.7 Surrounding Land Uses and Encroachment

The majority of the land uses surrounding the ravine system comprise residential neighbourhoods. As land ownership demarcation pre-dated modern-day regulations with respect to floodplains there are a number of privately-owned lands partially within the Study Area (defined by the City's Ravine and

Natural Feature Protection By-law Boundary). North of Eglinton Avenue the lands extending into ravine regulated areas are mainly owned by industry and south of St. Clair Avenue East the lands are mostly owned by residential property owners. Many properties own a portion of the steep ravine valley slopes, some of which exhibit erosion. Therefore, neighbourhood outreach and education are recommended as important aspects of management going forward.

In the channelized section of the Study Area between Lawrence Avenue and Eglinton Avenue, there are several reaches where industrial and commercial uses surround the Study Area, and road corridors cross the ravine system. These sections of the ravine system have sustained impacts from elicit dumping over many years and are locations where invasive species predominate the canopy and sub-canopy layers of vegetation. Education will play an important role in curbing impacts that encroachment activities may be having on the Natural Heritage System.

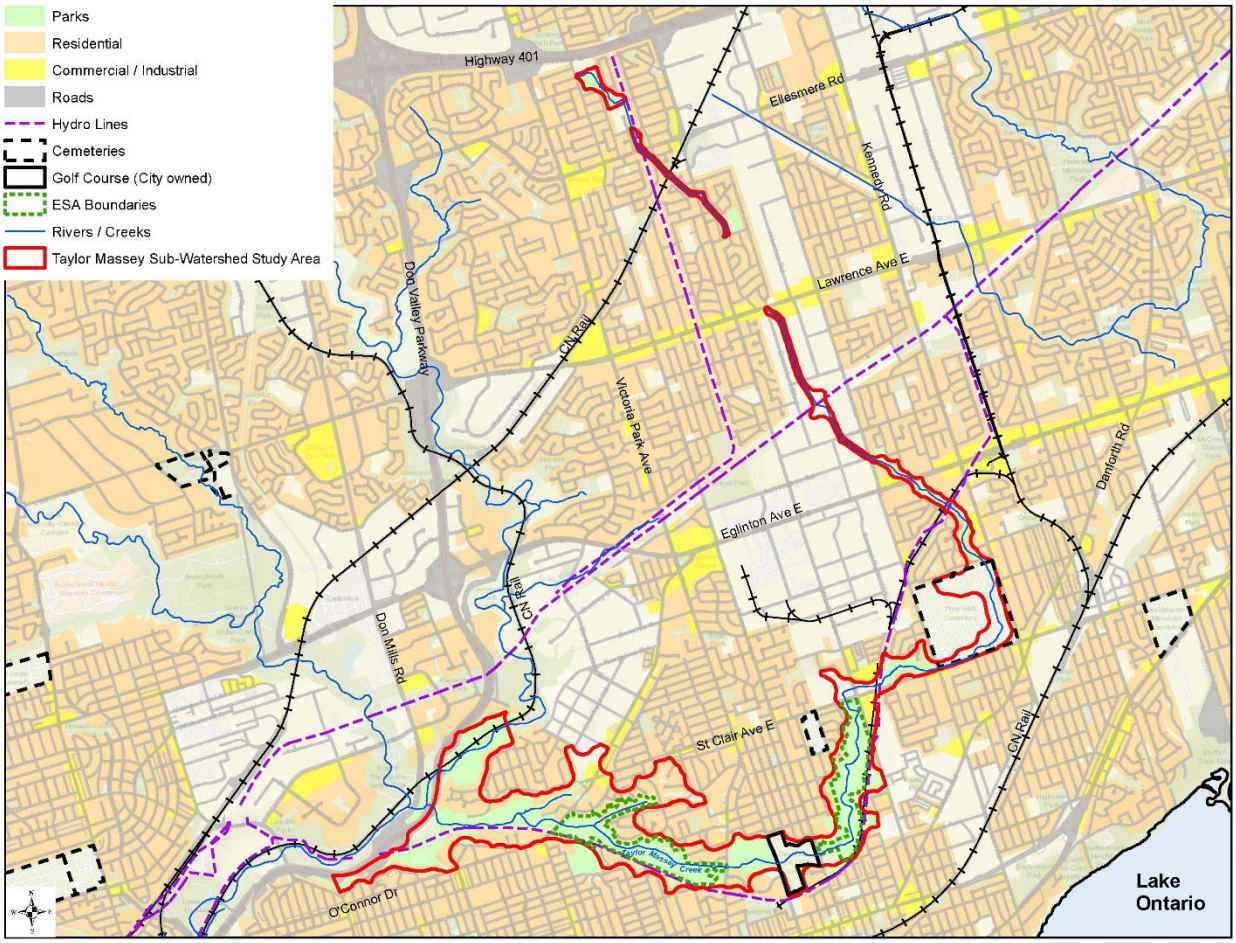

Figure 8: Land Uses

Map Source: City Open Data

1.8.8 Surrounding Transportation Network

The surrounding road network is well-serviced by TTC bus routes and the nearby Kennedy subway and GO stations form a transit hub. The Victoria Park subway station and Main Street GO station are also proximate to Taylor Creek Park. Transit provides an alternate option to driving by which to access

the ravine trail system. Directly linking the ravine's trail system to and from key transit stops and routes is an opportunity to fill gaps in the current trail system.

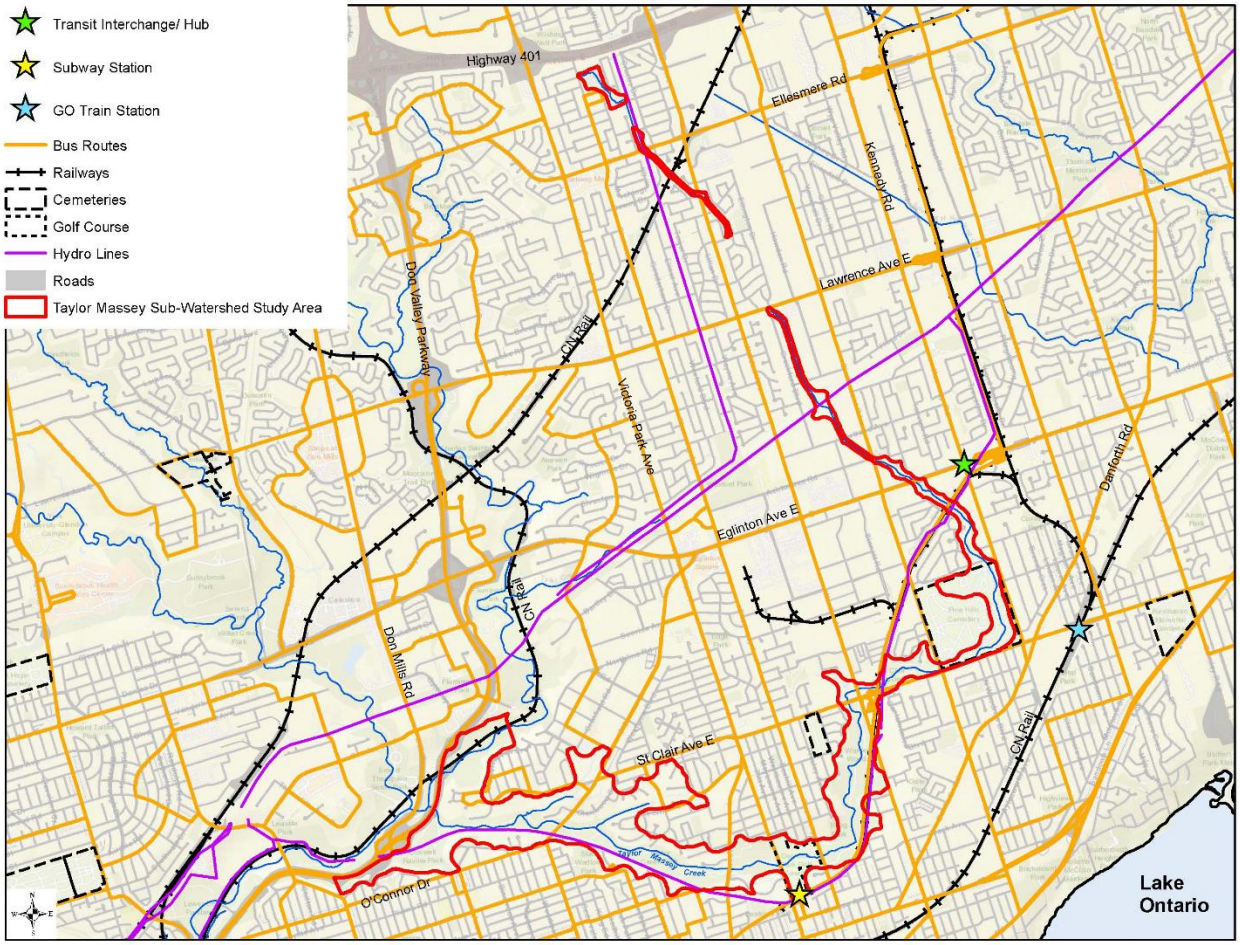

Figure 9: Transit Context Map Source: City Open Data

1.8.9 Former Landfill Sites

There are approximately 19 former landfills located within the Taylor Massey Creek Subwatershed Study Area. These landfills operated in the 1950's and 1960's. Information is limited on these areas, so the location and sizes of the sites are all approximate. The locations are illustrated on Figure 10 below. All of the sites are monitored for environmental condition on a regular basis, with some sites having controls in place to limit environmental impacts. The former landfill sites represent limitations in uses, as soil quality and integrity may be affected. Where permissible, former landfill sites, owned and maintained by the City, may serve as opportunities for trail construction. Some limited restoration planting opportunities may also be accommodated with proper planning and technical evaluation of proposed designs.

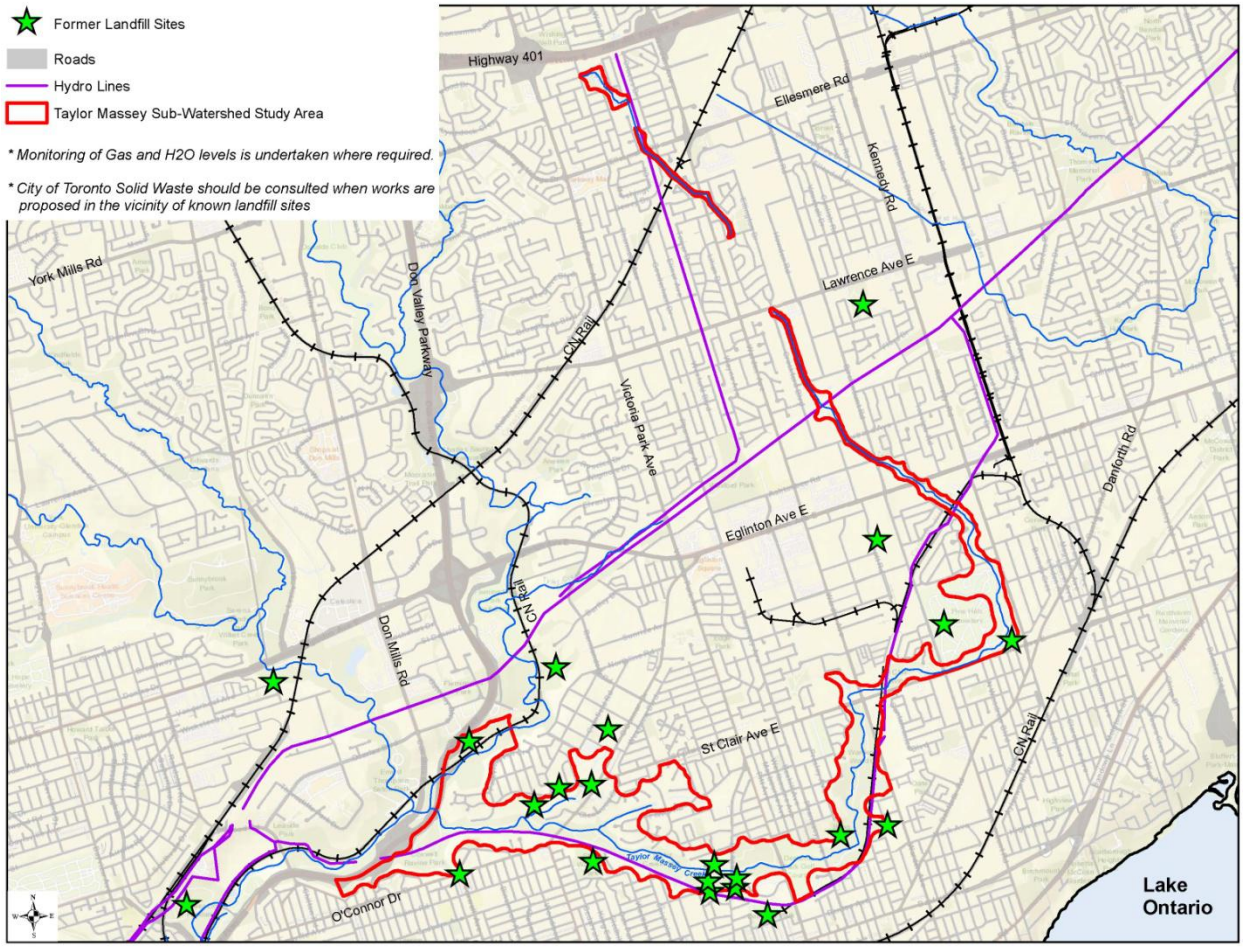

Figure 10: Former Landfill Sites Map Source: City Solid Waste Management GIS Data

1.8.10 Capital Programs of City Departments

On-going and future-planned initiatives will affect the valleylands of the Taylor Massey Creek system, including the instream condition of the Creek system. Representative projects include: the DR&CW project (including the Lower Don/ Coxwell bypass), trail rehabilitation projects, trunk sewer repair and lining (current-2023), stream restoration projects identified in the Taylor Massey Creek Geomorphic System Master Plan (TMC GSMP) (10-20 years), Basement Flooding mitigation studies (on-going), sewer outfall and combined sewer outfall replacement projects.

Monitoring projects that document the state of the environment include: Wet Weather Flow (WWF) Tributary Monitoring Program (on-going), Creek flow monitoring, and TRCA's geomorphic and aquatic habitat monitoring programs.

The planned capital investment projects represent opportunities for coordination of invasive species management, restoration of the Natural Heritage System and improvement projects to enhance the trail system.

1.8.11 Current Operations and Management Context

The City currently manages 22 parks within the Study Area, of which six contain facilities that are subject to permitting for sporting events and group gatherings. There are nine parking areas, one washroom (currently operational) and 14 sanctioned points of entry to the ravine trail system. The six parks within the Study Area that see seasonal permitting of sports and group gatherings attract relatively small numbers of users in comparison with parks outside of the Study Area. Although not actually included within the Study Area, Dentonia Park sees the most annual permits and usage near to the Taylor Massey Creek ravine system.

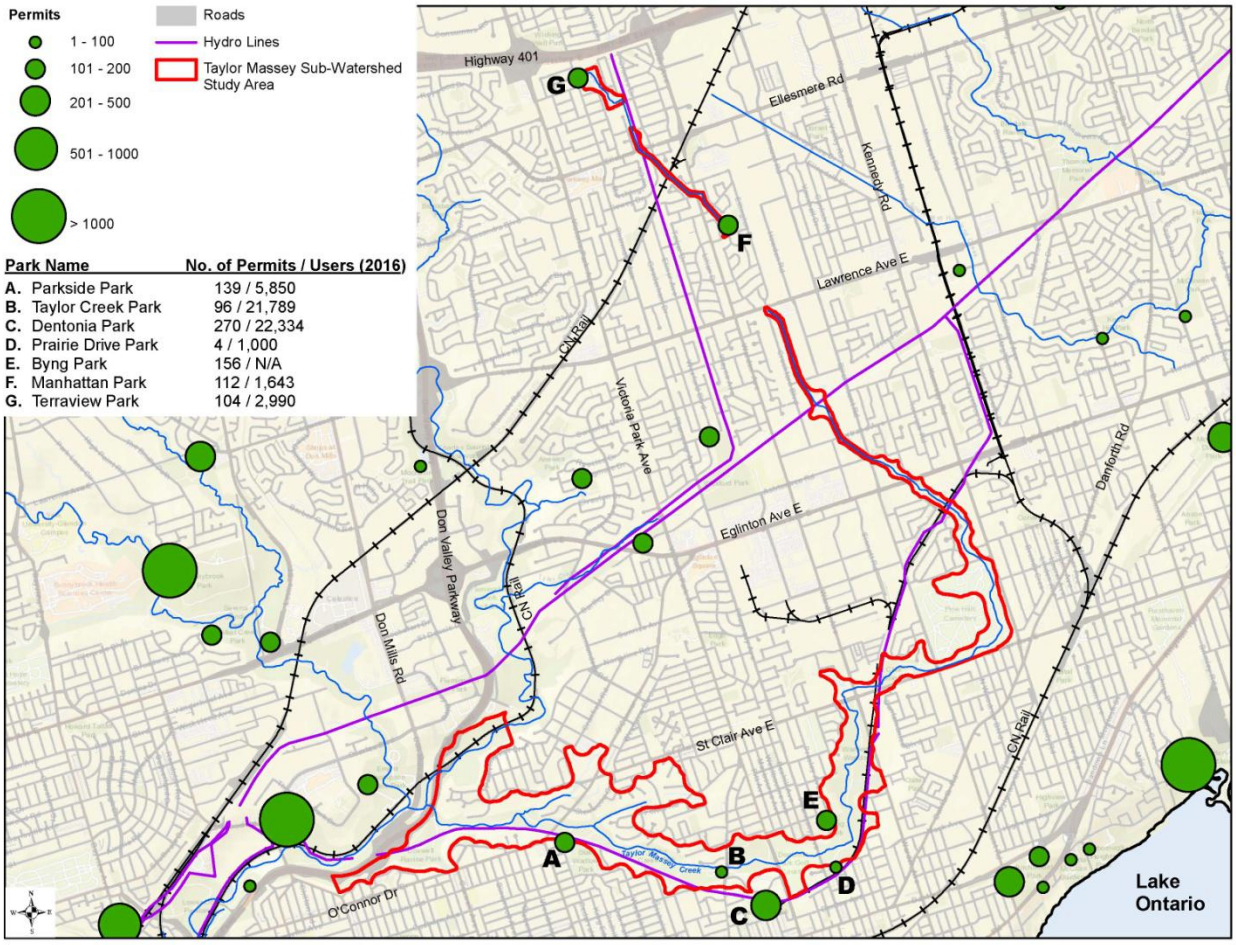

Figure 11: Park Permits in Parks

Map Source: City Planning Data

Parks permits and usage data provides an understanding of where facilities currently support permitted uses and may also indicate where the community prefers to recreate. Permitted parks A-D (as shown in Figure 11) are located within or adjacent to the Taylor Creek Park and Warden Woods ESAs. Large group activities and gatherings that occur within or next to the ESAs could be associated with management problems such as ad-hoc trail creation, invasive species proliferation, soil compaction, trampling of understorey vegetation and garbage. The potential impacts of permitted uses within or adjacent to the ESAs should be monitored for short and long-term cumulative impacts.

Municipal Licensing & Standards provides by-law administration and enforcement services, including targeted strategies to address graffiti, noise and parks regulations including dogs off-leash and commercial and residential waste issues.

1.9 Policy Context

The following applicable regulations and policies have jurisdiction within the Study Area:

Ravine and Natural Feature Protection By-law (City of Toronto Municipal Code Ch. 658)
The Ravine and Natural Feature Protection By-law is a tool to protect important natural features that are vulnerable to degradation due to removal of trees, changes in grade or lack of management. The Ravine and Natural Feature Protection By-law was adopted by City Council on May 27, 2008. It builds upon previous ravine protection by-laws by expanding the area of protection beyond the ravine system to include tableland forests and forested portions of the Lake Iroquois shoreline.

Ontario Regulation 166/06
The Toronto and Region Conservation Authority regulates and may prohibit work taking place within valley and stream corridors if the proposed development is not in keeping with the legislation. Permit requirements should be verified with TRCA at the conceptual and detailed design stage. Any works on TRCA lands, including those under management agreement, are subject to archaeological assessments by TRCA staff.

OPA policy (OPA 262 Environmental Policies and Designation of ESA Areas BL No. 1158-2015)
The policy was approved by Ministry of Municipal Affairs and Housing on May 20, 2016. Broadly the policy accounts for the fact that "our weather is changing. The City expects hotter, drier summers, more heat waves; warmer and milder winters; and fewer, but much more intense, summer rainfall events. These changes will impact how we design…infrastructure and the public realm to be resilient to changing weather and how we manage our forests and natural resources."

Specifically, the policy has bearing on the Natural Heritage System and ESA's in the following way:

- Provision of a set back from toe-of-slope;
- Protection of ESAs where they extend above top-of-bank;
- Protection of buffer areas and functions; and
- Prohibition on alteration of existing slopes to facilitate new development.

Official Plan Policies for ESAs in Toronto
Guides the protection of special and unique natural heritage features within the City of Toronto. The two ESAs within the Study Area are: Taylor Creek ESA and Warden Woods ESA.

Species-at-Risk
The Ministry of Natural Resources and Forestry (MNRF) protects important habitats within Ontario that support significant species of flora and fauna. The MNRF requires clearance (Letter of Advice) for proposed development within habitat of Species-at-Risk. The development may be denied or may require specific setbacks applied from the sensitive habitat.

Other Policy Considerations

Management planning going forward will also need to consider the following policies:

- Consideration for the *City of Toronto Tree Protection Policy* and *Specifications for Construction Near Trees;*
- Park By-law (City of Toronto Municipal Code Ch. 608);
- Timing window under the *Migratory Birds Convention Act* (federal);
- Timing window for near or in-water works (provincial);
- Ensure compliance with Toronto and Region Conservation Authority requirements of the *Living City Policies Planning and Development in Watersheds;*
- Ensure compliance with *City of Toronto Multi-Use Trail Guidelines*, 2014;
- Apply *Crime Prevention Through Environmental Design* (CTED) principles to ensure public safety;
- Compliance with the *Accessibility for Ontarians Disabilities Act,* that guides the design of recreational trails;
- Incorporate best practices for accessible trails, and accommodate the permitted uses in and adjacent to the ESA. Site specific accessible trail design standards may need to be considered for the portion of the trails within the ESAs;
- Permitting and licensing agreements with City of Toronto Parks division; and
- Licence and management agreements with Hydro One and the Province.

1.10 Area-Specific Characterization, Opportunities and Constraints

In order to better understand the varying conditions and landscape typologies present, the Study Area was divided into 'Management Areas' (herein referred to as Management Areas or Areas) utilizing the road network and infrastructure crossings as the points of subdivision. The relative complexity of issues within a given area, and its potential to require investment to fund capital and restoration projects to address longstanding concerns, was factored into the delineation of the limits of the Management Areas.

The development of the Master Plan framework was based upon the opportunities and constraints, and is intended to address management initiatives related to various longstanding issues within the ravine system, such as erosion, watercourse, landfills, vegetation, trails, access and signage. The framework relates to the *Toronto Ravine Strategy*, employing the same tools and criteria to evaluate options, providing recommendations for improving park facilities to address public use concerns.

Figure 12 illustrates the Management Areas within the overall Study Area. A description of each Area or group of Areas follows below.

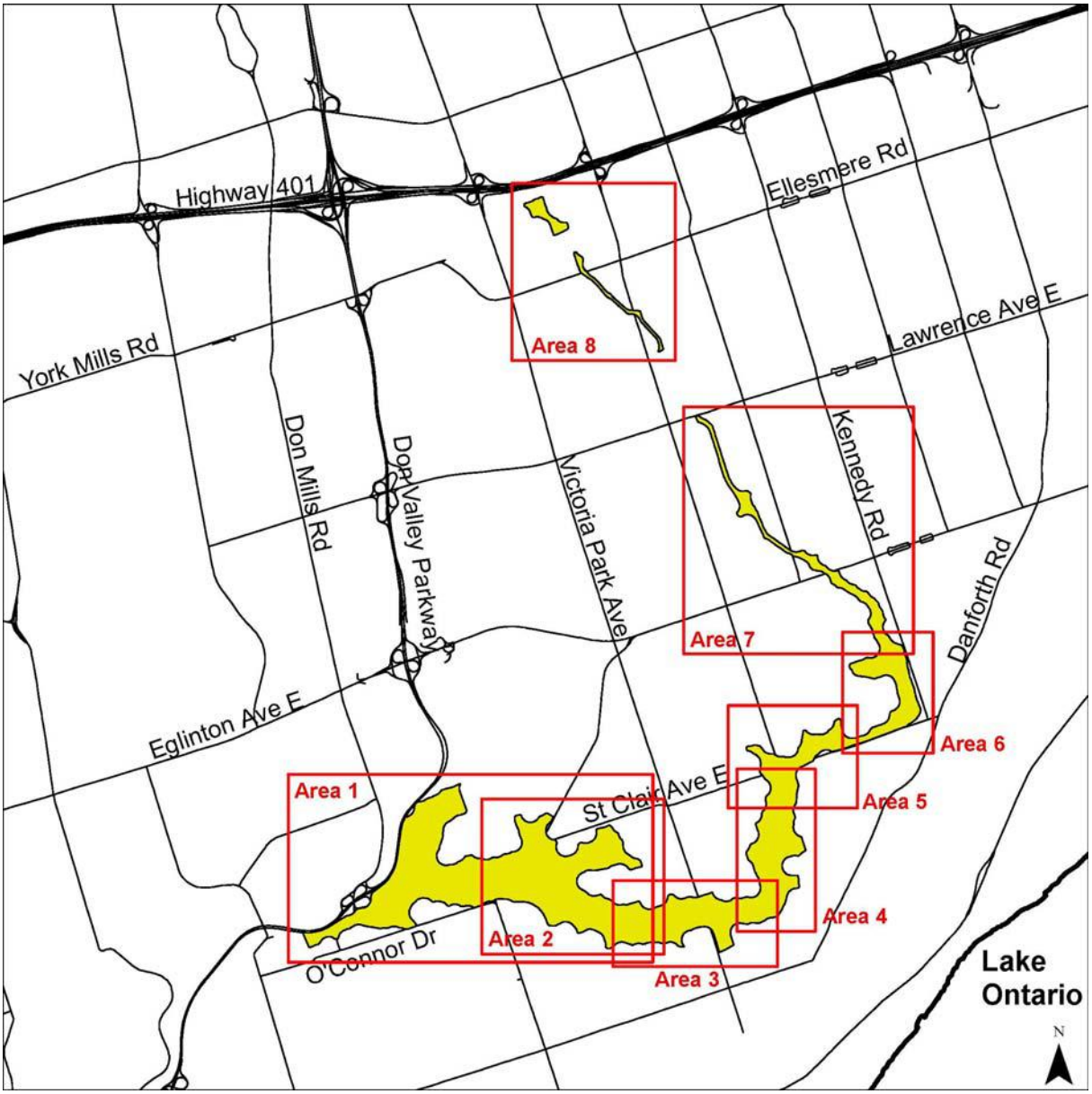

Figure 12: Key Plan for Taylor Massey Creek Subwatershed Management Areas

1.10.1 Areas 1& 2 – Taylor Creek Park

This Area of the subwatershed is characterized as follows:

- Deciduous woodlands on slopes, with bottomland swamps, thickets, meadows and small wetlands;
- Wetlands based on seepage support some species of fen habitats, which are highly sensitive;
- Many species that require specific habitats – mainly of woodlands and wetlands;
- A few forest species with specific habitat requirements – e.g. Pileated Woodpecker, which is area-specific and Star-nosed Mole, which needs rich, moist soils with abundant insects;

- Breeding area for many fauna species tolerant of urban habitats, as well as some that have more specific habitat requirements;
- Small wetlands also contain standing water in the spring and provide some breeding habitat for frogs and toads, including one species rare in the Toronto area, Grey Treefrog; and several urban-tolerant species, Leopard Frog and Green Frog;
- Wetlands are also being invaded by a highly invasive plant, Rough Mannagrass;
- Valley slopes through this stretch are quite highly-eroded, with a few areas of rich Spring ephemeral species;
- Several paved trails are twinned with a parallel natural surface trail on the opposite side of the Creek;
- Trails are located close to erosive banks;
- There is proliferation of ad-hoc trails, which are undermining the natural heritage features; and
- Section of Creek has areas left in natural state, but is very "flashy" (receives high flows in peak storm events with highly erosive forces and scour potential on creek banks).

Opportunities: Address Creek stability in a comprehensive manner with soft engineering and widening of the banks where space permits. This may require the relocation or removal of some trails. This work can be planned to implement trail improvements to address safety and maintenance issues as well as drainage issues. Within ecologically sensitive environments, elevated sections of boardwalk may be required.

Constraints: Steep valley slopes and limited paved trails complicate access to potential work sites. Further disturbance to the valley floor may be necessary to implement improvements. Many of the issues are located within the ESA, which is challenging from a natural heritage protection perspective.

1.10.2 Areas 3 & 4 – Dentonia Park Golf Course and Warden Woods

This Area of the subwatershed is characterized as follows:

- The Warden Woods ESA is characterized by an extensive deciduous forest along the Creek; high topographic variation leads to high vegetation community diversity;
- The area has a high diversity of breeding birds, including some that require large patches of wooded habitat (so-called woodland area-sensitive species), as well as those that can adapt to urban environments;
- Red-backed Salamander species are present and this indicates high quality of moist woodland habitat and abundance of downed woody debris;
- Dead and dying ash and elm provide maternity habitat for Species-at-Risk bat species;
- The Golf Course is largely manicured, but small stands of trees contribute to the potential for enhancing connections through the site; and
- Potential extension of trails to fill in gaps in the network.

Opportunities: Expansion of the ESA eastward from Taylor Creek Park. Enhancement of the Natural Heritage System by focussing restoration efforts to infill gaps in the riparian vegetation corridor.

Constraints: Access to many sites may be difficult due to steeply incised valley slopes in this part of the Study Area.

1.10.3 Areas 5 & 6 – St. Clair Ravine Park and Pine Hills Cemetery

This Area of the subwatershed is characterized as follows:

- The Creek is mostly channelized through this section;
- Most of Cemetery is mowed so it has little biodiversity. Large patches of Austrian Pine exist with nothing growing underneath;
- An area of high-quality deciduous forest exists within the northern part of the cemetery. This adds diversity;
- The Creek adds diversity but is disturbed;
- The Creek course is largely dominated by non-natives such as Manitoba Maple, Black Locust, Tartarian Honeysuckle and Garlic Mustard, with rare patches of native species;
- A few small wetlands exist but there is very little standing water for frog breeding;
- A large number of migrant birds move through the site, gleaning insects from leaves of non-native trees that leaf-out early, taking advantage of insects on flowering trees like Apple, Cherry and Hawthorn;
- Insects for urban aerial insectivorous bird species at risk, such as Chimney Swift and Barn Swallow, exist;
- Breeding area for birds that are tolerant of urban habitats, such as Baltimore Oriole, Northern Cardinal and American Goldfinch, are present; and
- Areas of habitat potential for endangered bat species exist.

Opportunities: Protect and enhance the Natural Heritage System, recognizing the value that limited habitat in this area has to the migratory bird population, as well as reptiles and amphibians.
Constraints: Large roads and infrastructure, pertaining to stormwater and the Toronto Transit Commission, make access, both logistically and bureaucratically, complicated in this section of the ravine.

1.10.4 Area 7 – Farlinger Ravine

This Area of the subwatershed is characterized as follows:

- There are some very disturbed areas, especially in northern sections;
- There are highly channelized sections of creek;
- The area is a narrow corridor that is disturbed and almost entirely dominated by invasive non-natives such as Black Locust, Manitoba Maple, Norway Maple and Tartarian Honeysuckle;
- Several areas of mowed grass exist some on engineered slopes;

- Migrant birds use this section as a corridor to move through the City, including some Species-at-Risk like Canada Warbler. These species feed on insects that inhabit flowering, non-native shrubs like Sweet Cherry and Apple;
- Some larger nodes of habitat are associated with powerline corridors. These areas are used by grassland sparrows;
- These areas also provide east-west corridors for migrant birds;
- Hydro corridors also add diversity and east-west connections (meadow, thicket and young forest); and
- Mammals, such as White Tailed Deer and Woodchucks, use thickets and meadows.

Opportunities: Enhance nodal habitat to encourage foraging potential for stop-over and migrating birds. Support the re-naturalization of the hydro corridors, to the extent possible as identified by other initiatives.
Constraints: Narrow and concrete channelized sections of the ravine provide limited potential for naturalization and trail linkages.

1.10.5 Area 8 – Manhattan Park to Terraview and Willowfield Gardens Parks

This Area of the subwatershed is characterized as follows:

- This is a very narrow corridor, dominated almost entirely by invasive non-native species like Manitoba Maple and Norway Maple;
- Few migrant birds were observed through fieldwork in this section;
- Habitat for urban-adapted birds, like Northern Cardinal and Song Sparrow, exists in this area;
- There are a few nodes of habitat where the creek course meets the powerline corridor, but not as wide as in section further south;
- Two constructed ponds, located at the north end, were configured in the 1990s to provide habitat;
- Some diversity of vegetation, although the landform is still relatively steep-sided;
- The area provides amphibian breeding habitat for adaptable species like Green Frog; and
- Natural and wood chip trails are well-maintained and are well used. All recreational features and amenities are in a state of good repair.

Opportunities: Extend the trail system southward along the hydro corridor and then link to the on-road cycling network identified in the *10-Year City's Cycling Network Plan*. Develop an education and stewardship program to solicit volunteers from local businesses and in schools and community centres, to contribute to improving the health of the ravine system, in this section of the Study Area.

Constraints: Limited access points to the ravine system.

2.0 Supporting Plans and Guideline Documents

Several reports establish the foundation and direction for the TMCMPU. The following summarizes how each document influences the Master Plan.

2.1 Taylor Massey Creek Status Report

The Status Report is the first step of a three phased planning process for the Taylor Massey Creek, as approved by Parks & Environment Committee on June 22, 2015 and City Council on July 7, 2015. The report includes an inventory and assessment of existing assets, a summary of past and current reports, and a list of recently completed and planned projects. It was compiled and reviewed by the members of the Taylor Massey Creek Working Group, which is led by Parks, Forestry and Recreation and includes City staff from Toronto Water, Transportation Services, Solid Waste Management; and staff from the Toronto and Region Conservation Authority. The information contained within the report was used as a base line against which to evaluate proposed recommendations.

2.2 Massey Creek Channel Rehabilitation, Geomorphic & Habitat Systems Study

Stream Restoration projects are one of the key elements of the *Wet Weather Flow Master Plan* (WWFMP), developed to address degraded water quality in the City's receiving waters and the other adverse effects of wet weather flows. A major source of water pollution comes from stormwater runoff and combined sewer overflows (CSOs), which contain a mixture of stormwater and untreated sewage, and are discharged from outfalls into Toronto's waterways after heavy rains or snowmelts. The WWFMP was developed based on the principles of managing wet weather flows on a watershed basis, recognizing rainwater as a valuable resource, and with a hierarchy of management practices and controls, starting with "at source", followed by "conveyance" and finally "end-of-pipe" controls.

The WWFMP examined the role that the City land use planning division would have on stabilizing the City's geomorphic systems through stormwater management source control measures that lead to a reduction in the volume of storm water runoff from developments and impervious surfaces. The WWFMP concluded that source control measures alone would not achieve the objective of geomorphic stability needed in Toronto's streams and rivers. Rather, the WWFMP concluded that physical intervention was needed, particularly because the channels had been straightened and were also often undersized.

In response to these findings, a 25-year implementation plan was developed, which identified projects and initiatives for implementation in five year periods. This priority framework supports actions within the *Toronto and Region Remedial Action Plan* (RAP), which is considered integral to improving water quality conditions and delisting the Toronto and Region as a Great Lakes Area of Concern. The implementation plan for the RAP includes watercourse restoration, remediation of basement flooding, municipal operations, greening new development, and public education.

The TMC GSMP completed in 2015 by Parish Geomorphic addressed erosion concerns and degradation of Taylor Massey Creek's aquatic and riparian habitats. Erosion has put some subsurface infrastructure at risk. The Master Plan identified recommendations for enhancing the stability and

function of Taylor Massey Creek to protect vulnerable infrastructure from future erosion impacts. The key findings that came out of the Study included:

- Confirmation of the findings of the WWFMP that in-stream intervention is the necessary solution to resolve Taylor Massey Creek rehabilitation issues;
- A variety of solutions, with a range in scale and cost, are needed to address priority infrastructure protection and aquatic habitat issues. These solutions range from site scale repairs (Schedule A projects) to reach-scale restoration projects (Schedule B projects); and
- Conclusion that channel maintenance solutions and riparian plantings are appropriate for certain sites, which are defined in the report.

The *Taylor Massey Creek Subwatershed Master Plan Update* considers the priority projects identified in the WWFMP as well as the findings of the TMP GSMP in developing new recommendations.

2.3 City of Toronto 10 Year Cycling Network Plan

On June 9, 2016 Toronto City Council approved a *10 Year Cycling Network Plan* to Connect, Grow and Renew infrastructure for Toronto's cycling routes. The Plan serves as a comprehensive roadmap, outlining the City's planned investments in cycling infrastructure from 2016-2025. The plan identifies opportunities for cycling infrastructure investments in every part of Toronto. It includes recommendations for cycle lanes or tracks on fast, busy streets and recommendations for traffic calmed routes, with cycling wayfinding, on local roads. The Plan also includes a network of multi-use and boulevard trails that form important linkages to trails within the Study Area.

The cycling routes that surround the Study Area (illustrated on Figure 13) represent opportunities to get to and from the ravine and neighboring communities, connecting to other off-road trails and the transit network.

The City's *10 Year Cycling Network Plan* opportunities that relate to the Taylor Massey Creek Study Area include:

- Opportunities for trail linkages through the Warden Hydro Corridor;
- East Don Trail Phase 1 - connection from Taylor Massey to Gatineau Hydro Corridor (Bermondsey);
- Improvements to existing Warden Woods trail to St. Clair and connection to subway station; and
- Potential trail connection through Dentonia Park Golf Course, to avoid on-road detour.

In addition, some priorities have changed in the Plan including:

- Scarborough Hydro Corridor north of station (is no longer a priority with East Don Trail connection in development); and
- No immediate plans for bridges to cross Taylor Massey Creek immediately north and south of Eglinton Avenue (portion of the trail is not part of the *10 Year Cycling Network Plan*).

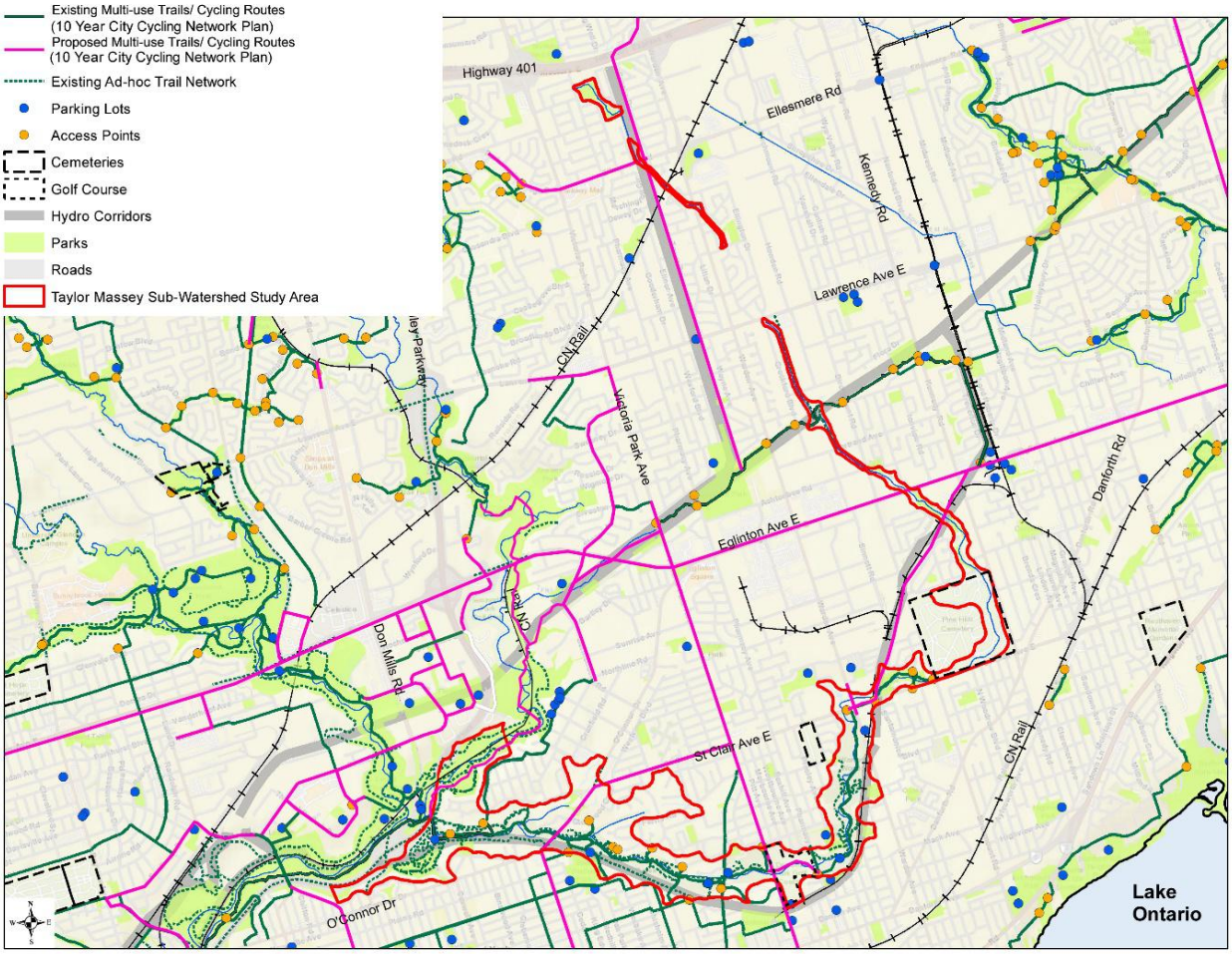

Figure 13: Cycling and Multi-use Trail Facilities Map Source: City Open Data and City's Cycling Network Plan

2.4 Archaeological Assessment Stage 1: Taylor Massey Creek EA

The Environmental Assessment (EA) was conducted and managed by the City of Toronto, and was aimed at identifying alternative methods to enhance the stability and function of the Creek. Past activities have led to degradation of aquatic and riparian zone habitats, as well as extensive erosion, which has put some City trails and subsurface infrastructure at risk. The EA process guided consultants in developing design alternatives to eliminate erosion risks along the Creek.

The objectives of the EA were to provide information about the property's geography, history, previous archaeological fieldwork and current land condition in order to evaluate the property's potential to contain cultural heritage resources that might be impacted by the modifications proposed in the EA.

The EA recommended that, within all of the areas identified as having archaeological potential, a Stage 2 Assessment would be required prior to any ground disturbing activities.

2.5 City of Toronto Environmental Significant Areas Study

The Official Plan lays out a clear policy framework for the protection of ESAs. Development is not permitted within ESAs and activities are limited to those that are compatible with the preservation of the natural feature(s). ESAs are meant to capture the most locally and regionally significant terrestrial natural areas within the City's Natural Heritage System; affording a mechanism by which to protect vulnerable habitats and the species that rely on them. Background work to identify potential ESAs was carried out between 2006 and 2008, and field work assessing landform and vegetation communities was completed in 2009 - 2012. The delineation of ESA boundaries was approved by the Province within the new Official Plan on July 12, 2016. The areas include private and public lands as the criteria were based solely on ecological considerations.

Of relevance to the Master Plan, the *City of Toronto ESA Study* found that natural heritage features are affected by the following:

- Unofficial trails;
- Encroachment by adjacent landowners (including building of decks, sheds, gazebos and pools);
- Removal of native vegetation for gardens, removal of trees to improve the view;
- Dumping of garbage, particularly compost and building materials; and
- Non-native species invasion.

The study concluded that virtually all of the ESAs examined would benefit from management, which could include targeted landowner and user outreach, education and stewardship, as well as City-led hands-on management. Furthermore, it concluded that ESA protection should be elevated in Toronto due to the fact ESAs are:

- Located in a dense urban area where the population is expected to grow by an additional 360,000 residents by 2031, with resulting increased pressures on natural areas;
- Located within the City's Natural Heritage System, which also supports a range of recreation uses, is traversed by infrastructure, and under continual pressure to provide additional uses; and
- Even under the current population levels subject to a wide range of impacts and stressors, so there is a need to identify and protect the most sensitive and least degraded areas quickly to ensure they are not further degraded as the population continues to grow.

The intensive use Taylor Creek Park receives on an annual basis, the impacts that compounding issues are having on the Natural Heritage System, and the presence of the ESA, have resulted in the decision by the City of Toronto to pursue the development of a Management Plan for Taylor Creek Park.

2.6 Taylor Massey Creek Characterization: Memorandum Report

Dougan & Associates was retained to complete a natural heritage characterization of the Taylor Massey Creek valleylands, between Donlands Avenue, northeast to Pavane Linkway and east to Kennedy Road and north to Highway 401. The field work was completed between May to June, 2016.

The Study included: Nocturnal Amphibian Surveys, Breeding Bird Surveys, Ecological Land Classification (ELC) and Botanical Inventories.

ELC data from this study was obtained and integrated into the GIS database initially obtained from the City of Toronto and TRCA. 546 ELC polygons, 86 wildlife species and 330 plant species, including Butternut, were identified within the Study Area. Five Species-at-Risk were detected within the Study Area. The locations of these conservation priority species were included in the assessment mapping, but are removed from this report and appendices, due to the sensitivity of the data. Numerous invasive species were present throughout the Study area – in most cases ubiquitous coverage was noted including: European Buckthorn (Rhamnus cathartica), Garlic Mustard (Alliaria petiolata), European Reed (Phragmites australis) and in most abundance, Dog-strangling Vine (Cynanchum rossicum).

Additional field work conducted by North-South Environmental Inc. as part of this Study confirms the conditions noted in the June 2016 memo and reinforces the need for a comprehensive vegetation management plan for the Study Area.

2.7 Parks and Recreation Facilities Master Plan

Toronto is changing, the population is growing and recreation trends are shifting. A long-term plan to build and renew facilities across the city will help the City of Toronto prepare to meet recreation needs into the future. In response, Parks, Forestry and Recreation is developing a 20-year *Parks and Recreation Facilities Master Plan* to guide investment in parks and recreation facilities, such as community recreation centres, ice rinks, and sports fields. The Parks and Recreation Facilities Master Plan was adopted by City Council's Executive Committee on October 24, 2017.

The *Parks and Recreation Facilities Master Plan* builds on past efforts and strengthens the City's ongoing commitment by establishing a vision for facility provision. The plan guides decision-making and investment in parks and recreation facilities that are owned and or operated by the City of Toronto.

The outcome of the study may inform which parks have shortfalls in recreational amenities, and the types and locations of recreational amenities that may be planned for given parks. This will have a direct impact on future park management and use, and should be coordinated with the management plan process for each Management Area within this Study.

2.8 Official Plan

The entire Taylor Massey Ravine system, including portions of the Golf Couse and Cemetery, but excluding the underground piped section from Lawrence to Warden, is included in the Official Plan Natural Heritage System, as well as Official Plan Map 9 (CoT, 2015b).

A Secondary Plan for the Warden Woods Community has been prepared "to support private and public investment in the creation of a new community, integrated with the surrounding residential communities and ravine system" (CoT, 2015g).

3.0 Foundation of the Master Plan

The Master Plan is founded upon a set of clear Guiding Principles that embody the framework from the Toronto Ravine Strategy, while reflecting consultation and planning work completed as part of the 2015 Taylor Massey Creek Geomorphic System Master Plan.

3.1 Guiding Principles

The following principles were developed to guide the development of the Master Plan in response to stakeholder and community feedback:

Natural Heritage Conserve, protect and enhance natural features and functions within the ravine environment.

Cultural Heritage Consider the cultural heritage features and archaeological potential of the site.

Experience Celebrate and interpret the unique qualities of the natural and semi-natural spaces within the subwatershed.

Context Connect all systems to the wider ravine and open space system.

3.2 Vision and Objectives of the Master Plan

The Master Plan envisions the establishment of a safe and connected trail system that may be comprised of on and off-road sections of trail. The trail system seeks to provide opportunities for cross-corridor connections. The Master Plan also envisions a stable and enhanced creek system, with improvements to the stormwater management system and water quality. Its recommendations seek to protect its most sensitive habitats, buffering and enhancing this system to build resilience against future increased pressures associated with levels of public use and climate change. The Implementation Plan addresses recommendations related to land ownership, coordination and timing, education and partnership-building.

The Master Plan seeks to provide a balance of perspectives and ensure the requirements of the various interest groups are considered. Moreover, the plan ensures that the management systems and maintenance regimes complement proposed uses. The Plan can be utilized as a tool to secure funding in an effort to meet the objectives and remain environmentally and financially sustainable. As can be imagined, this is not a simple task and it will require on-going coordination, division of responsibility and adaptive approaches to address climate change, shifting political views and community needs over time.

The Master Plan, supported by its recommendations, will play an important role in elevating the prominence of the Taylor Massey Creek subwatershed as an important environmental, recreational, social and educational asset within the City's ravine system, inspiring genuine interest and catalyzing funding to implement the Plan. This interest will propel the momentum necessary to move the Plan forward to implementation.

The component parts of the Master Plan described below provide guidance toward the development of an enhanced and adaptive ravine and open space system. It should be recognized that the recommendations that follow, are set out at a high level, with the expectation that future management plans, starting first with Taylor Creek Park, will rationalize the opportunities to identify detailed, site specific initiatives. This process will require further analysis of site conditions and evaluation of needs from all parties with vested interests, likely requiring implementation in a phased approach. More is described in the implementation section of this report with regards to next steps.

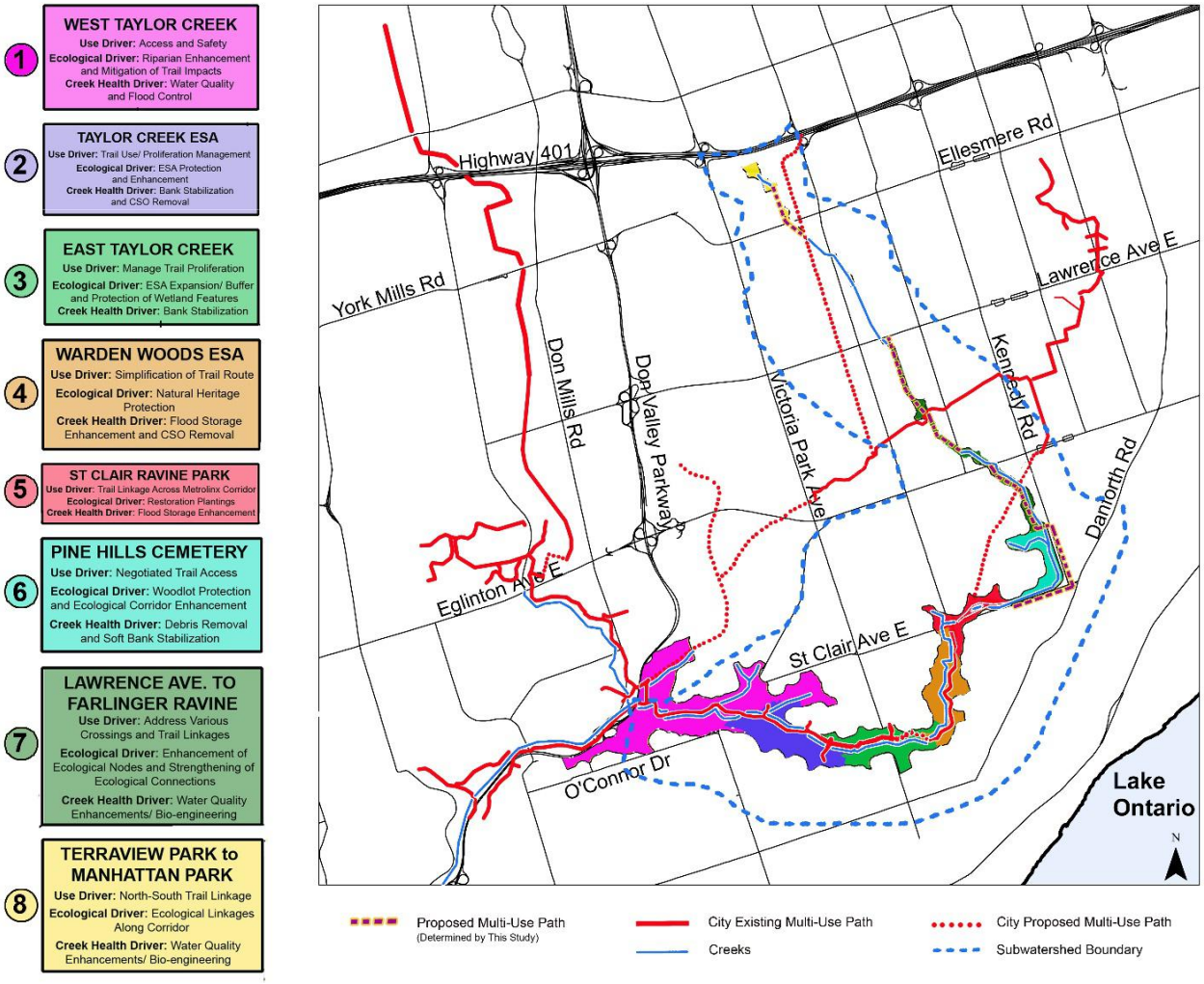

Figure 14: Master Plan Framework

The Master Plan Framework was established by dividing the Study Area into eight Management Areas by utilizing ESA boundaries, land ownership and "geomorphic reach" as the basis for the delineation. "Geomorphic" refers to landform history and dynamics. A "reach" is defined as a section of a watercourse with the most similar geomorphic characteristics, defined by a combination of the mean annual precipitation, lithology (rock formation), and land-uses, producing similar discharge for a given

drainage basin (Rosgen, 2001). In 2014, Parish Geomorphic delineated fifteen geomorphic-based reaches for Taylor Massey Creek from its headwaters to its mouth, based on similarity of the following physical characteristics: channel sinuosity, valley gradient, local geology, degree of valley confinement, and vegetative control" (Parish Geomorphic, 2014. Section 2.6.1, page 14).

An assessment of the characteristics of each of the Management Areas, as summarized in section 1.8, helped to define the broad direction future management planning ought to take for the specific area.

Natural and Cultural Heritage Protection and Enhancement Component

The ravine system has many layers of importance to various agencies that have jurisdiction over public lands. However, as identified in the guiding principles of the Ravine Strategy and this Master Plan, the Natural Heritage System is the foundation for the ravine system that must be protected and enhanced where possible. Without the health and vitality of this system, the other uses would not be possible. In order to meet this goal, the following objectives were developed:

- A vegetation management strategy should be developed that sets out priorities for management according to the sensitivity of the habitat, the abundance of non-natives, and the degree of aggressiveness of invasiveness of non-natives, with a focus on ESAs and of other priority areas, such as the deciduous forest within Pine Hills Cemetery;
- Trails should be rationalized to reduce trampling, with a focus on reducing access points;
- Trails should particularly be managed along the former railway line on the south side of Taylor Creek Park, to reduce the unofficial trails impacting sensitive seepage habitats that support fen indicators;
- Water quality should be maintained and enhanced in amphibian breeding ponds within Taylor Creek Park;
- Wildlife habitat elements that contribute to diversity, such as downed woody debris, standing dead trees, areas of vernal pooling and successional vegetation, should be left in place wherever possible, and compensation provided where it is not possible to leave them in place;
- Additional wildlife habitat elements such as nest boxes and bat condos should be provided;
- Trail uses that may be incompatible with the protection of habitat integrity should be resolved, with discussion with local groups of trail users, etc.;
- Edge enhancements through plantings of native species should be considered at the border of urban development;
- Trail enhancements such as boardwalks and stairways should be considered in areas of high impact and erosion;
- Linkages between habitats should be enhanced wherever possible, for example maintaining a riparian corridor through the Dentonia Park Golf Course lands to connect Taylor Creek Park and Warden Woods ESAs, and considering wildlife crossing structures where roads create a barrier to animal movement between sections of the corridor;
- Enhancements to the riparian corridor along the creek should be a particular priority, especially in highly manicured areas such as the Golf Course; and

- Brand the Taylor Massey Creek ravine system by adopting a unique theme that is founded on its historical context within the growing City as well as its natural heritage attributes and landscape character.

Flood and Erosion Management Component

As the majority of the lands within the Study Area are subject to potential flooding and the effects of erosion, the Master Plan recommends an approach that aligns with the TRCA's 2010 Stormwater Management Criteria for Watershed Protection "to protect and improve watershed health, promote a more resilient stormwater system and adapt to the effects of a changing climate."

The approach strives to combat the consequences of "hydro-modification" in the urban subwatershed including: streambank erosion, increased peak flows and pollutant loading, reduction in base flows, loss of habitat and risk to infrastructure. The objectives of the criteria are to: enable manageable stormwater rates and volumes, prevent increased flood risk, protect water quality, improve base flow, prevent major erosion, protect habitat, and maintain hydrological and ecological functions.

The approach speaks to the need to implement Low Impact Initiatives at a subwatershed scale, at the same time as addressing issues at the end of the "treatment train", which in this Study's case is the Creek system.

Recreational and Education Component

A theme that evolved during the consultation process was for an increase in the diversification of passive-based recreational experiences offered within the ravine system. Enabling a wider range of passive-based experiences could afford the dual benefit of making the ravine more accessible to a wider pool of users, affording the opportunity for environmental education, aiding stewardship building and 'cross-programming'.

Considerations for enhancements to the recreational system needs to plan for the impacts that potential increases in use may have on the Natural Heritage System. The multiplicity of uses needs to complement the natural heritage characteristics and respect safety issues within the floodplain.

In addition, in order to optimize the range of programming opportunities that could be considered for implementation within specific areas in the future, several categories have been created as a means to logically organize potential program opportunities.

To establish a unique identity for the Taylor Massey ravine system that fits into a complimentary whole, the following potential themes focus on the nature of education, recreation and leisure programs within the Study Area.

A. EDUCATION

- Passive interpretation
  e.g. interpretive signage

B. RECREATION

- Active
  e.g. organized sports

C. LEISURE

- Social
  e.g. gathering spaces

- Active learning
  e.g. school science experiments
- Skills development
  e.g. training course
- Curriculum support
  e.g. outdoor classrooms
- Cultural
  e.g. guided tours
- Passive
  e.g. hiking
- Nature-based
  e.g. bird watching
- Adventure
  e.g. geocaching
- Specialty (accessibility)
  e.g. sensory trails
- Cultural
  e.g. activities pertaining to cultural groups
- Special events
  e.g. treasure hunts
- Arts
  e.g. programming in the ravine
- Environmental
  e.g. awareness events

The catalogue of program types will serve as the organizational system for the recreational and use strategy of the Taylor Massey ravine system.

The intent is to encourage within each category a list of related programs that will emerge along with a suite of required supporting elements and infrastructure. However, this will occur in the context of refined management planning, further analysis and consultation. Program development within each Management Area should be aimed at building upon one another to optimize the balance between natural and cultural heritage protection and enhancement, and user experience. There is a process underway to prepare a Management Plan for Taylor Creek Park, however, depending on funding requirements and capital works schedules across multiple jurisdictions, plans for other Management Areas may not come to fruition for quite some time.

4.0 Master Plan Recommendations

The recommendations for the Master Plan are organized into Study-wide and area-specific recommendations. The subwatershed-based recommendations are less prescriptive than the area-specific, are more general in guidance and provide a balance in perspectives. The recommendations were developed through an iterative process of refinements with members of the Working Group, Stakeholders and the public through an online survey.

It should be noted that minor revisions to the recommendations were made to respond to the feedback received. Therefore, the wording of the recommendations presented in this report may differ than that found in the Online Survey Summary Report in Appendix A.

4.1 Subwatershed-Wide Recommendations

4.1.1 Theme One: Natural Systems

a) Protect good quality habitat and important ecological features within the Natural Heritage System;

b) Seek to reduce fragmentation of the Natural Heritage System by restoring the most degraded portions of the riparian corridor and seeking to control pockets of invasive species where good quality habitat is threatened;
c) Increase environmental buffers at the interface with surrounding land uses to protect the creek corridor; focus programming and recreational uses away from the creek banks;
d) Enhance connectivity of the creek corridor by investigating opportunities to improve linkages through habitat enhancement and improvement in safety of road crossings for wildlife;
e) Enhance stopover habitat for migrating birds;
f) Identify and mitigate barriers to fish migration;
g) Engage the community to implement restoration and enhancement initiatives;
h) Promote the acquisition of lands through the development approvals process to expand the land base associated with the creek corridor, improve linkages and make the system more resilient; and
i) Engage in neighbourhood outreach and education, encouraging stewardship building with private landowners whose lands are within the natural heritage system.

4.1.2 Theme Two: Creek Health & Stormwater Management

a) Implement monitoring to identify water quality issues and track success of SWM initiatives;
b) Address water quality issues at a subwatershed scale;
c) Evaluate potential sites for flood water capacity storage, attenuation and water quality enhancements;
d) Assess bank stability, especially within the lower creek and "flashy" parts of the system;
e) Replace or repair degraded bank stabilization works applying natural channel systems principles where feasible, recognizing that a larger footprint is required to implement this type of solution; and
f) Combine work to restore vegetation and improve trails in conjunction with sewer and infrastructure improvements where possible

4.1.3 Theme Three: Trails, Recreation and Cultural Heritage

a) Establish a continuous trail network through the subwatershed, utilizing the ravine system where possible, to implement the *10 Year Cycling Network Plan* and the *Natural Environment Trails Strategy*, and make connections to neighbourhoods and the City;
b) Provide trails of different types that offer a variety of experiences to fill key gaps in the trail network;
c) Address impediments to linkages at roads and rail crossings;
d) Enhance cross-corridor connections to improve access to the ravine system from surrounding neighbourhoods;
e) Continue to support recreational uses that compliment natural heritage protection and enhancement objectives;

f) Celebrate the history and cultural heritage of the subwatershed through education and interpretation; and

g) Encourage development of a subwatershed-wide wayfinding signage strategy.

4.2 Area-Specific Recommendations

The area-specific recommendations guide future management direction regarding the access, management, enhancement and protection of the open space, park, natural and cultural heritage systems within the specific reaches of the Taylor-Massey Creek subwatershed.

4.2.1 Area 1: Taylor Creek Park West

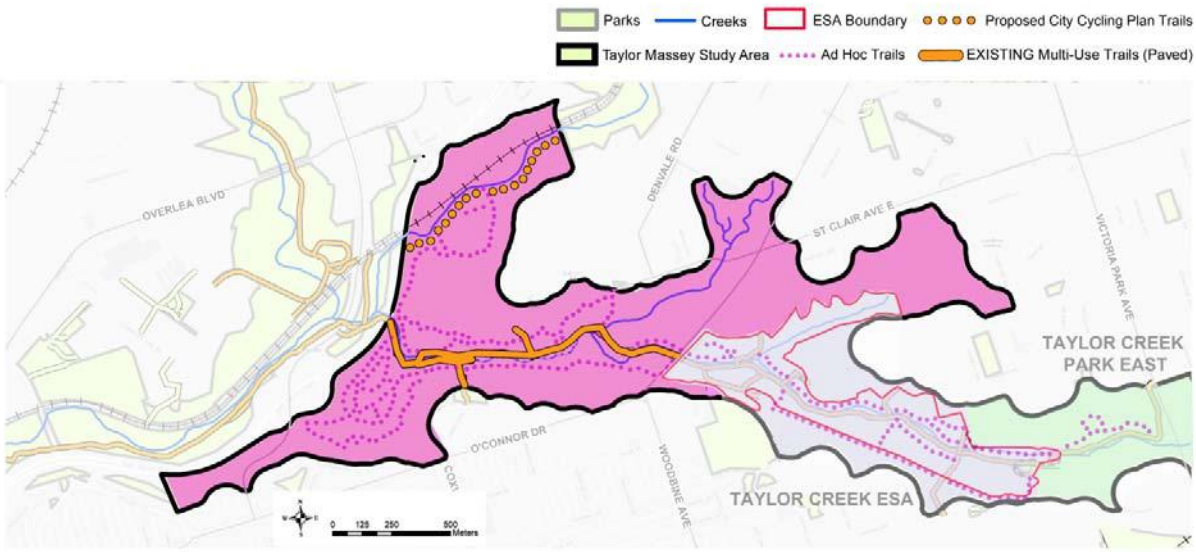

Figure 15: Taylor Creek Park West Management Area

1.1 Focus new planting to restore vegetation in degraded areas along the creek corridor;

1.2 Identify ways to improve the stability of creek banks and valley land slopes and reduce erosion;

1.3 Manage invasive species, with repeated follow up, as required;

1.4 Evaluate the existing trail system in order to rationalize the number of trails and trail types in the area;

1.5 Address safety concerns where trails are located near creek banks;

1.6 Identify new trail connections away from flood prone areas near the creek;

1.7 Prioritize points of access to the ravine park system;

1.8 Support the proposal for a new washroom location;

1.9 Be aware of former landfill sites through improved communications; and

1.10 Develop and implement vegetation management plans where good quality habitat is threatened.

4.2.2 Area 2: Taylor Creek Park Environmentally Significant Area

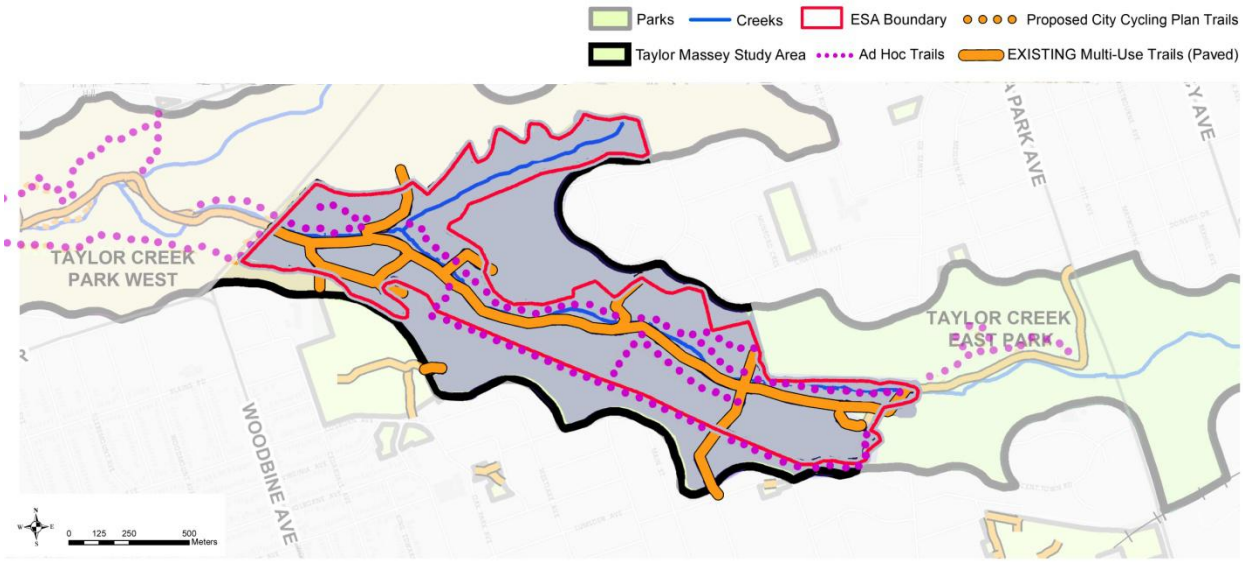

Figure 16: Taylor Creek Park Environmentally Significant Area Management Area

2.1 Ensure that high quality natural heritage features (e.g., vegetation, trees, water features) are protected from harm;

2.2 Implement pro-active vegetation management initiatives, which should include invasive species management, prioritizing sites nearest the ESA;

2.3 Identify opportunities to plant native plants, prioritizing degraded areas for this work;

2.4 Examine and rationalize the number of trails and types in the area;

2.5 Determine appropriateness of the trail type relative to the ESA;

2.6 Identify ways to improve the stability of valley land slopes in the area and reduce erosion;

2.7 Review the implications of activities and uses that are resulting in harm to high quality natural heritage features in the area and identify options for the relocation of these activities;

2.8 Promote low impact and appropriate recreational uses within the ESA; and

2.9 Investigate opportunities for active uses in areas outside of the ESA, on lands free from easements and within City ownership.

4.2.3 Area 3: Taylor Creek Park East

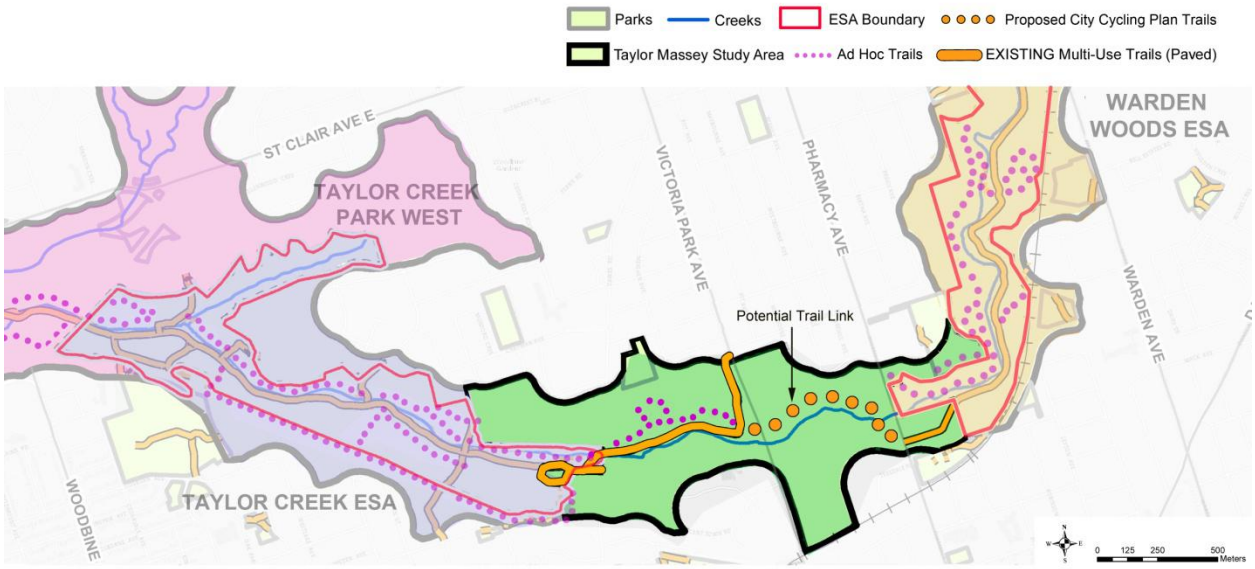

Figure 17: Taylor Creek Park East Management Area

3.1 Explore opportunities for interdepartmental coordination to run stewardship programs out of the Goulding Estate;

3.2 Investigate the potential pedestrian and cycling access between Warden Woods and Taylor Creek Park through a section of the City-owned Dentonia Park Golf Course;

3.3 Examine the feasibility of acquiring parkland within the Crescent Town Community as a future natural, cultural or recreational asset; and

3.4 Identify potential locations for new planting to restore and enhance natural vegetation.

4.2.4 Area 4: Warden Woods Environmentally Significant Area

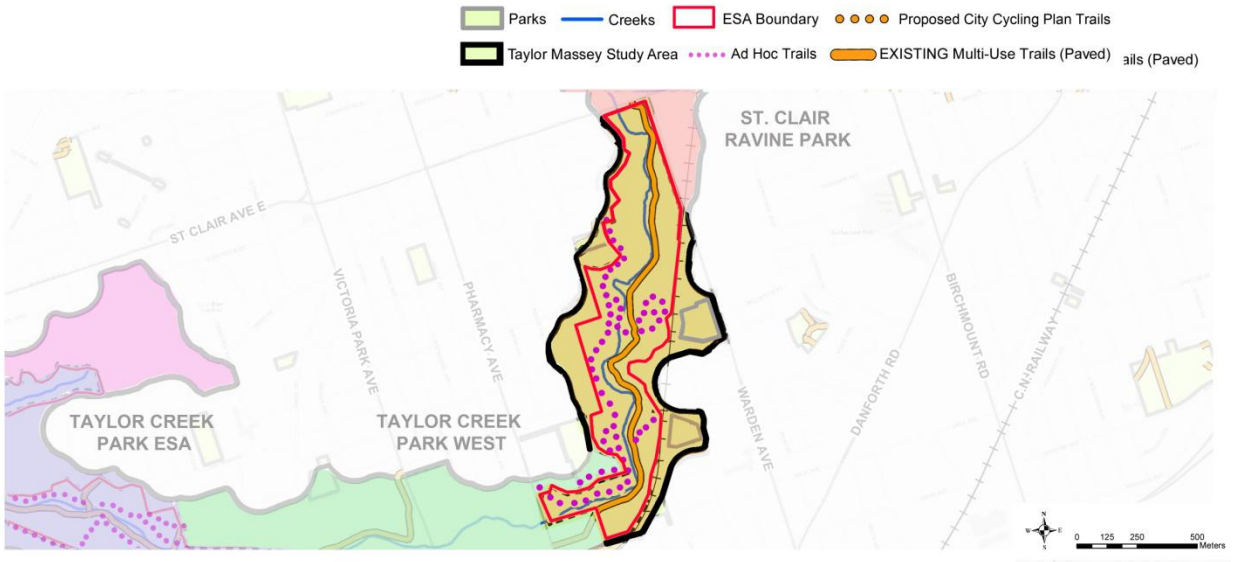

Figure 18: Warden Woods Environmentally Significant Area Management Area

4.1 Continue to promote Warden Woods as a special area of natural heritage conservation and regeneration;

4.2 Evaluate the existing trail system in order to examine and rationalize the number and type of trails in the area, as well as linkages to other trails;

4.3 Investigate the feasibility of a new trail connection to Fir Valley Woods Park;

4.4 Consider trail improvements to improve safety and accommodate different user groups;

4.5 Investigate the potential for one cross-creek connection in an optimal location;

4.6 Identify opportunities to improve access from the neighbourhood, where feasible, as well as at the north end of Warden Woods;

4.7 Investigate the potential for stormwater management, as part of park redevelopment at Byng Park, to implement concepts developed by TRCA in the Don Watershed Strategy;

4.8 Seek to develop a public education and interpretation program about the Lake Iroquois shoreline;

4.9 Identify and prevent undesirable activities such as fire pits, encroachments, dumping and large gatherings in the area; and

4.10 Investigate the degree to which dumping and gatherings in the area impact upon public enjoyment of the area.

4.2.5 Area 5: St Clair Ravine Park

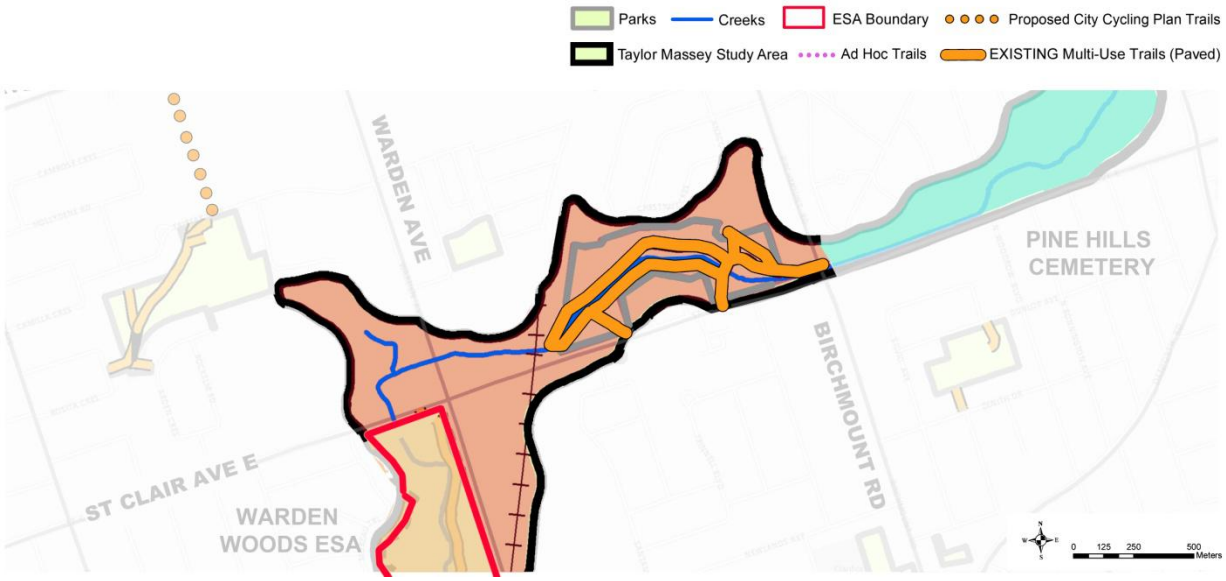

Figure 19: St. Clair Ravine Park Management Area

5.1 Review existing trails in the area and examine the potential for a trail link northward along the rail and hydro corridor to provide improved access to transit;

5.2 Work with Metrolinx to address potential safety issues related to ad-hoc trails within railway right-of-way;

5.3 Ensure integration with the *10 Year Cycling Network Plan*;

5.4 Identify and mitigate barriers to fish migration;

5.5 Review the condition of stormwater and drainage infrastructure in this area, address safety issues and maintenance requirements, and combine work to restore vegetation and improve trails, if work is required; and

5.6 Examine opportunities for re-vegetation efforts to restore an important green linkage between Warden Woods and Pine Hills Cemetery.

4.2.6 Area 6: Pine Hills Cemetery

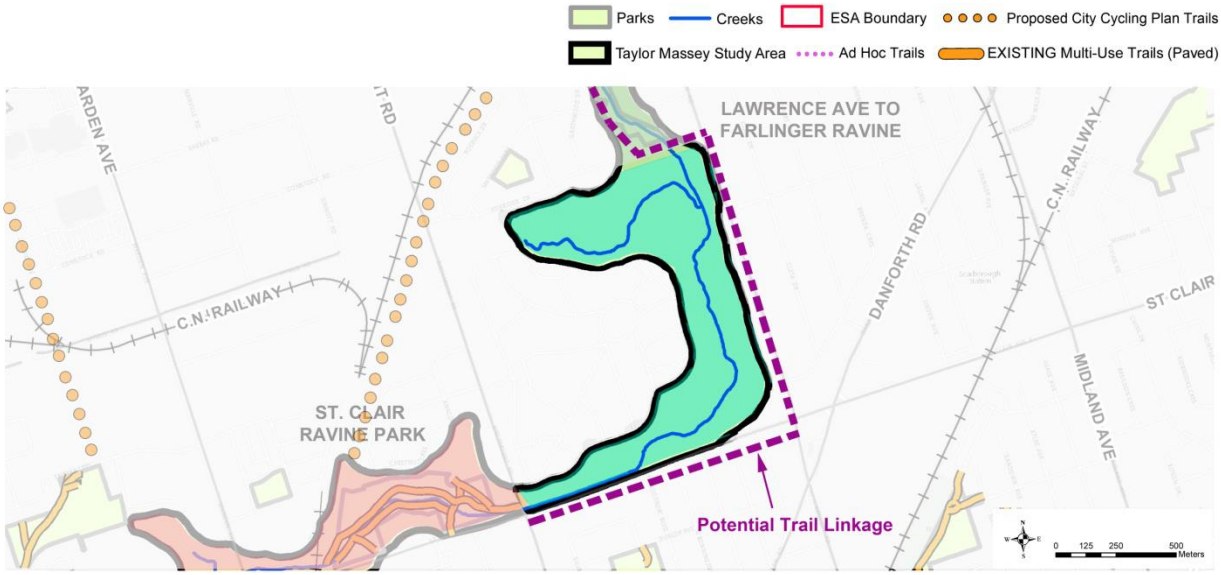

Figure 20: Pine Hills Cemetery Management Area

6.1 Explore the potential for a cooperative arrangement for public daytime access through Pine Hills Cemetery as well as a peripheral trail connection utilizing boulevards outside of the cemetery;
6.2 Through stewardship initiatives, encourage Pine Hills Cemetery to manage the woodlot within its ownership; and
6.3 Consider the need for a pedestrian crossing and wayfinding signs at Foxridge Drive, to provide a potential trail connection northward.

4.2.7 Area 7: Foxridge Drive to Farlinger Ravine

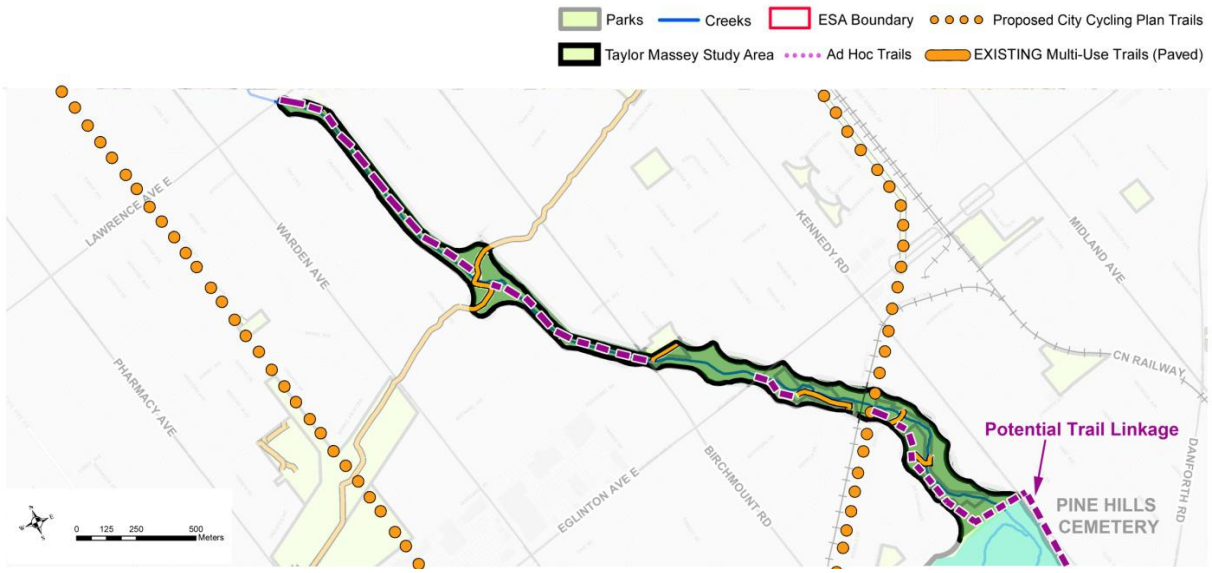

Figure 21: Foxridge Drive to Farlinger Ravine Management Area

7.1 Evaluate the existing trail system and feasibility of linking fragments of paved trail into a connected trail, recognizing the barrier at the railway corridor;
7.2 Explore the potential for a trail along the railway linking to Kennedy Station, as proposed in the *10 Year Cycling Network Plan*;
7.3 Consider the rail-trail through the Farlinger Ravine, between Birchmount Rd and Lawrence Avenue, as a viable natural surface trail;
7.4 Consider the potential for recognizing the rail-trail north of Wexford Park, as proposed in the *10 Year Cycling Network Plan* as a viable alternate route in this area and provide improved access to transit;
7.5 Work with Metrolinx to evaluate the need to fence the rail line to prevent unsafe crossing;
7.6 Consider new plantings to enhance the habitat node where the ravine meets the Gatineau hydro corridor; and
7.7 Investigate the potential for acquisition of lands on the east side of Taylor-Massey Creek to enable measures to address the susceptibility of existing flood prone developments, as well as potential trail linkages.

4.2.8 Area 8: Manhattan Park to Terraview and Willowfield Gardens Parks

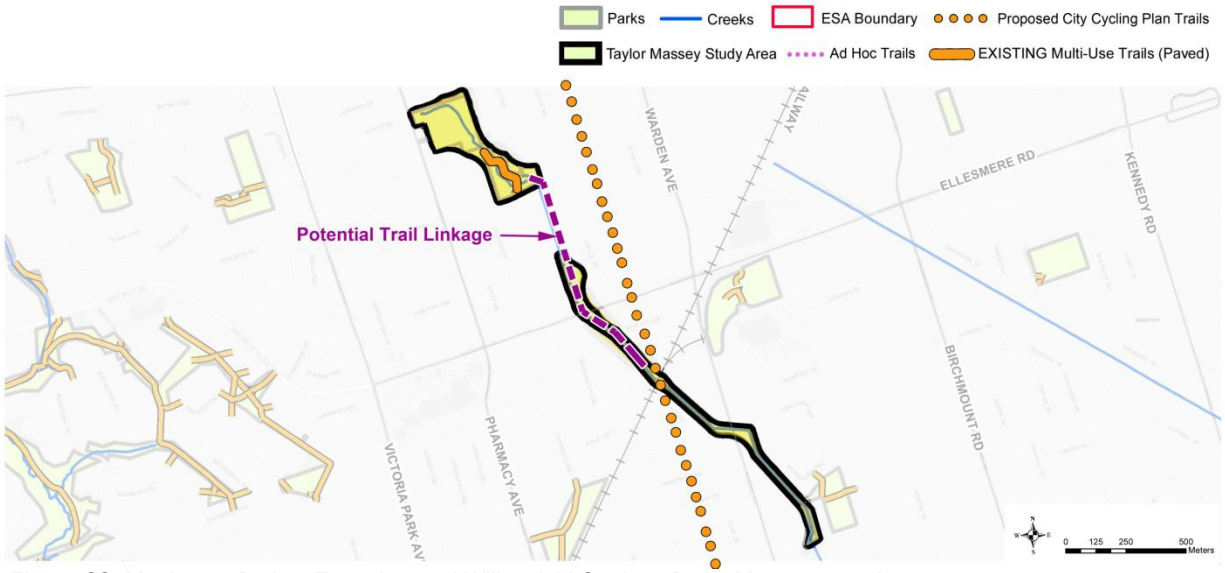

Figure 22: Manhattan Park to Terraview and Willowfield Gardens Parks Management Area

8.1 Combine future maintenance work on storm ponds with improvements to facilities and trails;

8.2 Consider a trail link within the hydro corridor linking to Terraview Park; and

8.3 Evaluate the success of the previous restoration project and identify any additional work that would be beneficial to enhance the ecological health of the area.

5.0 Consultation Summary and Feedback

5.1 Stakeholder and Community Consultation

The two Stakeholder Meetings, set in May and July 2017, were well attended and recurring topics of discussion centred around erosion and creek stabilization issues. Addressing overall creek health, while seeking water quality improvements and aquatic habitat enhancements where possible, were prominent discussion points. Opportunities to develop a sustainable forest plan for particular sites and to focus investment on protecting the highest quality natural heritage areas, as opposed to restoring degraded sections of the ravine, was an approach discussed and preferred by both internal and external stakeholders. Addressing erosion, creek bank stability and valley slope stability were other important issues that relate to public safety and the protection of public infrastructure. Seeking mutual benefits for environmental restoration and creek naturalization, where future capital investment projects are being planned, was an overarching objective that should be coordinated across all jurisdictions on an ongoing basis. From a recreational standpoint, maintenance of the existing trail system and limitation of new ad-hoc trails, and especially new paved trail surfaces, were key issues that came up repeatedly in the meetings.

Similarly, feedback provided by participants in the Public Meeting complemented the points provided by the smaller stakeholder groups. Participants were most concerned about erosion control, maintaining the integrity of the Creek, stormwater management, stormwater cooling, and changing the location of stormwater tanks. Trail connectivity and improvements to access and signage were identified as key issues.

5.2 Online Survey

The draft recommendations were evaluated as part of an online survey, and a summary of the responses to the recommendations are included in section 5.2.2 below. For more detailed investigation of the data or how the information was assembled, analyzed and expressed please refer to the *Online Survey Summary Report* prepared by Lura Consulting included in Appendix A.

Survey-wide results indicate that over 75% of respondents strongly agree, or somewhat agree with all the recommendations proposed through the survey, with many recommendations receiving over 90% agreement.

Recurring themes from the feedback include:

General Support

- increasing trail connectivity
- improving environmental conditions in the Creek
- invasive species management
- erosion control

Suggestions

- increase safety within the subwatershed
- create partnerships and undertake more public education
- recognise First Nations' use of the subwatershed

Concerns

- correct balance between recreation and environmental protection

Mixed Support

- provision of off-leash dog areas
- expansion of ad-hoc trails (concerned about impacts to the environment)

5.2.1 Summary of Responses to Subwatershed-wide Recommendations

Results from the online survey indicate that a majority of respondents strongly or somewhat agree with all the recommendations regarding the subwatershed-wide themes, including: Natural Systems, Creek Health & Stormwater Management, and Trails, Recreation & Cultural Heritage.

Generally, respondents emphasized the importance of protecting the ecological well-being of the Creek over the need to increase recreational opportunities in the valley, including less trails and initiatives to re-naturalize sections of the Creek re-introducing soft approaches to replace concrete channels. There was a clear preference for limestone trails with improved drainage, where hard surface trails are not required for accessibility or maintenance requirements. Opportunities to integrate art, interpret First

Nations histories and encourage environmental stewardship were among key subwatershed-wide issues.

5.2.2 Summary of Responses to Area-Specific Recommendations

Area 1: Taylor Creek Park West

Survey results indicate that a majority of respondents strongly or somewhat agree with all the recommendations for this area. The recommendations with the strongest support include 1.1, 1.2, 1.3, and 1.10. The recommendations with the most opposition include 1.4, 1.5, 1.6, 1.7, and 1.8.

Feedback included potential to separate cyclists from pedestrians on asphalt trails, prioritizing certain areas for invasive species management, and encouraging partnership building from an environmental and stewardship perspective.

Area 2: Taylor Creek Park Environmentally Significant Area

Survey results indicate that over 80% of respondents strongly or somewhat agree with all the recommendations for this area. The recommendations with the strongest support include 2.1, 2.2, and 2.3. The recommendations with the most opposition include 2.4, 2.7, 2.8 and 2.9.

Feedback included removal of redundant trails, addition of benches and provision for more activities in the valley.

Area 3: Taylor Creek Park East

Survey results indicate that over 80% of respondents strongly or somewhat agree with all the recommendations for this area. The recommendations with the strongest support was 3.4, with almost no opposition.

Feedback included partnering with environmental groups to achieve success, focus on water quality improvements and support land acquisition to incorporate new trails.

Area 4: Warden Woods Environmentally Significant Area

Survey results indicate that over 80% respondents strongly or somewhat agree with all the recommendations for this area. Recommendation 4.4 received the strongest opposition.

Feedback supported trail connectivity but preferred to limit the amount and type (i.e. less paved). Safety, access, dumping, fire pits and gatherings were cited as on-going management issues in this area.

Area 5: St Clair Ravine Park

Survey results indicate that a majority of respondents strongly or somewhat agree with all the recommendations for this area.

Feedback centred around better planning for trail users and improving connectivity to area destinations and commercial centres. Flooding issues on trails, lighting and tobogganing were considerations that need to be addressed in this area.

Area 6: Pine Hills Cemetery
Survey results indicate that more than 90% of respondents strongly or somewhat agree with all the recommendations for this area.

Feedback included expansion of the trail system and signage to provide key linkages, and addressing water quantity plan with future SWM improvements in this area.

Area 7: Foxridge Drive to Farlinger Ravine
Survey results indicate that almost 90% of respondents strongly or somewhat agree with all the recommendations for this area.

Feedback included many suggestions to address environmental issues such as erosion control, water quality improvements, establishing ESAs west of Centennial and naturalizing waterways. Recreational use focussed on trail links including bridge crossings, a dog park, rink and ski trails.

Area 8: Manhattan Park to Terraview and Willowfield Gardens Parks
Survey results indicate that a majority of respondents strongly or somewhat agree with all the recommendations for this area. Only recommendation 8.2 received any strong opposition.
Expansion of the trail system and naturalizing sections of the Creek were cited as important elements for this area.

Recommendations are only as good as they are able to be implemented. Therefore, through the identification and evaluation of relationships and responsibilities discussed in Section 6.0 of the report, a structure for ongoing staff coordination and public engagement is proposed in order to accompany future park planning and project implementation.

6.0 Implementation Recommendations

The Taylor Massey Creek Subwatershed Master Plan is a multi-faceted, multi-layered and overarching strategy that was designed to achieve the objectives and aspirations of multiple stakeholders, both internal and external to the City. As such, the successful implementation of the Master Plan will require the cooperative and coordinated effort of the various stakeholders to ensure that objectives are achieved in a logical sequence with a minimum of conflict. The overall goal is to capitalize on opportunities to implement the recommendations set out in the Taylor Massey Creek Subwatershed Master Plan as these opportunities present themselves. For example, the implementation of planned improvements to infrastructure by Toronto Water or TRCA may present the opportunity to improve or create a trail connection that is desired by Cycling Infrastructure and Programs and Parks, Forestry and Recreation. Interdepartmental communication and cooperation at the City, and with external stakeholders, including utility providers and NGOs, will be critical to the successful implementation of the Master Plan.

In order to drive the successful realization of the TMCSMPU, the following implementation recommendations are set out for consideration.

6.1 Coordination

In order to realize a successful Master Plan integration process, activities should be coordinated across various jurisdictions with flexibility for partnership building. This will require on-going leadership, which would include the appointment of a local champion. We recommend the following:

- Assemble a dedicated TMCSMPU Implementation Team to coordinate activities and administer the implementation program;
- Confirm ownership and administrative authority for lands within which specific initiatives are proposed;
- Coordinate implementation action, with life-cycle estimates, including improvements forecasted by:
    - Toronto Water
    - Toronto Transportation Services
    - Toronto Park, Forestry and Recreation
    - Toronto Solid Waste
    - Toronto City Planning
    - Toronto and Region Conservation Authority
    - Toronto Hydro
    - Hydro One Networks
    - Metrolinx
    - Toronto Transit Commission
    - Enbridge
    - Other utility providers with infrastructure within the TMCSMPU area
- Establish a schedule for the implementation of various Master Plan initiatives. The schedule should be integrated with the 5, 10 and 20-year Capital Works forecasts of the various departments;
- Create and maintain a database that tracks the status of implementation of Master Plan initiatives;
- Identify opportunities for land acquisition to achieve Master Plan objectives through the development approvals process; and
- Ensure consistent alignment with Ravine Strategy and meet regularly with Administrators of the Strategy.

6.2 Communication

Communication will be more effective if a variety of platforms and tools are employed to share information and build potential partnerships. To this end, we recommend the following:

- Establish a routine meeting protocol for the dedicated TMCSMPU Implementation Team. The meeting schedule should be coordinated with key milestone dates in the City's budget allocation and capital projects forecasting processes;
- Undertake outreach to engage NGOs and community groups to foster partnerships and enable community-based implementation activities; and
- Create and maintain a web-site as a portal for communication and information exchange.

6.3 Execution

Through the Master Plan process, interdepartmental collaboration and cooperative decision-making with Toronto Water and the TRCA has resulted in the successful sharing and evaluation of information. To ensure successfully funded and implemented initiatives, this approach should be continued through to execution. To this end, it is recommended to:

- Allocate a consistent and appropriate source of funding with a 5-year horizon;
- Leverage dual-purpose funding opportunities from the Ravine Strategy to achieve TMC Objectives;
- Explore opportunities for partnership, both internal and external, to drive the implementation of specific initiatives;
- Review policies to ensure that potential limitations to implementation are identified and addressed;
- Identify regulatory approval and permit requirements, and allocate sufficient lead time in the design process to address approval or permit acquisition;
- Undertake detailed inventories of site specific conditions (natural heritage, cultural heritage, archaeological, geotechnical, land ownership and infrastructure) in advance of the design process to identify issues of concern and inform budget allocation; and
- Ensure that there is adequate time allocated in the design process to accommodate interdepartmental coordination and to optimize potential synergies.

6.4 Operation

To ensure the ongoing success of the implemented initiatives, adaptations to the current operations regime(s) may be required. To this end, it is recommended to:

- Develop an appropriate operation and maintenance plan for each initiative, and identify funding requirements; and
- Create and maintain a database that is designed to track the life cycle status of the implemented initiative.

6.5 Monitoring

Monitoring the successes and insufficiencies in implementation will be a valuable tool in order to adapt techniques over time. Data gathering, storage and sharing will also require interdepartmental and inter-agency cooperation. To this end, it is recommended to:

- Design a standardized monitoring protocol in order to track the performance and determine the success of implemented initiatives;
- Institute separate monitoring programs for in-stream and terrestrial flora and fauna; and
- Establish and maintain a database to track and evaluate the findings of the monitoring program. Where possible, integrate the database with monitoring and data collection programs that are implemented by others (i.e. TRCA).

In summary, the next steps in implementing the Master Plan from a balanced approach of objectives will involve:

Task 1 – Rationalization of the recommendations developed for each Area of the Master Plan;
Task 2 – Prioritization of the remediation and enhancement opportunities. Identification of benefits from development of recreational facilities and programs with restoration opportunities;
Task 3 – Mapping of the potential locations and functional relationships between recreational facilities based on the natural heritage and sensitivity mapping; and
Task 4 – Reviewing concept plans with all City of Toronto departments involved in the process, Toronto Water and TRCA staff.

The establishment of management priorities is also required in the context of developing the specific implementation plans for each area. Some guidance and key opportunities throughout the whole Study Area are provided below.

7.0 Preliminary Management Considerations

The next step in the planning process will see the preparation a Management Plan for Taylor Creek Park. The Plan will outline and expand on ongoing management initiatives in regard to erosion, watercourse, landfills, vegetation, trails and signage. It will evaluate options and make recommendations for improving park facilities to address longstanding public concerns. Through the identification and evaluation of relationships and responsibility, a future governance structure for ongoing staff coordination and public engagement will be proposed to accompany future park planning and project implementation.

The following table provides a summary of the outcomes of discussions, community input, field observations and data analysis in the Master Plan process with some considerations for potential management directions and eventual actions as part of the Management Plan process. The list is not intended to be an exhaustive list but simply a list to capture some of the key issues, opportunities and considerations for further investigation and development of prescriptions to manage the issues.

Generally, the categories and range of issues can be organized into the following:

Trails and Recreation:

- Ad-hoc trails that are not mapped;
- Ad-hoc trail closure (to be considered in the context of erosion and other ecological impacts);
- Areas where new trails would be appropriate;

- Abandoned elements that should be removed (old segments of fences, concrete rubble, etc.); and
- Enhance the trail system coordinated with planned infrastructure projects.

Management Coordination of Capital Initiatives:
- Trail Rehabilitation Projects;
- DR & CW Project;
- Trunk sewer repair and lining;
- Stream Restoration and Channel Erosion Control Projects;
- Monitoring Projects (Wet Weather Flow (WWF) Tributary Monitoring, Fish Habitat and Geomorphic Systems Monitoring) including:
  - Reconstruction of major reaches of the City's watercourses;
  - Implementation of stormwater management measures to improve water quality and to provide some mitigation of the erosive nature of stormwater runoff entering the stream channel;
  - Enhancement of the riparian zone and instream fish habitat restoration projects;
- Valley Wall – slope stability projects; and
- Sewer outfall and combined sewer outfall replacement projects.

Stability of the Creek and Valley System:
- Areas of acute erosion (recent and collected by agencies);
- A reach-by-reach assessment (12 reaches) of existing geomorphic conditions;
- Reduce stream erosion risk to infrastructure, and improve aquatic ecological conditions; and
- Evaluation of aquatic habitat.

Natural and Cultural Heritage System:
- Wetlands, fens, and other sensitive areas that are not mapped;
- Sites of sensitive species and habitats;
- Provisions for Stage 2 and 3 archaeological assessments where alterations within the floodplain are required; and
- Invasive species management strategy.

Table 2: Preliminary Study Area Management Considerations

Existing Condition	Opportunities and Constraints	Consideration for Management
Trails and Recreation		
7km asphalt trails + 5km paved branching trails	AODA compliance, state of good repair	Identify sections where repair or replacement is required to ensure safety; identify extent of trails that are accessible in current condition and provide signage and maps throughout the TM system
Several kilometers of unofficial	Identify types of uses and	Identify consequences of no-

natural surface trails	ecological impacts of the uses	action vs. permanent closure, rotational closure or upgrade to sanctioned trail
Trails and access points	Accessibility, safe access/ sightlines, demarcation, multi-usability, wayfinding. Access points serve as vector points for invasive species	Evaluate access points for safety, continuity in trail system; determine hierarchy, signage plan, mapping system
Topography	Many ad-hoc trails traverse steep slopes and contribute to slope erosion	Evaluate environmental and safety issues where ad-hoc trails traverse steep slopes
Connectivity to surrounding open space system	Gaps in the system due to private lands, infrastructure and uses	Potential for cooperative management and partnership building
Continuity to surrounding trail network	Topographical constraints, roads and infrastructure	Investigate alternative routes and costs of linking across impediments to linkage
Flood plain/ risk	Address facilities and trails that are most vulnerable to risk	Conduct assessments to seek alternatives to mitigate risk
Stormwater Management		
Three storm ponds	Access to features for maintenance and repair	Access paths doubling as trails; opportunities for education/ signage and restoration planting
Estimated 115 Storm outfalls on public lands and ca.125 outfalls on private lands	Debris migration/ pollutant loading/ discharge and damage from point source flows/ scour	Toronto Water capital works plan; access agreements with private owners
Stability of the Creek and Valley System		
Trunk sewer lines extend each side of the Creek	Exposed or near-exposed sections of sanitary sewer	Identify risks of no-action in short term vs. long term repair/ capital expenditure; identify opportunities to coordinate amongst divisions and agencies, i.e. restoration

Stability of the Creek and stormwater management system as it relates to the Creek	Failed gabions/ retaining structures	Where appropriate and opportune replace with biotechnical stabilization techniques/ opportunities for restoration with riparian species
	Pedestrian bridge repair/ replacement. Vehicular bridge repair	Near future repair/ replacement to ensure safety
Stability of the Creek and stormwater management system as it relates to the Creek	Structure across Creek/ weir	Monitor, repair or replace as necessary
	Outfall	Toronto Water capital works plan
	Bank erosion/ slumping	Case by case assessment/ armouring and stabilization by Toronto Water and/ or TRCA
	Trail at risk near bank	Address in short term (safety)
	Culvert erosion	Toronto Water, PF&R or Transportation capital works plan (dependent on size and location)
	Log debris/ jam	City of Toronto Ravine Water Maintenance Crew
	Capital coordination	Capital works plans for all stakeholders should be coordinated for fiscal and environmental prudency
	Sand/ debris deposition	City of Toronto Ravine Water Maintenance Crew
	Manhole exposed	Toronto Water capital works plan
	Storm sewer exposed/ at risk	Toronto Water capital works plan
	Combined sewer exposed	Toronto Water capital works plan
	Sanitary sewer crossing	Toronto Water capital works plan

Natural and Cultural Heritage System		
Several small wetlands with standing water; several with amphibian breeding populations	Amphibian breeding can be impaired by changes in water quality and quantity; the species present are quite adaptable but the standing water is important	Ensure hydrological conditions in ponds are maintained; ensure water quality is maintained
Potential areas of Significant Wildlife Habitat depending on presence of indicator species	Habitat removal can affect these species	Ensure areas of SWH are known and mitigation proposed
Archaeological potential	Cultural expression, sensitivity to cultural appropriation and anonymity of sacred sites	Seek narratives for interpretation and include in signage strategy
Access from surrounding land uses, encroachment, dumping and contamination	Investigate extent of impacts on natural heritage	Protect most vulnerable resources against impacts. Encourage outreach and education programs, extension of curriculum, environmental events and volunteer initiatives
Trails in sensitive habitats (i.e. ESAs)	Investigate impacts of existing trails on surrounding natural systems and functions.	Determine viability of retaining the trail, re-routing or closing the trail depending on its impact. Work within principles of the City's Natural Environment Trails Strategy when developing new trails in sensitive areas.
Invasive plant species	Identify types, locations, extents of species and sensitivity of adjacent habitat	Strategic management of the areas affected by invasive species to control their spread
Natural Heritage System within private lands	Education and outreach to private landowners	Develop an engagement strategy to build awareness

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