



Borer's Falls - Rock Chapel Heritage Lands MANAGEMENT PLAN

Final Report

Prepared for Cootes to Escarpment EcoPark System

October 2018



Cootes to Escarpment EcoPark System Partners



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EXECUTIVE SUMMARY

The purpose of this Management Plan is to develop a set of management directions for the Borer's Falls – Rock Chapel Heritage Lands, which is one of six Heritage Lands within the Cootes to Escarpment EcoPark System. The Heritage Lands are owned by the Hamilton Conservation Authority, Royal Botanical Gardens, Conservation Halton, and the City of Hamilton. This Management Plan will inform the protection, enhancement and communication of the important natural and cultural features within the Borer's Falls - Rock Chapel Heritage Lands. This Management Plan is a compilation of detailed information about the Borer's Falls - Rock Chapel Heritage Lands and the articulation of the partner agencies' joint vision for the holistic management of their lands. It provides a framework for future planning and implementation actions at the individual site level.

Development of this Management Plan involved community consultation to identify management issues and concerns as well as compilation of information on the recreational, natural and cultural resources of the Heritage Lands (detailed in the Inventory, Issues and Opportunities report for the Borer's Falls - Rock Chapel Heritage Lands, North-South Environmental Inc. et al. 2018). This Management Plan also applied the Niagara Escarpment Parks and Open Space System planning framework to identify classifications and zones (detailed in the Classification and Zoning report for the Borer's Falls - Rock Chapel Heritage Lands, Appendix 1).

This Management Plan contains a summary of the background and context of the Borer's Falls - Rock Chapel Heritage Lands area followed by a summary of significance. Further detailed information can be found in the Inventory, Issues and Opportunities Report (North-South Environmental Inc. et al. 2018). Section 3.0 discusses issues and opportunities. Section 4.0 summarizes the management recommendations for the Heritage Lands, including the classification and zoning of the Heritage Lands, followed by implementation recommendations in Section 5.0 and monitoring recommendations in Section 6.0.

This Management Plan recommends several actions for future management of the Borer's Falls - Rock Chapel Heritage Lands. The recommendations are organized into three categories:

- Approach to Management Recommendations;
- Overarching Management Recommendations; and
- Borer's Falls - Rock Chapel Heritage Lands Management Recommendations.

An outline for implementing the recommended management actions is provided in Section 5.0 after which monitoring and evaluation are identified in Section 6.0.

1.0 Introduction

1.1 Study Background

Between 2007 and 2009, a group of public agencies and organizations consisting of the Royal Botanical Gardens, Hamilton Conservation Authority, Conservation Halton, City of Hamilton, City of Burlington, Halton Region, Bruce Trail Conservancy, Hamilton Naturalists' Club, and Hamilton Harbour Remedial Action Plan (2016a), undertook an initiative to develop a strategy to protect, connect and restore natural lands and open space between the Niagara Escarpment and Cootes Paradise in Hamilton Harbour. The initiative resulted in the "Cootes to Escarpment Park System Conservation and Land Management Strategy Phase II Report" (October 2009). This report was based on extensive background research, public engagement and stakeholder consultation, and articulates the vision for a new park system in this area. The Phase II report divides the Cootes to Escarpment EcoPark System into six core natural areas referred to as "Heritage Lands", named to reflect the natural and cultural components of each area (Figure 1):

- Burlington Heights Heritage Lands;
- Clappison-Grindstone Heritage Lands;
- Waterdown-Sassafras Woods Heritage Lands;
- Cootes Paradise Heritage Lands;
- Borer's Falls - Rock Chapel Heritage Lands; and
- Lower Grindstone Heritage Lands.

The Cootes to Escarpment EcoPark System faces intense pressures from the surrounding urbanized portions of Hamilton and Burlington, including major transportation arteries such as Highways 403 and 6. The effects of urban growth include stressors such as increased use, additional infrastructure, demand for recreation and educational programs, and unauthorized use and access. These stressors often result in damage to sensitive habitats and jeopardize the long-term health of natural features and their functions. In response to this, the Phase II report recommended that a Management Plan be prepared for each of the Heritage Lands. Each Management Plan is to:

- contribute to achieving the vision of the Cootes to Escarpment EcoPark System as a "protected, permanent and connected natural lands sanctuary from the Harbour to the Escarpment that promotes ecosystem and human health within Ontario's Greenbelt";
- provide guidance for the protection and conservation of valuable natural and cultural heritage resources located within the Heritage Lands, and direct future development and management efforts; and
- provide guidance to the partner agencies such that they can implement their respective mandates while providing consistency throughout the EcoPark System.

This report is the Management Plan for the Borer's Falls - Rock Chapel Heritage Lands. The Current EcoPark System Lands in the Borer's Falls - Rock Chapel Heritage Lands are owned and managed by four partner agencies: Hamilton Conservation Authority, Royal Botanical Gardens, Conservation Halton and the City of Hamilton (Figure 2).

The Heritage Lands include both publicly- and privately-owned lands. The Management Plan only addresses the publicly-owned lands and the Royal Botanical Gardens lands, which together are referred

Cootes to Escarpment EcoPark System Vision Map



- EcoPark Land Boundaries
- Privately Owned Outreach Area
- Hydro Corridors
- Water Bodies
- Roads
- Rail Lines
- Hiking Trails



Vision

Our vision for the Cootes to Escarpment EcoPark System is that it will be known internationally as a protected, permanent and connected natural lands sanctuary from the Harbour to the Escarpment that promotes ecosystem and human health within Ontario's Greenbelt.













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Figure 1. Cootes to Escarpment EcoPark System Study Area Location.

Cootes to Escarpment EcoPark System

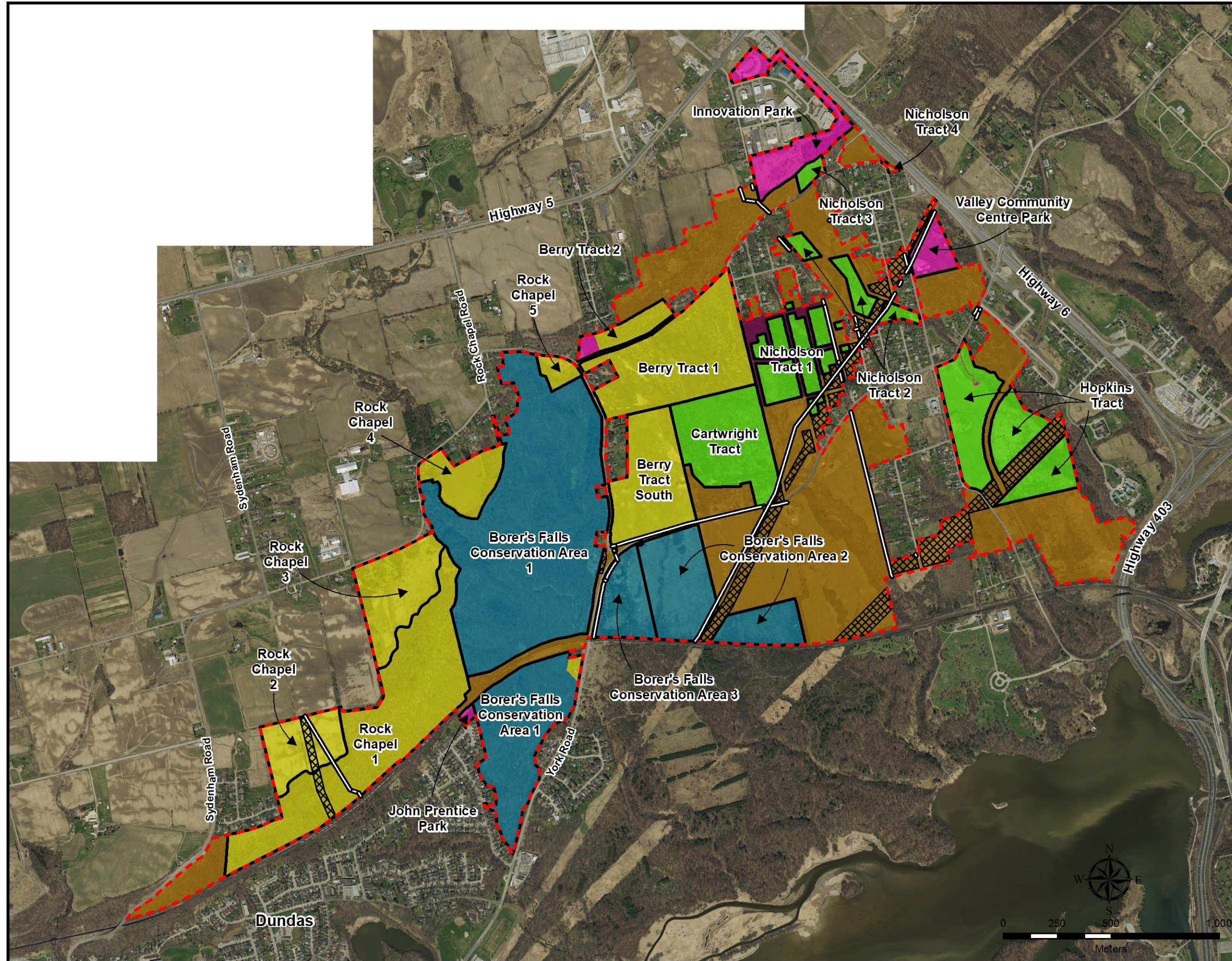
Figure 2: Borer's Falls - Rock Chapel Heritage Lands Management Units

Legend

-  Heritage Lands Boundary
-  Study Area Boundary
-  Utilities
-  Gas Pipeline
-  Privately Owned Outreach Area
-  City of Hamilton Owned Unopened Road Allowances
- Current EcoPark Lands**
-  City of Hamilton
-  Conservation Halton
-  Hamilton Conservation Authority
-  Royal Botanical Gardens

Sources of Information:
 Royal Botanical Gardens
 Conservation Halton
 Hamilton Conservation Authority
 City of Hamilton
 Land Information Ontario

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to as the Current EcoPark System Lands. Privately-owned lands located within the Heritage Lands are referred to as Privately Owned Outreach Areas, and lands outside the Heritage Lands but within the Cootes to Escarpment EcoPark System are referred to as Adjacent Lands (Figure 1).

1.2 Management Plan Purpose and Process

The purpose of this Management Plan is to enhance protection of important natural and cultural features, and improve sustainable recreation, research and education opportunities by addressing the following elements:

- protection and sustainable use of natural heritage resources;
- protection and sustainable use of cultural heritage resources;
- pressures and issues of concern identified by the four participating landowners, other Cootes to Escarpment EcoPark System partners, stakeholders and the public;
- wildlife corridors, wildlife crossing and pedestrian linkages;
- infrastructure maintenance, creation and decommissioning;
- recreation, education and research opportunities that are compatible with preserving the natural and cultural heritage of the area; and
- criteria and indicators for evaluation of the implementation and effectiveness of the Management Plan and an ongoing monitoring program to consistently collect supporting information.

The preparation of this Management Plan occurred in several phases. The first phase involved the development of a Project Charter to establish the purpose, context and rationale for the project, to provide necessary background information, and to introduce the planning process and team that would be formed to generate the Management Plan. During this phase, a Steering Committee and Stakeholder Advisory Committee for the project were formed, and North-South Environmental Inc. (NSE) was retained to develop the Management Plan.

The second phase of the project culminated in the preparation of the Borer's Falls - Rock Chapel Heritage Lands Inventory, Opportunities and Issues Report (North-South Environmental Inc. et al. 2018). It identified the significant natural and cultural heritage resources in the Heritage Lands, presented opportunities and issues, and provided preliminary management recommendations. The Inventory, Opportunities and Issues Report was reviewed by the Steering Committee, Stakeholder Advisory Committee and through public and Indigenous community's consultation.

During the third phase of the project, land classifications and zones for the Borer's Falls - Rock Chapel Heritage Lands were established and presented the Land Classification and Zoning Report (May 2018, Appendix 1), based on the Niagara Escarpment Parks and Open Space System (NEPOSS) Planning Manual (OMNR 2012). Not all of the Borer's Falls - Rock Chapel Heritage Lands are located within the Niagara Escarpment Plan Area (NEPA). Because this is a high-level guidance document, approval under NEPOSS is not required for these lands. However, the intent is to use the NEPOSS planning approach as a planning tool for all the Heritage Lands, as most of the Cootes to Escarpment EcoPark System is within the NEPA area and using one guiding framework for all the Heritage Lands will assist with maintaining consistency in the management approach. When detailed Management Plans or Master Plans are prepared in the future, approval through the NEPOSS process will be required for lands within the NEPA. The application of NEPOSS provides a framework for identifying appropriate uses that coincide with the

natural and cultural heritage resources in the various park and open space areas of the Borer's Falls - Rock Chapel Heritage Lands. The classifications and zones were reviewed by the Steering Committee and Stakeholder Advisory Committee.

This Management Plan is the culmination of information and input generated in the preceding phases of the project. The Management Plan summarizes key information from the Inventory, Opportunities and Issues Report, and presents final management recommendations that strive to balance the protection of the natural and cultural attributes with appropriate uses, education and research opportunities. The land classifications and zones identified in the Land Classification and Zoning Report (Appendix 1) provide defined areas through which management goals and policies can be directed and achieved, including directions for permitted uses.

1.3 Project Governance and Project Team

Each agency and organization that is a Party to the *Memorandum of Understanding Regarding the Cootes to Escarpment EcoPark System* appoints one regular member to a Management Committee. The Management Committee provides tactical leadership for implementing the Cootes to Escarpment EcoPark System and related initiatives. It has authority for decisions concerning specific projects and initiatives and provides direction to Cootes to Escarpment EcoPark System staff.

The Management Committee provides leadership and decision-making to, among other things:

- protect natural and cultural heritage features within the Cootes to Escarpment EcoPark System;
- support the growth of the Cootes to Escarpment EcoPark System through land securement initiatives;
- develop a centralized strategic marketing and communication process;
- develop, promote and implement stewardship programs appropriate to all landowners within the region to provide additional protection for Cootes to Escarpment EcoPark System lands;
- build strong relationships with key stakeholders and communities to address common park and open space issues and interests; and
- work together to provide an interconnected system of trails and educational, research and recreational opportunities.

The Borer's Falls - Rock Chapel Heritage Lands Management Plan project is directed by a Steering Committee consisting of representatives from Conservation Halton, City of Hamilton, Hamilton Conservation Authority, Royal Botanical Gardens, and the Bruce Trail Conservancy, as well as the Cootes to Escarpment EcoPark System Coordinator. Input and comment have also been received from a Stakeholder Advisory Committee comprised of thirteen representatives from key stakeholder organizations with a broad geographic interest in the area (Appendix 2). Meetings were also held to gather input from the public and Indigenous communities.

The Project Team is led by North-South Environmental Inc. (project management and natural heritage expertise) and consists of Lura Consulting (public and Indigenous engagement expertise), Schollen & Company Inc. (recreation expertise), Cecelia Paine (cultural expertise), and Andlyn Ltd (planning expertise).

2.0 Characterization of the Borer's Falls - Rock Chapel Heritage Lands

The general character of the Borer's Falls - Rock Chapel Heritage Lands is provided below. A more detailed characterization was provided in the Inventory, Opportunities and Issues report (North-South Environmental Inc. et al. 2018).

2.1 General Overview

The Borer's Falls - Rock Chapel Heritage Lands comprise 498 ha of land north of the urban boundary of the City of Hamilton. Borer's Falls - Rock Chapel Heritage Lands includes an area generally extending between Sydenham Road east to Highway 6 and from the Canadian National Railway (CN) north to Rock Chapel, Valley and Patterson Roads (Figure 2). Of the 498 ha within the Heritage Lands, 323 ha (65%) are currently owned and managed by partner organizations (the Current EcoPark System Lands) (Figure 2). The majority of the Current EcoPark System Lands are owned by Hamilton Conservation Authority (127 ha), Royal Botanical Gardens (124 ha), with smaller areas owned by Conservation Halton (57 ha) and the City of Hamilton (15 ha). To the south, Borer's Falls - Rock Chapel Heritage Lands is located adjacent to urban areas including the former Town of Dundas. North of Rock Chapel, Valley and Patterson Roads, the Borer's Falls - Rock Chapel Heritage Lands are bordered by privately-owned lands, some of which is open space, as well as rural residential areas. Borer's Falls - Rock Chapel Heritage Lands is adjacent to the Cootes Paradise Heritage Lands (on the south) and the Clappison-Grindstone Heritage Lands (on the east).

Borer's Falls - Rock Chapel Heritage Lands feature the Niagara Escarpment valley and include several recognized environmental designations including Environmentally Significant Areas (ESA) and Areas of Natural and Scientific Interest (ANSI). Ecologically, Borer's Falls - Rock Chapel Heritage Lands is generally classified as deciduous Escarpment forest. This area contains multiple small watersheds and floodplains, including Spencer Creek, and several small "North Shore" watersheds of Cootes Paradise. The Borer's Falls - Rock Chapel Heritage Lands, in combination with Cootes Paradise Heritage Lands, contain the largest area of undisturbed interior forest habitat within the Cootes to Escarpment EcoPark System (Wong 2009), although there are some gaps created by the CN Rail line and adjacent roads. Borer's Falls - Rock Chapel Heritage Lands includes over 100 ha of Carolinian forest. The character of the Heritage Lands is defined by the Niagara Escarpment, creek valleys, including Borer's Creek and Hopkin's Creek, and Borer's Falls.

The Heritage Lands include a diverse network of trails, which include the Bruce Trail and the Ray Lowes Side Trail. The Heritage Lands also contain traditional urban parks with sports fields and playground (John Prentice Park and Valley Community Centre Park). Borer's Falls - Rock Chapel Heritage Lands are used extensively by hikers, dog-walkers, birdwatchers, nature enthusiasts and the surrounding community due to their aesthetic, recreational and natural values. The area provides spectacular views of the Borer's Falls valley, the Niagara Escarpment, the City of Hamilton, Hamilton Harbour, deciduous forest and Cootes Paradise Marsh.

Some of the Current EcoPark System Lands support existing infrastructure including hydro and gas lines which intersect the site. Several utilities border the site including a railway across the southern edge.

2.2 Planning Policy and Regulatory Framework

For the Borer's Falls - Rock Chapel Heritage Lands, the current planning policy and regulatory framework reflect the jurisdiction of the Niagara Escarpment Plan, the City Official Plan and Zoning Bylaws.

Relevant policy documents and regulations include:

- Niagara Escarpment Plan, 2017;
- Niagara Escarpment Development Control Regulation;
- Greenbelt Plan, 2017;
- Provincial Policy Statement, 2014;
- City of Hamilton Official Plan, Rural March 2012, Urban August 2013;
- City of Hamilton Zoning Bylaw (City of Hamilton Zoning Bylaw 05-200, former City of Hamilton Bylaw 6593, former Town of Dundas Zoning Bylaw 3581-86 and 1964); and
- Conservation Authority Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (O. Reg. 161/06 and O. Reg. 162/06).

The current City Official Plan reflects the Provincial Plans in-place at the time of the Official Plan approval. Permitted uses on the Heritage Lands are typically limited to non-intensive recreational uses, trail uses and ancillary facilities like parking and access. Generally, these ancillary facilities are intended to be small in scale with the least impact on the environment and landscape. Given the extent of the Natural Heritage System under the City Official Plan, individual permitted uses may require Environmental Impact Studies depending on the location, conditions and applicable policy and regulation. Development in proximity to natural heritage features may be subject to greater separation distances to maintain the integrity of features. In the area of Niagara Escarpment Development Control, development permits may be required for individual projects on the Borer's Falls - Rock Chapel Heritage Lands unless the nature of the project falls under the development control exemptions. A more thorough description of applicable planning policies and the regulatory framework are summarized in the Borer's Falls – Rock Chapel Heritage Lands Inventory, Issues and Opportunities report (North-South Environmental Inc. et al. 2018).

Well in advance of any development, site alteration or activity on the Heritage Lands, it will be important to review applicable policies and regulations in order to determine conformity of any application, and approval requirements or exemptions.

2.3 Recreation

The Borer's Falls - Rock Chapel Heritage Lands are highly aesthetic and scenic, and are valued by hikers, dog-walkers, birdwatchers, nature enthusiasts and the surrounding community, and are thus primarily used for conservation and passive recreation. The area provides spectacular views of Hamilton, Hamilton Harbour, deciduous forests and marshlands.

Figure 3 illustrates the existing trail network, access points and parking areas in the Current EcoPark System Lands of the Borer's Falls - Rock Chapel Heritage Lands. The existing trail network consists of trails maintained by the Royal Botanical Gardens, the Hamilton Naturalists' Club, and the Bruce Trail Conservancy (on behalf of Hamilton Conservation Authority). The Main Bruce Trail traverses the Niagara Escarpment, along the northern boundary of the Heritage Lands. To the west, the Bruce Trail begins at

Cootes to Escarpment EcoPark System



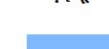


Figure 3: Trails, Parking and Access Locations at Borer's Falls - Rock Chapel Heritage Lands

Legend

Trails

-  Bruce Trail
-  Bruce Side Trail
-  RBG Trails
-  Conservation Halton Trails

Parking and Access Locations

-  Access Locations
-  Parking
-  Borer's Falls Dog Park
-  Slopes > 25%
-  Heritage Lands Boundary

Sources of Information:

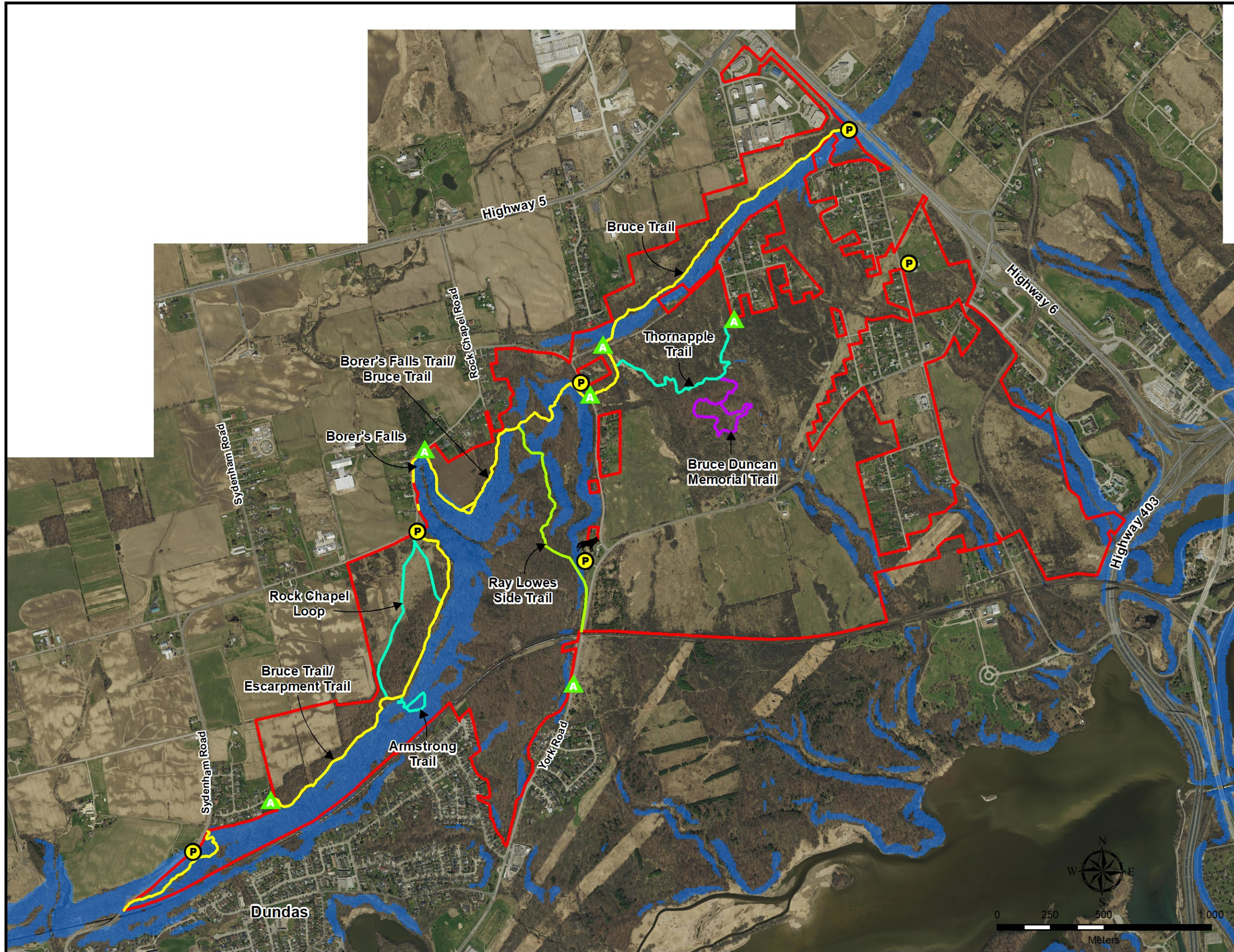
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October 12, 2018



Sydenham Lookout, providing spectacular views of the City of Hamilton and in particular, the former Town of Dundas.

Throughout Borer's Falls Conservation Area, the Trail is maintained by the Bruce Trail Iroquoia Club on behalf of Hamilton Conservation Authority. On Royal Botanical Gardens property, the trail is maintained by Royal Botanical Gardens with the assistance from the Bruce Trail Iroquoia Club. Through a standing agreement with Conservation Halton, the Hamilton Naturalists' Club maintains the Bruce Duncan Memorial Trail within the Cartwright Tract. Unsanctioned trails occur in many locations within the Heritage Lands, and many extend beyond the Current EcoPark System Lands onto neighbouring private property. One area where unsanctioned trails appear is at John Prentice Park into the south end of Borer's Falls Conservation Area, and across the CN railway, and in the Pleasant View Natural Area of Nicholson Tract 1.

There are a number of access points to the current trail system (Figure 3). Seven access points currently provide formal parking: (1) at Sydenham Road for 7-8 vehicles; (2) at Rock Chapel for 30 vehicles; (3) a pull-off area at Valley Road for 2-3 vehicles; (4) at the Patterson and Valley Road Corner for vehicles; (5) at Borer's Falls Dog Park for 20 vehicles; (6) at Old Guelph Road Bruce Trail for 10 vehicles; and (7) at the Valley Community Centre for 40 vehicles. Other access points do not formally provide parking, and parking occurs on roadside edges, which is not desirable. In several locations, trails from private lands that back onto Borer's Falls - Rock Chapel Heritage Lands were found. These trail connections into the Heritage Lands are unauthorized, and are not shown on Figure 3.

Trail use within the Borer's Falls - Rock Chapel Heritage Lands primarily consists of walking, jogging, hiking (ranging from casual outings by local residents, to more serious day-hikers), cycling and dog walking. In addition, although not generally permitted, motorized vehicles (e.g., ATVs, dirt bikes, e-bikes and snowmobiles) are used on some of the nature trails and utility corridors, unless consent is provided by the landowner. These same trails are used by cyclists and other recreationalists. Other known uses include equestrian use, rock and ice climbing, geocaching, and nature photography.

There are limited resources available for the partner agencies to oversee the use of their lands and enforce the rules that apply. Unsanctioned trails between private property and the Heritage Lands were observed. It is important to note that unsanctioned trail and structure development is prohibited within Heritage Lands. The partner agencies need to consider with the neighbouring land owners how to address trespassing issues in the ongoing management of these lands. The increasing use of trails by a variety of users is expected to increase pressure on the natural and existing recreational resources. An increased commitment to management to prevent and/or mitigate recreational impacts will be necessary. In addition, current access to the Heritage Lands is inadequate, and parking at unsanctioned access points is undesirable. Issues related to access and parking will be exacerbated by the continued increase in the use of the Heritage Lands.

2.4 Natural Heritage

2.4.1 Physiography and Surface Geology

The Borer's Falls - Rock Chapel Heritage Lands are located within the Niagara Escarpment and Iroquois Plain physiographic regions. Borer's Falls - Rock Chapel Heritage Lands possess significant earth science features comprising provincially significant Niagara Escarpment landform and geological exposures including portions of south-east facing Niagara Escarpment slopes and associated upland plains (Schwetz

2014). The main landscape features of this area are two major creek valleys which cut deep into the Escarpment: Hopkin's Creek and Borer's Creek. Both are situated in the central portion of the Heritage Lands where the shale slopes of the Queenston Formation dominate. The Borer's Creek Gorge, topped by the dolostone capstone Lockport Formation, includes the steep upper Escarpment (25 to 30 m high) and includes sub-vertical rock faces, while the lower sections of the Escarpment varies from moderate to steep (3 to 10%). The Lake Iroquois shoreline, which marks the boundary between the Niagara Escarpment and Iroquois Plain physiographic regions, lies along the lower Escarpment slopes. This section of the Lake Iroquois shoreline consists of a stranded beach at approximately 110 m elevation (Schwetz 2014). Borer's Creek drops over the Escarpment at Borer's Falls, which is a 25 m high punchbowl waterfall. Downstream of the falls, the underlying Upper Grimsby Formation and occasional red shales of the Queenston Formation are exposed along the creek bed and valley (Riley et al. 1996).

To the west of the Borer's Falls Gorge, the area is characterized by intermittent cliffs exposing the Lockport and Whirlpool Formations of underlying sandstone. To the north, above these cliffs, the Escarpment plain is overlain by clay-rich Halton Till. The development of soils is limited in many areas due to the steep Escarpment slopes and the thin layers of overburden. For this reason, many slopes have little to no organic layer and may be prone to erosion. The overall angles of the rock layers creates the unusual condition of directing water south resulting in an abundance of springs emerging along the length of the escarpment face in this area. The lack of an organic layer on slopes also influences vegetation, and the ground layer is often sparse. Along the Escarpment rim, well-drained Farmington loam has developed, while below the Escarpment the soil is dominated by well-drained Oneida loam (Schwetz 2014).

2.4.2 Surface Water

Borer's Creek flows over Borer's Falls just south of Rock Chapel Road. The falls are approximately 25 m in height and are located on Royal Botanical Gardens property in Rock Chapel 4 (Figure 2). The creek crosses the Borer's Falls Conservation Area and discharges into Cootes Paradise downstream. The flow in the creek is permanent across the Heritage Lands, although during the summer the flow is very low.

Water quality for Borer's Creek above the Niagara Escarpment has been impaired by urban development and agriculture. Groundwater discharge along the Escarpment and in the moraines in the Dundas Valley improves water quality as the stream falls over the Niagara Escarpment. The Escarpment slopes here are well-forested, and the shade provided by the trees keeps temperatures cool and provides leaf litter that supports macro-invertebrate communities in the streams. The stream gradient is very steep, with pool-riffle sequences providing good habitat for fish. The stream substrate is generally made up of large cobbles and gravel.

Hopkins Creek starts just above the Niagara Escarpment and flows into Borer's Creek in Borer's Falls Conservation Area. Hopkins Creek is relatively unaltered and has good vegetation growth on its banks. Water flow is intermittent.

A small brook flows from the meadow above the Escarpment but disappears approximately 200 m back from the Escarpment edge. It reappears at the end of Armstrong Trail and is thus referred to as the Disappearing Brook. This is evidence of karst, formed when water dissolves the dolostone bedrock and creates underground passages.

Several small tributaries flow through the Pleasant View Natural Area. From west to east, Hickory Brook drains through Cartwright Tract, and Highland Creek drains through Nicholson Tract 1. Hickory Brook and Highland Creek both drain directly to Cootes Paradise and are part of the North Cootes Paradise Subwatershed. Pleasant View Tributary (West Tributary 6) drains through Nicholson Tract 2 and Hopkins Tract, and into Grindstone Creek, which outlets to Hamilton Harbour, and is part of the Grindstone Creek Watershed.

The drainage pattern and discharge areas of the many small tributaries and springs above and below the Escarpment rim in Rock Chapel 1 is poorly understood, which is typical in areas with extensive Karst. An extensive network of groundwater emerges along the escarpment west of Borer's Creek resulting in a number of small tributaries. The full extent of these small tributaries and where they drain to is not adequately mapped.

2.4.3 Vegetation Communities

Approximately 52% (169 ha) of the Borer's Falls - Rock Chapel Heritage Lands are characterized by natural vegetation communities, including Deciduous Forest, Treed Cliff, Meadow Marsh, Shrub Talus, Treed Talus, Open Tallgrass Prairie, and Tallgrass Woodland (Table 1 and Figure 4). These are the most ecologically sensitive areas, and they provide important habitat for many of the plant and animal species within the Borer's Falls - Rock Chapel Heritage Lands. The remaining 43% (142 ha) of the Heritage Lands consists of anthropogenic and cultural vegetation communities, including cultural meadow, cultural plantation, cultural savannah, cultural thicket, and cultural woodland (Table 1 and Figure 4). These areas have had a high degree of change as a result of human use and activity. Land classified as anthropogenic consist of mowed lands, parking lots, roads, etc.

Table 1. Vegetation Communities of Current EcoPark System Lands in the Borer's Falls - Rock Chapel Heritage Lands

Vegetation Community	% Current EcoPark System Lands	Area (ha) Current EcoPark System Lands
Natural Vegetation Communities		
Forest	35.6%	117
Talus	13.1%	43
Marsh	2%	6.5
Cliff	0.5%	1.6
Tallgrass Prairie and Woodland	0.3%	0.9
Cultural Vegetation Communities		
Thicket	17.5%	57.7
Meadow	9.3%	30.7
Savannah	2.2%	7.4
Woodland	2.0%	6.6
Plantation	0.8%	2.8

Vegetation Community	% Current EcoPark System Lands	Area (ha) Current EcoPark System Lands
Other		
Anthropogenic	11.1%	36.6
Unclassified	5.3%	17.5

Forested and Talus communities dominate the natural Borer's Falls - Rock Chapel area within the Heritage Lands. Deciduous forests are found throughout the Current EcoPark System Lands, above and below the Niagara Escarpment (Figure 4, Table 1), with 14 different deciduous forest vegetation types covering 117 ha (35.6%). Above the Escarpment, forests are dominated by Sugar Maple, oaks and hickories, whereas below the Escarpment, forests are dominated by Sugar Maple, oak (*Quercus* spp.), hickory (*Carya* spp.), Black Maple (*A. nigrum*) and Black Walnut (*Juglans nigra*). Talus vegetation communities occur on slopes of rock rubble at the base of the Escarpment. A total of 43 (13.1%) of Treed Talus vegetation communities have been documented at Berry Tract 2, Borer's Falls Conservation Area 1, Rock Chapel 1 and 4, and Nicholson Tract 3. Within the treed cliff communities along the narrow cliff rim of the Niagara Escarpment, coring of Eastern White Cedar (*Thuja occidentalis*) trees has revealed a small area of old-growth cliff-edge forest. According to Kelly and Larson (2008), on the east side of Borer's Falls - Rock Chapel Heritage Lands, nine old Eastern White Cedar trees have germination dates ranging from 1603-1799, making the oldest known tree in Borer's Falls - Rock Chapel Heritage Lands 416 years old in 2018.

There are eight provincially significant vegetation communities present within the Borer's Falls - Rock Chapel Heritage Lands (Figure 4):





- White Cedar Treed Carbonate Cliff Type (CLT1-1);
- Sugar Maple – Ironwood – White Ash Treed Carbonate Cliff Type (CLT1-2);
- Fresh-Moist Sugar Maple – Black Maple Deciduous Forest (FOD6-2);
- Fresh-Moist Black Walnut Lowland Deciduous Forest (FOD7-4);
- Fresh-Moist Black Maple Lowland Deciduous Forest (FOD7-5);
- Fresh-Moist Sugar Maple Carbonate Treed Talus (TAT1-4);
- Dry Tallgrass Prairie Type (TPO1-1); and
- Dry Black Oak – White Oak Tallgrass Woodland (TPW1-1).

In addition, prairie and oak savannah communities are present and are one of the most significant ecosystems in the Heritage Lands. Tallgrass Prairie remnants occur at Borer's Falls Conservation Area 1, and Tallgrass Woodland remnants occurs at Borer's Falls Conservation Area 1, and Rock Chapel 1 and 4, although some of the inclusions are too small (<0.5 ha) to show in the vegetation community mapping (Figure 4). The remnant prairie/savannah represent the rarest and most threatened community types within the Borer's Falls - Rock Chapel Heritage Lands.

Cootes to Escarpment EcoPark System

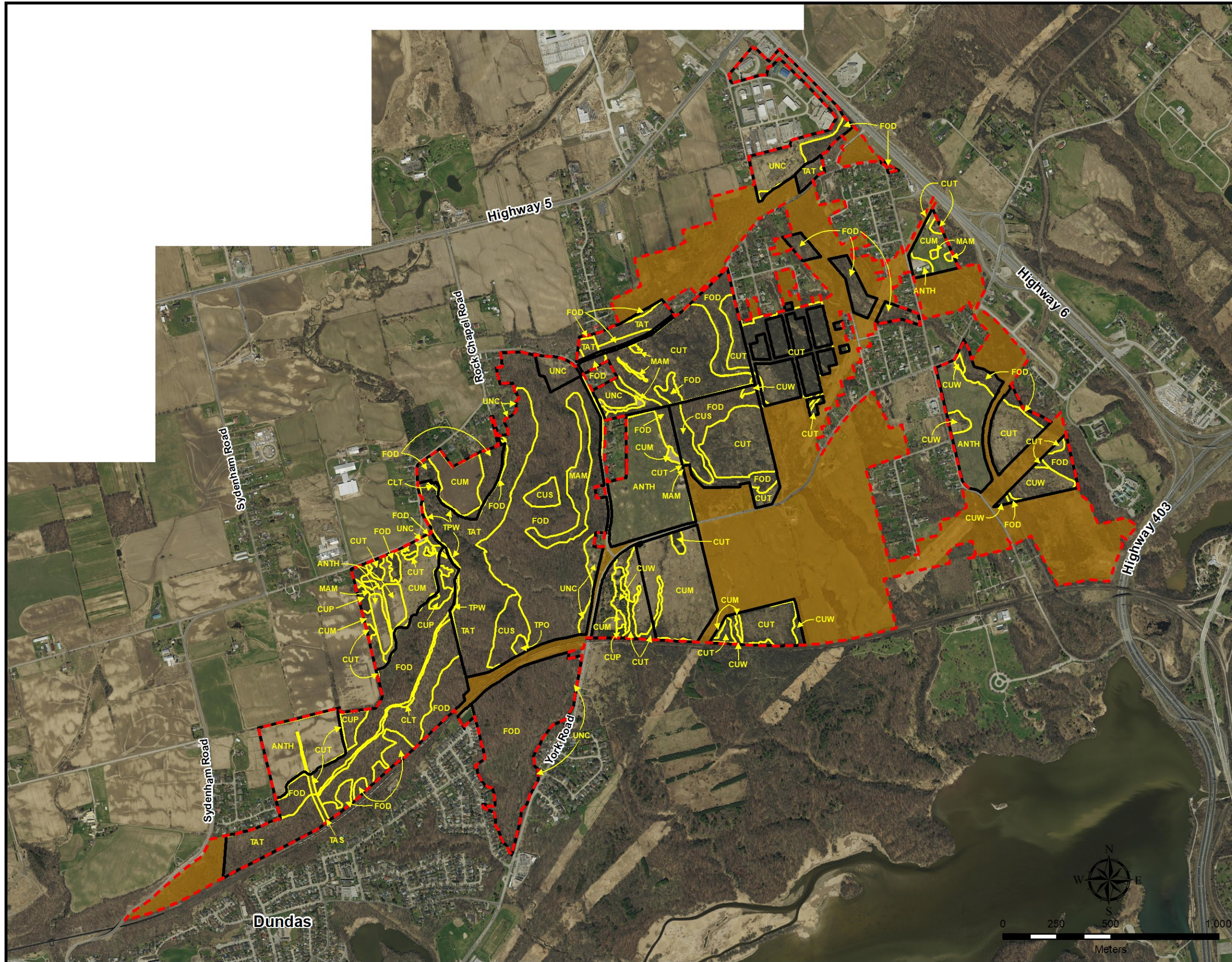
Figure 4: Ecological Land Classification of Borer's Falls - Rock Chapel Heritage Lands

Legend

-  Ecological Land Classification
- ANTH** - Anthropogenic
- CLT** - Treed Cliff
- CUM** - Cultural Meadow
- CUP** - Plantation
- CUS** - Cultural Savannah
- CUT** - Cultural Thicket
- CUW** - Cultural Woodland
- FOD** - Deciduous Forest
- MAM** - Meadow Marsh
- TAS** - Shrub Talus
- TAT** - Treed Talus
- TPO** - Open Tallgrass Prairie
- TPW** - Tallgrass Woodland
- UNC** - Unclassified
-  Privately Owned Outreach Area
-  Heritage Lands Boundary
-  Study Area Boundary

Sources of Information:
 Royal Botanical Gardens
 Conservation Halton
 Hamilton Conservation Authority
 City of Hamilton
 Land Information Ontario

Data Disclaimer:
 All boundaries on this map should be considered approximate. No responsibility or liability is assumed by the C2E EcoPark System partners or their employees, officers and agents for any errors, omissions or inaccuracies, whether due to their negligence or otherwise. Some data on this map is used under license from the Ministry of Natural Resources. © Queen's Printer for Ontario, 2016. © Teranet Enterprises Inc. and its suppliers. All rights reserved. NOT A PLAN OF SURVEY.



2.4.4 Flora

A total of 798 flora species have been documented in the Borer's Falls - Rock Chapel Heritage Lands of which 448 (56%) are native. The Floristic Quality Index (FQI) for the Borer's Falls - Rock Chapel Heritage Lands is 150.6, an extremely high value. The FQI is a measure of both habitat conservatism and species richness and thus an indicator of vegetation quality. In southern Ontario, most high-quality natural areas within urban or urbanizing landscapes have FQI values of around 70-80. The southerly exposure of the Heritage Lands results in a relatively warm, dry microclimate that supports many Carolinian and southern plants, including rare and uncommon species, endangered and threatened species, and other Species at Risk (SAR). A number of significant flora species have been identified within the study area, including four nationally and provincially endangered species, one nationally and provincially threatened species, 20 provincially rare species (S1-S3 provincially ranked), and 51 regionally rare species in the City of Hamilton (Schwetz 2014).

Invasive species have been identified as one of the greatest threats to the integrity of the ecosystems of the Borer's Falls - Rock Chapel Heritage Lands. Major invasive plant species found within the Borer's Falls - Rock Chapel Heritage Lands include: Garlic Mustard (*Alliaria petiolata*), Dog-strangling Vine (*Cynanchum rossicum*), Phragmites (*Phragmites australis*), Common Buckthorn (*Rhamnus cathartica*), non-native honeysuckles (e.g., *Lonicera tatarica*), Multiflora Rose (*Rosa multiflora*), Manitoba Maple (*Acer negundo*) and Black Locust (*Robinia pseudo-acacia*).

2.4.5 Fauna

The Borer's Falls - Rock Chapel Heritage Lands provide important habitat for many wildlife species including:

- 51 species of butterfly or moth;
- 22 species of dragonfly or damselfly;
- 11 species of fish;
- 10 species of amphibian or reptile;
- 89 species of breeding bird; and
- 15 species of mammal.

2.4.6 Natural Heritage Corridors

Borer's Falls - Rock Chapel is part of the provincial-scale Niagara Escarpment and Lake Ontario Corridors. In terms of inter-Heritage Land connections, creek valleys provide natural corridors for species moving between Borer's Falls - Rock Chapel Heritage Lands and Cootes Paradise Heritage Lands, and generally from Lake Ontario (Hamilton Harbour/Cootes Paradise Marsh) to the Niagara Escarpment.

Connectivity and linkage opportunities are, however, significantly impeded by the fact that the Cootes to Escarpment EcoPark System is bisected by provincial and regional highways. York Road limits the connectivity between the Cootes Paradise Heritage Lands and Borer’s Falls - Rock Chapel Heritage Lands. Within the Borer’s Falls – Rock Chapel Heritage Lands, current EcoPark System Lands are bisected by York Road, Valley Road, and Old Guelph Road (Figure 2). The Rock Chapel and Borer’s Falls Conservation Area 1 is well-connected and configured, and interior forest habitat is available for area-sensitive species. However, the remainder of the Borer’s Falls – Rock Chapel Heritage Lands is fragmented, and existing infrastructure and development limit opportunities for improving the connectivity among areas that contain interior forest habitat.

Significant wildlife corridor issues have been identified with major roadways within the Cootes to Escarpment EcoPark System, and within the Borer’s Falls - Rock Chapel Heritage Lands. Roadside nesting and subsequent mortality of turtles is also an issue on several of these roads. A focus of management efforts within the Cootes to Escarpment EcoPark System has been on addressing wildlife corridor issues.

2.4.7 Natural Heritage Summary

Table 2 summarizes the natural heritage features and designations of the Borer’s Falls - Rock Chapel Heritage Lands. It is also important to note that much of the Heritage Lands are designated as Natural Heritage System by the City of Hamilton.

Table 2. Natural Heritage Summary of the Borer’s Falls - Rock Chapel Heritage Lands

Features	Borer’s Falls - Rock Chapel Heritage Lands
Environmentally Significant Area (ESA)	<ul style="list-style-type: none"> • City of Hamilton ESA: Cootes Paradise ESA (DUND-15); Borer’s Falls - Rock Chapel ESA (DUND-16)
Area of Natural and Scientific Interest (ANSI)	<ul style="list-style-type: none"> • Rock Chapel Escarpment Regional Life Science ANSI • Rock Chapel Regional Earth Science ANSI
Species at Risk	<ul style="list-style-type: none"> • 4 END (ESA/SARA) and 1 THR (ESA/SARA) flora species • 1 SC (ESA/SARA) butterfly species • 1 SC (SARA) snake species • 2 END (SARA and ESA), 5 THR (ESA and SARA), 1 SC (ESA and SARA), 1 THR (ESA)/SC (SARA), 2 SC (ESA)/THR (SARA), and 1 SC(ESA) bird species
Significant Wildlife Habitat	<p><u>Examples</u> of Significant Wildlife Habitat within the Borer’s Falls - Rock Chapel Heritage Lands include:</p> <ul style="list-style-type: none"> • Seasonal Concentration Areas of Animals <ul style="list-style-type: none"> ▪ Bat Hibernacula ▪ Bat Maternity Colonies ▪ Deer Winter Congregation Areas

Features	Borer's Falls - Rock Chapel Heritage Lands
	<ul style="list-style-type: none"> • Rare Vegetation Communities <ul style="list-style-type: none"> ▪ Old Growth Forest ▪ Other Rare Vegetation Communities • Specialized Habitat for Wildlife <ul style="list-style-type: none"> ▪ Seeps and Springs ▪ Woodland Area-sensitive Breeding Bird Habitat ▪ Shrub/Early Successional Breeding Bird Habitat • Habitat for Species of Conservation Concern • Animal Movement Corridors
Surface water and fisheries resources	<ul style="list-style-type: none"> • Borer's Creek provides important fish habitat • Permanent and intermittent streams • Cold-water fish habitat
Flora <ul style="list-style-type: none"> • based on provincial ESA • excluding historical records and planted species 	<ul style="list-style-type: none"> • 798 flora species; 448 native flora species • 21 Carolinian Indicators; 29 Prairie-Savannah Indicators • 96.5 FQI; 5.0 Mean C • 4 END species • 20 S1-S3 species • 51 regionally rare species in Hamilton
Butterflies and Moths <ul style="list-style-type: none"> • based on provincial ESA • excluding historical records 	<ul style="list-style-type: none"> • 51 species; 49 native species • 1 SC species • 1 S1-S3 species • 2 regionally rare species in Hamilton
Dragonflies and Damselflies <ul style="list-style-type: none"> • based on provincial ESA • excluding historical records 	<ul style="list-style-type: none"> • 22 native species • 2 S1-S3 species • 1 regionally rare species in Hamilton
Fish <ul style="list-style-type: none"> • based on provincial ESA • excluding historical records and stocked species 	<ul style="list-style-type: none"> • 11 species; 10 native species • 1 area sensitive species
Amphibians <ul style="list-style-type: none"> • based on provincial ESA • excluding historical records 	<ul style="list-style-type: none"> • 5 native species • 1 area sensitive species
Reptiles <ul style="list-style-type: none"> • based on provincial ESA • excluding historical records 	<ul style="list-style-type: none"> • 5 native species • 1 regionally rare species in Hamilton
Birds <ul style="list-style-type: none"> • based on provincial ESA • based on bird species known to breed in the City of Hamilton 	<ul style="list-style-type: none"> • 89 species; 84 native species • 2 END, 6 THR, and 4 SC • 4 S1-S3 species

Features	Borer's Falls - Rock Chapel Heritage Lands
<ul style="list-style-type: none"> excluding historical records 	<ul style="list-style-type: none"> 9 regionally rare in Hamilton 14 area-sensitive species
<p>Mammals</p> <ul style="list-style-type: none"> based on provincial ESA excluding historical records 	<ul style="list-style-type: none"> 15 species <u>Note</u>: bat surveys not completed to date

2.5 Cultural Heritage

The Borer's Falls - Rock Chapel Heritage Lands are represented in features originating from use by Indigenous People, including trails and archaeological sites, which were then overlaid with the imprint of early military and colonial settlement activity, including the grid system of concessions and lots that subdivided the land in the late 1700s. After being logged, much of the land was used for agricultural purposes, primarily as pasture for dairy cows and sheep, with crops that included hay and corn and some orchards. Today, numerous subdivisions and small residential parcels occupy what was once farmland. Many farm fields now held as Current EcoPark Lands have regenerated to cultural meadow, thicket and/or woodland.

Borer's Falls is the principal natural feature of the Current EcoPark System Lands and one that significantly influenced the cultural history of the Heritage Lands. Borer's Falls is a 25 m waterfall, at the top of which the Rock Chapel Village Sawmill was established in 1799 by Moses Morden (Theysmeyer, pers. comm. 2018). In 1865, John Borer was hired to operate the mill and later purchased it and the surrounding property (Waterdown-East Flamborough Heritage Society 2003). The Borer family operated the mill for more than 100 years (Hamilton Region Conservation Authority 2000). Both Borer's Creek and Borer's Falls were named after the Borer family, whose decedents live near the Heritage Lands today. The presence of Borer's Falls and its capacity for milling made this an essential landscape feature which the British government, settlers and later residents relied on for lumber and employment.

Potential for buried archaeological resources has been identified in association with the numerous tributaries, creeks and transportation routes located throughout these Heritage Lands (City of Hamilton AMP, 2016). Identified heritage properties include St. Joseph's Convent, a heritage property designated by the City of Hamilton, and the Hopkins Family Cemetery, listed on the City of Hamilton Inventory of Cemeteries and Burial Sites but not designated. Structures, remnants and archaeological sites of potential cultural heritage value include the Rotary Club building and nearby remnant foundation and those associated with farms, transportation corridors and trails.

3.0 Management Issues

This section summarizes the management issues identified for the Borer's Falls - Rock Chapel Heritage Lands. Many of the current types and intensities of use are contributing to the degradation of the natural features and functions of the Heritage Lands. Impacts have been noted within the existing

extent of use, and considerably greater use of the Heritage Lands is anticipated in the future, with a subsequent expectation of increased stresses to natural features. Many of the issues are inter-related and, in many cases, cannot be addressed in isolation. For example, over-use of trails from hiking and/or cycling can result in erosion issues, which can lead to ecological management issues such as soil degradation, impacts to ground flora, susceptibility to invasion by non-native plant species, degraded water quality, wildlife displacement, etc.

3.1 Overarching Issues and Opportunities

Several management issues are not constrained exclusively to the Borer's Falls - Rock Chapel Heritage Lands, but instead, span the entire Cootes to Escarpment EcoPark System. These issues are generally related to the recognition and identification of the EcoPark System, both in terms of boundary identification and the public perception or knowledge of the EcoPark System. The numbers provided in paragraph headings provide a cross-reference to the management recommendations listed in Sections 4.2 and 4.3.

Awareness of the Cootes to Escarpment EcoPark System (3)

The Cootes to Escarpment EcoPark System is a relatively recent initiative and is novel in its concept. Each of the partner agencies operates under their own policies and protocols in response to their individual mandates and governance. However, there are commonalities among the partners with respect to natural heritage, recreation and cultural heritage. In particular is the desire to facilitate connections between Lake Ontario and the Escarpment, which was the impetus for the Cootes to Escarpment EcoPark System. One challenge in implementing the initiative is achieving recognition of these commonalities without impinging on the identity or mandate of the individual partners. Establishing a distinct identity for the EcoPark System and raising its profile would benefit the overall intent, however achieving this cannot compromise the mandates and branding of the land-owning partners.

Delineation of Current EcoPark System Lands (4)

It is often difficult to determine when EcoPark System users are within Current EcoPark System Lands, or within Privately Owned Outreach Areas, as signage is often limited and natural areas (woodlands, open lands, etc.) that compose the majority of the Heritage Lands extend well beyond individual property boundaries. Further, the Current EcoPark System Lands are owned by multiple agencies, and because the boundaries between ownership are not clear, it is difficult to enforce policies regarding use and encroachment in areas around the periphery of Current EcoPark System Lands. This creates issues for both adjacent landowners (e.g., trespassing and privacy issues) and Current EcoPark System Lands (e.g., encroachment of manicured areas and structures from adjoining lands). In addition, because property ownership is sometimes unclear, users are unable to determine to whom issues should be reported.

Need to Better Communicate the Multi-agency Management of the EcoPark System (5)

Each partner agency has unique policies and rules that reflect their individual mandates. As noted above, this creates a challenge to communicate the structure of the EcoPark System to the public, since the varying permitted land uses, signage, branding, etc. of the individual owners does not convey the traditional notion of a single park, and nor is this the intent of the EcoPark System mandate. For example, the Bruce Trail Conservancy and Royal Botanical Gardens allow only pedestrian traffic on their trails; however, cycling is permitted in sanctioned areas by the City of Hamilton, Hamilton

Conservation Authority, and other partner agencies. Not only is this mixture of permitted uses confusing to EcoPark System users, but users are generally not aware of the relevant rules and regulations of use. Different rules and permitted uses will continue to apply to different properties, depending on who owns the land and the sensitivity of the property. However, partner agency rules and policies need to be more clearly communicated, along with the unique structure of the EcoPark System.

Population and Use (6)

A major overarching management issue is the anticipated increase in use. This particular issue is of less significance for Borer's Falls - Rock Chapel Heritage Lands than some other Heritage Lands with respect to more development, owing to the limited opportunity for major development on adjacent lands. However, the continued growth of the nearby major urban areas, (Cities of Burlington and Hamilton) and the increase in people engaged in passive recreation, will exert greater pressure on the Heritage Lands in the future. Thus there is an expectation of ongoing degradation of the natural, recreational and cultural resources of the Borer's Falls-Rock Chapel Heritage Lands unless mitigation in the way of increased management initiatives are implemented.

At present, there are no policies that would directly facilitate the implementation of relevant management recommendations in the management plan through development approvals (e.g., through a Condition of Draft Plan approval). However, where geographic-specific park or public land management plans exist, the Greenbelt Plan (Ontario Ministry of Municipal and Rural Affairs 2017) indicates that municipalities, agencies, and other levels of government must consider them when making decisions on land use or infrastructure proposals. As the Cootes to Escarpment EcoPark System represents such a park, it would be incumbent on planning authorities to consider increased use pressures and likely environmental impacts on Heritage Lands in their assessment of development applications.

Several planning policies require proponents of development applications to consider impacts on adjacent natural features and areas resulting from their development proposals and to mitigate them accordingly. It is especially important that the impacts associated with future developments adjacent to the Heritage Lands be clearly identified and assessed in Environmental Impact Studies (or similar studies) in the context of the role the Heritage Lands play in the overall Cootes to Escarpment EcoPark System. In other words, the value and significance of the natural features captured in the Heritage Lands are greater because they are part of the EcoPark System, and because they have an ecological function that goes beyond the feature itself. In determining impact mitigation from future development, this higher value should be considered when determining mitigation, such as the limits of the developable area, buffer widths, management needs such as design and provision of trails within the Heritage Lands. The management issues and opportunities identified for the Heritage Lands provide information on current impacts that could be exacerbated by future adjacent development. Management recommendations may assist in the determination of appropriate mitigation that could be implemented through the development process.

Owing to the multi-agency agreement to implement the EcoPark System and the public resources that have already been spent on the acquisition and management of the Heritage Lands, potential population-induced negative impacts from development should be mitigated through conditions of the approval process wherever possible. More generally, the partner agencies that are directly involved in the development approval process (in the case of the Borer's Falls - Rock Chapel Heritage Lands these

are the City of Hamilton, Hamilton Conservation Authority and Conservation Halton), should continue to consider and incorporate the significance of the Heritage Lands in their reviews and the subsequent conditions they impose on development applications. This is viewed as part of their commitment to implementing the Vision of the Cootes to Escarpment EcoPark System. Partner agencies that are not directly involved in the development approval process should be encouraged to comment as landowners on development applications that may impact their lands. Where a public or private development proposal may exacerbate existing management issues and/or create new ones, adjacent landowners should make such concerns known so they may be addressed accordingly through the development approval process.

Funding (7)

There are differences in approach to management by the partner agencies. Individual partners manage lands in a variety of models, from pay to use to free to use. This reflects the fact that Cootes to Escarpment EcoPark System includes three distinct organizational types: government, not for profit and registered charities. Future operating and capital costs associated with the Cootes to Escarpment EcoPark System will be high, and no clear or uniform model for allocating these and financing them has been proposed. Funding estimates are not included in this management plan; however, funding as a broad management issue is included as the Cootes to Escarpment EcoPark System creates both challenges and opportunities in this regard.

Trail/CN and CP Railway Crossings (8)

A key overarching issue for the Cootes to Escarpment EcoPark System is that multiple trails cross railways, including within Borer's Falls - Rock Chapel Heritage Lands. These pose connectivity, colonization pathways for invasive species (e.g., Dog-strangling vine) and safety concerns. There is a need for a formal discussion with railway companies to engage in a conversation about trail crossings at key locations in the Cootes to Escarpment EcoPark System.

Critical Corridor for Connection of Borer's Falls - Rock Chapel to the Niagara Escarpment (9)

A potential protected corridor that is currently in private ownership remains through Borer's Falls - Rock Chapel Heritage Lands that would substantially add to the connection of Cootes Paradise to the Niagara Escarpment. This protected corridor would substantially contribute to the success of the Cootes to Escarpment EcoPark System in achieving the goal of connecting and restoring natural lands and open space between the Niagara Escarpment and Cootes Paradise in Hamilton Harbour and thus is an important issue with respect to land acquisition.

Desire and Need for Trail Connections and Trail Plan (10)

Pedestrian and cycling use of York Road has been described as a significant recreation issue. Although not strictly contained solely within the Heritage Lands, it has repercussions for both the Borer's Falls - Rock Chapel and the Cootes Paradise Heritage Lands, due to safety concerns. York Road is an old, narrow and winding road without a shoulder. It is used as a commuter route, but it is also by recreational cyclists. The desire for trail connections between Borer's Falls - Rock Chapel, Cootes Paradise, and Clappison-Grindstone Heritage Lands is well-documented. In particular, the need for trail connections to the Pleasant View Natural Areas (Nicholson and Hopkins Tracts) has been emphasized. With significant road reconstruction cycling could be accommodated. Alternatively, there is some potential for a trail connection through the pipeline/utility line on non-partner lands owned by utility companies, extending from Cootes Paradise Sanctuary 9 through Borer's Falls Conservation Area 3, Pleasant View Natural Area – Cartwright Tract and Nicholson Tracts to Old Guelph

Road, just south of the Bruce Trail crossing of Highway 6. The Cootes to Escarpment EcoPark System does not currently have a Trail Plan in place to provide guidance on trail-related issues that span individual Heritage Lands boundaries and land-owning partners. The development of a Trail Plan would require a separate funding arrangement.

[Desire and Need for a Wildlife Corridor/Crossing Plan \(11\)](#)

The lack of wildlife corridors and crossings have been identified as a major issue of concern for the Cootes to Escarpment EcoPark System. The existing assemblage of land parcels that comprise the Current EcoPark System Lands are fragmented across the landscape, and as a result, wildlife is forced to cross roads, and railways to access lands that are required for fulfilling their various life processes (e.g., nesting, foraging, over-wintering). Vehicular speed and wildlife collision on roads severely impacts the safe passage of wildlife, and ultimately wildlife populations.

3.2 Access and Infrastructure

[Parking and Access \(16\)](#)

Parking and access are limited at the Borer's Falls - Rock Chapel Heritage Lands (Figure 3). Some parking and access points are sanctioned, and some are not. A few parking areas are available (e.g., Rock Chapel parking lot, Borer's Falls Dog Park), however, most EcoPark System users use road allowances and pull-off parking areas to access the Heritage lands. These have posed significant public safety concerns due to insufficient sightlines and limited opportunities for safe roadside parking. Access points within the Borer's Falls - Rock Chapel Heritage Lands are poorly marked and not well-known to the general public; as a result, several unsanctioned footpaths have been established by users looking for quick access/shortcuts to distinct vistas, features, and/or trails (Figure 5).

[Lack of Access to Lower Borer's Falls \(17\)](#)

Lower Borer's Falls is not a sanctioned visitation area and thus has no formal access point. Hikers access the falls through unsanctioned access points (John Prentice Park, Watson Lane, scaling down off the Bruce Trail west of Borer's Falls, and approaching from the south off of the Ray Lowes Side Trail). An inventory of Hamilton's waterfalls was recently prepared by a local citizens group, and a coffee table book of Hamilton's waterfalls is available. Both publications likely encourage visitation to Lower Borer's Falls (as well as others outside the Heritage Lands), but neither provide details on sanctioned access points. Region #3 Tourism Organization (regions created by the Ontario Government to increase visitors, generate more economic activity, and create more tourism jobs) lauds Hamilton as the Waterfall Capital of the World. The Hamilton Halton Brant tourism page does request that visitors follow posted rules, stay on marked trails, and not climb or bypass fencing.

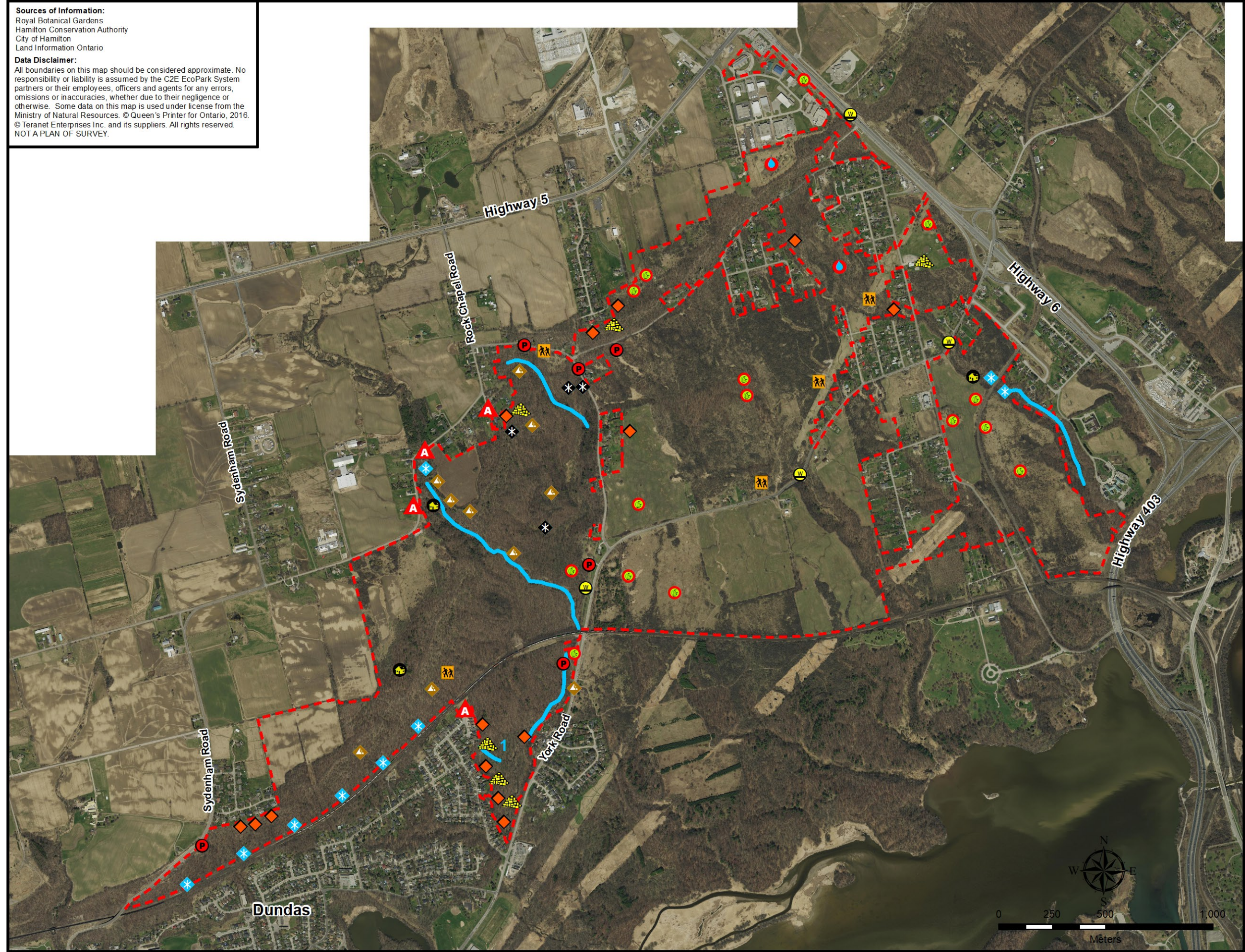
The City of Hamilton, Hamilton Conservation Authority, and the Bruce Trail Conservancy collaborate to maintain the Hamilton Waterfalls webpage. Overall the platform appears dated and is difficult to navigate. It is not readily apparent that the Lower Borer's Falls is identified as "Inaccessible" on the webpage – the absence of access information does not appropriately relay that the Lower Borer's Falls are not meant to be visited by the public.

[CN Safety Issue \(18\)](#)

EcoPark System users currently cross the Canadian National (CN) railway to connect to unsanctioned trails not within the Heritage Lands. Users may also walk along the railway to access unsanctioned trails. This is a safety issue.

Sources of Information:
 Royal Botanical Gardens
 Hamilton Conservation Authority
 City of Hamilton
 Land Information Ontario

Data Disclaimer:
 All boundaries on this map should be considered approximate. No responsibility or liability is assumed by the C2E EcoPark System partners or their employees, officers and agents for any errors, omissions or inaccuracies, whether due to their negligence or otherwise. Some data on this map is used under license from the Ministry of Natural Resources. © Queen's Printer for Ontario, 2016. © Teranet Enterprises Inc. and its suppliers. All rights reserved. NOT A PLAN OF SURVEY.



Cootes to Escarpment EcoPark System

Figure 5: Management Issues and Opportunities in Borer's Falls - Rock Chapel Heritage Lands

Legend

- Management Issues**
- Access Issues
 - Cultural Heritage Opportunity
 - Dumping
 - Encroachment
 - Erosion Issues
 - Invasive Species
 - Parking Issues
 - Trail Issues
 - Trail Structure Issues
 - Unsanctioned Use
 - Water Quality Issues
 - Wildlife Crossing
 - Watercourse Erosion Sensitivity
 - Refer to Map - Geomorphix Fig 5.3a and 5.3c
 - Heritage Lands Boundary



Trespassing (19)

Trespassing on privately-owned lands within the Heritage Lands is an issue. Adjacent landowners have posted many "No Trespassing" signs as a result, and conflicts between landowners and EcoPark System users have been noted. This issue ties into the need to identify and mark the boundaries of the Current EcoPark System Lands. Trespassing also includes unsanctioned trail construction on Current EcoPark System Lands and encroachment from adjacent private properties.

Old Infrastructure and Trail Structures (20)

Staircases are incorporated into trail systems were needed to address steep terrain. Several of these staircases in the Borer's Falls - Rock Chapel Heritage Lands are in poor condition and require repair/replacement (e.g., the staircase on Ray Lowes Side Trail in Borer's Falls Conservation Area 1). A timber crib wall and footbridge located in Borer's Falls Conservation Area 1 is also failing and needs to be assessed more comprehensively (i.e., erosion control study) on the gully where the footbridge is located. Heavy scouring of the gully appears to occur from two roadside outfall pipes, upslope from the gully. Known locations of old infrastructure and trail structures are summarized in the Borer's Falls – Rock Chapel Heritage Lands Management Plan Inventory, Issues and Opportunities report (North-South Environmental Inc. et al. 2018).

Lack of Public Transportation (21)

There is currently a lack of public transportation options for users to arrive/depart sanctioned access points within the Borer's Falls – Rock Chapel Heritage Lands. In particular, there are no routes that carry the public to the top of the Escarpment.

Nicholson Tract Transfer of Lots and Road Allowances (22)

Nicholson Tract is comprised of a number of fragmented Conservation Halton landholdings bisected by City of Hamilton-owned unopened road allowances. The ongoing transfer of remaining undevelopable lots in the vicinity of Nicholson Tract 1 is anticipated to occur over time.

Stopping up, closing and transferring the unopened road allowances would improve connectivity and facilitate the development of options for restoration and trail connections. Road allowances currently constitute hurdles to recreation management in Nicholson Tract 1.

Preferably, undeveloped lots should come into public ownership before the City closes and transfers the abutting sections of the unopened road allowances to Conservation Halton. Although current private landowners are by no means required to sell these lots, this will provide an avenue for transfer of the unopened road allowances.

3.3 Recreation

The existing trail system through the Heritage Lands centers largely around the Bruce Trail with sanctioned and unsanctioned trail networks branching from this well-travelled route (Figure 3).

Through the review of background information, conversations with key stakeholders, and fieldwork, it is clear that the management plans need to be as much about managing people as they are about managing the natural environment. In fact, people management is key to effective management of the Heritage Lands/Cootes to Escarpment EcoPark System. Managing impacts that result from recreation

must carefully balance the provision of recreational opportunities with natural and cultural heritage protection. The current management planning process provides an excellent opportunity to take a holistic approach to address recreational impacts with multiple stakeholders. Issues and opportunities related to recreation are described below.

Hamilton Conservation Authority and Royal Botanical Gardens own the bulk of the land in the current Borer's Falls – Rock Chapel Heritage Lands; the Bruce Trail and Side Trails to the Bruce Trail are managed in partnership with the Bruce Trail Conservancy. Trails are similarly maintained by the City of Hamilton and Conservation Halton on their respective properties, with the Hamilton Naturalists' Club responsible for the management of the Bruce Duncan Memorial Trail. Trail use within the Heritage Lands primarily consists of walking, hiking, jogging, and dog walking. Some evidence of cycling has been documented on trails, and to the east of the Heritage Lands (i.e., Nicholson Tract 1) unauthorized motorized vehicle use appears to occur somewhat frequently. Generally, the current level of recreational use appears to be having little impact on the surrounding natural system with the exception of the Nicholson Tract 1 property and Rock Chapel 1.

Trail Overuse and Erosion (24)

The public frequently uses a large part of the existing trail network throughout the Borer's Falls - Rock Chapel Heritage Lands with well-travelled sections being primarily associated with the Bruce Trail. Some impact from trail use is inevitable and acceptable. However, there are portions of the trail system that show signs of overuse, including excessive exposure of tree roots, unacceptable impacts to ground flora, soil compaction and widening of the trails. Trail overuse has resulted in soil erosion in places. Some erosion, compaction, and water ponding is considered acceptable as long as it is sustainable (i.e., not expanding) and not impacting significant species, habitats or hydrological functions. Generally, it is considered to be tolerable and part of the trail experience. Unacceptable erosion on trails has however been noted in places and attributed to overuse, improper trail construction, poor trail alignment and/or drainage issues. In a few locations, water ponding has led to trail widening or braiding to avoid wet patches on trails. Widened erosion areas occur on the Bruce Trail and Ray Lowes Side Trail in Borer's Falls Conservation 1 where cyclists and hikers have created alternate paths on steep slopes to avoid staircases with steps which are too high, uneven and falling apart. The use of grade bars (i.e., hewn logs and iron bars) is helping to prevent erosion successfully, but their unevenness is difficult to navigate, and they create a tripping hazard. Major issues with erosion have been identified at Rock Chapel 4 near Borer's Falls outlook point and cliff side trail where heavy erosion in several sections of the trail occurs.

Unsanctioned Trails Proximate to Escarpment Brow (25)

Unsanctioned trails are being formed off Borer's Falls Trail in Rock Chapel 4 to access views from the Escarpment brow. There are safety and erosion issues, as well as trail duplication, associated with many of these unsanctioned trails. At least one unsanctioned trail along the cliff appears to be used to access the valley below to gain a better vantage point of the waterfall (Figure 5). This is a potential impact to cliff ecosystems, and the trail alignment may not be in the best location.

Bruce Trail along Rock Chapel Road (26)

The Bruce Trail, as it exits the Rock Chapel parking lot and enters Rock Chapel 4, meanders on and off Rock Chapel Road creating a potential safety issue and detracting from the hiking experience. Hikers must pass through narrow gaps in the guard rail to gain access to the trail which follows a narrow trail

between the guard rail and the Escarpment brow. It is difficult to see the sharp drop off while hiking this section of trail.

Cycling (27)

Whereas cycling is an approved use on sanctioned City of Hamilton and Hamilton Conservation Authority trails, the Royal Botanical Gardens, Conservation Halton and the Bruce Trail Conservancy do not permit cycling on their owned and/or managed trail system in the Heritage Lands. Sanctioned cycling trails are not present within the Borer's Falls – Rock Chapel Heritage Lands, with the adjacent roads being part of the Hamilton cycling routes. Regardless, cycling continues to occur on trails within the Heritage Lands; specifically, to a limited extent, along the Bruce Trail and Ray Lowes Side Trail. This is in part a result of the intrinsic appeal of these trails for cycling (steep and technical descent along Ray Lowes Side Trail), and also as the route through Borer's Falls Conservation Area 1 to connect to Valley Road, and then take Patterson Road to Old Guelph Road, to pass under Highway 6 which provides a much needed connection to Clappison Woods, a known and accepted cycling destination, located east of Borer's Falls - Rock Chapel Heritage lands. Issues with erosion associated with cycling have been identified on Ray Lowes Side Trail and this use continues despite there being signage posted that indicates that cycling is not permitted. The cycling community is eager to work with Royal Botanical Gardens, Hamilton Conservation Authority, and the Bruce Trail Conservancy to identify appropriate places where cycling may be permitted. Further to the documented Mountain and Road Bike uses in the Heritage Lands, people park on Patterson Road and cut through Berry Tract 2 to reach an old foundation which is used to BMX/cycle and skateboard. This old foundation is located on private lands, and this use is trespassing.

Cycling Route Connectivity (28)

For the most part, avid cyclists, especially mountain bikers, would like to utilize the trail network within the Borer's Falls - Rock Chapel Heritage Lands as a means to connect to the trail network at Clappison Woods located within the Clappison-Grindstone Heritage Lands, east of Highway 6, i.e., they do not want to use the Borer's Falls - Rock Chapel lands as a destination, only to access another area without using roads, which do not currently accommodate cycling safety. This desire comes about from the broader cycling infrastructure issue, which is the unsafe nature of York Road for cyclists as a result of the speed limit, narrow road width and lack of road shoulder.

There is a very difficult issue with cycling overall, insofar that cycling should be encouraged as a healthy, energy-efficient activity, but that the location of desirable cycling locations and existing road infrastructure makes it impossible to realize cycling opportunities fully. It would be irresponsible to encourage cycling and/or identify cycling routes on roads that are unsafe. The City of Hamilton's Draft Cycling Master Plan Review and Update identifies cycling route connectivity along municipal roads (City of Hamilton 2018), however plans for additional road work are not currently in place, including the western portion of the Cootes to Escarpment EcoPark System. The City of Hamilton will not be able to initiate road improvement projects (e.g., York Road) independent of consultation with its citizens and partner organizations.

The City of Hamilton Cycling Plan (2009) identifies a plan for paved shoulders on the full length of York Road; however, the City of Hamilton intends to revise this plan given the challenge of widening the York Road platform (City of Hamilton, Daryl Bender, pers. comm. February 15, 2018). The updated Cycling Master Plan, which is part of the Transportation Master Plan for the City of Hamilton (planned to be approved), proposes a two-way cycling route along the York Road corridor to connect Dundas to

Old Guelph Road along the north side of York Road, veering north of the roadway just east of Valley Road, following the powerline corridor to connect to Old Guelph Road further east (City of Hamilton, Daryl Bender, pers. Comm. August 24, 2018). The portion of the multi-use trail along the York Road right-of-way is planned to be along the north side of the roadway. The Hamilton Burlington Trails Council (HBTC) is currently pursuing funding to proceed with a functional design for this project, which is part of a route they are calling the 'Cootes Loop' (City of Hamilton, Daryl Bender, pers. comm. February 15, 2018). However further fragmenting the park system and ecology is contradictory to one of the core objectives of the park system.

Trail Connectivity (29)

Several management units within the Borer's Falls - Rock Chapel Heritage Lands are disconnected from the trail network, but a desire for trail connectivity for these areas has been expressed by the partners. In some cases, the absence of trails and disconnect of certain areas may be the result of specific management objectives, therefore, it should not be assumed that all properties without trails require them. The Hopkins Tract is currently disconnected from the existing trail network. Future installation of trails at Hopkins Tract and in the surrounding area should consider options for connecting Hopkins Tract to the rest of the Heritage Lands. Options would only occur by means of City of Hamilton multiuse trails (parallel to road network). Proposed trails at Hopkins Tract could easily link to any future City of Hamilton roadside multiuse trail. A priority should be placed on resolving the safety issues associated with the dangerous crossing of Old Guelph Road. Berry Tract South does not have any trails to date. Trail connectivity among management units is considered a major management recommendation. Also, there is a strong desire to create a safe connection on non-partner Heritage Lands through the Borer's Falls Rock - Chapel Heritage Lands to link urban areas to the south and west with destinations to the east, particularly for cyclists. This needs to be considered through this Management Plan, although the issue is really an over-arching Cootes to Escarpment EcoPark System Issue.

Unsanctioned Trails (30)

Unsanctioned trails are occasionally constructed and used within the Heritage Lands without consultation or authorization from the land-owning agency. According to the Hamilton Conservation Authority, there is not a lot of unsanctioned trail use in Borer's Falls Conservation Area 1. Unsanctioned trails connecting John Prentice Park to the Armstrong Trail in Rock Chapel 1 (Figure 3) were noted by the Project Team. Unsanctioned trails are routinely closed by the Bruce Trail Conservancy, Royal Botanical Gardens and the Hamilton Naturalists' Club on their properties by posting signage, placing brush and planting vegetation that deters access (e.g., Prickly Ash, *Xanthoxylum americanum*). Use of unsanctioned trails is exacerbated by the fact that unsanctioned and closed trails have been, and continue to be, posted on Google Maps and other publicly-accessible websites and apps (e.g., Trailforks, maps.me, and Alltrails). Some base-maps used by partner agencies for interactive mapping show unsanctioned and closed trails (e.g., Conservation Halton Online Basemap, Hamilton Conservation Authority Regulated Areas Map Tool).

Trail Proliferation (31)

Trail proliferation was noted in several management units within the Borer's Falls - Rock Chapel Heritage Lands. In some areas, three or more parallel trails occur at Rock Chapel 4 (Figure 5). Various short unsanctioned trails branch off the main Bruce Trail in Rock Chapel 1 and Borer's Falls Conservation Area 1 to access views from the Escarpment edge. Multiple trail alignments need to be evaluated and rationalized to minimize impacts to natural features and enhance the user experience.

Signage (32)

In general, the Borer's Falls - Rock Chapel Heritage Lands are inconsistently signed, and the Cootes to Escarpment EcoPark System logo is not always present on signage. Partner agencies are encouraged to display the Cootes to Escarpment EcoPark System logo on future signage and indicate that the parcel is part of the larger EcoPark System. For example, new signage was posted at the Bruce Duncan Memorial Trail access to Cartwright Tract in summer 2017 by Conservation Halton, which included the Cootes to Escarpment EcoPark System logo and above it the wording "part of the" to indicate that the parcel is part of the larger EcoPark System.

Site-specific issues related to signage include the following:

1. a cut-down signpost located at the edge of a trail in Borer's Falls Conservation Area is now a tripping hazard (Figure 5);
2. interpretation of the area around the Armstrong Trail could be improved through interpretive signage; and
3. little to no signage is present within the Nicholson Tracts and Berry Tract South due to challenging boundary issues and since there are no authorized trail networks at these locations, which are owned by Conservation Halton and Royal Botanical Gardens, respectively.

User Conflicts (33)

Potential conflicts between different trail user groups have impacted the enjoyment and safety of EcoPark System users. Principal trail user groups include hikers, on- and off-leash dog walkers, and cyclists. Off-leash dog use is not permitted within the EcoPark System Lands, and cycling is not permitted on the Bruce Trail or Royal Botanical Gardens trails. Conflicts among hikers, dog walkers and cyclists arise on occasion and are often related to off-leash dogs, fast-moving bicycles or runners. Some cyclists and dog walkers do not respect that you must remain in control of your bicycle or dog at all times. Additional education is needed regarding the appropriate use of trails and trail etiquette.

Off-leash Dogs (34)

Off-leash dog use has been reported as a major problem, especially at Rock Chapel 1 and Borer's Falls Conservation Area 1 where the Bruce Trail follows the Escarpment Brow. This use is unsanctioned, but enforcement is often lacking. Off-leash dog use can negatively impact natural areas by causing erosion, soil compaction, water quality impacts, and effects on vegetation and wildlife (e.g., damage to ground flora, the spread of invasive species, harassment/harm to wildlife).

Unsanctioned signs are posted at Rock Chapel 3 that indicate the area is an off-leash dog park, which it is not. Royal Botanical Gardens and Conservation Halton signage is also posted indicating that dogs must be on-leash at all times. Off-leash dogs have been identified as a safety concern by regular users. Off-leash dog use may be deterred by the increasing number of ticks in the area and the growing public concern of tick-borne diseases. Additional off-leash dog parks may provide an opportunity for these users to focus this recreational use outside sensitive natural areas. Traditionally, municipalities offer the service of dog parks as part of their tax-supported Parks and Recreation programs and facilities.

Motorized Vehicle Use (35)

Public recreational use of motorized vehicles is prohibited throughout the Current EcoPark System Lands. Whereas the use is not permitted, ATV, dirt bike and snowmobile activity have been noted in various locations, including Berry Tract South, Nicholson Tract 1 and 2 (Figure 5). Most motorized

vehicle use is carried out by local individuals, however, some people allegedly bring in ATVs on trailers to use the trail system in Nicholson Tracts 1 and 2, Berry Tract South and the adjacent hydro corridor. Motorized vehicles disproportionately impact trails and the natural environment due to aggressive tire treads and unencumbered ability to travel through muddy site conditions.

Equestrian Use (36)

Some equestrian use occurs within the Borer's Falls - Rock Chapel Heritage Lands, within Nicholson Tract 1, Berry Tract 1, Cartwright Tract and Hopkins Tract. Equestrian use is prohibited throughout the Current EcoPark System Lands as this use disproportionately impacts trails and the natural environment due to the aggressive impact of horse hooves and ability to travel through and exacerbate wet and muddy trail sections.

Hunting/Poaching (37)

Hunters currently use utility corridors and unopened road allowances to access the Heritage Lands to hunt wildlife using firearms, including bow and arrow. Discharging firearms is generally prohibited in the urban portion of the City of Hamilton, in which all of the Borer's Falls - Rock Chapel Heritage Lands are located. Several deer stands and hunting blinds are regularly removed from the Current EcoPark System Lands by Conservation Halton and Royal Botanical Gardens. This poses obvious issues for public safety and is not consistent with the conservation mandate of the Heritage Land partners.

Foraging (37)

Wild plant and mushroom foraging have been noted to take place within the Heritage Lands. Issues associated with over-harvesting have been reported (e.g., substantial declines in Wild Leek (*Allium tricoccum*) populations). Over-harvesting can lead to the direct loss of biodiversity and can also cause other indirect impacts such as the spread of invasive species and trampling. The impacts of this activity are not currently being monitored and are therefore largely anecdotal.

Illegal Cannabis Grow-ops (38)

Illegal cannabis grow-ops have been found at Nicholson Tract 1 and Borer's Falls Conservation Area 3 in the past.

3.4 Encroachments

Impacts associated with adjacent land uses are creating management issues for Current EcoPark System Lands (e.g., encroachment from residences abutting the northwest shore and along the south shore of Borer's Falls - Rock Chapel Marsh) (Figure 5).

Private Unsanctioned Trails (39)

Unsanctioned trails are occasionally created from private residences linking to an adjacent sanctioned (or widely used unsanctioned) trail. Sometimes, gates are installed into rear-lot fencing to facilitate access to Heritage Lands. This speaks to the frequency of use that some of these trails experience. The cumulative effect can have an impact on the quality of the natural area and can also impact wildlife through an increased level of disturbance.

Structures and "Yard Extension" (40)

Structures such as retaining walls, picnic tables, small sheds, and household objects such as lounge chairs and composters were noted within the Current EcoPark System Lands, adjacent to residential

properties. Also, yards are occasionally extended by mowing, and by the placement of flowerbeds within the natural area boundary (often referred to as “property creep”). Apart from being illegal trespass, this has an impact on edge vegetation and reduces the overall size of the natural area.

Dumping (41)

Yard waste, such as grass clippings and trimmed branches, is often thrown into natural areas from adjacent residences. Yard waste dumping can be a vector for the spread of non-native invasive species. It also smothers existing vegetation and degrades the aesthetic and floristic quality of an area. Dumping of garbage was frequently noted in many places within the Current EcoPark System Lands (Figure 5).

Vegetation Removal/Trampling (42)

Removal of vegetation occasionally occurs along the edges of natural areas. For example, tree cutting of both dead and living trees occurs, as well as clearing of brush, and tree topping to maintain views. These activities reduce the quality of natural areas by reducing or degrading the structure of edge vegetation and removing snags which have high wildlife value. Specific examples of vegetation removal and trampling at Borer’s Falls - Rock Chapel Heritage Lands include tree cutting at Berry Tract 2 to maintain views (Figure 5) and impacts to species at risk have occurred (Red Mulberry and Butternut).

Cats/Domestic Pets (43)

Domestic pets, in particular cats which roam freely within Heritage Lands, have a significant impact on native wildlife populations. Cats are very proficient predators and are responsible for killing millions of birds, small mammals, reptiles and amphibians each year (Marks and Duncan 2009).

3.5 Hydrologic Impacts

Issues related to anthropogenic influences within, adjacent to, and upstream of the Borer’s Falls - Rock Chapel Heritage Lands were largely moderated by forested and grassland communities which served a number of functions in controlling the movement of water in the landscape through the attenuation of surface flows from precipitation, slow release over time, evapotranspiration, and erosion control. With the advent of land clearing for agriculture, industrialization and urbanization, the widespread removal of vegetation and alteration of surface water features have resulted in a number of hydrologic issues within the Borer’s Falls - Rock Chapel Heritage Lands, largely related to erosion, sedimentation and reduced water quality.

Run-off and Peak Flows (44)

There is a widespread issue of increased rates of run-off and peak flows as a result of past land clearing for agricultural purposes (e.g., vegetation removal, draining of wetlands to increase the quantity of arable lands, etc.), industrialization, and continued urbanization resulting in an increase in impervious surfaces associated with development (e.g., buildings and asphalt surfaces restrict ability of precipitation to infiltrate in the ground and focus precipitation into watercourses resulting in rapid run-off). Within and beyond the current EcoPark System lands, Pleasant View Tributary subwatershed extends into a portion of urbanized Waterdown and is 50% impervious. High run-off rates and peak flows have caused massive erosion of streams (e.g., sections of Borer's Creek and Pleasant View Tributary – West Tributary 6) and a decrease in groundwater infiltration. Any steps possible to mitigate run-off through Low Impact Development (LID) techniques and wetland restoration/creation would benefit the Heritage Lands.

Erosion and Sedimentation (45)

The tributaries draining to Cootes Paradise historically had natural erosion rates, which slowly increased the incised nature of the valleys. However, changes in land use in recent history have accelerated the rate of erosion considerably in some areas. Impacts resulting from erosion and sedimentation can significantly damage vegetation. In many areas within the Current EcoPark System Lands, bank erosion has exposed tree roots and has resulted in deadfall. Some fallen trees have blocked creek channels, which in turn may impact the hydrology and fluvial geomorphology of the watercourse (recognizing that in some cases, woody materials can enhance the stream ecosystem but on the other hand can contribute to bank-cutting, channel braiding, steep gradients, and create barriers to fish passage). Habitat for herbaceous plants is also impacted. In some places where creek banks would have naturally sloped gently toward the creek, the soil has been washed away until the banks have become vertical or even under-cut. This impacts the ability of riparian vegetation to establish with subsequent impacts for further erosion and bank stability.

Although some rates of erosion have been accelerated due to higher peak runoff volumes, much of the Borer's Falls - Rock Chapel Heritage Lands have not undergone significant land use change. The majority of down-cutting is natural and a result of the topographic difference between the Niagara Escarpment and Lake Ontario. A bank erosion study completed by GEO Morphix Ltd. in 2016 highlights stream reaches that were assessed as 'very sensitive' in terms of sensitivity to erosion. These reaches are illustrated in Figure 5 as 'Watercourse Erosion Sensitivity'. Site-specific issues related to drainage and erosion include:

- Erosion is resulting from uncontrolled run-off along road edges and roadside outfalls on Valley Road at the top of Borer's Falls (Figure 5). There is a need to improve municipal infrastructure in this location.
- Erosion upstream and downstream of the culvert located under the railway at Hopkins Tract (Figure 5). The culvert appears to be undersized and perched.
- Major bank failure and slumping has been reported from neighbourhoods located to the south of Rock Chapel 1, where layers of clay occur over bedrock in conjunction with groundwater discharge from the Niagara Escarpment (Figure 5).
- Drainage re-alignments along Old Guelph Road have redirected a tributary formerly travelling through Hopkins Tract via a ditch along Old Guelph Road to its outlet at Highland Creek. Since the re-alignment, accelerated rates of erosion have been documented in this reach.
- Issues with water quantity and quality have been reported for Pleasant View Tributary – West Tributary 6 (part of the Pleasant View Subwatershed of the Grindstone Creek Watershed). This

tributary runs parallel to Highway 6, within the Innovation Park management unit, then enters the SWM pond and discharges to the ravine that runs through Nicholson Tract 2 and Hopkins Tract. Upstream of the SWM pond in Innovation Park, this tributary is channelized and heavily impacted by Phragmites. The integration of Low Impact Development (LID) measures on impervious lands outside of the Heritage Lands, and planting in riparian areas to improve buffer and stream habitat improvement of the tributary in Innovation Park would be beneficial for mitigating water quantity and quality impacts in the Pleasant View Tributary subwatershed, including drainage through Nicholson Tract 2 and Hopkins Tract (Figure 5).

- Issues have been reported regarding the Stormwater Management (SWM) pond located in Innovation Park. The SWM pond was designed as a dry pond. At the present time, there are no active City work plans to retrofit this facility. Potential retrofits are limited due to karst and wildlife habitat. An alternative approach may be to install oil-grit separators within the road allowance, outside of the storm pond block.

Water Quality (46)

A number of water quality issues have been identified in the Borer's Falls - Rock Chapel Heritage Lands:

- Hickory Creek has been identified as being exposed to residential septic system overflows.
- Chloride from de-icing agents, used widely to improve winter road safety, discharging into creek systems and migrating to the groundwater during snowmelt in the spring;
- Turbidity and warmed water caused by stormwater runoff, erosion, siltation, limited vegetative buffers adjacent to coldwater streams, etc.
- Issues with water contamination in shallow groundwater resulting from rural and agricultural runoff and improperly functioning septic systems.
- Local funeral homes have posted on their websites that cremated remains (ashes) can be scattered in various parts of the EcoPark System, including Borer's Falls. This activity is not sanctioned and has the potential to impact water quality negatively. There is an opportunity to reach-out to funeral homes to educate on the potential impacts of this activity and to request that the suggestion is removed from their website and associated platforms.

Septic Drainage (47)

The improper functioning of septic systems in the Pleasant View Neighbourhood may result in water quality impacts downstream in the Pleasant View Tributary subwatershed (Figure 5).

Polluting Spills (48)

The roadways, pipelines and railway lines within the Heritage Lands are a potential source of chemical and fuel spills. Spill prevention plans, contingency plans and emergency response plans should aim to protect natural features along roads, railway lines and pipelines, as well as human safety.

3.6 Ecosystem Management and Restoration

Management issues related to ecosystem management and restoration are aimed at identifying potential threats and impacts to ecosystem features and functions and identifying opportunities for management and restoration.

Forest Fragmentation (49)

Within the Current EcoPark System Lands, some forest patches are fragmented and poorly configured, with few opportunities for increasing forest interior habitat. In the past, the majority of tableland forests in and adjacent to the Current EcoPark System Lands were removed for agriculture. There is a need to restore tableland forest between the Escarpment brow and Rock Chapel Road/Sydenham Road. Currently, the narrowest tract of forest within the Current EcoPark System Lands along the Escarpment brow is only 35 metres wide (Barr 2014). Opportunities for making ecological connections are limited due to these adjacent urban land uses and major transportation corridors.

Decline in Natural Feature Quality (50)

An overall decline in the quality of natural features, including biodiversity, has resulted from increased pressures from adjacent lands, and intensification of recreational uses. For example, 19% of taxa listed as historically occurring could not be re-found at Rock Chapel based on a botanical report prepared by Royal Botanical Gardens (Stover 2014). This report provides evidence that floral richness is in decline, even in remote areas, suggesting causes may be widespread and originate outside of the Current EcoPark System Lands (see Section 4.2 on accommodating stresses from increased use, and Section 4.3.6 on hydrologic impacts). A key theme in the Management Plan will be how the Current EcoPark System Lands can be managed for biodiversity values in the face of habitat fragmentation, climate change, human uses, etc.

Forest Health Decline (51)

Several factors are currently impacting the health of forests in southern Ontario. Climate change and extreme weather events, such as prolonged periods of drought, can significantly impact the health of forests and can lead to the death of trees. Excessive tree blowdown and resulting erosion where they are stabilizing slopes can also impact the health of forests.

Oak Decline, Beech Bark Disease, Emerald Ash Borer, Gypsy Moth, Chestnut Blight, Dogwood Anthracnose, Butternut Canker, and other diseases are currently impacting the health of trees and forests overall. Asian Long-horn Beetle has not yet been documented in the Borer's Falls - Rock Chapel Heritage Lands but is another potential threat. Many forest pests, such as Emerald Ash Borer, are killing trees or causing significant dieback of trees, resulting in forest health decline, hazard trees and safety issues. Gaining access to and managing the dead trees creates a secondary management issue, along with invasive species management. Fortunately, ash is a relatively minor component of the forest ecosystem within the Heritage Lands. Non-native earthworms also appear to be contributing to the decline of forest health, particularly impacting the diversity of the ground flora and soil micro-invertebrate communities (with subsequent issues higher up in the food chain). Earthworms are keystone detritivores that can act as "ecosystem engineers" and have the potential to change fundamental soil properties, with cascading effects on ecosystem functioning and biodiversity. Proper disposal of infected trees is also a concern in areas of poor access.

Urban-adapted Wildlife (52)

Some wildlife species benefited from the forest cutting and agricultural intensification that followed European settlement in North America, increasing their population sizes and ranges (Naughton 2012, p. 517). Some of these species have also become well-adapted to urban life. Within the Borer's Falls - Rock Chapel Heritage Lands, urban-adapted wildlife species include squirrels, raccoons, skunks and deer. Over-population of mesopredators, such as raccoons and skunks, impact other wildlife through

predation, resource depletion and by dominating habitat. Their ability to capitalize on urban land use has provided them with a competitive advantage over other wildlife species.

Fragmented landscapes favour White-tailed Deer, a species which prefers forest edge. In addition, in urban areas the added complexity of intense highway development interrupts natural wildlife movement patterns. Urban areas also have few natural predators and no hunting. The Ministry of Natural Resources and Forestry (MNRF) completed a wintering deer survey in the Ancaster Area in 2009 (Yagi and Timmerman 2009). This study concluded that “concerns regarding health, public safety, vehicle collisions, impacts to forest ecosystems, biodiversity, conservation of Species at Risk, damage to ornamental plants, landscaping, agricultural crops and nursery stocks indicate that in some areas deer populations have exceeded society’s tolerance levels”, and “in areas where normal deer movement behaviours are impaired, and there is no predation, deer populations have likely exceeded the carrying capacity of their habitat”.

Royal Botanical Gardens has taken some steps to control deer populations on their lands and has partnered with local Indigenous communities to organize a cull (Royal Botanical Gardens 2013) which resulted in the removal of seven deer with their lands in the Cootes Paradise Heritage Lands. Hamilton Conservation Authority has in place a hunting model for a nearby conservation area (Dundas Valley) but not within the Borer’s Falls – Rock Chapel Heritage Lands (Hamilton Conservation Authority 2016). Although controversial, deer management of some kind should be implemented within the Current EcoPark System Lands in order to address impacts to natural heritage and human safety.

Loss of Open Woodland/Prairie/Savannah Habitat (53)

There is significant literature noting the vast open oak woodland and grassland understory that formerly occurred within and around the Cootes to Escarpment EcoPark System, the presence of which can be partially attributed to centuries of Indigenous Peoples periodic burning to maintain hunting areas, tree seed and fruit production (e.g., Goodban et al. 1997). Due to the presence of prairie indicators in the Heritage Lands, it is likely that pre-contact vegetation communities would have been comprised of a substantially greater area and coverage of open oak woodland, prairie and savannah habitats.

Over time, these habitats have been diminished within the Heritage Lands due to the loss of natural disturbances, including fire, which would have maintained a more open landscape character. Forest canopies have closed, reducing the amount of light that is able to penetrate to the forest floor. This has had an impact on the flora in the area, which has resulted in a reduction of the abundance of prairie, savannah and open woodland-dependent species. Some habitat for these species remains within the Current EcoPark System Lands and others may yet be identified (Figure 4). Current plans for ecological restoration within the Current EcoPark System Lands includes prairie, savannah, and woodland restoration, and include prescribed burning as a management technique (e.g., Berry Tract South). Conservation Halton conducted a controlled burn in Cartwright Tract on April 12, 2017.

Conservation and Recovery of Species at Risk (54)

- The conservation and recovery of Species at Risk in the Borer’s Falls - Rock Chapel Heritage Lands is largely associated with conserving and restoring habitat for Red Mulberry (*Morus rubra*), Butternut (*Juglans cinerea*), Eastern Flowering Dogwood (*Cornus florida*), American Columbo (*Frasera caroliniensis*), Eastern Meadowlark (*Sturnella magna*) and Bobolink

(*Dolichonyx oryzivorus*). Management activities focused on the conservation and recovery of Species at Risk and their habitats in the Current EcoPark System Lands include:

- Removal of White Mulberry (*M. alba*), a non-native species which hybridizes with Red Mulberry, and genetically confirmed hybrid mulberry;
- Detailed assessment of Red Mulberry sapling health and survival;
- Removal of invasive species in proximity to known locations of Species at Risk and Species at Risk habitat;
- Closure of trails in proximity to known locations of Species at Risk and Species at Risk habitat; and
- Maintaining open woodland characteristics for species at risk that rely on gaps in the canopy (e.g., American Columbo).

The conservation and recovery of species at risk is an important component of maintaining biodiversity and should continue to be supported and expanded to include other species.

Invasive Species (55)

Tables 6 and 9 in the Borer's Falls – Rock Chapel Heritage Lands Management Plan Inventory, Issues and Opportunities (North-South Environmental Inc. et al. 2018) summarize the major invasive species noted within the Current EcoPark System Lands. Invasive species tend to spread aggressively and out-compete native species with resulting losses in species diversity and ecosystem function. Invasive species management is a major priority requiring considerable management effort as many invasive species occur in the Heritage Lands. Royal Botanical Gardens is in the process of creating an organization-wide policy to help manage the spread of non-native species. Some of the invasive species documented are very difficult and/or resource-intensive to eradicate. High-profile invasive fauna noted within the Current EcoPark System Lands include Common Carp, Gypsy Moth, and Emerald Ash Borer.

Site-specific examples of invasive species issues include the following:

- Dog-strangling Vine is particularly prevalent within hydro corridors, adjacent to railways, at the north end and at the south end of Ray Lowes Side Trail (Figure 5).
- The way hydro corridors are currently managed through the Heritage Lands, including the access roads used by utility companies to access these corridors through the Heritage Lands' steep ravines, creates vectors for the spread of invasive species.
- Conservation Halton is currently managing Common Buckthorn and Dog-Strangling Vine populations at Hopkins Tract and Cartwright Tract, and Royal Botanical Gardens is managing Common Buckthorn at Rock Chapel 3 and Berry Tract South as part of the ecological restoration.
- There is a small remnant prairie just north of the CN railway in Borer's Falls Conservation Area 1 where non-native invasive species are invading (Figure 5).
- Non-native cool-season grasses and agricultural weeds, which inhibit the establishment of native grassland species, are prevalent in old fields, including those present at Berry Tract South, Borer's Falls Conservation Area 2 and 3 and Hopkins Tract (Figure 5).

Noxious Plants (56)

Poison ivy and other noxious plants pose health and safety issues for park users. Poison ivy is found throughout the Current EcoPark System Lands in various concentrations. Giant Hogweed has also been noted within the Current EcoPark System Lands.

Wildlife Crossing/Corridors (57)

The lack of wildlife crossings has been identified as a major issue of concern for the Cootes to Escarpment EcoPark System. The issue includes impacts to wildlife populations as well as human safety issues in the case of collisions involving deer. The existing assemblage of land parcels that comprise the Current EcoPark System Lands are fragmented by transportation infrastructure. As a result, wildlife is forced to cross roads, and railways in order to access lands that are required for fulfilling their various life processes (e.g., mating, nesting, foraging, over-wintering). Highway 6 likely serves as a significant barrier to east-west wildlife movement through the Ecosystem Park Lands owing to the cut through the Niagara Escarpment creating vertical faces just south of Highway 5 until just south of the northern terminus of Old Guelph Road, whereupon large quantities of fill raise the Highway 6 to its intersection with Highway 403. Three rows of jersey barrier bounding and dividing the highway further hinder movement in the raised portion of Highway 6 for some wildlife. Vehicular speed and wildlife collision on roads severely impacts the safe passage of wildlife, and ultimately wildlife populations. Road mortality has been attributed to significant declines in amphibian and reptile populations, although this fact has not yet been proven within the Heritage Lands. The City of Hamilton has established a wildlife corridors committee to examine key wildlife crossings and movement as they relate to the City of Hamilton's Natural Heritage Plan. Several issues related to wildlife crossing and corridors have been identified for the Borer's Falls - Rock Chapel Heritage Lands, including the following:

- There is a large population of White-tailed Deer within the Borer's Falls - Rock Chapel Heritage Lands and the adjoining Cootes Paradise Heritage Lands. The crossing of urban and rural roads by White-tailed Deer poses issues for wildlife and the safety of the public. Deer and other wildlife crossing hotspots have been identified in several locations on York Road:
 - at Hickory Brook through the valley system extending from Borer's Falls - Rock Chapel Heritage Lands to Cootes Paradise Lands;
 - through stream valley east of Valley Road, across York Road; and
 - from the bottom end of Borer's Falls Conservation Area across York Road and into Cootes Paradise Sanctuary 9 (Figure 5).
- Reptiles, particularly snakes, are at risk as multiple roads through this area run east-west parallel with the escarpment reducing north-south movement to Cootes Paradise (i.e., movement from candidate overwintering areas to foraging and reproduction areas).

Cootes Paradise to the Niagara Escarpment, of which the Borer's Falls - Rock Chapel Heritage Lands is a part, is a critical corridor. The development of an appropriate wildlife corridor and enhanced forest connectivity through the north should be a priority initiative.

Watershed/Sub-watershed Boundary Issues (58)

In reviewing background information and mapping for the Borer's Falls - Rock Chapel Heritage Lands Management Plan, discrepancies in watershed boundary mapping were encountered. The watershed boundary available from Land Information Ontario (LIO) differed from watershed boundary information provided by Conservation Halton and Hamilton Conservation Authority. Issues with consistency in the mapping of sub-watershed boundaries were also encountered. According to some map layers, a portion of Conservation Halton appears to be within Hamilton Conservation Authority's watershed/drainage. In addition, Hamilton Conservation Authority owns lands within Conservation Halton's jurisdiction (Borer's Falls Conservation Area 2 and 3), which is confusing. In addition, current mapping of small tributaries and springs that originate from the Niagara Escarpment requires updating.

3.7 Cultural Heritage

A number of issues and opportunities were identified through the inventory and evaluation of cultural heritage resources as follows.

Cultural Heritage Importance of Farming Structures and Remnants (60)

Farming was an important activity in the Borer's Falls - Rock Chapel Heritage Lands for over 200 years, yet few cultural resources remain within the Heritage Lands other than building foundations and building remnants to convey this history.

Hopkins Cemetery (61)

The Hopkins Cemetery is a tangible connection to the settlement history of Borer's Falls - Rock Chapel Heritage Lands but has not been designated for protection by the City of Hamilton, is not generally known to the public and is not easily accessible.

Rotary Club Masonry Building (62)

The Rotary Club masonry building on the Royal Botanical Gardens Escarpment Trail may create confusion for visitors who assume it is the Rock Chapel for which the Rock Chapel Nature Sanctuary and trail are named (Figure 5).

Cultural Heritage on Privately Owned Outreach Areas and Adjacent Lands (63)

There is little that remains to convey the importance of the Rock Chapel Village Sawmill (Borer's Mill) as a cultural resource in the Borer's Falls - Rock Chapel Heritage Lands.

4.0 Heritage Lands Management Recommendations

This section of the Management Plan addresses the issues and opportunities identified in Section 3.0. The recommendations have been developed predicated on the expectation that use is going to increase as a result of the continued growth in the Greater Toronto and Hamilton Area, a surge in public interest in waterfalls along the Niagara Escarpment and the expansive outdoor experience offered within the Cootes to Escarpment EcoPark System. The Cootes to Escarpment EcoPark System as a whole, including Borer's Falls - Rock Chapel Heritage Lands, are at a critical juncture; if management is not implemented, current and anticipated increases in impacts are expected to result in substantial degradation of the natural, recreational and cultural values of the area. Thus, implementing management of these lands is extremely important and timely. Although the management plan focuses on Current EcoPark System Lands within the Borer's Falls - Rock Chapel Heritage Lands, there are also pressures being placed on Privately Owned Outreach Areas within the Heritage Lands, and Adjacent Lands. In some instances, management issues on the Adjacent Lands affect the Current EcoPark System Lands and will influence the scope of management initiatives. Communication, education and stewardship with adjacent landowners will be a key consideration in future management. Where appropriate, consideration of these adjacent pressures is provided.

The recommendations of this Management Plan are arranged into 64 "Management Themes". These themes are based on the issues identified in Section 3.0. Each Management Theme is numbered solely

to allow easy reference to a corresponding management issue; the numbers do not reflect any priority for implementation.

4.1 Approach to Management Recommendations

Because much of the Cootes to Escarpment EcoPark System is part of the NEPOSS, the management plans were prepared following the NEPOSS land classifications and zones as a basis for recommending future management initiatives. The NEP requires that Management Plans be prepared for each park and open space in the NEPOSS. The NEP Management Plans lay out goals and objectives, guide the protection and management of natural heritage features and cultural heritage features, and identify appropriate activities in NEP park and open space areas. This poses a unique situation for the Borer's Falls - Rock Chapel Heritage Lands, which are comprised of several parcels, some, but not all of which are classified as separate parks in the NEP, i.e., several NEP parks with different classifications occur within the Borer's Falls - Rock Chapel Heritage Lands.

Within the Borer's Falls - Rock Chapel Heritage Lands, the following six park and open space areas have been identified and classified in the NEP:

1. Rock Chapel – Natural Environment;
2. Borer's Falls Conservation Area – Nature Reserve;
3. Berry Tract – Natural Environment;
4. York Road Access – Escarpment Access;
5. Pleasant View Conservation Sanctuary – Natural Environment; and
6. Clappison Woods – Natural Environment.

In the context of the Cootes to Escarpment EcoPark System, a single Management Plan is being prepared for each of the six Heritage Lands per requirements specified in the Cootes to Escarpment Park System Phase II Land Management Strategy (October 2009). A single overall Management Plan is desirable in order to manage the lands in a holistic and integrated manner, among multiple partners. To reconcile these two different frameworks, the Borer's Falls - Rock Chapel Heritage Lands will not be identified as a single park or open space area but will adopt the classification and zoning for each park as identified in the NEP. Classification and zoning have also been recommended for park and open space areas not included under an existing park, and for those not falling within the NEP area. As a result, the Heritage Lands will contain multiple classification and zoning assignments.

This Management Plan intends to provide overall high-level guidance for the future management of the Heritage Lands. Detailed site-specific master plans may be prepared at a later date by individual landowners or agencies to refine recommendations further and, depending on whether their lands are within the NEP area, these may need to be submitted for approval through the NEPOSS process.

4.1.1 Classification and Zoning of the Heritage Lands

To assist in the development of future detailed Master Plans, the classifications and zones from the NEPOSS planning manual were applied to the Borer's Falls - Rock Chapel Heritage Lands. These provide a basis for identifying permitted uses and long-term management. The full rationale and description of the classification and zoning exercise are provided in Appendix 1. Note that classifications are applied to entire parks, as defined in the NEPOSS manual, and zones are areas that guide development and management within each park.

A summary of the classifications and zones is provided below.

1: Classification of the Heritage Lands per NEPOSS

The NEPOSS Planning Manual (MNR 2012) provides six classifications that characterize park and open space areas within the NEP area. Notably, with the release of the updated Niagara Escarpment Plan in 2017, the previous “Historical” classification was replaced with “Culture Heritage”. The Borer’s Falls - Rock Chapel Heritage Lands contain three classifications: Nature Reserve, Natural Environment and Escarpment Access.

Changes to the classification of lands with the Borer’s Falls – Rock Chapel Heritage Lands have been proposed in the Classification and Zoning Report (see Appendix 1).

- We recommended that the classification of Rock Chapel be changed from Natural Environment to Nature Reserve to emphasize the importance of the area’s natural heritage features, which include provincially significant plant species and rare vegetation communities;
- We also proposed that the boundaries of York Road Access park be modified to include Borer’s Falls Conservation Area 3 and the western parcel of Borer’s Falls Conservation Area 2;
- Lastly, we recommended that the eastern parcel of Borer’s Falls Conservation Area 2 be changed from Escarpment Access to Natural Environment. This parcel could either be incorporated within the adjacent Cootes Paradise Sanctuary park (classified Natural Environment) or named as a new individual park.

2: Zoning of the Heritage Lands per NEPOSS

The use of zoning is outlined in the NEP as “essential to the orderly planning, development and effective management of a park or open space area”. NEP zoning is intended to work within each of the park classifications to guide uses based on the significance of resources, the need for protection, and the potential for recreation or other activities. The NEPOSS Planning Manual (Ontario Ministry of Natural Resources 2012) provides six zones and each one serves a specific purpose and provides direction on planning and management. The revised Niagara Escarpment Plan (Ministry of Natural Resources and Forestry 2017) has changed the naming for the zones as identified in the NEPOSS Planning Manual; what was previously “Natural” is now “Natural Environment” and “Historical” is now “Cultural Heritage”. The changes in the name of the zones do not appear to change the intent of their management direction and permitted uses. The Borer’s Falls – Rock Chapel Heritage Lands contain six zones: Nature Reserve, Natural Environment, Access, Cultural Heritage, Development, and Resource Management.

In this Management Plan, the Resource Management zone has been applied to lands with the sole intent of providing for future restoration activities, and not to provide for active resource extraction or harvesting. It is recommended where restoration would be the principal management activity in the future owing to the current characteristics of the area. Zoning recommendations are based on the inventory and analysis completed for the Inventory, Opportunities and Issues Report. Recommended Zoning for the Borer’s Falls – Rock Chapel Heritage Lands is provided in Appendix 1.

4.2 Overarching Management Recommendations

There are a number of recommendations that are better to be addressed throughout the EcoPark System and are not specific to the Borer's Falls - Rock Chapel Heritage Lands. These recommendations are organized according to the management themes identified in Section 3.0 and are provided below.

3. Awareness of the Cootes to Escarpment EcoPark System

- While recognizing the identity of the partner agencies, standardize elements of signage used in the Cootes to Escarpment EcoPark System. Signage, promotional material, advertising, educational material, etc. should include the Cootes to Escarpment EcoPark System and Heritage Lands. This will raise the EcoPark System profile, contribute to name-recognition and promote the EcoPark System as a collaborative initiative;
- Encourage partners to collaborate on standardizing signage within the EcoPark System. For example, standardization of colour, size, messaging, graphics, font, Accessibility for Ontarians with Disabilities Act, 2005 (AODA) compliance, placement and size of EcoPark System and partner logos, etc. could be established;
- The placement of signage can be challenging, especially because there are so many access points into the Cootes to Escarpment EcoPark System. The future placement of signage should take into consideration visibility, locations of other signage, the density of adjacent brush and proximity to intersections; and
- Consistently post signage to indicate when users are entering and exiting the Cootes to Escarpment EcoPark System to increase awareness.

4: Delineation of Current EcoPark System Boundaries to Reduce Trespass/Encroachment Issues

- Develop and implement a consistent system to locate and mark boundaries of Current EcoPark System Lands within the Cootes to Escarpment EcoPark System. This could include fencing or where that is not feasible or ecologically appropriate, permanent boundary markers. Increasing awareness of property boundaries will reduce trespass and encroachment issues. It will also provide a basis for enforcement of the policies and permitted uses of each of the partner agencies on their properties. Note that there may also be a need to mark boundaries of partner agency properties within the Current EcoPark System Lands, especially where permitted uses change in response to ownership. This could be more subtle marking along trails where they cross property boundaries.

5: Need to Better Communicate the Multi-agency Management of the EcoPark System

- Permitted uses for each of the land-owning partners should be clearly communicated throughout the Current EcoPark System Lands. Permitted uses do not have to be consistent throughout all properties or areas, but should be established based on the sensitivity of the area and the mandate of the landowning agency. Current EcoPark System Lands may also have specific uses/restrictions applied as a result of NEPOSS classification and zoning;
- Clearly communicate permitted uses to EcoPark System users through improved signage and outreach initiatives; and
- The partner agencies that own land within the EcoPark System should identify and, to the extent that is possible, reconcile inconsistencies in permitted uses and management policies (e.g., cycling on the Bruce Trail, which is not permitted by the Bruce Trail Conservancy, but is by other partner agencies). Preferably, this would be done for the entire EcoPark System,

however, if that is not possible, then at least doing it within each of the Heritage Lands would be helpful to deliver a concise and consistent message to the public.

6: Population and Use

- Responsibility for impacts on Heritage Lands resulting from development and the cost of additional management to mitigate impacts should be borne by development proponents to the extent possible;
- Planning authorities should consider developing policies that would encourage the implementation of relevant management recommendations made in this Management Plan through development approvals, where appropriate. Per the Greenbelt Plan 2017, municipalities, agencies and other levels of government must consider the Borer's Falls – Rock Chapel Heritage Lands Management Plan when making decisions on land use or infrastructure proposals;
- Partner agencies directly involved in the development approval process (in the case of the Borer's Falls - Rock Chapel Heritage Lands these are the City of Hamilton, Conservation Halton, and the Hamilton Conservation Authority) should consider and incorporate the significance of the Heritage Lands in their reviews and in the subsequent development of conditions they impose on development approvals, where appropriate;
- Partner agencies should include consideration of increased use pressures and environmental impacts on Heritage Lands in their assessment of development applications on adjacent and nearby land, where appropriate;
- Impacts associated with future developments adjacent to the Heritage Lands should be clearly identified and assessed in Environmental Impact Assessments/Studies in the context of the role the Heritage Lands play in the overall Cootes to Escarpment EcoPark System. Limits of developable areas, buffer widths, and management needs such as design and provision of trails within the Heritage Lands should consider the higher ecological value of the Cootes to Escarpment EcoPark System when determining impact mitigation for future development, where appropriate; and
- Encourage other agencies and landowners that are not directly involved in the development approval process to comment on development applications that may impact their lands.

7: Funding

- Partner agencies should determine how each of the areas that comprise the Current EcoPark System Lands are to be accessed by users and on what terms (e.g., pay for use, payment not required);
- Consider updating the funding formula for the Cootes to Escarpment EcoPark System;
- Identify sources and pursue additional funding for the management of Current EcoPark System Lands; and
- Identify efficiencies for managing the Current EcoPark System Lands collaboratively, and in a holistic manner. Communication among partner agencies on planned management activities may highlight opportunities for reducing costs and improving the efficiency of implementation.

8. Trail/CN and CP Railway Crossings

- Consult with and clearly demarcate Borer's Falls – Rock Chapel Heritage Lands trail crossing points with CN Rail to ensure they meet safety standards.

9. Critical Corridor for Connection of Cootes Paradise to the Niagara Escarpment

- Continue to purchase and receive donations of lands within the Cootes to Escarpment EcoPark System, as they become available through the Land Securement Strategy, with a priority placed on “joining” existing EcoPark System Lands and lands located with the critical corridor that provides the connection between Cootes Paradise and the Niagara Escarpment; and
- Securement tends to focus on highly sensitive lands. However, consideration could also be given to purchasing lands that are less ecologically sensitive that could provide opportunities for activities that are inappropriate in ecologically significant/sensitive lands. For example, lands that are dominated by non-native invasive species would be better suited for dog walking, mountain biking or other forms of more active recreation than ecologically significant/sensitive lands.

10. Desire and Need for Trail Connections and Trail Plan

- Pursue opportunities to develop connecting nature trails as well as multi-use trails on roadside shoulders, in rights-of-way and utility corridors to create these much-needed trail connections. In addition, consideration should also be given to incorporating multiuse trails in future planned road works such as potential re-alignment, widening or geometric improvements within the surrounding road network;
- Explore the potential for a trail connection, where possible, through the pipeline/utility line corridors, extending from Cootes Paradise Sanctuary 9 through Borer’s Falls Conservation Area 3, Pleasant View Natural Area - Cartwright Tract and Nicholson Tracts to Old Guelph Road, just south of the Bruce Trail crossing of Highway 6; and
- Prepare a Trail Plan for the Cootes to Escarpment EcoPark System to provide guidance on trail-related issues that span individual Heritage Lands boundaries, with an emphasis placed on addressing the need for trail connections throughout the EcoPark System. All relevant stakeholders should be engaged to provide comment and review of the Trail Plan, and the City of Burlington Community Trails Strategy (2015), the City of Hamilton Recreational Trails Master Plan (2016), and the City of Hamilton Draft Transportation Master Plan Review and Update (2018) should be referenced. Note this is different from the Ecopark Trail Guideline, discussed below in Management Theme 12, which primarily addresses trail design and maintenance issues.

11. Desire and Need for a Wildlife Crossing Plan

- Maintain and protect the continuity and integrity of corridors through the Borer’s Falls – Rock Chapel Heritage Lands, particularly across major roads;
- Investigate the need for and feasibility of implementing wildlife corridors and wildlife crossings through the Environmental Assessment process. Ensure that best design principles for wildlife crossings are incorporated, including adequate fencing to accompany wildlife crossings structures;
- As identified through the development of a Wildlife Crossing Plan, prioritize and upgrade existing crossing structures (e.g., road culverts) to improve wildlife passage. This could be completed across a municipal jurisdiction and would not necessarily need to be tied to the Cootes to Escarpment EcoPark System, but should be designed to complement the objectives of the Cootes to Escarpment EcoPark System;

- Identify areas where wildlife habitually cross roads within the Cootes to Escarpment EcoPark System, to gain a better understanding of where wildlife passages or other mitigation needs to be initiated. This may include:
 - collect and map road kill data from municipal and other sources;
 - establish a program that encourages the reporting of all road kill from the public and partner agencies, and enters it into a database to facilitate analysis;
 - include wildlife impact analyses into the Terms of Reference of all road upgrade projects within the Heritage Lands; and
 - stay informed of current and future alternatives for improving wildlife road crossings including wildlife crossing structures, traffic calming, signage, etc. through review of relevant literature, participating in conferences, workshops, etc., addressing wildlife road mortality.
- Identify representatives from the City of Hamilton and the City of Burlington that have responsibility for road maintenance and capital works projects in the Cootes to Escarpment EcoPark System lands and include them in management discussions that involve roads (e.g., salt/de-icing agent management, pedestrian trail-road crossings, wildlife crossings, roadkill clean-up, roadside parking, signage on roads, etc.);
- Contribute to long-term monitoring opportunities by initiating and/or continuing to monitor wildlife crossing and road mortality. Monitoring programs could be developed at a municipal scale, and could be designed to complement the objectives of the Cootes to Escarpment EcoPark System; and
- Results of monitoring should be made publicly available through peer-reviewed journals, conferences, published on partner web-pages, etc., in order to contribute to peer to peer information sharing and the continued improvement in the field of road ecology.

12: EcoPark System-wide Guidelines

There are a number of issues that are generally common to all of the Heritage Lands. It would be most efficient to address these issues through several EcoPark System-wide Guidelines, which address all the common issues and also identify the issues that are limited to one or more Heritage Lands. This approach has the additional advantage of providing consistency among Heritage Lands, thus contributing to the resolution of consistency and identity issues noted above.

- Identify participating partners for each EcoPark System Guideline; and
- Using the guidance provided in this Management Plan, it is recommended that the Steering Committee identify themes or groups of issues that are best addressed through EcoPark System-wide Guidelines and initiate the development of those guidelines. As a starting point, it is recommended that the EcoPark System-wide issues can be grouped into the following themes/guidelines:
 - Trail Guideline;
 - Education and Signage Guideline;
 - Vegetation Management Guideline; and
 - Edge Management Guideline.

The issues to be addressed in these Guidelines, as identified through the Clappison-Grindstone and Waterdown-Sassafras Woods Heritage Lands Management Plan studies (North-South Environmental Inc. 2016), are provided in Section 3.0 and recommendations for implementation are provided in

Section 5.0. Suggestions for which management issues and opportunities could be addressed by each Guideline are provided in Appendix 3.

Each partner agency may already have some form of guidelines (e.g., guidelines for trail construction and/or trail closure), although not specific to the Cootes to Escarpment EcoPark System. Partner agencies are encouraged to use their existing guidelines as a starting point for developing Guidelines that are specific to the Cootes to Escarpment EcoPark System. The Guidelines are intended to engage the partner agencies in the preparation of a series of short reference documents that can be used to guide future management consistently and holistically across the EcoPark System. For example, the Trail Guideline could include guidelines that are agreed upon by the partner agencies for trail construction, including specifications for trail width, trail surfacing and proper trail alignment, as well as guidelines for trail closure, including specifications for when trails should be closed, how they should be closed, appropriate signage, etc. Additional detail on the EcoPark System Guidelines is provided in Section 5.2.

The Management Plans prepared for individual Heritage Lands are intended to provide high-level guidance for the management of each individual Heritage Lands. The EcoPark System Guidelines are intended to provide specific guidance for trails, education and signage, vegetation management, edge management, etc. agreed upon by the partner agencies to enable, to the extent possible, consistent and holistic management across the entire EcoPark System.

The Management Plans, once completed for all six Heritage Lands, will provide the basis for the recommended EcoPark System Guidelines, as well as future system-wide Plans that will provide direction for actual implementation. Both the EcoPark System Guidelines and future EcoPark System-wide Plans are proposed future initiatives that are not currently planned and will need to be considered by the Cootes to Escarpment EcoPark System Management Committee. Future proposed initiatives include the preparation of Guidelines at a wider scale including a Trail Plan (to address trails, trail connections, access points, etc.) and a Wildlife Crossing Plan (to address wildlife corridor, wildlife crossings, etc.) (See theme 11 above). The preparation of EcoPark System-wide Plans would be individual agency followed by implementation (including detailed design and construction), and monitoring.

4.3 Borer's Falls – Rock Chapel Heritage Lands Management Plan Recommendations

4.3.1 Vision

The Vision for the Cootes to Escarpment EcoPark System is that “it will be known internationally as a protected, permanent and connected natural lands sanctuary from the Harbour to the Escarpment that promotes ecosystem and human health within Ontario’s Greenbelt” (Phase II Report, October 2009). The primary focus of the Vision is to establish a sustainable natural system that will contribute to ecosystem integrity and enhance the quality of life for the public through appreciation of the natural environment. Inherent in providing opportunities for appreciation is realizing the recreational opportunities in the EcoPark System, and ensuring that recreation will be promoted and supported where consistent with the protection of natural heritage features and functions.

13: Develop Vision

It is recommended that the Steering Committee for the Borer's Falls – Rock Chapel Heritage Lands develop a unique Vision for the Heritage Lands. We suggest the following as a starting point for the Vision:

“The overall vision to guide the long-term use and management of the Borer's Falls - Rock Chapel Heritage Lands is to protect, restore and appropriately manage significant natural, recreational and cultural heritage resources. Inherent in this vision is recognition of:

- the integral role the Borer's Falls - Rock Chapel Heritage Lands play in preserving biodiversity and the ecological integrity of the Cootes to Escarpment EcoPark System;
- the value of the Borer's Falls - Rock Chapel Heritage Lands for passive outdoor recreation;
- the value of teaching wise stewardship through active involvement in protection and management activities; and
- the responsibility of the partner agencies and community, through management and stewardship, to preserve biodiversity and ecological functions for the well-being and enjoyment of present and future generations.”

This Vision articulates the long-term intent for the protection and use of the Borer's Falls - Rock Chapel Heritage Lands. Given the evolving context of the surrounding landscape, it is inevitable that active management will be required to mitigate impacts from increased use and to provide and maintain the appropriate infrastructure for public access. The Heritage Lands Management Plan provides a framework for implementing long-term management.

4.3.2 Recommended Permitted Uses

14: Permitted Uses per NEPOSS Classification

This section of the Management Plan provides general directions on permitted uses based on the NEPOSS Planning Manual. Specific management recommendations are provided in Sections 4.3.1 through 4.3.8 to address the management issues identified in Section 3.0. A summary of classifications and zoning for Borer's Falls – Rock Chapel Heritage Lands is provided in Appendix 1: Figure 1 and Table 3. Landowners have the ability to further refine recommended classifications and permitted uses, as appropriate, at a later date should they opt to develop individual Management/Master Plans for their lands.

Nature Reserve Classification:

The Nature Reserve class parks intend to ensure that the features and values for which the parks are identified are protected in perpetuity. Recommended permitted uses include the following, except where prohibited by the policies of Heritage Lands partners:

- Limited access to nature trails: Access should be limited and not widely promoted due to the sensitivity of the features in them and the potential for impacts;
- The “nature trails” referred to in the NEPOSS manual are understood to refer to low-impact hiking trails, which is the preferred use for trails in Nature Reserve class parks;
- Expansion of cycling and higher impact recreational activities are not recommended or encouraged in Nature Reserve class parks. It is recommended that:
 - No management be undertaken to expand or encourage cycling in Nature Reserves (e.g., new trails, etc.);

- Management be undertaken that will reduce or eliminate any impacts resulting from the existing level of use; and
- Where the existing use is resulting in unacceptable impacts (e.g., owing to inappropriate trail alignment, proximity to species at risk or other significant or sensitive feature), it is discontinued;
- Activities such as ecological restoration and those that can further scientific understanding and education should be encouraged, including scientific research, natural history interpretation, nature trails and the Bruce Trail;
- Other existing low-impact activities that are currently allowed by the existing policies of the partner agencies, should continue to be allowed, subject to other management recommendations of this management plan aimed at reducing/eliminating impacts; and
- Signage and interpretive facilities should be kept to a minimum and should be restricted to those required to support the preferred use, education and/or minimize impacts.

Recreational activities currently occur in Nature Reserve class parks (e.g., Waterdown Woods).

Natural Environment Classification:

The intent of Natural Environment class parks (e.g., Rock Chapel, Berry Tract, Pleasant View Conservation Sanctuary, Clappison Woods) is to protect existing natural heritage features and allow for moderate intensity recreational activities. Recommended permitted uses include the following, except where prohibited by the policies of Heritage Lands partners:

- day use activities in areas accessible by sanctioned trails;
- recreation activities of moderate intensity such as hiking, trail running, cycling, on-leash dog-walking, and nature appreciation (botanizing, bird-watching, etc.); and
- other existing low-impact activities that are currently allowed by the existing policies of the partner agencies should continue to be allowed, subject to other management recommendations of this management plan aimed at reducing/eliminating impacts.

Recreation Classification

Recommended permitted uses include the following, except where prohibited by the policies of Heritage Lands partners (e.g., Valley Community Centre Park):

- Facilities for overnight camping, including campgrounds, temporary yurts and tents, lean-tos and un-serviced cabins;
- Visitor service facilities with retail components; and
- Small-scale, special-purpose facilities designed and operated in support of natural history, environmental and UNESCO World Biosphere Reserve and related programming, which may include fully serviced overnight accommodations with meals for facility guests.

Resource Management

Recommended permitted uses include the following, except where prohibited by the policies of Heritage Lands partners (e.g., Innovation Park):

- Uses of these areas may include flood control, sustainable forest and wildlife management, and activities such as hiking, cross-country skiing and nature appreciation.

Specific management recommendations aimed at minimizing impacts from recreation and other uses are provided in Section 4.3.4.

15: Permitted Uses per NEPOSS Zone

This section of the Management Plan provides general permitted uses for each park zone based on the NEPOSS Planning Manual with consideration for the preferred use concept described above. Specific management recommendations that respond to issues identified in Section 3.0 are provided in Section 4.0. Landowners have the ability to further refine recommended zones and permitted uses, as appropriate, at a later date should they opt to develop individual Management/Master Plans for their parks.

Nature Reserve Zone:

Recommended permitted uses provided in the NEPOSS Planning Manual include the following, except where prohibited by the policies of Heritage Lands partners. Not all of the following are relevant for the EcoPark System:

- protect, preserve and restore identified natural heritage features;
- hiking, trail running, on-leash dog walking and passive activities such as nature appreciation, bird watching, etc.;
- visitor uses should be very restricted within the Nature Reserve zone;
- development should be restricted to maintenance of limited and strategically placed nature trails, interpretive and directional signs;
- any temporary equipment or minor structure required for research or monitoring (e.g., data loggers, quadrats, blinds, recording equipment, etc.);
- cycling and higher impact recreational activities are not recommended or encouraged in the Nature Reserve zone. However, where they are existing uses and they could be tolerated, management is recommended where it reduces impacts but does not expand the use;
- activities associated with habitat restoration, conservation and research;
- signage should be provided that indicates when a park user is entering a Nature Reserve, and what the appropriate behaviour is (e.g., staying on trails, no unsanctioned management, etc.);
- a “special protection” sub-zone should be used within Nature Reserve zones where there are significant and/or sensitive features. Recreational activities, including existing ones (e.g., cycling and hiking), should not be permitted in such sub-zones:
 - this sub-zone may be desired in locations such as rare species habitat, talus slopes, wetlands, etc. where access should not be facilitated;
 - the benefits of applying a “special protection” sub-zone include protecting sensitive and/or significant natural heritage features by directing recreational activities away from these areas; and
 - the “special protection” sub-zone could be established in future property-specific Management/Master Plans.

Natural Environment Zone:

Recommended permitted uses provided in the NEPOSS Planning Manual include the following, except where prohibited by the policies of Heritage Lands partners. Not all of the following are relevant for the EcoPark System:

- the Natural Environment zone is to function as a buffer between Development zones and Historical or Nature Reserve zones;
- visitor uses should be limited to low- to moderate-intensity recreational activities;
- hiking, trail running, cycling, on-leash dog walking, nature appreciation, bird watching etc.;

- a major difference in use between Natural and Nature Reserve zones is that cycling will be accommodated (on properly designed and located trails) in the former, but only tolerated and not expanded or encouraged in the latter;
- a minimal level of development (e.g., trails, necessary signs, etc.) should be permitted to support low-intensity recreational activities in ecologically appropriate locations; and
- activities associated with habitat restoration, education, research and conservation-based activities.

Access Zone:

Recommended permitted uses provided in the NEPOSS Planning Manual include the following, except where prohibited by the policies of Heritage Lands partners. Not all of the following are relevant for the EcoPark System:

- the Access zone intends to support the use and access of adjacent zones;
- all uses permitted with adjacent zones;
- development should be limited to facilities that support access to Nature Reserve, Natural Environment and Cultural Heritage zones, such as parking lots, access roads, signs and trailheads;
- low-impact development techniques, such as permeable pavement, bioretention, and bioswales, should be evaluated and implemented wherever feasible to minimize impacts to water quality and quantity otherwise resulting from an increase in impervious-permeable surfaces (e.g., access roads and parking lots); and
- consider ecological restoration opportunities in Access zones where manicured turf is not required.

Cultural Heritage Zone:

Recommended permitted uses provided in the NEPOSS Planning Manual include the following, except where prohibited by the policies of Heritage Lands partners. Not all of the following are relevant for the EcoPark System:

- the Cultural Heritage zone intends to protect significant archaeological and cultural heritage features and areas;
- management activities should aim to protect and interpret archaeological and cultural heritage features, and could include interpretive, educational, research and management facilities, trails, signs, and historical restorations or reconstructions; and
- within the Cultural Heritage zone, cultural heritage resources should be conserved using appropriate techniques and practices that are consistent with Municipal, Provincial and Federal policy and standards.

Development Zone:

Recommended permitted uses provided in the NEPOSS Planning Manual include the following, except where prohibited by the policies of Heritage Lands partners. Not all of the following are relevant for the EcoPark System:

- the Development zone intends to provide the main access to the park or open space, and facilities and services to support the recreational facilities available;
- this type of zone allows the development of visitor and park facilities, subject to other recommendations of this management plan;

- development includes parking lots and gates, picnic areas, commercial service facilities, and orientation, interpretive, education, research and maintenance facilities;
- development of facilities must be designed and undertaken in an environmentally sustainable manner that will minimize their environmental and visual impact;
- uses permitted in adjacent zones;
- low-impact development techniques, such as permeable pavement, bioretention, and bioswales, should be evaluated and implemented wherever feasible to minimize impacts to water quality and quantity otherwise resulting from an increase in impervious surfaces; and
- the Development zone should have a minimal negative impact on natural heritage features and cultural heritage features, the natural landscape and watersheds.

Resource Management Zone:

As noted previously, in this management plan the Resource Management zone is applied where ecological restoration is recommended as the primary management need and is not intended to facilitate resource extraction or harvesting. Recommended permitted uses provided in the NEPOSS Planning Manual include the following, except where prohibited by the policies of Heritage Lands partners. Not all of the following are relevant for the EcoPark System:

- the intent of the Resource Management zone for the purpose of this plan is to identify lands where ecological restoration should be a principal management activity owing to the current characteristics of the area and potential for enhancing ecological integrity and biodiversity;
- uses permitted will be the same as those recommended for Natural zones, excepting that in the future, should the restoration result in an area that would qualify as a Nature zone, the more restrictive uses of that zone would apply;
- ecological restoration within Resource Management zones must aim to compliment adjacent natural heritage resources, and to the extent possible, must use native species of local genetic provenance;
- Resource Management zones may be used to demonstrate ecologically sustainable resource management practices; and
- establishing permanent research plots for monitoring purposes is also encouraged.

Recreation Zone:

In this management plan, the Recreation zone is applied in areas where management and development of resources are appropriate in order to provide the recreational environment and facilities required to support a wide variety of activities, which may be for day use only. While the public use of recreation zones may include more intensive activities or uses than in other zones, these activities should be suited to the natural character of the classification and must be conducted in an environmentally sustainable manner. Development of facilities must also be designed and undertaken in a way that will minimize the environmental impact of the development. Recommended permitted uses provided in the NEPOSS Planning Manual include the following, except where prohibited by the policies of Heritage Lands partners. Not all of the following are relevant for the EcoPark System:

- Facilities for overnight camping may be provided, including campgrounds, temporary yurts and tents, lean-tos and unserviced cabins.
- Visitor service facilities with a retail component may be permitted.
- Small-scale, special-purpose facilities designed and operated in support of natural history, environmental and UNESCO World Biosphere Reserve and related programming, which may include fully serviced overnight accommodations with meals for facility guests only, are

permitted. They may also be allowed as an accessory use if specifically permitted in an approved management plan.

- Note: Intensive commercial facilities, such as full-service restaurants, banquet halls, lodges, hotels, conference centres, retreats, schools, spas and buildings with provision for fully serviced overnight accommodation, as distinct from camping, will not be permitted.
- Certain activities or functions such as those listed above may be considered if such use is a secondary or an off-season use at an approved recreational facility. For example, a ski lodge where food is served during the winter may be used for occasional day conferences during off-season periods.

4.3.3 Access and Infrastructure Recommendations

This section of the Management Plan provides management recommendations for access and infrastructure-related issues identified in Section 3.2.

16: Lack of Adequate Parking and Access

- Proposed access points and parking areas should be reviewed in the context of the Cootes to Escarpment EcoPark System management plans and the City of Hamilton's Recreational Trails Master Plan;
- Encourage partners to secure lands that would enable the creation of additional Access zones and promote trail connections
- Complete recommended trail connections throughout the Heritage Lands and beyond through a comprehensive Trail Plan;
- Evaluate existing parking areas to determine how well they provide access, including: are they located in an appropriate park zone, are they adequately sized, and identify potential safety concerns;
- Assess the feasibility of improving accessibility for all people;
- Clearly identify existing sanctioned parking areas, where they occur in appropriate zones, as part of the EcoPark System and promote their use;
- Provide interpretive and way-finding signage at designated parking areas to orient and educate EcoPark System users;
- Ensure appropriate levels of security are provided at parking and access locations including addressing adequate visibility, safe access and traffic calming, and Crime Prevention through Environmental Design (CPTED) principles;
- As parking lots undergo maintenance or are constructed, low impact development techniques should be evaluated for each development to reduce environmental impact.
- Look for opportunities for additional parking and access and investigate for feasibility. Consider investigating the feasibility of using utility corridors and/or unopened road allowances as additional access points;
- Evaluate the feasibility and complete the appropriate investigations to determine if shifting the Rock Chapel Parking Lot west of its existing location will reduce hazards identified with entering and exiting the lot relative to the curve in Rock Chapel Road.
- Develop options for improving parking and access from Valley Road.
- Improve parking and signage at Borer's Falls Dog Park to improve access and mitigate impact associated with overflow parking occurring under the drip-line of trees, outside the designated parking area.

- Support the development of a publication that specifies recognized access points for appropriate access to Hamilton's waterfalls such as Borer's Falls to help mitigate unsanctioned access and the creation of unsanctioned trails associated with the falls. Consultation with Tourism Hamilton is required for waterfall publications.
- Evaluate the feasibility and complete the appropriate investigations to determine if a parking lot at Hopkin's Tract is needed/appropriate to facilitate visitor access to the Cootes to Escarpment EcoPark System.
- Engage with Bike Share Hamilton (Social Bike or SoBi Hamilton) to explore interest and potential for installation of Bike Share hubs at key locations in Borer's Falls - Rock Chapel Heritage Lands. Currently, the SoBi Hamilton system area does not extend to the Borer's Falls - Rock Chapel Heritage Lands; SoBi Hamilton is actively seeking prospective partners to sponsor new stations. Bike Share hubs should be strategically sited as there is evidence from other escarpment access areas in the City of Hamilton that users are often reluctant to cycle up steep and lengthy inclines.

17: Lack of Access to Lower Borer's Falls

- Through the Trail Plan, assess the feasibility of formalizing a sanctioned route to access the Lower Borer's Falls;
- Continue to promote the Cascades & Waterfalls of Hamilton website (Hamilton Conservation Authority 2018), across partner platforms;
- Modernize the website to facilitate quick navigation and appeal to a younger audience;
- Update the Lower Borer's Falls webpage:
 - Clearly communicate that the waterfall is not open for viewing by the public;
 - Remove reference to available parking;
 - Clarify D-I classification under Accessibility heading
- Consider ways in which the Cascades & Waterfalls of Hamilton website could be better used to communicate sanctioned and non-sanctioned access, relay information on feature sensitivity, etc.

18: CN and CP Safety

- Trail crossings should be consistent with Draft RTD-10 Road or Railway Grade Crossings: Technical Standards and Inspection, Testing and Maintenance Requirements (2002) available from Transport Canada;
- Enter into a discussion with CN Rail to develop an appropriate solution to address trails crossing the CN Rail line; and
- The future Trail Plan developed for the Cootes to Escarpment EcoPark System should limit trail crossings of the CN Rail line to a minimum number of crossings, in consultation with CN Rail.
- Consider the option of fencing John Prentice Park to limit unsanctioned access.

19: Trespassing

- Consider installing a fence to provide a physical barrier where unsanctioned access has been a continual management issue. Consider potential impacts to wildlife movement when evaluating options for fencing design;
- Improve access to other areas of the Heritage Lands by formalizing access points and providing safe parking options; and

- Identify and mark boundaries of the Borer's Falls - Rock Chapel Heritage Lands along the entire perimeter in an identifiable and clear manner to reduce trespass concerns on neighbouring private properties (see Section 4.2 on the consistent designation of EcoPark System boundaries).

20: Old Infrastructure and Trail Structures

- Repair or replace failing staircases, structures and boardwalks (e.g., the staircase on Ray Lowes Side Trail in Borer's Falls Conservation Area 1, timber crib wall and footbridge located in Borer's Falls Conservation Area 1).
- An Erosion Control Study should be conducted in order to comprehensively assess the heavily eroding gully and failing timber crib wall and footbridge located in Borer's Falls Conservation Area 1.

21: Lack of Public Transportation

- Develop a tourism bus route system to provide access to the entrances to the Cootes to Escarpment EcoPark System. This would also assist in addressing parking issues and the lack of public transportation.

22: Nicholson Tract Transfer of Lots and Road Allowances

- Facilitate the ongoing transfer of remaining lots owned by the City of Hamilton in the vicinity of Nicholson Tract 1 to Conservation Halton;
- Undertake a review to determine the appropriateness and requirements to transfer to Conservation Halton the unopened road allowances which bisect Nicholson Tract 1.

4.3.4 Recreation Recommendations

This section of the Management Plan provides management recommendations for recreation-related issues identified in Section 3.3.

23: General Trail Recommendations

- Develop EcoPark System-wide Trail Guideline (Management Theme 12 and Section 5.2) that would address the trail-related issues that are common to all or most Heritage Lands. Issues and opportunities that should be addressed, based on the research for this current Management Plan, are provided in the following sections and Section 3.1. The Hamilton Burlington Trails Council and other relevant stakeholders could support the development of the Trail Guideline by providing comments and review (see Sections 3.3 #28 and 5.2);
- Create an EcoPark System-wide Trail Plan, including a plan for cycling use. This plan could build on the recommendations made in existing trail and/or cycling plans such as the City of Hamilton's Recreational Trails Master Plan (2016), Draft Cycling Master Plan Review and Update (2018) and the City of Burlington's Trail Plan;
- Create a trails map for Borer's Falls – Rock Chapel Heritage Lands. Show all trails, identify problems/issues and prioritize management issues.
- Complete recommended trail connections with the rest of the EcoPark System. Refer to the City of Hamilton Recreation Trails Master Plan, Cycling Master Plan, and Draft Transportation Master Plan Review and Update as a reference. These Plans include trail standards, future trail connections, etc.;

- Develop guidelines for trail construction including actual construction protocols (with recognition that each agency has varying standards and capacity of capital and operational costs), choice of trail surface, storage and within-park movement of materials, etc. Since this is an issue common to all Heritage Lands, it should be addressed in the recommended EcoPark System-wide Trail Guideline (see Management Theme 12):
 - consider optimal trail user operating guidelines (trail type/recommended widths for different uses) and AODA requirements (provide appropriate accessibility for persons with disabilities wherever practical, and provide relevant information on levels of difficulty where it is not practical or appropriate to fully comply with the requirements); and
 - assess the possibility of reducing the width of trails through more sensitive areas, where appropriate, etc., including just having unsurfaced footpaths in Nature Reserves and other sensitive areas where access is not encouraged. These could be left off of any public trail mapping.
- Encourage plant salvage as part of trail construction protocols as part of the Trail Guideline;
- Develop trail closure protocols including methods of trail closure, restoration of ground flora, signage, etc.;
- Consider the following principles when assessing options for trail closure, rationalization and formalization:
 - limit access to physically and ecologically sensitive habitats, including banks and seepage areas as trail location should result in the least disturbance to habitat and wildlife;
 - ensure appropriate routing of trails and trail activities to minimize the potential for harm, minimize the potential for damage to wildlife habitat and avoid impact to the habitat of Species at Risk and other significant and/or rare species and ecological communities;
 - as an alternative to permanent trail closure, consider seasonal trail closure where the limitation is to keep users out of seasonally wet parts of the trail system;
 - improve signage, trail marking (e.g., blazes) and implement measures to assess and close redundant trails;
 - when trail closure is undertaken, post signage to communicate reasons why the closure was necessary as people are more apt to respect the trail closure if they know why it has occurred;
 - construct bridges and boardwalks to address erosion and wet trail conditions where they are resulting in unacceptable impacts;
 - investigate alternative trail surfaces that are commensurate with the trail use and location; and
 - consider retrofitting remnant logging roads/old cart trails and incorporating them into the trail system where doing so would avoid the need for a new trail and where they may complete logical connections.
- Facilitate discussion among experts from each of the partner agencies to determine acceptable targets for minor trail impacts (e.g., instances of widening to avoid wet areas, minor erosion, instances of exposed roots on trails), noting that there are no standard thresholds, and these will be based on professional judgement. Consider higher standards for Nature Reserve zones and trail sections in proximity to Species at Risk. For Threatened and Endangered species, “proximity” should be assessed in the context of individual species needs and habitat protection as defined through the Endangered Species Act and the Species at Risk Act (when

applicable) and their respective regulations as well as the documents that support these acts (e.g., Recovery Strategies, Government Response Statements, General Habitat Descriptions, Committee on the Status of Species at Risk in Ontario (COSSARO) and Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Assessments, Status Reports, Action Plans, etc.);

- Develop monitoring protocols that include:
 - general monitoring for trail condition;
 - identification of new unsanctioned trails that need to be closed; and
 - monitoring the success of closures.
- Upon dedication of lands to public agencies, evaluate the opportunity to locate access and creek crossing facilities for recreational trails outside the 100-year floodplain;
- Identify and engage individuals and/or groups currently undertaking unsanctioned stewardship initiatives to formalize a good working relationship by providing guidance, support and recognition of their efforts. Consider in-person and online public engagement formats to educate, promote and encourage stewardship; and
- Ensure local ordinances and by-law policies are updated to include the prohibition of unsanctioned uses in natural areas. This is necessary to be able to engage by-law enforcement officers if and when needed.
- Identify appropriate locations for additional benches and picnic tables to facilitate small social gatherings in desired locations.
- Reach out to The Barn School (private school) to gain an understanding of their use (if any) of the Current EcoPark System Lands and explore opportunities for partnership.
- Where trails are managed wholly or in part by the Bruce Trail Conservancy under agreements with any of the partners, refer to their future volunteer model for trail maintenance.
- Ensure that partner mapping (.pdf and online interactive mapping) is updated to reflect trail closures within the Cootes to Escarpment EcoPark System.
- Ensure partner mapping (.pdf and online interactive mapping) does not show ad hoc (unsanctioned) trail systems within the Cootes to Escarpment EcoSystem Park.
- Consider incorporating the City of Hamilton’s Hopkins Cemetery into the interpretation of the Conservation Halton-owned Hopkins Tract by providing access to the cemetery via a potential future trail network.

24: Overuse and Erosion of Trails

- Construct bridges, boardwalks, and/or ‘natural’ stairways using logs, etc. to address existing erosion and wet trail issues and prevent similar conditions from occurring in the future. Note that some judgement is required as seasonally and/or localized wet areas that are not creating unacceptable impacts are fine and are part of the trail experience. Also, structures should only be used where the trail cannot be re-aligned to prevent the issue or where the re-alignment of a trail would result in greater impact on the natural environment than the construction of a structure;
- Investigate alternative trail surfaces (e.g., natural surface, gravel, woodchips, etc.) that are commensurate with site-specific trail use and with consideration for the zone they occur in, the preferred use (as to not encourage non-preferred uses), intensity of use, slope, localized potential for erosion and flooding, etc.; and
- Continue to monitor for trail erosion and implement appropriate trail construction and remediation measures on steeper slopes where warranted. Close trails where management needs are too onerous.

25: Trails Proximate to Escarpment Brow at Borer's Falls

- As part of the proposed Cootes to Escarpment EcoPark System Trail Plan, a comprehensive review should be undertaken to assess the long-term feasibility of the existing alignment of the Borer's Falls Trail/Bruce Trail in proximity to Borer's Falls. Options for alternative alignments should be considered and assessed.

26: Bruce Trail along Rock Chapel Road

- Coordination with the City of Hamilton Public Works and Infrastructure department is recommended in order to identify the need for safe pedestrian access when considering future road rehabilitation works in the vicinity of Borer's Creek on Rock Chapel Road.
- Recommended Trails Guideline Document should address the approach to trail in close proximity to/those that follow roads.
- Install signage and traffic-calming measures in appropriate areas alerting motorists of potential for pedestrians on the road. Signage could be coordinated with flashing lights triggered by passage by pedestrians between guardrail access to Rock Chapel Road to draw additional attention.

27: Cycling

- Assess unsanctioned structures and trail "improvements" for compatibility with zoning management directions, ecological suitability, safety and effectiveness. Develop a strategy for decommissioning unsanctioned structures and trail "improvements" as well as for retrofitting and maintaining structures and "improvements" that can remain. This could be done as part of the future proposed EcoPark System Trail Guideline and/or Trail Plan. However, portions of this can be completed prior to an approved Guideline or Plan to ensure that trail closure is not delayed at the expense of natural heritage protection;
- There is an opportunity to work with bike shops in the area to educate cyclists about appropriate trail use and trail etiquette. Hamilton Burlington Mountain Biking Association has embarked on this task. Consideration could be given to including a trail use pamphlet with the sale/maintenance of bicycles in area cycling shops. Hamilton Conservation Authority has pamphlets for the different user groups that could provide a useful starting point;
- Develop and initiate a monitoring schedule to identify manage needs for structures and trail improvements;
- Provide bike parking racks at trailheads, especially at access points to trails where cycling is not permitted. Monitor for bicycle activity and take appropriate action such as closing unauthorized trails and, to the extent possible, enforcing use violations; and
- Engage cyclists to educate on the appropriate use of the trail system, in collaboration with and with approval from the landowner.

28: Cycling Route Connectivity

- Collaborate with the Hamilton Burlington Mountain Biking Association to consult on a functional trail network for mountain biking that respects the area's natural and cultural heritage while providing safe passage among cycling destinations.

29: Trail Connectivity

- Complete trail (hiking and bike) connections throughout the EcoPark System through a comprehensive Trail Plan. Consider using utility corridors and/or unopened road allowances as additional access points or trail connections.
- Prioritize evaluation of safety issues associated with future crossings across Old Guelph Road; and
- The absence of trails and disconnect of certain areas may be the result of specific management objectives which should be considered when developing a comprehensive trail plan.

30: Unsanctioned Trails

- Identify and close trails that have a negative environmental impact or are considered inappropriate;
- Engage user groups (e.g., Iroquoia Bruce Trail Club) in the ongoing monitoring and management of the trail system.
- Ensure local ordinances and by-law policies are updated to include the prohibition of unsanctioned uses in natural areas. Consider closing the unsanctioned access point at the Rock Chapel Road allowance.
- Consider options for Armstrong Trail, including trail closure, to mitigate impacts associated with connecting unsanctioned trail use.
- Consider options for potential parking and trail system at Berry Tract South, and incorporate a future feature, such as a lookout or boardwalk, to be named after the Mattiaci family.

31: Trail Proliferation

- Identify redundant trails and trails that are in inappropriate locations (e.g., adjacent to sensitive species) and close them.
- Undertake detailed inventory work prior to siting specific new trail segments or re-aligning existing ones to determine the sensitivity of the habitat that the trail will traverse.

32: Signage

- Interpretive and way-finding signage should be developed for all designated parking areas and integrated into a broader Education and Signage Guideline for Borer's Falls - Rock Chapel Heritage Lands.
- Consider developing an Education and Signage Guideline for the EcoPark System (Management Theme 12 and Section 5.2) to improve signage and trail markings (refer to Section 4.2 for recommendations related to signage to address overarching management recommendations).

The Education and Signage Guideline could include:

- C2E logo on signs and include "Part of the" above the logo as a means to convey the concept to users;
- acknowledgement of existing ownership, logos, etc.;
- location of signs (parking areas, trail access areas, changes in property ownership, boundaries of Nature Reserve zones, etc.);
- increasing visibility of existing signage;
- improving messaging;
- way-finding signs;
- interpretive signs;
- property boundary signs;

- “rules of use” signs;
- trail closure signs; and
- trail blazes.
- Ensure that signage can be easily seen and understood by EcoPark System users of all abilities;
- Consistently post signage to indicate when users are entering and leaving the Cootes to Escarpment EcoPark System.
- Develop and implement a consistent system to locate and mark boundaries of Current EcoPark System Lands within the Cootes to Escarpment EcoPark System.
- Post signage indicating permitted uses including an educational component that identifies impacts associated with unsanctioned uses and stating fines for illicit uses.
- Remove or repair damaged sign post located in Borer’s Falls Conservation Area (see Section 3.3 Issue 32, and Figure 5);
- Consider installing interpretive signage around the Armstrong Trail;
- Consider installing signage at Nicholson Tract parcels and Berry Tract South. Similar signage as Borer’s Falls Conservation Area 2 (shows land parcels, announces ownership and inclusion in the Cootes to Escarpment EcoPark System) could be used as an example in the absence of dedicated interpretive signage. Consider alternatives to traditional signs. Signs are not always effective tools for informing trail users and are often targeted for vandalism/removal.
 - using materials that are resistant to scratching/marketing;
 - consider the use of Barrier/Sacrificial coatings on signs; and
 - improved lighting.

33: User Conflicts

- Undertake a survey to increase the understanding on how the Heritage Lands are currently being used, what the desires of the park users are, etc. and to better understand potential use conflicts;
- Adopt the ‘preferred use’ approach to trail use by allowing some flexibility in trail use rather than trying to rigidly implement use policies that will be virtually impossible to enforce. Monitor cycling activity and take appropriate action such as closing unauthorized trails and, to the extent possible, enforce; and
- Encourage ongoing dialogue with all trail user groups to ensure that all opinions and users’ needs are being heard and incorporated into trail management considerations.

34: Off-leash Dogs

- Provide consistent signage that clearly explains permitted uses (e.g., off-leash dog area, dogs much be on-leash);
- Increase education and management (including enforcement) of off-leash dog use where it is a non-permitted use;
- Off-leash dog parks should be located outside of sensitive natural areas;
- Engage the dog-walking community in evaluating opportunities to accommodate leashed and off-leash dog-walking, where it can be accommodated without impacting sensitive and/or significant natural heritage features; and
- Securement tends to focus on highly sensitive lands; however, consideration could be given to purchasing lands that are less ecologically sensitive that could provide opportunities and would be more suitable for a dog-friendly area (and/or other forms of more intensive recreation).

Furthermore, pressures arising from the Greater Toronto and Hamilton Area (GTHA) are making land securement challenging; all land in this area should be considered.

35: Motorized Vehicle Use

- Post signage indicating permitted uses and impacts associated with unsanctioned uses stating fines for illegal uses;
- Where appropriate and once the unopened road allowances are closed, restoration/rehabilitation of the existing ATV tracks that traverse Nicholson Tract 1 could be considered, incorporating ecosystem elements that support the management targets of the management unit and simultaneously minimize the appeal to users of motorized vehicles.

36: Equestrian Use

- Post signage indicating permitted uses and impacts associated with unsanctioned uses stating fines for illegal uses.

37: Hunting/Poaching/Foraging

- Monitor known hunting/fishing areas and wild plant and mushroom foraging areas to enable prioritization of a management response;
- Review the applicability of existing partner policies on foraging for wild edibles (e.g., Royal Botanical Gardens policy) to determine applicability to the Cootes to Escarpment EcoSystem Park as a whole;
- Illegal activities should be reported to the appropriate law enforcement agencies; and
- Recognize Indigenous rights associated with harvesting.

38: Illegal Cannabis Grow-ops

- Monitor known locations, if assessed as safe to do so; and
- Engage with appropriate authorities to resolve and remove cannabis grow-ops. Rehabilitate impacted areas immediately following removal to restore ecosystem function and reduce the opportunity for re-cultivation.

4.3.5 Recommendations for Encroachment

This section of the Management Plan provides management recommendations for encroachment-related issues identified in Section 3.4. A review of existing guidelines and procedures currently held by partners (e.g., Bruce Trail Conservancy) could be considered in the implementation of encroachment recommendations.

39: Private Unsanctioned Trails

- As part of the recommended EcoPark System-wide Trail Plan, evaluate and provide guidance on trail closures including the closure of personal trails from private residences (see Management Theme 12). Priority for closures could be related to the recommended zoning and/or presence of sensitive natural heritage features;
- Consider fencing where privately-owned property abuts Nature Reserve zones and any other areas where there are sensitive/significant natural heritage features (Unless the sensitive land also is present on private lands [see Management Theme 12]). Priority should be given to fencing where management issues, such as encroachment, have been identified, or where there are significant and/or sensitive features (e.g., SAR or significant vegetation communities).

- Review and evaluate the effectiveness of existing by-laws and identify gaps in by-laws to facilitate the enforcement of use policies;
- Agency partners should allocate additional resources to enforce encroachment polices. This should be implemented in conjunction with the education/awareness initiatives and Heritage Land boundary identification;

40: Structures and “Yard Extension”

- Establish a program to educate adjacent residential landowners by providing information on the impacts of disposing of yard waste, garbage, garden structures, etc., and other forms of encroachment in natural areas;
- Post signage to educate the public about the impacts associated with encroachment;
- Provide fencing along the outer perimeter of Nature Reserve zones and any other areas where there are sensitive/significant natural heritage features where they are on the boundary of the Heritage Area (i.e. don’t fence internally, within the Heritage area). This is especially important where they abut private property (see Management Theme 12). Priority should be given to fencing where management issues, such as encroachment, have been identified; and
- Continue to remove structures, flower beds, composters, etc. as well as garbage and dumped refuse from the areas adjacent to private residences.

41: Dumping

- Identify locations of dumped garbage and yard waste, and facilitate clean up;
- Coordinate with/support community volunteer organizations to organize and facilitate the removal of waste;
- Post signage indicating “No Dumping” and that a fine will be applied if dumping occurs; and
- Continue to remove garbage and dumped refuse from the Current EcoPark System Lands.

42: Vegetation Removal/Trampling

- Establish a program to educate adjacent residential landowners by providing information on the impacts of removing natural vegetation and trampling in natural areas;
- Post signage to educate the public about the impacts associated with encroachment;
- In conjunction with appropriate authorities, investigate and where possible levy fines based on trespass and/or local tree-cutting by-laws when tree topping/pruning and/or removal is noted.
- Instances of removal of Species at Risk protected under the Endangered Species Act should be reported to the appropriate Ministry.
- Identify and engage individuals and/or groups currently undertaking unsanctioned stewardship initiatives to formalize a good working relationship by providing guidance, support and recognition of their efforts. Consider in-person and online public engagement formats to educate, promote and encourage stewardship.

43: Cats/Domestic Pets

- Establish a program to educate adjacent residential landowners by providing information on the impacts of free-ranging cats and off-leash dogs; and
- Review and evaluate the effectiveness of existing by-laws and identify gaps in by-laws to facilitate the enforcement of use policies, including a cat control by-law, which at least provides enforcement officers with the mandate to respond to complaints.

4.3.6 Recommendations for Hydrologic Impacts

This section of the Management Plan provides management recommendations for hydrologic impact-related issues identified in Section 3.5.

44: Run-off and Peak Flows

- Continue to engage in discussion and initiatives to improve urban infrastructure to mitigate stormwater management, high run-off and peak flows. Hamilton Harbour Remedial Action Plan (HHRAP) released a report in 2016 about urban runoff in Hamilton which touches on opportunities for Low Impact Development (LID) (Hamilton Harbour Remedial Action Plan 2016b);
- Low Impact Development initiatives should accompany impervious surfaces created as part of the future park infrastructure;
- Investigate and resolve the issues that have been reported regarding the function of the Innovation Park SWM pond.
- Undertake a community communications campaign to highlight the importance of implementing Low Impact Development to the health of the Cootes Paradise Marsh, Hamilton Harbour and their tributaries;
- Develop a septic system improvement/inspection program targeted for the watersheds that drain to the northern portion of the Borer's Falls – Rock Chapel Heritage Lands; and
- Support restoration and creation of tableland wetlands as part of managing surface run-off. Wherever possible, tableland restoration should aim to achieve pre-settlement run-off conditions to reduce peak flows to watercourses (e.g., kettle and palustrine tableland wetland pockets could be retained in any future development proposals and restoration should be encouraged to manage run-off).

45: Erosion and Sedimentation

- Improve municipal infrastructure and outfalls located on Valley Road near Borer's Falls;
- Provide detail to CP railway regarding undersized/perched culvert in Hopkin's Tract;
- Complete detailed erosion mitigation monitoring for watercourses that showed the highest potential for erosion (GEO Morphix Ltd. 2016);
- Develop a plan to address in-stream erosion through bio-engineering restoration (GEO Morphix Ltd. 2016);
- Improve mapping of small tributaries and springs to gain a greater understanding of drainage patterns and discharge areas below the Escarpment rim; and
- Investigate any opportunities for collaboration with nearby University graduate programs to research the karst within the Heritage Area, especially with respect to connections between "disappearing" streams above the escarpment and the spring below the escarpment.

46: Water Quality

- Improve water quality in Hickory Creek which involves updates/maintenance activities to local residential septic systems. Consider other/additional opportunities to improve water quality, to the extent feasible;
- Improve buffers along watercourses, in particular along coldwater streams;
- Improve climate change resiliency in the area through the creation of a comprehensive and long-term plan for climate change mitigation and adaptation, with particular attention paid to impacts resulting from spring flooding. This is an issue that transcends the Current EcoPark

System Lands and would likely be lead by an agency outside of the EcoPark System, with the representation of EcoPark System partners;

- Plant riparian areas to improve buffer and stream habitat of the tributary in Innovation Park;
- Engage with appropriate departments at City of Hamilton, and/or adjacent businesses, to discuss grass mowing in proximity to the tributary and the importance of retaining natural riparian buffers, and the need to keep mowing equipment out of the tributary; and
- Reach-out to funeral homes to educate on the potential impacts from spreading cremation ashes within the Heritage Lands and to request that the suggestion is removed from their website and associate platforms.

47: Septic Drainage

- Identify and monitor locations where inadequately functioning septic systems are located;
- Initiate contact with the local health unit and municipal engineering departments to verify water quality issues in the Pleasant View Neighbourhood and develop a better understanding of the potential impact to Current EcoPark System Lands and potential solutions; and
- Develop a septic system improvement program targeted at the Pleasant View Tributary subwatershed that drains portions of the Borer's Falls - Rock Chapel Heritage Lands.

48: Polluting Spills

- Improve spill prevention and response by ensuring that spill prevention plans, contingency plans and emergency response plans are updated for the purpose of protecting natural features along roads, railway lines and pipelines. Ensure that partner agencies inform themselves of what the spill response protocols are so that if they become aware of a spill, they know whom to call.

4.3.7 Ecosystem Management and Restoration Recommendations

This section of the Management Plan provides management recommendations for ecosystem management and restoration-related issues identified in Section 3.6.

49: Forest Fragmentation

- Promote the succession of forest habitat in locations where the creation of forested ecosites has been assessed to be an ecologically sound rehabilitation strategy, with a priority on improving the shape of woodlands to minimize the edge to interior ratio;
- Look for opportunities to increase the area of the interior forest through restoration and management, and improve the buffer along the forest edge by reducing mowing and completing reforestation plantings; and
- Expand Borer's Falls - Rock Chapel Heritage Lands through ongoing acquisition to increase the extent of develop interior forest in public ownership.

50: Decline in Natural Feature Quality

- Wherever possible, retain mature trees and snags for cavity-nesting fauna, and fallen logs for salamander and other wildlife habitat;
- Where feasible and beneficial, install low maintenance wildlife habitat structures to provide features underrepresented in the landscape;
- For newly acquired properties, landowners should be encouraged to develop property-specific conservation, restoration and management plans;

- Improve buffers along forest edges through ecological restoration and the removal of invasive, non-native species;
- Initiate a program to restore tableland forest and/or meadow habitat on agricultural fields bordering forest along the Escarpment brow, south and east of Rock Chapel Road/Sydenham Road;
- The masonry Rotary Club building on the Bruce Trail/Escarpment Trail (Figure 5) should be removed if not actively in use, and the area should be rehabilitated;
- Rehabilitate the creek that runs parallel to Highway 6, within the Innovation Park management unit, including Phragmites removal, in-stream habitat improvements, and planting native vegetation in the riparian area to improve buffer function;
- Restore hydrologic connections and watercourses in Hopkins Tract, Berry Tract South, and Borer's Falls Conservation Area 2 and 3; and
- Remove historical dumping from creek valley channels.

51: Forest Health Decline

- Continue to manage off-trail use and disturbance to minimize impacts and bolster establishment of a native ground vegetation layer and understory;
- Restore degraded woodlands and plantations;
- Develop invasive species management plans for dominating invasive plant species (e.g., Common buckthorn, Dog strangling vine)
- Transition plantations of non-native species to native locally appropriate species;
- Plantations of native species should be managed to encourage healthy trees and understory growth;
- Target areas where there is a high presence of ash and encourage plantings of other native species to mitigate some of the impacts of Emerald Ash Borer. Trees may also be planted in woodlands and thickets to encourage succession of native species; and
- Follow management recommendations provided in Royal Botanical Gardens' Ecological Land Classification Report (Barr 2014).

52: Urban Adapted Wildlife

- Continue to pursue opportunities to control deer populations, including options that engage Indigenous communities; and
- Install deer exclusion fencing in areas which have been recently restored/planted.

53: Loss of Open Woodland/Prairie/Savannah Habitat

- Identify ecosystem targets for the Heritage Lands, based on historical and current composition:
 - identify best examples of remaining prairie, savannah and open oak woodland as a priority for ongoing management and to serve as example end goals for restoration initiatives;
 - include guidelines for local prairie and/or savannah restoration, including target amount, patch size, and best management practices; and
 - include recommendations for the use of prescribed burns, which are considered the best means of managing prairie, savannah and open woodland habitats.
- Improve the condition of rare and uncommon ecosystems, such as prairie, savannah and open oak woodlands;



- Continue management for tallgrass prairie and oak savannah habitat, including invasive species control, prescribed burns, planting and seeding;
- Conduct research into the ecological disturbances that maintained the original forest ecosystems, including the feasibility of re-introducing or emulating such disturbances, including fire/prescribed burning;
- Continue prescribed burns at Cartwright Tract, as appropriate, based on follow-up monitoring.
- Consider prescribed burns as a management option for restoring areas to native-plant dominated meadows/prairies;
- Consider opportunities to restore the City of Hamilton's Hopkins Cemetery grounds as a tall-grass prairie, which would decrease maintenance requirements and enhance the area's natural heritage function.
- Continue to work with Hydro One to manage hydro corridors as natural communities such as native grassland, shrub thickets or meadow habitat, wherever appropriate.

54: Conservation and Recovery of Species at Risk

- Pursue opportunities for habitat creation for amphibians through pond construction in appropriate areas of the Heritage Lands;
- Further explore opportunities to enhance wildlife habitat (e.g., pit and mound restoration, ephemeral pond creation, the addition of woody debris);
- Encourage management efforts that follow an ecosystem-based approach to Species at Risk recovery. By considering the ecosystem and all of its components (e.g., species, habitats, interactions and processes) in an individual-species strategy, broader and more synergistic ecological protection and conservation outcomes can usually be achieved;
- Continue ongoing monitoring of the populations of significant plants and wildlife found in the Heritage Lands;
- Develop and implement Species at Risk recovery strategies applicable to the Heritage Lands - plans should be consistent with provincial and federal recovery strategies and response statements and compliant with the Endangered Species Act and the Species at Risk Act (when it applies) and the regulations to these acts;
- Report locations of Species at Risk and rare species to the land-owning partner and the Natural Heritage Information Centre;
- Ensure that trails and recreational uses are not impacting Species at Risk and rare species habitat; and
- Continue and expand, ongoing inventory of flora and fauna in the Current EcoPark System Lands, with an emphasis on species at risk and rare species.

55: Invasive Species

- Formalize the program to document and map the locations of major aggressive invasive species (see Section 2.4.4 and Section 5.2/Table 6 North-South Environmental Inc. et al. [2018]), and monitor and control the spread of invasive plant species on an ongoing basis;
- Develop an Invasive Species Management Guideline as part of the EcoPark System Vegetation Management Guideline to direct the removal of priority invasive plant species throughout the Cootes to Escarpment EcoPark System;
- Within the Guideline, prioritize management of invasive plant species populations with consideration given to:
 - protection of high-quality vegetation communities;

- threats to Species at Risk, rare species or rare vegetation types;
- newly established and easily eradicated invasive plant populations;
- budget and staff efficiencies (e.g., other projects occurring in an area);
- volunteer and partnership opportunities; and
- ease of access for management.
- Within the Guideline, provide detailed monitoring recommendations to evaluate the success of control/removal initiatives:
 - develop a control strategy for the removal of priority invasive plant species throughout the Cootes to Escarpment EcoPark System;
 - continue to document and map the locations of major aggressive invasive species;
 - monitor and control the spread of invasive plant species;
 - rebuild forest edge and improve forest interior to build a better buffer to provide a screen for invasive species; and
 - design buffer plantings and zones to manage the interface between horticultural areas and natural areas.
- A management protocol for mitigating the impacts of Emerald Ash Borer should be developed that could include:
 - identifying areas with a high proportion of ash and prioritizing them for management so that areas that priority is given to areas that would suffer the greatest impact on biodiversity (e.g., of size, the dominance of ash, quality of understory, etc.);
 - planting other tree species native to the area to replace the loss of ash-dominated canopy
 - interpretive signage for affected areas proximate to trails that explains why trees are dying and conveys the broader message of the impact of invasive non-native species and possibly climate change.
- As part of other monitoring and inventory programs, continue to watch for signs of new forest pathogens (e.g., Asian long-horned beetles) to enable a response at the outset of infestation;
- Encourage and support Royal Botanical Garden's initiative to develop a policy for non-native species control; and
- Continue to educate the public on pathways (e.g., rail lines, roads, etc.) and the impact that invasive plants have on biodiversity and the cost of controlling them once established.

56: Noxious Plants

- Post educational signage noting the identification and toxic properties of Poison Ivy at key trailhead locations within the Heritage Lands;
- Continue to monitor and remove populations of Giant Hogweed as they are encountered;
- Include recommendations for monitoring noxious plants as part of invasive species monitoring (e.g., to identify potential locations of Giant Hogweed, etc.); and
- Post educational signage noting key identification features and the toxic properties of Poison Ivy and other known noxious species (e.g., Wild Parsnip, Dog-strangling Vine, European Buckthorn) in a few key trailhead locations as an educational/precautionary measure.

57: Site-Specific Wildlife Crossing/Corridors

- Continue to look for opportunities to enhance the continuity and integrity of natural corridors connecting the Niagara Escarpment and Cootes Paradise through the Borer's Falls - Rock Chapel Heritage Lands, particularly across York Road; and

- Investigate the need for and feasibility of implementing wildlife corridors, including eco-passages for road crossings, and Identify representatives from City of Hamilton that have responsibility for road maintenance and capital works projects in the Heritage Lands and include them in management discussions that involve the conflict between wildlife and roads.

58: Watershed/Sub-Watershed Boundary Issues

- Collaborate with partners and agencies to address issues related to mapping discrepancies and sub-watershed boundary delineations.

4.3.8 Cultural Heritage Recommendations

This section of the Management Plan provides management recommendations for cultural heritage resource-related issues identified in Section 3.7.

59: Historic and Current Use by Indigenous Peoples

Indigenous Peoples have interest in the historic land use, current occupancy and traditional rights associated with the Cootes to Escarpment EcoPark System heritage lands, including access to these areas for harvesting as part of their traditional culture and diet.

- Continue on-going consultation and meaningful engagement in recognition of Indigenous Peoples rights and traditions as part of developing management strategies for the heritage lands, as well as advancing reconciliation.

60: Cultural Heritage Importance of Farming Structures and Remnants

- As an integral part of one of Canada's earliest settled areas, the Borer's Falls - Rock Chapel Heritage Lands are deserving of more intensive investigation to expand knowledge of its agricultural history and documentation of its cultural heritage resources. This area, which could also contain Indigenous archaeological resources in addition to the documented Euro-Canadian historical use, meets archaeological potential criteria and assessment could be actively pursued to help inform interpretation.

61: Hopkins Cemetery

- The Hopkins Cemetery provides the opportunity to connect the names of local settlers to the history of those who settled, lived and worked on the land in the Borer's Falls - Rock Chapel Heritage Lands. A cultural heritage assessment should be conducted to determine if the property warrants designation under the Ontario Heritage Act. Visitor use plans for the Hopkins Tract could include a trail network that includes the cemetery as a destination point.

62: Rotary Club Masonry Building

- The Rotary Club masonry building on the Bruce Trail/Escarpment Trail (Figure 5) should be assessed for its cultural heritage value or interest. To avoid confusion for visitors, the structure and possibly the Rock Chapel Trail should be named to distinguish them from the original Rock Chapel and its associated landscape.

63: Cultural Heritage on Privately Owned Outreach Areas and Adjacent Lands

- The Rock Chapel settlement area should be subject to a cultural heritage assessment to determine what form of heritage protection is appropriate.

- The history and importance of Rock Chapel Village Sawmill (Borer's Mill) has the potential to be communicated to local residents and the public in general through education, interpretation and commemoration. Among the themes to investigate is the reliance early settlers had on water and timber and the later loss of a primary economic generator, the Village Sawmill, due to unsustainable resource management. This area meets archaeological potential criteria and assessment could be actively pursued to help inform interpretation of this site, which could also contain Indigenous archaeological resources in addition to the documented Euro-Canadian historical use
- Although outside the Current EcoPark System Lands, the trail through Berry Tract 1 and roads including Old Guelph Road, York Road, Valley Road and Patterson Road should be assessed
- Segments of railways including the CP and CN Railways

5.0 Implementation

It is recognized that resources and funding are limited and thus a key concern for implementation of this, and other Management Plans for the six Heritage Lands, is finding efficient and cost-effective ways to prioritize and implement the numerous management recommendations that have been identified. Two approaches that will assist with this are 1) identifying common management needs among the six Heritage Lands and developing solutions that can be used throughout the EcoPark System, and 2) prioritizing so that the management tasks that will reduce impacts (existing and anticipated) and protect high risk or locally threatened natural heritage and cultural features are addressed first. In view of this, it is recommended that the series of "EcoPark System Guidelines" (see Section 4.2 #12) be developed, as outlined below. The EcoPark System Guidelines and recommended Trail Plan will address a large portion of the issues identified for the Borer's Falls - Rock Chapel Heritage Lands. Although this Management Plan applies only to lands owned by the partner agencies with land holdings in the Borer's Falls - Rock Chapel Heritage Lands, many of the issues and recommendations provided are relevant throughout the EcoPark System and are thus of interest to all partner agencies.

Implementation of the management recommendations discussed in Section 4.0 has been organized into three categories:

- 1) Recommendations that are perceived to be a high priority are discussed in Section 5.1;
- 2) Recommendations related to the recommended EcoPark System Guidelines are discussed in Section 5.2 and Appendix 3; and
- 3) Recommendations that are site-specific management tasks are discussed in Section 5.3.

Table 3 provides suggested implementation of the recommendations made per Management Theme under these three categories. Note that in some cases management recommendations covered off in the Guidelines do not fully address an issue identified in the Borer's Falls – Rock Chapel Heritage Lands, and these issues are thus identified as being both Guideline recommendations and site-specific recommendations. Management Themes are marked as a high priority because they contain at least some high priority recommendations identified in Section 5.1. However, this does not imply that all the management recommendations in these Themes are a high priority.

Table 3. Suggested Implementation of Recommendations per Management Theme for the Borer's Falls - Rock Chapel Heritage Lands.

Management Themes	High Priority Tasks	EcoPark System Guidelines				Other / Site-specific Management Tasks
		Trail	Education and Signage	Vegetation Management	Edge Management	
Classification and Zoning of the Heritage Lands						
1: Classification per NEPOSS						x
2: Zoning per NEPOSS						x
Overarching Management Recommendations						
3: Awareness of the Cootes to Escarpment EcoPark System		x	x		x	
4: Delineation of Boundaries		x	x		x	
5: Better Communicate Multi-Agency Management		x	x		x	
6: Population and Use		x	x		x	
7: Funding	x					
8: Trail/CN and CP Railway Crossings		x	x	x		
9: Critical Corridor for Connection						x
10: Desire and Need for Trail Connections		x				
11: Desire and Need for a Wildlife Crossing Plan	x					x
12: EcoPark System-wide Guidelines		x	x	x	x	
Heritage Lands Management Plan Recommendations						
13: Develop Vision						x
Recommended Management Directions						
14: Permitted Uses per NEPOSS Classification		x	x			x

Management Themes	High Priority Tasks	EcoPark System Guidelines				Other / Site-specific Management Tasks
		Trail	Education and Signage	Vegetation Management	Edge Management	
15: Permitted Uses per NEPOSS Zone		x	x			x
Access and Infrastructure Recommendations						
16: Lack of Adequate/Appropriate Parking and Access on Land	x	x	x			x
17: Lack of Access to Lower Borer's Falls		x	x			x
18: CN and CP Safety	x		x			x
19: Trespassing			x			x
20: Old Infrastructure and Trail Structures						x
21: Lack of Public Transportation						x
22: Nicholson Tract Transfer of Lots and Road Allowances	x					x
Recreation Recommendations						
23: General Trail Recommendations		x	x		x	
24: Overuse and Erosion of Trails		x	x			
25: Trails Proximate to Escarpment Brow		x	x			x
26: Bruce Trail along Rock Chapel Road		x	x			
27: Cycling		x	x			
28: Cycling Route Connectivity	x	x				
29: Trail Connectivity		x				x
30: Unsanctioned Trails		x	x			

Management Themes	High Priority Tasks	EcoPark System Guidelines				Other / Site-specific Management Tasks
		Trail	Education and Signage	Vegetation Management	Edge Management	
31: Trail Proliferation		x	x			
32: Signage		x	x			
33: User Conflicts		x	x			
34: Off-Leash Dogs			x			
35: Motorized Vehicle Use			x			
36: Equestrian Use		x	x			
37: Hunting/Fishing/Poaching/Foraging			x			
38: Illegal Cannabis Grow-ops						x
Recommendations for Encroachment						
39: Private Unsanctioned Trails		x	x		x	x
40: Structures and 'Yard Extension'			x		x	x
41: Dumping			x		x	x
42: Vegetation Removal/Trampling			x			
43: Cats/Domestic Pets			x			
Recommendations for Hydrologic Impacts						
44: Run-off and Peak Flows	x			x		
45: Erosion and Sedimentation		x				
46: Water Quality	x					x
47: Septic Drainage	x		x			x

Management Themes	High Priority Tasks	EcoPark System Guidelines				Other / Site-specific Management Tasks
		Trail	Education and Signage	Vegetation Management	Edge Management	
48: Polluting Spills						x
Ecosystem Management and Restoration Recommendations						
49: Forest Fragmentation		x	x	x		
50: Decline in Natural Feature Quality		x	x	x		
51: Forest Health Decline		x		x		x
52: Urban Adapted Wildlife			x			
53: Loss of Open Woodland/Prairie/Savannah Habitat	x			x		x
54: Conservation and Recovery of Species at Risk	x	x	x	x	x	
55: Invasive Species	x			x		
56: Noxious Plants			x	x		
57: Site-Specific Wildlife Crossings/Corridors	x	x	x			x
58: Watershed/Sub-Watershed Boundary Issues						x
Cultural Heritage Recommendations						
59: Historic and Current Use by Indigenous Peoples			x			x
60: Cultural Heritage Importance of Farming Structures and Remnants			x			
61: Hopkins Cemetery			x			
62: Rotary Club Masonry Building			x			

Management Themes	High Priority Tasks	EcoPark System Guidelines				Other / Site-specific Management Tasks
		Trail	Education and Signage	Vegetation Management	Edge Management	
63: Cultural Heritage on Privately Owned Outreach Areas and Adjacent Lands			x			
Monitoring the Implementation of Recommendations						
64: Review Schedule for Monitoring	x					x

5.1 High Priority Management Tasks

We note that overall, the Borer’s Falls – Rock Chapel Heritage Lands are in surprisingly good condition, especially given their level of use and proximity to large population centres. However, some high priority management needs should be completed as soon as possible to address safety concerns and existing high priority impacts. The tasks that are identified as being a high priority are in response to either human safety issues or to existing impacts that are currently and significantly degrading communities or impacting species populations, i.e., are a threat to the biodiversity of Heritage Lands. Table 4 lists the tasks that are considered high priority management tasks and includes recommendations for the partner agency responsible. Although some issues identified in Section 3.0 appear to be obvious candidates for immediate action, there may be others that are deemed high priority owing to the responsibilities and/or mandates of the partner agencies. Thus, the list of high priority management tasks provided in Table 4 should be reviewed and refined by the partner agencies.

Table 4. High Priority Management Recommendations for the Borer’s Falls - Rock Chapel Heritage Lands.

High Priority Management Recommendations	Partner Agency(s) Responsible
1. Address wildlife crossing issues through the development of a Wildlife Crossing Plan, especially on York Road (Management Theme 11 and 57).	Royal Botanical Gardens, City of Hamilton, Hamilton Conservation Authority, Conservation Halton
2. Identify opportunities for additional parking lots and access points. Consider the feasibility of using utility corridors and/or unopened road allowances as additional access points. Evaluate the feasibility and complete the appropriate investigations to determine: 1) if shifting the Rock Chapel Parking Lot west of its existing location will reduce hazards identified with entering and exiting the lot relative to the curve in Rock Chapel Road (Management Theme 16); and 2) to institute a trail system in the Berry Tract South Property, and develop a safe public access point to the Berry Tract area (Management Theme 30, 32 and 50).	Royal Botanical Gardens, City of Hamilton, Hamilton Conservation Authority, Conservation Halton
3. Address invasive species issues, especially Dog-Strangling Vine which is particularly prevalent within hydro corridors, and adjacent to railways (Management Theme 55).	Royal Botanical Gardens, City of Hamilton, Hamilton Conservation Authority, Conservation Halton
4. Improve water quality in Hickory Creek by updating/maintaining local residential septic systems. Consider other/additional opportunities to improve water quality in the Borer’s Falls – Rock Chapel Heritage Lands, to the extent feasible (Management Theme 47).	Conservation Halton, City of Hamilton

High Priority Management Recommendations	Partner Agency(s) Responsible
5. Close or re-route trails that are in close proximity to Species at Risk and/or rare vegetation communities if the trail is causing negative impacts to the significant feature (Management Theme 55).	Royal Botanical Gardens, City of Hamilton, Hamilton Conservation Authority, Conservation Halton
6. Update communications and publications with Tourism Hamilton that specifies recognized access points for appropriate access to Hamilton’s waterfalls such as Borer’s Falls to help mitigate unsanctioned access and the creation of unsanctioned trails associated with the falls (Management Theme 16 and 17)	Royal Botanical Gardens, Hamilton Conservation Authority, City of Hamilton

5.2 EcoPark System Guidelines

As noted above, many the issues identified for this Management Plan are relevant across all, or most of the Heritage Lands, and thus are most efficiently implemented in Guidelines that span the entire EcoPark System (see Management Theme 12). These are intended to be short reference documents that would only address generic issues. Partner agencies are encouraged to look internally and across partner agencies at certain management issues (e.g., trails, education and signage, etc.) to address these issues at an EcoPark System level. It is noted that the differing mandates and policies among the Park EcoSystem partners will likely preclude complete consistency across lands with different ownership, however, addressing certain management issues at this higher level through the Guidelines is still viewed as providing broader efficiency and consistency to how the Current EcoPark System Lands are managed. Future Management Plans prepared for the remaining Heritage Lands may identify additional issues and recommendations to consider in the proposed EcoPark System Guidelines. It is noted that there may be instances where one or more partners may wish to move forward with an initiative (e.g., refinement of train maintenance standards) before other partners wish to or are able to engage in it. These Guidelines should not prevent individual partners moving forward with such initiatives independently of the other partners in the EcoPark System.

Four potential EcoPark System Guidelines are listed below, however, some of these could be combined (e.g., Trails, and Education and Signage) and not all may be necessary (e.g., Edge Management):

- EcoPark System Guideline: Trails
- EcoPark System Guideline: Education and Signage
- EcoPark System Guideline: Vegetation Management
- EcoPark System Guideline: Edge Management

The potential purpose (to be refined by those developing the Guideline) of each Guideline is outlined broadly below:

- Trails: standardize the trail system within the Cootes to Escarpment EcoPark System (see Section 4.3.3, 4.3.4 and 4.3.5);
- Education and Signage: standardize signage and educational messaging used within the Cootes to Escarpment EcoPark System, with acknowledgement of ownership where appropriate;

- Vegetation Management: identify guiding principles and best management practices for vegetation management, including the management of invasive species, within the Cootes to Escarpment EcoPark System; and
- Edge Management: identify guiding principles and best management practices to restore disturbed natural area edges, and standardize information used to engage adjacent landowners inappropriate management of natural area edges.

Responsibility for Developing EcoPark System Guidelines

The various EcoPark System Guidelines could be prepared internally by the partner agencies or through external contracts. Owing to funding constraints, and given that each of the partner agencies have substantial expertise and experience in the management of lands and natural heritage features, it is recommended that the guidelines would be best developed internally. Logistically, it will be most efficient for one partner agency to take the lead in the development of each guideline and coordinate input from the other partners. The lead partner should be determined through internal discussion with consideration for experience and capacity.

The following provides a suggested framework for the development, organization and content of the EcoPark System Guidelines.

EcoPark System Guidelines Organization

Introduction

The proposed EcoPark System Guidelines should be developed as a series of reference documents. They should have a minimum of introductory text and focus on the identification of issues and their related management needs. It is suggested that they not contain figures showing the location of issues, but just provide guidance on solutions, possibly with illustrations of “typical” situations. The introductory sections that outline the purpose and organization of each EcoPark System Guideline can be generic and minor variations be used for each of the proposed EcoPark System Guideline.

EcoPark System Issues

This section of each EcoPark System Guideline is an iterative task that draws on the collective experience to identify the issues or topics to be addressed. Thus a list of issues or topics for each EcoPark System Guideline, which applies to all or most Heritage Lands, should be developed (suggested lists for each EcoPark System Guideline are provided in Appendix 3, based on the issues identified at the Borer’s Falls - Rock Chapel Heritage Lands).

Management Recommendations

For each EcoPark System Guideline, compile all existing management approaches and protocols from partner agencies (e.g., trail construction and maintenance, boundary delineation, education/stewardship for adjacent landowners, etc.). The existing documents from the various agencies should be reviewed for consistency and the partners should, to the extent possible, agree on a single protocol for all lands within the EcoPark System. The recommendations provided in Section 4.0 of this Management Plan may also assist in the development of solutions to each of the issues.

References and Contacts

This section of each EcoPark System Guideline would provide reference material and contacts that may be useful in implementing management recommendations.

5.3 Site-specific Management Recommendations

There are a few issues that were identified through this Management Plan that may be specific to the Borer's Falls - Rock Chapel Heritage Lands and thus would not be addressed through the proposed EcoPark System Guidelines and are not high priority. Similar issues are grouped together below for the purpose of setting priorities (which follows in Table 5).

Access and Infrastructure Management Recommendations (Management Themes 16, 17, 20, 22)

- Evaluate the feasibility and complete the appropriate investigations to determine if shifting the Rock Chapel Parking Lot west of its existing location will reduce hazards identified with entering and exiting the lot relative to the curve in Rock Chapel Road;
- Develop options for improving parking and access from Valley Road;
- Improve parking and signage at Borer's Falls Dog Park to improve access and mitigate impact associated with overflow parking occurring under the drip-line of trees, outside the designated parking area;
- Support the development of a publication that specifies recognized access points for appropriate access to Hamilton's waterfalls such as Borer's Falls to help mitigate unsanctioned access and the creation of unsanctioned trails associated with the falls. Consultation with Tourism Hamilton is required for waterfall publications;
- Evaluate the feasibility and complete the appropriate investigations to determine if a parking lot at Hopkin's Tract is needed/appropriate to facilitate visitor access to the Cootes to Escarpment EcoPark System;
- Engage with Bike Share Hamilton (Social Bike or SoBi Hamilton) to explore interest and potential for installation of Bike Share hubs at key locations in Borer's Falls - Rock Chapel Heritage Lands. Currently, the SoBi Hamilton system area does not extend to the Borer's Falls - Rock Chapel Heritage Lands; SoBi Hamilton is actively seeking prospective partners to sponsor new stations. Bike Share hubs should be strategically sited as there is evidence from other escarpment access areas in the City of Hamilton that users are often reluctant to cycle up steep and lengthy inclines;
- Continue to promote the sanctioned Cascades & Waterfalls of Hamilton website (Hamilton Conservation Authority 2018), across partner platforms;
- Modernize the website to facilitate quick navigation and appeal to a younger audience;
- Update the Lower Borer's Falls webpage:
 - Clearly communicate that the waterfall is not open for viewing by the public;
 - Remove reference to available parking;
 - Clarify D-I classification under Accessibility heading
- Consider ways in which the Cascades & Waterfalls of Hamilton website could be better used to communicate sanctioned and non-sanctioned access, relay information on feature sensitivity, etc.

- Repair or replace failing staircases, structures and boardwalks (e.g., the staircase on Ray Lowes Side Trail in Borer's Falls Conservation Area 1, timber crib wall and footbridge located in Borer's Falls Conservation Area 1);
- An Erosion Control Study should be conducted in order to comprehensively assess the heavily eroding gully and failing timber crib wall and footbridge located in Borer's Falls Conservation Area 1; and
- Facilitate the ongoing transfer of remaining undevelopable lots in the vicinity of Nicholson Tract 1 to Conservation Halton;
- Undertake the appropriate review to determine if, by way of NEC Amendment 179 lots abutting the unopened ROW are undevelopable, then is it possible to divest of the ROWs that bisect Nicholson Tract 1 given there is no potential for future development.

Recreation Management Recommendations (Management Themes 23, 30, 32, 35, 38)

- Reach out to The Barn School to gain an understanding of their use (if any) of the Current EcoPark System Lands, and explore opportunities for partnership;
- Ensure that partner mapping (.pdf and online interactive mapping) is updated to reflect trail closures within the Cootes to Escarpment EcoPark System;
- Ensure partner mapping (.pdf and online interactive mapping), especially with waterfall locations does not show ad hoc (unsanctioned) trail systems within the Cootes to Escarpment EcoSystem Park;
- Consider incorporating the City of Hamilton's Hopkins Cemetery into the interpretation of the Conservation Halton-owned Hopkins Tract by providing access to the cemetery via a potential future trail network;
- Consider closing the unsanctioned access point at the Rock Chapel Road allowance;
- Consider options for Armstrong Trail, including trail closure, to mitigate impacts associated with connecting unsanctioned trail use;
- Consider options for potential parking and trail system at Berry Tract South, and incorporate a future feature, such as a lookout or boardwalk, to be named after the Mattiaci family;
- Remove or repair damaged sign post located in Borer's Falls Conservation Area (see Section 3.3 and 4.3.4 Issue 32, and Figure 5);
- Consider installing interpretive signage around the Armstrong Trail;
- Consider installing signage at Nicholson Tract parcels and Berry Tract South. Similar signage as Borer's Falls Conservation Area 2 (shows land parcels, announces ownership and inclusion in the Cootes to Escarpment EcoPark System) could be used as an example in the absence of dedicated interpretive signage;
- Where appropriate, restoration/rehabilitation of the existing ATV tracks that traverse Nicholson Tract 1 could be considered, incorporating ecosystem elements that support the management targets of the management unit and simultaneously minimize the appeal to users of motorized vehicles;
- Review the applicability of existing partner policies on foraging for wild edibles (e.g., Royal Botanical Gardens policy) to determine applicability to the Cootes to Escarpment EcoSystem Park as a whole;
- Monitor known locations of illegal cannabis grow-ops, if assessed as safe to do so; and
- Engage with appropriate authorities to resolve and remove cannabis grow-ops. Rehabilitate impacted areas immediately following removal to restore ecosystem function and reduce the opportunity for re-cultivation.

Management Recommendations for Encroachment (Management Themes 40)

- Continue to remove structures, flower beds, composters, etc. as well as garbage and dumped refuse from the areas adjacent to private residences.

Management Recommendations for Hydrologic Impacts (Management Themes 45, 46, 47)

- Improve municipal infrastructure and outfalls located on Valley Road near Borer's Falls;
- Provide detail to CP railway regarding undersized/perched culvert in Hopkin's Tract;
- Develop a plan to address in-stream erosion through bio-engineering restoration (GEO Morphix Ltd. 2016);
- Complete detailed erosion mitigation monitoring for watercourses that showed the highest potential for erosion (GEO Morphix Ltd 2016);
- Improve mapping of small tributaries and springs to gain a greater understanding of drainage patterns and discharge areas below the Escarpment rim;
- Improve water quality in Hickory Creek which involves updates/maintenance activities to local residential septic systems. Consider other/additional opportunities to improve water quality to the extent feasible;
- Plant riparian areas to improve buffer and stream habitat of the tributary in Innovation Park;
- Engage with appropriate departments at City of Hamilton, and/or adjacent businesses, to discuss grass mowing in proximity to the tributary and the importance of retaining natural riparian buffers, and the need to keep mowing equipment out of the tributary;
- Reach-out to funeral homes to educate on the potential impacts from spreading cremation ashes within the Heritage Lands and to request that the suggestion be removed from their website and associate platforms;
- Identify and monitor locations where inadequately functioning septic systems are located;
- Initiate contact with the local health unit and municipal engineering departments to verify water quality issues in the Pleasant View neighbourhood and develop a better understanding of the potential impact to Current EcoPark System Lands and potential solutions; and
- Develop a septic system improvement program targeted at the Pleasant View Tributary watershed that drains portions of the Borer's Falls - Rock Chapel Heritage Lands.

Ecosystem Management and Restoration Recommendations (Management Themes 49, 50, 52, 53, 58)

- Expand Borer's Falls - Rock Chapel Heritage Lands to develop interior forest and improve the buffers by reducing mowing and completing reforestation plantings;
- The masonry Rotary Club building on the Bruce Trail/Escarpment Trail (Figure 5) should be removed if not actively in use, and the area should be rehabilitated;
- Rehabilitate the creek that runs parallel to Highway 6, within the Innovation Park management unit, including Phragmites removal, in-stream habitat improvements, and planting native vegetation in the riparian area to improve buffer function;
- Restore hydrologic connections and watercourses in Hopkins Tract, Berry Tract South, and Borer's Falls Conservation Area 2 and 3;
- Remove historical dumping from creek valley channels;
- Continue to pursue opportunities to control deer populations, including options that engage Indigenous communities;
- Continue prescribed burns at Cartwright Tract and other lands, as appropriate, based on follow-up monitoring;

- Consider prescribed burns as a management option for restoring areas to native-plant dominated meadows/prairies (e.g., Berry Tract South, Borer’s Falls Conservation 2 and 3);
- Consider opportunities to restore the City of Hamilton’s Hopkins Cemetery grounds as a tall-grass prairie, which would decrease maintenance requirements and enhance the area’s natural heritage function;
- Collaborate with partners and agencies to address issues related to mapping discrepancies and sub-watershed boundary delineations; and
- Develop and implement invasive species management plans for dominating invasive species.

Cultural Heritage Management Recommendations (Management Theme 59, 61, 62, 63)

- Continue on-going consultation and meaningful engagement in recognition of Indigenous Peoples rights and traditions as part of developing management strategies for the heritage lands, as well as advancing reconciliation.
- Conduct cultural heritage assessment of the Hopkins Family Cemetery to determine if the property warrants designation under the Ontario Heritage Act.
- Assess the Rotary Club masonry building on the Bruce Trail/Escarpment Trail to determine its cultural heritage value or interest. Consider renaming this structure.
- Subject the the Rock Chapel settlement to cultural heritage landscape assessment and determine what form of heritage protection is appropriate.
- The Rock Chapel Village Sawmill (Borer’s Mill) site meets archaeological potential criteria and assessment could be actively pursued to help inform interpretation of this site.
- Although outside the current EcoPark System Lands, the trail through Berry Tract 1 and roads including Old Guelph Road, York Road, Valley Road and Patterson Road should be assessed for their cultural heritage value.

Table 5 provides guidance on the priority for implementing EcoPark Guidelines and Site-specific management recommendations. Note that the priorities are relative to one another, thus the implementation of Management Recommendations for: Access and Infrastructure, Hydrologic Impacts and Cultural are not low per se, but are considered to be less urgent than the Management Recommendations identified as a Medium priority. High Priority Management Recommendations are addressed separately in Section 5.1

Table 5. Implementation Priority for Completion of EcoPark System Guidelines and Site-specific Management Tasks for the Borer’s Falls - Rock Chapel Heritage Lands

Action	High Priority	Medium Priority	Low Priority
Recommended Guidelines			
Trail Guideline	x		
Education and Signage Guideline		x	
Vegetation Management Guideline	x		
Edge Management Guideline		x	
Site-specific Management Tasks			
Access and Infrastructure Management Recommendations		x	
Recreation Management Recommendations	x		
Management Recommendations for Encroachment		x	
Management Recommendations for Hydrologic Impacts			x

Action	High Priority	Medium Priority	Low Priority
Ecosystem Management and Restoration Recommendations	x		
Cultural Heritage Management Recommendations			x

6.0 Management Plan Monitoring and Evaluation

This section of the Management Plan provides direction on how to monitor the implementation of the Plan. This could be achieved indirectly through measures that determine changes in the Heritage Lands (e.g., degradation or improvement of trails, increase/decrease in invasive plants, etc.) or it can be measured directly by monitoring the number of recommendations that are implemented, and possibly the timing of their implementation. The difficulty with the indirect approach is that it will not discriminate between any particular recommendation being implemented, and the effectiveness of the recommendation. For example, trails may continue to degrade either because there was no attempt to implement the trails recommendations, or the trails recommendations were implemented, but the recommendations were either inadequate or use increased beyond the carrying capacity of the trail. Thus, since the main intent of this section is to measure the implementation of the management plan, direct measurement of the implementation of recommendations is preferred, regardless of their effectiveness. It is important to note that the effectiveness of management (i.e., efficacy of the recommendations) is also critically important, and so some guidance is provided on the development of performance indicators, but these can only be developed fully when the tasks that respond to recommendations in this report are developed at the time of their implementation.

6.1 Monitoring the Implementation of Recommendations

Section 4.0 of this Management Plan provides management recommendations in 64 Management Themes, each of which is a general management issue for the Borer's Falls - Rock Chapel Heritage Lands. It is recommended that an audit be undertaken annually to evaluate each of these themes to determine, 1) if action on the theme has been initiated; and 2) has action been completed, or in the case of issues needing ongoing management (e.g., invasive species control), are there active programs in place that are resulting in ongoing management.

Table 6 provides an outline for tracking the implementation and completion of Management Themes. A blank column has been provided for indicating the agency(s) that are involved with implementing each theme. It is recommended that the Cootes to Escarpment EcoPark System Management Committee determine agency involvement. Once this information is available, the "Agencies Involved" column in Table 6 can be filled out. Without a better understanding of the capacity, available funding and other priorities of the partner agencies, it is not possible to provide guidance on realistic timeframes for initiation. Thus, the Steering Committee should review and propose a realistic schedule for implementation. This is identified as the last management recommendation:

64. Review and Refine Schedule for Monitoring Management Themes

- The Cootes to Escarpment EcoPark System Management Committee should identify the agencies involved in each of the Management Themes provided in Table 6.
- The Steering Committee should review and propose a realistic schedule for implementation.

Table 6. Outline for Tracking the Implementation and Completion of Management Themes for the Borer’s Falls - Rock Chapel Heritage Lands.

Management Themes	Agencies Involved	Task Initiated (date)	Task Completed (date)
Classification and Zoning of the Heritage Lands			
1: Classification per NEPOSS			
2: Zoning per NEPOSS			
Overarching Management Recommendations			
3: Awareness of the Cootes to Escarpment EcoPark System			
4: Delineation of Boundaries			
5: Better Communicate Multi-Agency Management			
6: Population and Use			
7: Funding			
8: Trail/Railway Crossings			
9: Critical Corridor for Connection			
10: Desire and Need for Trail Connections			
11: Desire and Need for Wildlife Crossings			
12: EcoPark System-wide Guidelines			
Heritage Lands Management Plan Recommendations			
13: Develop Vision			
Recommended Management Directions			
14: Permitted Uses per NEPOSS Classification			
15: Permitted Uses per NEPOSS Zone			
Access and Infrastructure Recommendations			
16: Lack of Adequate/Appropriate Parking and Access on Land			
17: Lack of Access to Lower Borer’s Falls			
18: CN Safety			
19: Trespassing			
20: Old Infrastructure and Trail Structures			
21: Lack of Public Transportation			

Management Themes	Agencies Involved	Task Initiated (date)	Task Completed (date)
22: Nicholson Tract Transfer of Lots and Road Allowances			
Recreation Recommendations			
23: General Trail Recommendations			
24: Overuse and Erosion of Trails			
25: Trails Proximate to Escarpment Brow			
26: Bruce Trail along Rock Chapel Road			
27: Cycling			
28: Cycling Route Connectivity			
29: Trail Connectivity			
30: Unsanctioned Trails			
31: Trail Proliferation			
32: Signage			
33: User Conflicts			
34: Off-Leash Dogs			
35: Motorized Vehicle Use			
36: Equestrian Use			
37: Hunting/Fishing/Poaching/Foraging			
38: Illegal Cannabis Grow-ops			
Recommendations for Encroachment			
39: Private Unsanctioned Trails			
40: Structures and 'Yard Extension'			
41: Dumping			
42: Vegetation Removal/Trampling			
43: Cats/Domestic Pets			
Recommendations for Hydrologic Impacts			
44: Run-off and Peak Flows			
45: Erosion and Sedimentation			
46: Water Quality			
47: Septic Drainage			

Management Themes	Agencies Involved	Task Initiated (date)	Task Completed (date)
48: Polluting Spills			
Ecosystem Management and Restoration Recommendations			
49: Forest Fragmentation			
50: Decline in Natural Feature Quality			
51: Forest Health Decline			
52: Urban Adapted Wildlife			
53: Loss of Open Woodland/Prairie/Savannah Habitat			
54: Conservation and Recovery of Species at Risk			
55: Invasive Species			
56: Noxious Plants			
57: Site-Specific Wildlife Crossings/Corridors			
58: Watershed/Sub-Watershed Boundary Issues			
Cultural Heritage Recommendations			
59: Historic and Current Use by Indigenous Peoples			
60: Cultural Heritage Importance of Farming Structures and Remnants			
61: Hopkins Cemetery			
62: Rotary Club Masonry Building			
63: Cultural Heritage on Privately Owned Outreach Areas and Adjacent Lands			
Monitoring the Implementation of Recommendations			
64: Review Schedule for Monitoring			

6.2 Guidance for Performance Indicators

6.2.1 Adaptive Management

As noted above, it is important to evaluate the efficacy of management actions to determine if they are producing the desired outcome. The accepted approach to achieve this is Adaptive Management.

Adaptive Management involves the following steps:

1. Implement management actions based on the best available information and analysis;
2. Monitor the outcome of the management actions;

3. Evaluate monitoring outcomes against management objectives and/or targets; and
4. Where objectives and/or targets are not being achieved, refine management prescriptions.

In some instances, Adaptive Management will reveal unrealistic or unattainable objectives and/or targets, in which case they will need to be revised. Monitoring and evaluation should continue until objectives and/or targets are achieved, or in the case where the management action is ongoing (e.g., invasive species management), as long as management is undertaken.

Adaptive Management is especially valuable where the outcome of management actions is uncertain, for example, when introducing a disturbance regime to restore a particular vegetation type, trying a new trail surface, or undertaking habitat modification to conserve a Species at Risk. However, it is also useful for actions such as trail closure, where it is simply a matter of seeing if the method to prevent further use of the trail (signage, restoration at trail entrance, placing obstructions across the entrance, etc.) is effective. Adaptive Management is essential to increase knowledge, i.e., to gain a better understanding of what management techniques work in a particular application. It is also very useful for reporting results, as it provides objective and defensible information on the progress of management.

A key component of Adaptive Management is establishing a benchmark for success; a yardstick against which results can be compared to evaluate progress. These can be objectives, targets or performance indicators. In most cases, these cannot be established until detailed management tasks are developed, and generally require more detail than is available for this Heritage Lands Management Plan. They would be established when the protocols for management are developed, or decisions on management are made (e.g., which trails should be closed, how EcoPark System boundaries will be demarcated, etc.). Also, some management tasks may not lead themselves to establishing performance indicators, such as the development of education/stewardship material, as it would be extremely difficult to measure their efficacy. In such cases, it is probably reasonable to assume that they benefit overall management goals and evaluate the tasks simply by noting if they were completed, as outlined in Table 6.

Notwithstanding the difficulty of providing performance indicators before more detailed plans are developed, guidance for their development is suggested in Table 7. In making these suggestions, it is realized that it would be possible to develop metrics to measure and evaluate probably all of the recommendations. However, the time and effort to actually develop and undertake that level of monitoring is probably not justified in most cases. For example, for the recommendation to install perimeter fencing, one could measure the length of fencing completed as a measure of implementation success, but it is probably sufficient to note that the fencing has been initiated, in progress, and finally completed. There are other recommendations where the efficacy of the recommendation is more tenuous, for example, vegetation management, management of Species at Risk, etc., and it is these cases where targets and performance monitoring is recommended in Table 7. There are no standards for when a rigorous Adaptive Management approach should be undertaken, thus the recommendations regarding the appropriateness of setting targets and performance measures can be re-evaluated and revised as deemed necessary. "N/A" is used in Table 7 where it is not yet possible to establish Targets of Performance Indicators.

Table 7. Guidance for Setting Targets and Performance Indicators for the Borer's Falls - Rock Chapel Heritage Lands.

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
Classification and Zoning of the Heritage Lands		
1: Classification per NEPOSS	N	
2: Zoning per NEPOSS	N	
Overarching Management Recommendations		
3: Awareness of the Cootes to Escarpment EcoPark System	N	
4: Delineation of Boundaries	N	
5: Better Communicate Multi-Agency Management	N	
6: Population and Use	N	
7: Funding	N	
8: Trail/Railway Crossings	N	
9: Critical Corridor for Connection	N	
10: Desire and Need for Trail Connections	N	
11: Desire and Need for Wildlife Crossings	N	
12: EcoPark System-wide Guidelines	N	
Heritage Lands Management Plan Recommendations		
13: Develop Vision	N	
Recommended Management Directions		
14: Permitted Uses per NEPOSS Classification	N	

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
15: Permitted Uses per NEPOSS Zone	N	
Access and Infrastructure Recommendations		
16: Lack of Adequate/Appropriate Parking and Access on Land	N	
17: Lack of Access to Lower Borer’s Falls	N	
18: CN Safety	N	
19: Trespassing	N	
20: Old Infrastructure and Trail Structures	N	
21: Lack of Public Transportation	N	
22: Nicholson Tract Transfer of Lots and Road Allowances	N	
Recreation Recommendations		
23: General Trail Recommendations	Y	<ul style="list-style-type: none"> • Identify all potential trail connections in the EcoPark System (the target) and use a proportion of connections achieved as a performance measure. • Use total number of trails to be closed as a target, and use proportion of trails successfully closed as a performance measure. • Considerations for general condition could include: <ul style="list-style-type: none"> • owing to extensive trails system, select representative sections of trails to monitor (e.g., ten 100m long sections) including: “typical” sections, sections where issues are contemplated, areas with steep slopes, sections adjacent to Species at Risk, and sections in Natural and Nature Reserve zones;

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
		<ul style="list-style-type: none"> • measure frequency of trail widening to circumvent wet areas; • measure frequency of substantial erosion issues; and • measure frequency of damage to trail-side vegetation from users leaving trail to avoid conflict with other users (e.g., hiker/cyclist conflicts). • Evaluate efficacy of closures using motion-triggered cameras to record use of newly closed trails; report number of uses per week for 6 weeks following closure and per month for one year and record if the trail was accessed by foot and/or bicycle. Evaluate success of closure, determine the need for re-visiting closure protocol based on a number of users and considering if use is increasing or decreasing.
24: Overuse and Erosion of Trails	Y	<ul style="list-style-type: none"> • Determine total number of instances where a boardwalk or bridge is required to prevent impacts. • Use proportion of structures installed as a performance measure. • Performance measures for evaluating different trails surfaces should be established but these will be dependent on the actual surface used and the impacts they are intended to address; it may be the measures suggested for Management Theme 23 will suffice. • Closures in response to erosion/steep slopes are covered in suggestions for Management Theme 23.
25: Trails Proximate to Escarpment Brow	Y	N/A
26: Bruce Trail along Rock Chapel Road	N	
27: Cycling	Y	N/A
28: Cycling Route Connectivity	N	

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
29: Trail Connectivity	N	
30: Unsanctioned Trails	N	
31: Trail Proliferation	Y	<ul style="list-style-type: none"> • See suggestions for Management Theme 23. • Include trail monitoring sections wherever trail is in close proximity (e.g., 10 m) of a Species at Risk.
32: Signage	N	
33: User Conflicts	N	
34: Off-Leash Dogs	N	
35: Motorized Vehicle Use	N	
36: Equestrian Use	N	
37: Hunting/Fishing/Poaching/Foraging	N	
38: Illegal Cannabis Grow-ops	N	
Recommendations for Encroachment		
39: Private Unsanctioned Trails	Y	Determine total number of unsanctioned structures and instances of inappropriate, unsanctioned trail management (targets) and use proportion of structures and improvements removed as performance measures.
40: Structures and 'Yard Extension'	Y	Determine total number of unsanctioned structures and instances of inappropriate yard extensions (targets) and use a proportion of structures and removal of yard extensions (e.g., plantings) as performance measures.
41: Dumping	N	
42: Vegetation Removal/Trampling	N	

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
43: Cats/Domestic Pets	N	
Recommendations for Hydrologic Impacts		
44: Run-off and Peak Flows	Y	N/A
45: Erosion and Sedimentation	Y	<ul style="list-style-type: none"> Targets and performance measures should definitely be established for the stormwater management facilities, but this will have to be done collaboratively between ecologists and water resource engineers.
46: Water Quality	Y	N/A
47: Septic Drainage	Y	N/A
48: Polluting Spills	N	
Ecosystem Management and Restoration Recommendations		
49: Forest Fragmentation	Y	N/A
50: Decline in Natural Feature Quality	Y	N/A
51: Forest Health Decline	Y	<ul style="list-style-type: none"> Targets and performance measures related to the control of invasive insects are specific to the species and largely dependent on the ability/practicality of controlling them; these will need to be established on a case-by-case basis. <p>Development of targets and performance measures for vegetation restoration and management is a substantial task that should be undertaken within the EcoPark System Vegetation Management Guideline, but some ideas are provided below.</p>

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
		<ul style="list-style-type: none"> • Determine the main vegetation types that are representative of the each of the Heritage Lands and any rare or otherwise significant vegetation types, especially those containing Species at Risk. • Identify areas with the Heritage Lands that are the best remaining remnants of these vegetation types; these may be relatively small patches (2500 - 10,000 m²?) within larger units of more disturbed vegetation. • Establish measurable characteristics that define each of the vegetation types (e.g., canopy closure, indicator species, extent of native ground cover, plant species richness, etc.) that could serve as to develop targets and related performance measures. • Determine reasonable timelines for restoration, including response times for vegetation following management action, and use to determine monitoring/evaluation schedules.
52: Urban Adapted Wildlife	N	
53: Loss of Open Woodland/Prairie/Savannah Habitat	Y	N/A
54: Conservation and Recovery of Species at Risk	Y	<ul style="list-style-type: none"> • Targets and performance measures for Species at Risk are species dependent and should be developed as part of the restoration/monitoring protocol. • Targets should be informed by the relevant provincial and federal Recovery Strategies, Government Response Statements, etc. and focus on maintaining or increasing population size(s) (number of individuals or number of patches). • Targets and performance measures could also include population health, i.e. monitoring whether flowering/seed set/recruitment is maintained or improved.

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
		<ul style="list-style-type: none"> • Where there are known threats to Species at Risk, consider monitoring and evaluating the threats, rather than the species. • See Geomatics International (1994) for discussion and suggestions for monitoring Species at Risk, and Geomatics International (1991, 1992) and Finney, N. (2012) for monitoring American Columbo. • See suggestions for management themes 23 and 24 for trail monitoring.
55: Invasive Species	Y	<ul style="list-style-type: none"> • Targets and performance measures are essential to determine the efficacy of control measures. • Targets for species with the capacity for serious degradation of native ecosystems should be complete elimination, where feasible. • Consider most aggressive targets in Nature Reserves, representative vegetation areas (see Management Theme 31), and where there may be threats to Species at Risk. • Performance measures should focus on reduction of individuals, patch size and/or number of patches of invasive species.
56: Noxious Plants	Y	<ul style="list-style-type: none"> • Where noxious species is non-native, targets and performance measures should be determined in concert with invasive species (management theme 55 above). • Targets and performance measures for native noxious species (poison-ivy) should focus on control along sanctioned paths and areas where access is facilitated.
57: Site-Specific Wildlife Crossings/Corridors	Y	<ul style="list-style-type: none"> • The number of priority locations for wildlife crossings can be used as the target, noting this will likely be refined as greater knowledge of the Heritage Lands is gained (e.g., implementation of the top 10 wildlife crossing locations throughout the Cootes to Escarpment EcoPark System).

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
		<ul style="list-style-type: none"> • Performance measures could be the proportion of potential locations where wildlife crossings are installed. • Efficacy (targets and performance measures) of individual wildlife crossings can only be determined when they are designed as they should focus on the target species that the passage is designed to accommodate (e.g., targets and performance measures will be different for deer and turtles).
58: Watershed/Sub-Watershed Boundary Issues	N	
Cultural Heritage Recommendations		
59: Historic and Current Use by Indigenous Peoples	N	
60: Cultural Heritage Importance of Farming Structures and Remnants	N	
61: Hopkins Cemetery	N	
62: Rotary Club Masonry Building	N	
63: Cultural Heritage on Privately Owned Outreach Areas and Adjacent Lands	N	
Monitoring the Implementation of Recommendations		
64. Review Schedule for Monitoring	N	

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Appendix 1: Borer's Falls - Rock Chapel Heritage Lands Land Classification and Zoning Report



Borer's Falls-Rock Chapel Heritage Lands

LAND CLASSIFICATION AND ZONING REPORT

Prepared for Cootes to Escarpment EcoPark System

May 2018

Cootes to Escarpment EcoPark System Partners



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Cover Photograph: Bruce Trail in Rock Chapel, Photograph taken by Leah Lefler, 2017

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1.0 Introduction

This report recommends classifications and zones for Borer’s Falls-Rock Chapel Heritage Lands in accordance with the Niagara Escarpment Parks and Open Space System (NEPOSS) as described in the recently updated Niagara Escarpment Plan (NEP) (MNRF 2017) and Niagara Escarpment Parks and Open Space System Planning Manual¹ (MNR 2012). It builds on the Inventory, Issues and Opportunities report that provides a complete inventory of recreation, natural heritage and cultural heritage resources, identifies management issues and opportunities, and provides preliminary recommendations for management of the Heritage Lands. Although the focus of this report is on classifications and zones, permitted uses are also discussed to provide a fuller understanding of the repercussions of the proposed classifications and zones. More detail on permitted uses, as well as overall management recommendations, will be included in the management plan.

1.1 Niagara Escarpment Parks and Open Space System

NEPOSS is comprised of more than 160 parks and open space areas, most of which are or will be connected by the Bruce Trail (MNRF 2017). These parks and open space areas are owned and managed by several conservation authorities and agencies, including local municipalities, Bruce Trail Conservancy and Royal Botanical Gardens. The NEPOSS balances protection, conservation and sustainable development to ensure that the Niagara Escarpment will remain largely as a natural environment for future generations (MNRF 2017). The objectives of the NEPOSS are:

- to protect the Niagara Escarpment’s natural heritage resources and conserve its cultural heritage resources;
- to provide opportunities for outdoor education and recreation;
- to provide for public access to the Niagara Escarpment;
- to complete a public system of major parks and open space areas through land acquisition and master/management planning;
- to secure a permanent route for the Bruce Trail;
- to protect and enhance the natural environment of the Niagara Escarpment, including the protection of natural heritage and hydrologic features and functions;
- to support tourism by providing opportunities on public land for discovery and enjoyment by Ontario’s residents and visitors;
- to provide a common understanding and appreciation of the Niagara Escarpment; and
- to show leadership in supporting and promoting the principles of the Niagara Escarpment’s United Nations Educational, Scientific and Cultural Organization (UNESCO) World Biosphere Reserve Designation through sustainable park planning, ecological management, community involvement, environmental monitoring, research and education.

Borer’s Falls-Rock Chapel Heritage Lands include six parks and open space areas that are a part of the NEPOSS: (1) Clappison Woods; (2) Pleasant View Nature Sanctuary; (3) York Road Access; (4) Berry Tract; (5) Rock Chapel; and (6) Borer’s Falls Conservation Area. These areas are subject to the policies associated with the NEPOSS, and contribute to a framework for establishing and coordinating a system

¹ Section 3.1.2.2 of the NEP states that the 2012 NEPOSS Planning Manual may be reviewed by the MNRF at the request of the NEC or the NEPOSS Council. The review will be based on the best information available at the time and consultation with the NEC and NEPOSS Council (MNRF 2017).

of publicly-owned lands on the Niagara Escarpment. The NEP requires that management plans be prepared for each park and open space in the NEPOSS (Policy 3.1.5.1.1, MNRF 2017). Management plans lay out the goals and objectives and guide the protection and management of natural heritage features and cultural heritage features, and activities in parks and open space areas.

Policy 3.1.5.1.2 of the NEP states that: “The NEPOSS agencies may produce a single Master/Management Plan for a grouping of protected areas where the NEPOSS lands are adjacent or within close proximity to each other”. Furthermore, management plans are required by the Cootes to Escarpment Park System Conservation and Land Management Strategy Phase II Report (Wong 2009) for each of the six Heritage Lands. A single management plan for each Heritage Area (as opposed to several based on the NEP designations) is desirable in order to manage the lands in a holistic and integrated manner, among the multiple landowning and managing agencies.

The Borer’s Falls-Rock Chapel Heritage Lands are comprised of several parcels, some of which have been previously classified under NEPOSS and others that are not classified in the NEPOSS and/or the NEP. Thus, the Borer’s Falls-Rock Chapel Heritage Lands will not be classified as a single park and/or open space area but will adopt the classifications for each park as identified in the NEP, as well as classifying the remaining area. As a result, the Borer’s Falls-Rock Chapel Heritage Lands will contain multiple classifications, including Natural Environment, Nature Reserve, Resource Management and Recreation.

The intent of the management plan is to provide high-level guidance for the future management of the Heritage Lands. Detailed park-specific master/management plans may be prepared at a later date by individual landowners or agencies to further refine recommendations. Detailed park-specific master/management plans must be submitted for approval through the NEPOSS process (Policy 3.1.5.3.1, MNRF 2017). There is no intent to submit the management plan currently being prepared for the Borer’s Falls-Rock Chapel Heritage Lands to the Niagara Escarpment Commission (NEC) for endorsement, or to the Ministry of Natural Resources and Forestry (MNRF) for approval.

Within the NEPOSS, classifications and zones serve as a guide to agencies and other landowners in the management and use of a park or open space. Detailed descriptions of the NEPOSS classifications and zones and the uses permitted in each area are provided in sections 1.2 and 1.3. While not all of Borer’s Falls-Rock Chapel Heritage Lands are in the NEPA, they are part of the broader ecosystem. As such, tools outlined in the NEPOSS Planning Manual (MNR 2012) have been used to guide the classification and zones of all the Current EcoPark Lands within the Heritage Lands, including those outside of the NEPA, in combination with other guiding principles based on best practices. Policy 3.3 of the NEP states that “Municipal parks and open spaces not identified in Appendix 1 or on Map 10 may, upon request by the municipality and with the agreement of the Ministry of Natural Resources and Forestry and the Niagara Escarpment Commission, be included in the NEPOSS”. A discussion of the classifications and zones assigned to the Borer’s Falls-Rock Chapel Heritage Lands is provided in section 2.0.

The NEPOSS classification and zone policies (sections 3.1.4 and 3.1.5 respectively of the NEP, MNRF 2017) are intended to be applied to park and open space areas along the Niagara Escarpment that are generally relatively large natural areas. However, the Cootes to Escarpment EcoPark System, and the Borer’s Falls-Rock Chapel Heritage Lands in particular, includes urban parks and public infrastructure which were not anticipated to occur within the NEPOSS. The NEPOSS classifications and zones do not address some of these uses, perhaps because they are outside the intended use. In this report, the

NEPOSS planning manual was applied as best as possible, and where an existing use (mainly municipal infrastructure) did not fit into the NEPOSS framework, they were left “unclassified”

As this management plan is not going through the NEPOSS approval process, the classifications and zones are recommendations, which have been based on current understanding of the areas. They will be used to guide the development of future park-specific management plans that must be approved through the NEPOSS process.

1.2 NEPOSS Park Classifications

NEPOSS provides six classifications which are assigned based on the predominant characteristics of the park and open space area. Each of the six classifications serves a specific purpose and provides planning and management direction to agencies. The classifications are included within the NEP and re-classification is generally discouraged. The park classifications are described in the NEP as follows (MNRF 2017):

Table 1. Park Classification Descriptions

Classification	Description
Nature Reserve	<p>These areas represent and protect the most sensitive natural heritage features and landforms along the Niagara Escarpment, such as provincially significant wetlands and provincially significant Areas of Natural and Scientific Interest. Management practices will ensure that the features and values for which the reserve was established are protected.</p> <p>Access to these areas will not be widely promoted and activities will be limited to those that can further scientific understanding and education (i.e., scientific research, natural history interpretation, and trails). The minimum amount of facilities necessary to support these activities will be provided.</p>
Natural Environment	<p>These lands are characterized by, and serve to protect, a variety of outstanding natural heritage resources and cultural heritage resources, and scenic resources.</p> <p>Activities may range from back-country hiking in the interior of these areas to car-camping and day-use activities in more developed or accessible areas.</p>
Recreation	<p>These are some of the best recreational environments along the Escarpment that occur naturally or can be developed to provide a variety of outdoor recreational opportunities in attractive Escarpment surroundings. Recreation parks or open spaces may include day-use activities, outdoor recreational activities, which may include hiking, mountain biking, skiing, rock climbing, zip lines and athletic fields, and supporting infrastructure for recreational activities where appropriate. Facilities for overnight camping may also be provided, including campgrounds, temporary yurts, tents, lean-to's and unserviced camper's cabins. Special purpose buildings that include overnight accommodations and meals for guests may also be permitted.</p>
Cultural Heritage	<p>These areas are intended to protect distinctive areas representative of the Escarpment's cultural heritage resources. Development of facilities will be focused primarily on the conservation of cultural heritage resources.</p>
Escarpment Access	<p>These generally small areas will complement the larger, and in some cases, more developed parks and open spaces by providing opportunities for public access to the Niagara Escarpment. These areas may provide modest facilities</p>

Classification	Description
	to support day use activities at points of interest (e.g., trailheads, picnic sites, scenic areas, fishing areas, beaches).
Resource Management Areas	<p>This classification includes certain public lands that are managed primarily to provide resource-related benefits, such as forest products, fish and wildlife, or flood control.</p> <p>These areas also provide recreation opportunities and allow for the protection of natural heritage resources and the conservation of cultural heritage resources. In most cases, these areas will include more resource management activities relative to other classifications in the NEPOSS.</p>

1.3 NEPOSS Park Zones

According to the NEP, the development of zone mapping and zone policies is required for orderly planning, compatible development and effective management of a park or open space (MNRF 2017). Zones recognize that every park or open space includes a particular combination of significant natural heritage resources and cultural heritage resources and potential or existing development. Zones are intended to work within each of the park classifications to guide uses based on the significance of resources, the need for protection, and the potential for compatible recreation or other activities. According to the NEPOSS Planning Manual, zones are intended to fulfill a variety of functions in a park or open space area, including the following:

- identification and recognition of the features and attributes;
- protection of key natural heritage features and cultural heritage features and functions;
- segregation of conflicting recreational activities by directing activities with higher impacts to the least sensitive areas and low-impact activities to areas that are more sensitive, if appropriate;
- delineation of areas on the basis of their requirements for management;
- standardization of the approach to support management objectives and actions, based on a variety of features;
- balancing of public use with the preservation of the natural environment; and
- encouraging users to understand the park and open space policies and to appreciate the unique contribution each park or open space makes to NEPOSS.

The NEP outlines six park zones. Each zone serves a specific purpose and provides direction on planning and management. The six park zones and their descriptions are:

Table 2. Park Zone Descriptions

Zone	Description
Nature Reserve	Nature Reserve Zones include the most sensitive natural heritage features and areas that require careful management to ensure long-term protection.
Natural Environment	Natural Environment Zones include scenic landscapes in which minimum development is permitted to support recreational activities that have minimal impacts on the Escarpment environment.
Access	Access Zones serve as staging areas (e.g., trailheads, parking lots) where minimal facilities support the use of Nature Reserve Zones and relatively undeveloped Natural Environment and Cultural Heritage Zones.
Cultural Heritage	Cultural Heritage Zones include cultural heritage resources that require management to ensure long-term conservation.

Zone	Description
Development	Development Zones provide access, orientation and operational facilities (e.g., visitor centres, maintenance buildings, parking lots) to support nature appreciation and recreational activities. This zone may include areas designed to provide facilities and supporting infrastructure for recreational purposes.
Resource Management	Resource Management Zones provide for sustainable resource management (e.g., forest management, fisheries management, watershed management, wildlife management, and flood control).

The NEP also states that “other zones may be established and applied in specific circumstances to resolve special planning or management considerations that cannot be accommodated by the zones described above” (MNR 2017). In addition to providing the above descriptions of each zone, the NEPOSS Planning Manual includes the management direction and types of uses that are considered appropriate within the zone description. Management direction and permitted uses within each zone are reviewed in section 4.0.

2.0 Establishing Classifications and Zones

2.1 Establishing Classifications

Within the Borer’s Falls-Rock Chapel Heritage Lands, six park and open space areas have been identified and classified in the NEP:

1. Rock Chapel – Natural Environment;
2. Borer’s Falls Conservation Area – Nature Reserve;
3. Berry Tract – Natural Environment;
4. York Road Access – Escarpment Access;
5. Pleasant View Conservation Sanctuary – Natural Environment; and
6. Clappison Woods – Natural Environment.

We propose that the classification of Rock Chapel be changed from Natural Environment to Nature Reserve to emphasize the importance of the area’s natural heritage features, which include provincially significant plant species and rare vegetation communities.

We propose that the boundaries of York Road Access park be modified to include Borer’s Falls Conservation Area 3 and the western parcel of Borer’s Falls Conservation Area 2. We propose that the eastern parcel of Borer’s Falls Conservation Area 2 be changed from Escarpment Access to Natural Environment. This parcel could either be incorporated within the adjacent Cootes Paradise Sanctuary park (classified Natural Environment) or named as a new individual park.

The Inventory, Issues and Opportunities report for the Borer’s Falls-Rock Chapel Heritage Lands (North-South Environmental et al. 2018) was used to review and confirm the classifications applied to the NEPOSS parks and open space areas. Classifications are recommended for those portions of the Heritage Lands that are located outside the NEPOSS and/or NEPA, based on the description and management direction provided for each classification included in the NEPOSS Planning Manual (MNR 2012). The management direction for the classifications applied are as follows:

Nature Reserve:

Management practices and uses in a Nature Reserve will ensure that the features and values for which it was established remain protected in perpetuity.

Natural Environment:

Natural Environment lands provide opportunities for the protection of important natural heritage features and cultural heritage features.

Recreation:

Management and development of resources is appropriate in order to provide the recreational environment and facilities required to support a wide variety of activities, which may be for day use only. While public use of recreation parks may include more intensive activities or uses than at other NEPOSS parks, these activities will still be suited to the natural character of the particular park. Such activities must occur in zones identified in an approved management plan and be conducted in an environmentally sustainable manner. Development of facilities must be designed and undertaken in a way that will minimize the environmental impact of the development.

Escarpment Access:

Escarpment Access parks or open spaces are intended to provide opportunities for public access to the Escarpment.

Resource Management:

Resource Management Areas are intended to provide many benefits, including recreation opportunities, the protection of important natural heritage features and cultural heritage features, and resource products. In most cases, these areas will undergo more intensive resource management than the other classifications.

2.2 Establishing Zones

Within the Borer's Falls-Rock Chapel Heritage Lands, zones were applied through a process that examined the Current EcoPark Lands in detail to determine:

- what natural heritage features and cultural heritage features exist;
- what permitted uses and development options are appropriate; and
- what management priorities and policies should be put in place for the future.

Zones were applied based on the inventory and analysis undertaken in the Inventory, Issues and Opportunities report (North-South Environmental et al. 2018). It included the location of Areas of Natural and Scientific Interest (ANSI), Environmentally Sensitive Areas or Environmentally Significant Areas (ESA), Species at Risk (SAR) and other rare or uncommon species, rare vegetation communities, current and projected uses, etc. Knowledge of the Heritage Lands gained through fieldwork for this study, existing information, and reference to aerial photography were all used in determining the recommended zones. In general, there is flexibility in the precise location of zoning boundaries and to some extent the exact location is subjective. For example, in Rock Chapel, the boundary between the Nature Reserve Zone and the Resource Management Zone is more of a transitional area, rather than a

discrete line. Zoning boundaries should be refined as part of future park-specific master/management plans.

Zoning assigns uses to lands based on their significance for protection and their potential for recreation within the classification policy (MNR 2012). In the NEPOSS Planning Manual the management direction provided for the zones applied are as follows:

Nature Reserve:

Nature Reserve Zones are predominantly natural and should contain naturally functioning ecosystems. Such zones should protect natural heritage features in the long term.

Natural Environment:

The Natural Environment Zone can function as a buffer between Development Zones and Cultural Heritage or Nature Reserve Zones. Natural Environment Zones are not permitted in Nature Reserve class parks.

Access:

Access Zones are intended to support the use of and access to adjacent zones.

Cultural Heritage:

Management planning for archaeological or cultural heritage features may range from maintaining their present condition to restoring and/or reconstructing the site.

Development:

A Development Zone is usually oriented to the provision of recreational opportunities that are suited to the natural character of the particular park or open space and are conducted in an environmentally sustainable manner. This zone should have minimal negative impact on natural heritage features and cultural heritage features, the natural landscape or watersheds. Development Zones are not permitted in Nature Reserve class parks.

Resource Management:

Resource Management Zones are sustainably managed for many diverse values, such as wildlife, fisheries, forestry and outdoor recreation. Such zones may be places for experimenting with alternative resource management practices and developing a better understanding of ecosystem structures and functions in a scientifically sound manner. This zone should demonstrate exemplary conservation and stewardship. Resource Management Zones should not be established in Nature Reserve parks, provincial parks or in life science ANSIs, except as noted in section 3.1.5.6 of the NEP. These exceptions are:

- a) where existing forestry agreements are in effect;
- b) to facilitate uses permitted under existing approved master/management plan;
- c) to protect and where possible enhance the unique features of an Area of Natural or Scientific Interest, where such features would otherwise disappear without active management;
- d) for emergency access (e.g., fire protection); and
- e) on public lands included in a Resource Management Area class park.

In this report, the Resource Management Zone has been applied to lands with the main intent of providing for future ecological restoration activities, not to provide for active resource extraction. It is

recommended where ecological restoration would be a principal management activity in the future owing to the current characteristics of the area². If ecological restoration is undertaken within a Resource Management Zone, consideration could be given to changing the zone from Resource Management to Natural Environment when the restoration has matured and shown to be successful. For example, if woodland restoration is undertaken within an old field, zoning of this area could be changed from Resource Management to Natural Environment once the ELC would classify the land as woodland.

Recreation:

At present, there is no Recreation Zone included in the NEP (MNR 2017) or NEPOSS Planning Manual (MNR 2012). However, a Recreation Zone was created within City View Park in an NEC approved Management Plan (The Landplan Collaborative Ltd. et al. 2009) in recognition of the recreation facilities planned for the park there. Since there are similar recreation facilities within the Borer's Falls-Rock Chapel Heritage Lands, we propose to also use a Recreation Zone, as there is no existing zone in the NEPOSS Planning Manual that easily accommodates this use. The proposed Recreation Zone as described here is only for the purpose of the Borer's Falls-Rock Chapel Heritage Lands Management Plan. Such a zone may also be appropriate elsewhere, but it is not the intent of this report to provide a generic description and permitted uses for application elsewhere in the NEPOSS.

The intent of the proposed Recreation Zone is to provide a category that permits recreational uses that require more intensive development such as sports fields, off-leash dog parks and open green space intended for passive recreation. Recreation Zones do not include associated infrastructure such as driveways, parking lots, washrooms and other amenities normally associated with urban recreation facilities. Driveways and parking lots are zoned as Access, and buildings are zoned as Development per the NEPOSS Planning Manual (MNR 2012). The Recreation Zone is applied to spaces used for more intensive recreation.

In this report, the Recreation Zone has been applied only to existing intensive recreational sites within the Borer's Falls-Rock Chapel Heritage Lands that do not support, or provide only minimal, natural heritage values. This zoning should not be applied to areas with native vegetation or high-quality natural settings. Nor should it be applied to abandoned fields where they provide complimentary ecological functions to adjacent natural features, or where ecological restoration would substantially improve the natural heritage values of adjacent natural sites. The proposed Recreation Zone should have minimal negative impact on natural heritage features and cultural heritage features, the natural landscape and watersheds.

For the Borer's Falls-Rock Chapel Heritage Lands Management Plan, the proposed Recreation Zone is proposed for areas where there are existing intensive recreational uses at Borer's Falls Off-leash Dog Park, John Prentice Park and Valley Community Centre Park.

² Although the Resource Management Zone is not permitted in Nature Reserve Class parks, we feel that it is appropriate to reclassify Rock Chapel (based on its natural heritage significance) and zone areas targeted for ecological restoration as Resource Management.

2.3 Unclassified and Unzoned Lands

The management unit referred to as Innovation Park is owned by the City of Hamilton and currently supports industrial/business uses. These lands were not acquired for parkland development. Given these uses, public access to these areas will not be encouraged or supported. This management unit has not been classified or zoned and is identified on the maps as “unclassified”.

3.0 Recommended Classifications and Zones

Recommended classifications and zones for the Current EcoPark Lands within the Borer’s Falls-Rock Chapel Heritage Lands are provided in Table 3, which includes supporting rationale. Figure 1 illustrates the recommended classifications and zones. For additional information on property boundaries and property ownership, refer to Figure 2 in the Borer’s Falls-Rock Chapel Inventory, Issues and Opportunities report (North-South Environmental et al. 2018).

The Borer’s Falls-Rock Chapel Heritage Lands mainly consist of a large relatively intact natural area that includes escarpment slope forests and natural areas below the escarpment slope, including several of the Pleasant View Tributaries and associated natural areas. The Borer’s Falls-Rock Chapel Heritage Lands currently support several uses which include natural heritage protection, ecological restoration, education, recreation in various forms, and some municipal uses (e.g., stormwater management), which is reflected in the application of zones.

In assigning/confirming the NEPOSS classifications, and in determining appropriate zones, it is very important to consider the context of the Heritage Lands. The NEPOSS Planning Manual applies to the whole of the Niagara Escarpment and must address a variety of parks and open space areas, each with its own unique characteristics. The Borer’s Falls-Rock Chapel Heritage Lands are located in close proximity to a large urban population and are subject to a number of urban pressures, including existing recreational uses. Many of the existing uses are well-established and, without management, are expected to escalate with the anticipated increase in use of the Cootes to Escarpment EcoPark System (based on growth targets and urban intensification identified for the City of Hamilton (see Growth Plan for the Greater Golden Horseshoe (MMA 2017))). Recognition of the natural and/or cultural heritage value of the Heritage Lands through classification and zoning helps convey their importance to the public (and thus assists in getting acceptance of restrictive management and limited use), as well as providing the mandate for protection, restoration and management of valued resources as required.

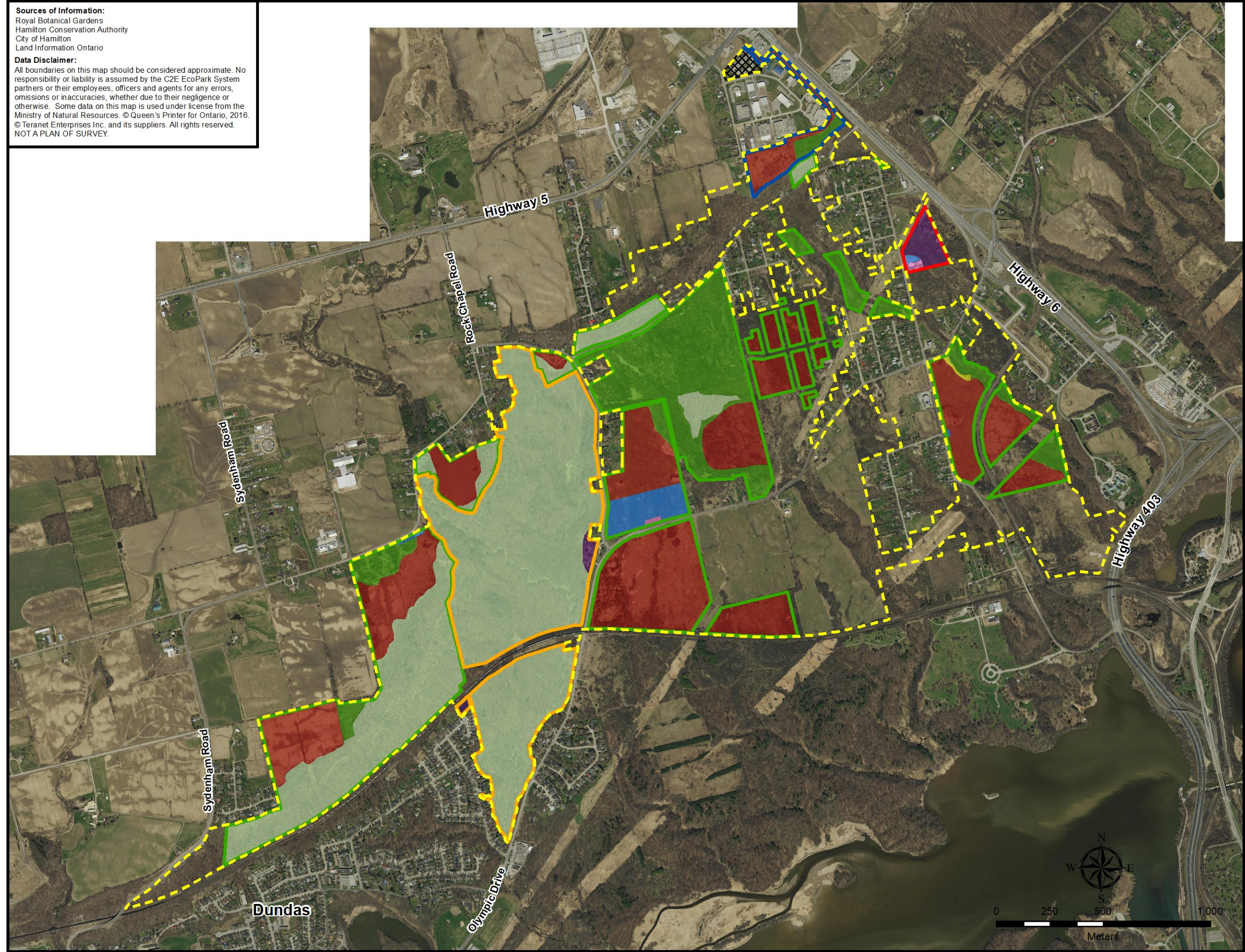
Table 3. Borer's Falls-Rock Chapel Heritage Lands Classifications and Zones

NEPOSS Park	Management Unit	Classification	Zoning	Rationale
Rock Chapel	Rock Chapel 1	Natural Environment	Nature Reserve	rare vegetation communities, SAR
			Natural Environment	cultural plantation
	Rock Chapel 2	Natural Environment	Resource Management	old field, restoration opportunity
	Rock Chapel 3	Natural Environment	Access	parking lot
			Natural Environment	high-quality natural setting
			Resource Management	old field, restoration opportunity
	Rock Chapel 4	Natural Environment	Nature Reserve	rare vegetation communities, waterfall
			Resource Management	old field, restoration opportunity
Rock Chapel 5 (in part)	Natural Environment	Nature Reserve	rare vegetation communities	
		Resource Management	restoration opportunity	
Borer's Falls Conservation Area	Borer's Falls Conservation Area 1	Nature Reserve	Nature Reserve	rare vegetation communities, SAR
			Recreation	Borer's Falls Dog Park and parking lot
	Rock Chapel 5 (in part)	Nature Reserve	Nature Reserve	rare vegetation communities
			Resource Management	restoration opportunity
John Prentice Park	Nature Reserve	Recreation	John Prentice Park, open green space	
York Road Access	Borer's Falls Conservation Area 2	Natural Environment	Resource Management	old field, restoration opportunity
Berry Tract	Berry Tract 1	Natural Environment	Natural Environment	high-quality natural setting
	Berry Tract 2	Natural Environment	Nature Reserve	rare vegetation communities, SAR
Pleasant View Conservation Sanctuary	Cartwright Tract	Natural Environment	Natural Environment	high-quality natural setting
			Resource Management	restoration opportunity, invasive species management
			Nature Reserve	rare vegetation communities, SAR

NEPOSS Park	Management Unit	Classification	Zoning	Rationale
	Nicholson Tract 1	Natural Environment	Resource Management	restoration opportunity, invasive species management
	Nicholson Tract 2	Natural Environment	Natural Environment	high quality natural setting, sensitive ravine
Clappison Woods	Nicholson Tract 3	Natural Environment	Nature Reserve	rare vegetation community, SAR
	Nicholson Tract 4	Natural Environment	Natural Environment	high quality natural setting
Not Named/Not in NEPOSS	Borer's Falls Conservation Area 3	Natural Environment	Resource Management	potential development
	Berry Tract South	Natural Environment	Resource Management	old field, restoration opportunity
			Natural Environment	high quality natural setting
			Access	potential future parking lot
			Development	potential future facilities
	Innovation Park	Resource Management	Resource Management	channelized creek, stormwater management pond
			Natural Environment	high quality natural setting
			Unclassified	industrial building
	Valley Community Centre Park	Recreation	Recreation	baseball diamonds, open green space, playground
			Access	parking lot
			Development	building, facilities
	Hopkins Tract	Natural Environment	Resource Management	ongoing restoration, restoration opportunities
			Access	location for potential future parking lot
			Natural Environment	high quality natural setting
			Cultural Heritage	Hopkins cemetery

Sources of Information:
 Royal Botanical Gardens
 Hamilton Conservation Authority
 City of Hamilton
 Land Information Ontario








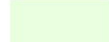






Data Disclaimer:
 All boundaries on this map should be considered approximate. No responsibility or liability is assumed by the C2E EcoPark System partners or their employees, officers and agents for any errors, omissions or inaccuracies, whether due to their negligence or otherwise. Some data on this map is used under license from the Ministry of Natural Resources. © Queen's Printer for Ontario, 2016. © Teranet Enterprises Inc. and its suppliers. All rights reserved. NOT A PLAN OF SURVEY.



Cootes to Escarpment EcoPark System

Figure 1: Classification and Zoning of Borer's Falls - Rock Chapel Heritage Lands

Legend

-  Heritage Lands Boundary
-  Unclassified
- Classifications**
-  Escarpment Access
-  Natural Environment
-  Nature Reserve
-  Recreation
-  Resource Management
- Zones**
-  Nature Reserve
-  Natural Environment
-  Access
-  Cultural Heritage
-  Development
-  Resource Management
-  Recreation



4.0 Permitted Uses

4.1 Permitted Uses per Classification

The NEPOSS Planning Manual provides the following direction on permitted uses for Nature Reserve, Natural Environment, Recreation, Escarpment Access and Resource Management Area park classifications (subject to management planning):

Table 4. Permitted Uses per Classification

Classification	Permitted Uses
Nature Reserve	<ul style="list-style-type: none"> • Access to Nature Reserve class parks will not be widely promoted due to the sensitivity of the features in them. Activities will be limited to those that can further scientific understanding and education (e.g., scientific research, natural history interpretation, nature trails or the Bruce Trail). • Facilities will be kept to a minimum. • Forestry or tree cutting in a life science ANSI in public ownership will be permitted where it is necessary to maintain the features for which the area was designated, for emergency access or to implement uses permitted in an approved NEPOSS management plan that are not in conflict with the Niagara Escarpment Plan.
Natural Environment	<ul style="list-style-type: none"> • Activities may range from back-country hiking in the interior to car-camping and day-use activities in the more developed or accessible areas. Agencies should consider compatible uses within the park or open space.
Recreation	<ul style="list-style-type: none"> • Facilities for overnight camping may be provided, including campgrounds, temporary yurts and tents, lean-tos and unserviced cabins. • Visitor service facilities with a retail component may be permitted. • Small-scale, special-purpose facilities designed and operated in support of natural history, environmental and UNESCO World Biosphere Reserve and related programming, which may include fully serviced overnight accommodations with meals for facility guests only, are permitted. They may also be allowed as an accessory use if specifically permitted in an approved management plan. • Note: Intensive commercial facilities, such as full-service restaurants, banquet halls, lodges, hotels, conference centres, retreats, schools, spas and buildings with provision for fully serviced overnight accommodation, as distinct from camping, will not be permitted. • Certain activities or functions such as those listed above may be considered if such use is a secondary or an off-season use at an approved recreational facility. For example, a ski lodge where food is served during the winter may be used for occasional day conferences during off-season periods.
Escarpment Access	<ul style="list-style-type: none"> • Modest facilities may be provided to support day use activities at viewpoints, rest areas, trailheads, picnic sites, scenic areas, fishing areas, beaches or other points of interest.
Resource Management Area	<ul style="list-style-type: none"> • Uses of these areas may include sustainable forest and wildlife management, and activities such as hiking, cross-country skiing and nature appreciation.

4.2 Permitted Uses per Zone

Table 5 summarizes the direction provided in the NEPOSS Planning Manual on permitted uses per zone (subject to management planning). As there is no Recreation Zone described in the NEPOSS Planning Manual, it is not included in the table, but is described in section 2.2 of this report.

Table 5. Permitted Uses per Zone

Zone	Permitted Uses
Nature Reserve	<ul style="list-style-type: none"> To protect, preserve and rehabilitate identified natural heritage features, visitor uses are limited or restricted. Development is generally restricted to trails, necessary signs, interpretative facilities (where warranted), temporary research facilities and conservation practices.
Natural Environment	<ul style="list-style-type: none"> Low- to moderate-intensity recreational activities are permitted. A minimal level of development (e.g., trails, backcountry campsites, necessary signs and minimal interpretive facilities) is permitted to support low-intensity recreational activities.
Access	<ul style="list-style-type: none"> Development may include minimal facilities to support Nature Reserve, Natural Environment and Cultural Heritage Zones. Examples include roads, signs, trailheads and parking lots.
Development	<ul style="list-style-type: none"> Development may include roads, parking lots and gates, beaches, picnic areas, campgrounds and commercial service facilities, and orientation, interpretative, educational, research and maintenance facilities. Development of facilities must be designed and undertaken in a way that will minimize their environmental and visual impact.
Resource Management	<ul style="list-style-type: none"> Resource Management Zones may be used to demonstrate ecologically sustainable resource management practices. Establishing permanent research plots for monitoring purposes (e.g., permanent sample plots for growth and yield studies) is encouraged in these zones. Water may be controlled for purposes related to flood protection, watershed management or municipal water supply. The recreation uses of Resource Management Zones are subject to park management planning.
Cultural Heritage	<ul style="list-style-type: none"> Development will include protection and interpretation of archaeological or cultural heritage features. Examples include interpretative, educational, research and management facilities, trails, signs, and cultural heritage restorations or reconstructions.

The Borer's Falls-Rock Chapel Heritage Lands are situated in close proximity to a largely urbanized environment. Recreational uses have and will continue to become established, and there is an obvious high desire from the public to access the Heritage Lands. These may result in unacceptable impacts to the Heritage Lands, thus it is essential that access and recreational activities are managed. Limiting access and permitted uses are policies currently used to protect natural heritage and cultural heritage values of the area. For example, the Royal Botanical Gardens (RBG) and the Bruce Trail Conservancy currently prohibit cycling and other more intensive types of recreation. Despite this, because of the

proximity of the Heritage Lands to a large population base, some illicit cycling occurs, and will likely continue within the Heritage Lands.

If permitted uses are being re-evaluated in the future, consideration could be given to applying the concept of ‘preferred use’ to the management of recreational uses, particularly trails, within the Cootes to Escarpment EcoPark System. This approach provides individual landowning agencies with the opportunity to educate the public about what the preferred use of an area is. For example, within the Nature Reserve Zone, the preferred use may be low-impact hiking; within the Natural Environment Zone, the preferred use may be hiking, cycling or mixed-use. The preferred use concept provides flexibility and is a realistic approach to managing recreational use and impacts to natural areas. For example, strict implementation of permitted uses in a Nature Reserve Zone is probably unrealistic owing to the substantial enforcement effort required. The preferred use concept would encourage and facilitate strictly passive uses, including public education, but would tolerate some alternative uses, recognizing they are usually a continuation of an existing use.

In addition, a “special protection” sub-zone could be added under the Nature Reserve Zone, where there are very sensitive features and no recreational activities are permitted, even low-impact hiking. This sub-zone may be desired in locations such as rare species habitat, talus slopes, wetlands, etc. The benefits of applying a “special protection” sub-zone include protecting sensitive and/or significant natural heritage and cultural heritage features by directing recreational activities away from these areas. The “special protection” sub-zone could be established in future park-specific management plans.

5.0 Next Steps

The NEPOSS classifications and zones have been applied to the Current EcoPark Lands within the Borer’s Falls-Rock Chapel Heritage Lands as a means of categorizing and defining appropriate management actions. Five classifications have been applied: Nature Reserve, Natural Environment, Recreation, Escarpment Access and Resource Management Area. Five of the six NEPOSS zones have been applied: Nature Reserve, Natural Environment, Access, Development and Resource Management. An additional zone, Recreation, has also been applied to existing intensive recreational uses in the Borer’s Falls-Rock Chapel Heritage Lands.

The designation of a zone acknowledges that a range of activities may take place within a particular location. It also highlights where existing incompatible uses are occurring. Within the Borer’s Falls-Rock Chapel Heritage Lands, existing incompatible uses include cycling in Nature Reserve zoned lands. The incompatibility of existing uses will be explored further in the management plan, following refinement and acceptance of the classifications and zones recommended in this report.

Park classification and zones set the management direction for Borer’s Falls-Rock Chapel Heritage Lands. Following the review and approval of the recommended classifications and zones by the Steering Committee and Stakeholder Advisory Committee, recommendations for bringing existing uses in line with the recommended classifications and zones will be provided in the Borer’s Falls-Rock Chapel Heritage Lands Management Plan, along with opportunities for education, research, interpretation and restoration.

6.0 References

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- Wong, Janet. 2009. Cootes to Escarpment Park System: Conservation and Land Management Strategy. Royal Botanical Gardens. Burlington, Ontario, Canada.

Appendix 2: Borer's Falls - Rock Chapel Heritage Lands Stakeholder Advisory Committee Members

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Alexandra Brodka – Hamilton Burlington Trails Council
Dr. Pat Chow-Fraser – McMaster University-Biology
Bryan Czerneda – Hamilton Burlington Mountain Biking Association
Rosemary Horsewood – Dundas Turtle Watch
Scott Martin – McMaster University-Sustainable Archeology
Kristin O'Connor – Hamilton Harbour Remedial Action Plan
Werner Plessl – Hamilton Waterfront Trust
Brian Wylie – Hamilton Naturalists' Club
Mary Lyn Brown – Royal Botanical Gardens Auxiliary
Lisa Grbinicek – Niagara Escarpment Commission
Lynda Lukasik – Environment Hamilton Incorporated
Susan Cooper – Ministry of Natural Resources and Forestry Regional Office
Shelly Petrie – Greenbelt Foundation

Appendix 3: Suggested List of Issues to be Addressed in Each Proposed EcoPark System Guideline

Appendix 3: Suggested List of Issues to be Addressed in Each Proposed EcoPark System Guideline

EcoPark System Guideline: Trails

- Lack of adequate and safe parking and access
- Lack of accessibility
- Trespassing
- Duplication and density of trails
- Overuse and erosion on trails
- Unsanctioned structures and trail improvements
- User Conflicts
- Off-leash dogs
- Natural area degradation associated with non-permitted recreational uses
- Safety concerns associated with non-permitted recreational uses
- Personal trails

EcoPark System Guideline: Education and Signage

- Consistent branding of the Cootes to Escarpment EcoPark System
- Identification of Current EcoPark System Lands boundaries to reduce trespass and encroachment issues
- Trespassing
- User conflicts
- Off-leash dogs
- Interpretation
- Natural area degradation associated with non-permitted recreational uses
- Safety concerns associated with non-permitted recreational uses
- Dumping
- Unsanctioned structures and trail improvements
- Interpretation
- Natural area degradation associated with non-permitted recreational uses
- Safety concerns associated with non-permitted recreational uses
- Personal trails
- Structures and “Yard Extension”
- Vegetation removal
- Cats/domestic pets
- Drainage and erosion
- Interpretation and commemoration

EcoPark System Guideline: Vegetation Management

- Natural area degradation associated with non-permitted recreational uses
- Vegetation removal (encroachment)
- Forest health decline
- Loss of open woodland habitat
- Conservation and recovery of Species at Risk
- Invasive species
- Noxious plants

EcoPark System Guideline: Edge Management

- Personal trails leading from backyards
- Structures and “yard extension”
- Dumping along edges of Current EcoPark System Lands (e.g., yard waste, Christmas Trees, potted plants)
- Vegetation removal along edges of Current EcoPark System Lands
- Cats/domestic pets
- Drainage and erosion (e.g., caused from swimming pool drainage)

Appendix 4: Definition of Privately Owned Outreach Area as Used Within the Management Plan Document

Appendix 4: Definition of Privately Owned Outreach Area as Used Within the Management Plan Document

Identified privately-owned lands that are situated adjacent to properties owned by Cootes to Escarpment EcoPark System partners are referred to as ‘Privately Owned Outreach Areas’ within this report. This term does not imply that there are formal agreements on these lands between private landowners and any partner within the Cootes to Escarpment EcoPark System. The term references the fact that there are opportunities for private landowners within the Privately Owned Outreach Areas to seek advice from Cootes to Escarpment EcoPark System staff and partner agencies, if the private landowner is interested in projects that enhance the environment on their properties. This Management Plan is intended as a guiding document for partner staff at each of the nine partner organizations within the Cootes to Escarpment EcoPark System and does not impose restrictions to private landowners living in proximity to Cootes to Escarpment EcoPark System partner properties.

Entry onto identified Privately Owned Outreach Areas by members of the public without express permission of private property owners is an act of trespass.