Lower Grindstone Heritage Lands

MANAGEMENT PLAN

Prepared for Cootes to Escarpment EcoPark System

December 2019

Cootes to Escarpment EcoPark System

Cootes to Escarpment EcoPark System Partners

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Bruce Trail CONSERVANCY

Hamilton

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EXECUTIVE SUMMARY

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

In addition to consultation with the land-owing partners, this this Management Plan included community consultation to assist in the identification of management issues and concerns, as well as compilation of information on the recreational, natural and cultural resources of the Heritage Lands. Although not within the Niagara Escarpment Planning Area, to be consistent with the Management Plans for other Heritage Lands, this Management Plan 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 Lower Grindstone Heritage Lands, Appendix 1).

This Management Plan contains a summary of the background and context of the Lower Grindstone Heritage Lands area followed by a summary of significance. More detailed information can be found in the Lower Grindstone Heritage Lands Inventory, Issues and Opportunities Report (North-South Environmental Inc. et al. 2019). This report is structured as follows:

- Section 1.0 introduces the project and summarizes the project governance and methods;
- Section 2.0 provides a summary of the Inventory of recreational, environmental and cultural features;
- Section 3.0 reports the management issues documented through the project;
- Section 4.0 summarizes the management recommendations for the Heritage Lands, including the classification and zoning of the Heritage Lands;
- Section 5 provides implementation recommendations; and
- Section 6 provides monitoring recommendations.

This Management Plan recommends several actions for future management of the Lower Grindstone Heritage Lands. The recommendations are organized into three categories:

- Approach to Management Recommendations;
- Overarching Management Recommendations; and
- Lower Grindstone 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[1](RBG), 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, undertook to develop a strategy to protect, connect and restore natural lands and open space between the Niagara Escarpment and Cootes Paradise in Hamilton Harbour[2]. 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 divided 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):

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

The Cootes to Escarpment EcoPark System contains a wealth of natural and cultural features and outstanding recreation opportunities. Owing to its proximity to major urban centres, primarily the cities of Hamilton and Burlington, the Ecosystem Park faces intense pressures, including major transportation arteries such as Highways 403 and 6. The effects of anticipated future urban growth include stressors such as increased use, additional infrastructure, demand for recreation and educational programs and facilities, and unauthorized use and access. These stressors can be expected to result in damage to sensitive habitats and will jeopardize the long-term health of natural features and their functions. In response to this, the Phase II report recommended a number of actions, one of which was the preparation of a Management Plan for each of the Heritage Lands.

The Management Plans 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". Thus, the Management Plans will 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. Because much of the Cootes to Escarpment EcoPark System is part of the Niagara Escarpment Parks and Open Space System (NEPOSS), the Management Plans have been prepared following the NEPOSS land classifications and zones as a basis for recommending future management initiatives. The Management Plans will provide guidance to the partner agencies in such a manner that they can implement their respective mandates while still providing consistency throughout the EcoPark System.

[1] Royal Botanical Gardens is a charitable corporation which owns and manages its own lands, established by an Act of the Provincial Legislature in 1941. The Board of Directors is comprised of members appointed by both the federal and provincial government, the City of Hamilton, the Regional Municipality of Halton, McMaster University, and RBG Volunteers. Additional Board members are recruited and appointed by the Board itself.

[2] McMaster university also became a partner in the Cootes to Escarpment EcoPark System initiative at a later date.

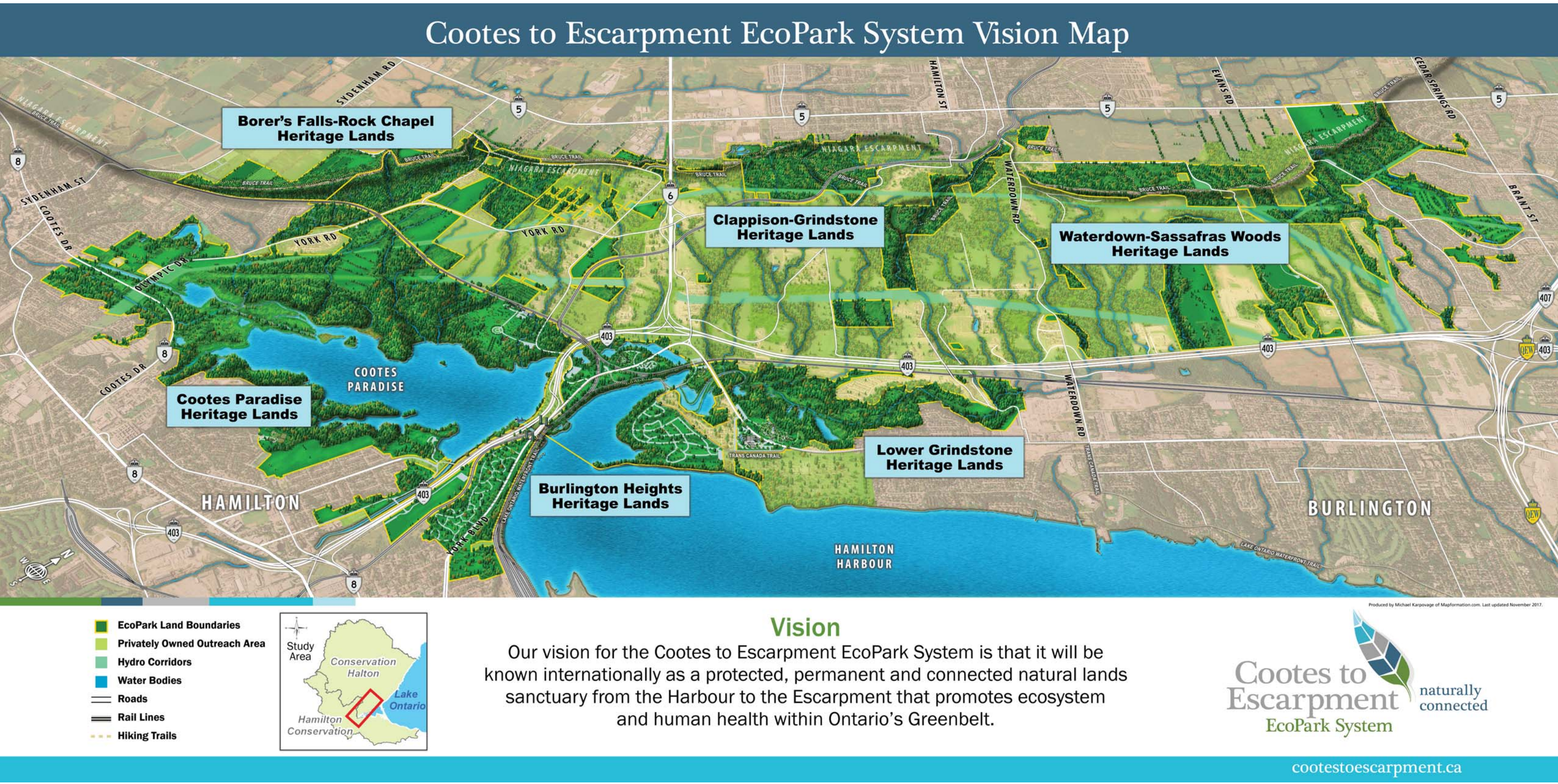
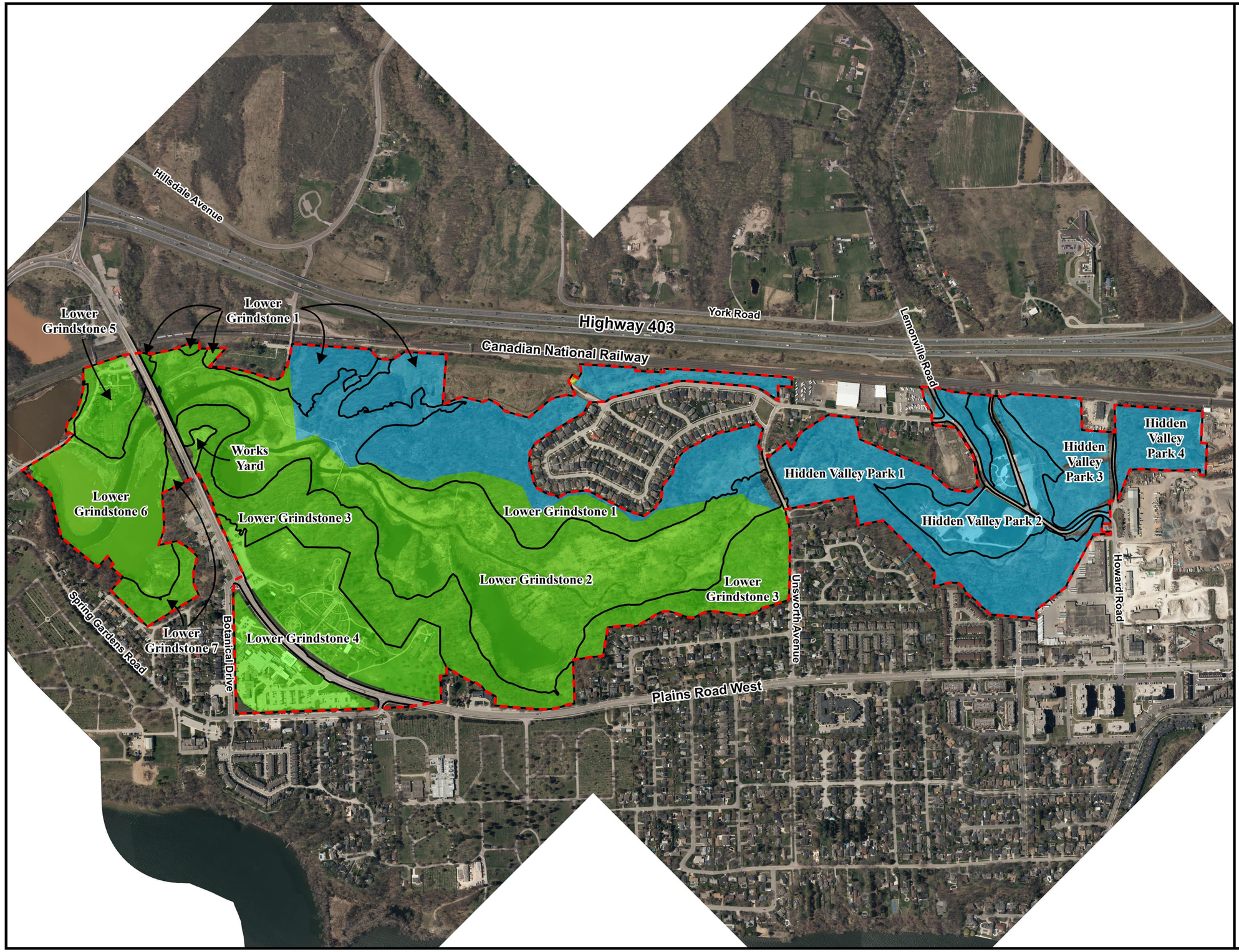


Figure 1. Cootes to Escarpment EcoPark System Study Area Location.

Cootes to Escarpment EcoPark System Lower Grindstone Heritage Lands

Figure 2: Management Units



Legend

Current EcoPark System Lands

- City of Burlington
- Halton Region
- Royal Botanical Gardens
- Management Units
- Heritage Lands Boundary

N W E S

0 100 200 400

Meters

Cootes to Escarpment EcoPark System

October 29, 2019

Most of the Heritage Lands include both publicly and privately-owned lands; however, Lower Grindstone Heritage Lands are unique in that the entire area is either owned by RBG or are public lands, i.e., there are no privately-owned lands within the Lower Grindstone Heritage Lands. The privately-owned lands in the Cootes to Escarpment EcoPark System are referred to as "Privately Owned Outreach Areas". All the Management Plans are restricted to providing guidance on the publicly owned lands (as well as RBG), which are referred to as "Current EcoPark System Lands" in this report. The Current EcoPark System Lands in the Lower Grindstone Heritage Lands are owned and managed by three partner agencies: RBG, City of Burlington (CoB) and Halton Region (HR) (Figure 2). Some consideration is given to adjacent privately-owned lands outside the Heritage Lands where they have bearing on management including context and connectivity, but no recommendations are provided for privately-owned lands. Public roads within the EcoPark System as technically outside the Heritage Areas, however, owing to the opportunities they provide (e.g., facilitating access to the Heritage Lands, providing cycling connections, etc.), and well as being the source of impacts (e.g., focusing storm water run-off, barriers to wildlife movement, etc.), the Management Plans do provide some recommendations regarding roads.

To date, the Management Plans for Burlington Heights Heritage Lands (Cootes to Escarpment EcoPark System 2014), Clappison-Grindstone Heritage Lands (North-South Environmental et al 2016a), Waterdown-Sassafras Woods Heritage Lands (North-South Environmental et al 2016b), Cootes Paradise Heritage Lands (North-South Environmental et al 2018a), and Borer's Falls-Rock Chapel Heritage Lands (North-South Environmental et al 2018b) have been completed.

1.2 Management Plan Purpose and Process

Management Plans for the Burlington Heights, Clappison-Grindstone, Waterdown-Sassafras Woods, Cootes Paradise and Borer's Falls-Rock Chapel Heritage Lands were completed between 2014 and 2018. The Lower Grindstone Heritage Lands Management Plan is the final Management Plan to be developed for the EcoPark System.

The Management Plan will enhance protection of important natural and cultural features and improve sustainable recreation, research and education opportunities through addressing the following:

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

This Management Plan was undertaken 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 on behalf of the Steering Committee.

The second phase of the project collected and summarized existing information on the natural, cultural and recreational resources of the Heritage Lands and identified preliminary management issues and opportunities. It culminated in the Lower Grindstone Heritage Lands Inventory, Opportunities and Issues Report (North-South Environmental Inc. et al. 2019). The Inventory, Opportunities and Issues Report was reviewed and refined through a consultation process. This included ongoing dialogue and review by the Steering Committee, two meetings with a Stakeholder Advisory Committee, and consultation with the public and Indigenous communities. In addition, there was ongoing discussions with staff from the partner agencies throughout the project regarding the inventory of resources and identification of issues and opportunities.

The third phase of the project established classifications and zones for the Lower Grindstone Heritage Lands based on the Niagara Escarpment Parks and Open Space System (NEPOSS) Planning Manual (MNR 2012). None of the Lower Grindstone Heritage Lands are located within the Niagara Escarpment Plan (NEP) area and are thus are not subject to the NEP. However, for consitency with the Management Plans for the other Heritage Lands, the Steering Committee decided to apply the NEPOSS classification and zoning guidelines within the Lower Grindstone Heritage Lands. 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 Lower Grindstone Heritage Lands.

The fourth phase involved summarizing all the information from the first three phases into a Management Plan. 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.

1.3 Project Governance and Project Team

The Lower Grindstone Heritage Lands Management Plan project is directed by a Steering Committee and will receive input and comment from Stakeholders, Indigenous Peoples, and the public. The Steering Committee consists of representatives from RBG, CH, CoB, as well as the Cootes to Escarpment EcoPark System Coordinator.

Responsibilities of the Steering Committee are as follows:

- assist with substantive decisions concerning preparation of the Lower Grindstone Heritage Lands Management Plan;
- organize input, feedback and review from the perspective of each partner organization at pertinent points through the process of Management Plan development; and
- provide guidance to the Project Team and the Cootes to Escarpment EcoPark System Coordinator.

The role of Stakeholders is to provide advice and input at various phases of the Lower Grindstone Heritage Lands Management Plan, as determined by the Steering Committee and the Cootes to

Escarpment EcoPark System Coordinator. Members include individuals and representatives from organizations that are affected by and/or can provide useful input to the Management Plan.

The Project Team is led by North-South Environmental Inc. (project management and natural heritage expertise), and consists of LURA (public engagement expertise), Schollen & Company Inc. (recreation expertise), Cecelia Paine (cultural heritage expertise) and Andlyn Ltd. (planning expertise). Responsibilities of the Project Team are as follows:

- responsible for undertaking the project and all aspects of Management Plan development;
- facilitate and record stakeholder and public input;
- communicate with and take direction from the Cootes to Escarpment EcoPark System Coordinator and Steering Committee; and
- provide regular progress reports as required by the Cootes to Escarpment EcoPark System Coordinator.

2.0 Characterization of the Lower Grindstone Heritage Lands

The general character of the Lower Grindstone Heritage Lands is described below. A more detailed characterization is provided in the Inventory, Opportunities and Issues report (North-South Environmental Inc. et al. 2019).

2.1 General Overview

The Lower Grindstone Heritage Lands comprise of 147 ha of land within the City of Burlington. The Lands are dominated by Grindstone Creek and the associated valley and generally comprise the RBG lands and Hidden Valley Park, which is a municipal park in the City of Burlington. The CN railway forms the northern limit, and Howard Avenue generally demarcates the eastern boundary. Most of the Heritage Lands are north and east of Plains Road West, although the RBG Centre and lowermost reaches of Grindstone Creek are south and west of Plains Road respectively.

The Heritage Lands are entirely owned and managed by partner organizations (the Current EcoPark System Lands) (Figure 2). The majority of the Current EcoPark System Lands are owned by RBG (approximately 90 ha) and the City of Burlington (approximately 54 ha), with a very small area owned by Halton Region. To the south and east, Lower Grindstone Heritage Lands is located adjacent to residential and municipal infrastructure, and two urban cemeteries (Woodland Cemetery and Holy Sepulchre Cemetery West, City of Hamilton) which provide smaller scaled open space areas. Lower Grindstone Heritage Lands also connect directly to the Burlington Heights Heritage Lands (on the west) and Clappison Grindstone Heritage Lands (to the north).

Lower Grindstone Heritage Lands include several recognized environmental designations including: a Provincially Significant Wetland (Hendrie Valley-Lambs Hollow Wetland), Urban River Valley, Significant Woodlands and other Natural Heritage System components (e.g., buffers) in the Region of Halton's Official Plan which serve to support natural processes necessary to maintain ecosystem services and ecological integrity. On adjacent lands to the north, the Heritage Lands also connect to the Grindstone Creek Valley Life Science ANSI. The character of the Heritage Lands is largely defined by Hendrie Valley (Grindstone Creek Valley), marshlands and Grindstone Creek.

The Heritage Lands include a diverse network of trails including: Grindstone Marshes Trail, Old Snake Road Trail, Bridle Trail, Creekside Walk Trail, and Hidden Valley Multi-Use Trail. The Heritage Lands also contain a traditional urban park and sport facilities (Hidden Valley Park), RBG Centre and numerous cultivated garden areas (e.g., Laking Garden, Hendrie Park). Lower Grindstone 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 rich history of the area and significance of the botanical gardens has resulted in a number of significant cultural resources. The area provides spectacular views of Hendrie Valley, deciduous forests, marsh communities and Grindstone Creek.

Some of the current EcoPark System Lands support existing infrastructure including hydro and gas lines which intersect the site. A number of additional utilities border the site including a railway situated at the northern edge.

2.2 Planning Policy and Regulatory Framework

A detailed review of the planning policy and regulatory framework is provided in Appendix 2 of the Issues and Opportunities Report (North-South Environmental et al. 2019), along with a Planning Characterization Matrix. The existing planning policy and regulatory framework in this area consists of Provincial jurisdiction (Provincial Plans) and municipal two-tier jurisdiction (Region of Halton and City of Burlington Official Plans), a Zoning Bylaw and Minister's Zoning Order (Parkway Belt Land Use regulation). The Provincial planning policy framework was updated in 2017 through the Coordinated Provincial Plan Review and more recently, in 2019.

The current Region of Halton Official Plan and City of Burlington Official Plan reflect the Provincial Plans and Provincial Policy Statements in place at the time of approval of these Official Plans. The current City Official Plan, while dated, still reflects the fundamental environmental imperatives of the senior planning documents. The City Official Plan is currently under review and will be replaced in the near future by a new Official Plan which will conform fully to all senior planning documents.

Depending on location, the permitted uses on the Lower Grindstone Heritage Lands are restricted by the physical hazards and environmental conditions on these lands, and the long-standing public use for which these lands were acquired. The lands in the vicinity of the RBG Headquarters on Plains Road West are ~~were~~ historically developed for intensive culture, education and administration uses, including ornamental gardens, and Hidden Valley Park is historically developed for active recreation use.

Permitted uses on the Lower Grindstone 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. Development in proximity to natural heritage features may be subject to greater separation distances to maintain the integrity of features.

Other than the RBG Headquarters, and depending on location and scale, it is possible that individual developments within the Heritage Lands may require an Environmental Impact Assessment, although the criteria for relief from this requirement as set out in the Regional Official Plan may apply given the local Official Plan designations and applicable zoning permissions. Certainly, any development should strive achieve the intent of the Provincial Policy Statement, the Greenbelt Plan "Urban River Valley"

provisions and the Regional and City Official Plans. The "public authority" provision of Zoning By-law 2020 and the public service provision of the Parkway Belt Land Use regulation may be important. Conservation Halton permits may apply, and site plan control may be required.

In advance of any proposed development, site alteration or activity on the Heritage Lands, it is important to review the applicable land use policy and regulation in order to determine conformity of the proposal and any planning application, and approval requirements or exemptions.

Relevant policy documents and regulations include:

- Provincial Policy Statement, 2014;
- Growth Plan for the Greater Golden Horseshoe, 2019
- Greenbelt Plan, 2017;
- Parkway Belt West Plan 1978, as amended;
- City of Burlington Official Plan, 2008;
- Region of Halton Official Plan, 2018 Office Consolidation;
- City of Burlington Official Plan, 2017 Office Consolidation; ~~and~~
- Parkway Belt Land Use regulation 482/73;
- Zoning By-law 2020; and
- Conservation Authority Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation O. Reg. 162/06.

2.3 Recreation

The Lower Grindstone Heritage Lands are primarily used for conservation and passive recreation. They are highly aesthetic and scenic, and are valued by hikers, dog-walkers, birdwatchers, nature enthusiasts and the surrounding community. The various trails that comprise the trail network in the Lower Grindstone Heritage Lands are described in detail in the Lower Grindstone Heritage Lands Inventory, Issues and Opportunities report (North-South Environmental Inc. 2019), including photographs and maps (Appendix 9) depicting trail conditions and issues. An overview of the trails and main management issues is provided below.

Figure 3 illustrates the existing trail network, access points and parking areas in the Lower Grindstone Heritage Lands. Approximately 1.15 km of trail within Hidden Valley Park are maintained by the City of Burlington and 4.56 km are within the RBG. The recreational objectives of the two organizations are similar, with RBG resources focused towards environmental protection, education and supporting programming. One principal difference is that cycling is allowed on trails within the City-owned Hidden Valley Park, but it is not a permitted use within the RBG. Within RBG the paths are split into natural area trails and garden paths. There are internal fences to ensure access is limited to specific access points for the formal garden areas and event spaces within RBG. For the most part, nature trails are narrow footpaths, which are appropriate for a natural environment area. The widths and surfaces of the trails vary throughout the trail network. The condition of the trails also varies, being generally good but showing signs of over-use in the form of erosion and flooding in places. The paved trails through Hidden Valley Park are denoted as multi-use, however, the width and material change intermittently. The trail network for the entire Heritage Lands would benefit from a consistent design, meeting provincial standards for Accessibility, safety and multi-usability where appropriate.

Overall the Heritage Lands are within a transportation pinch point at the head of Lake Ontario. It has undergone gradual transformation as the major transportation corridor serving an industrial community that has evolved over the years, from a main route of the original Highway 2 along Spring Garden Road, to Plains Road West, to the current Highway 403. This has resulted in a gradual transformation of how the lands are used. The trail network has undergone an evolution consistent with these land use changes, as in many cases, the current trails are based on historical roads, early cart-paths and even earlier Indigenous trails. The most recent shift in use was the closure of Spring Garden Road/Valley Inn Road as a through-road and its conversion to a multiuser trail route (2011). A similar conversion occurred on lower Snake Road, with part of this road at its south end, near the Laking Garden lower access road, becoming part of the RBG trail network in 1978.

Changes such as these have been captured by the Hamilton Burlington Trails Council which has put together a publicly accessible interactive Regional Trails Map available at: http://hamiltonburlingtontrails.ca/trail-map/. This map was put together through a Memorandum of Understanding with Cootes to Escarpment EcoPark System partners to provide the Hamilton Burlington Trails Council with GIS data available on trails.

RBG has also put together a trail strategy to provide guidance for management of the trail network within the RBG lands (RBG Master Plan). This approach is expected to evolve following the completion of the current review of the RBG Master Plan. The guiding principles of the draft strategy are:

- focus to a single access for each area;
- maximize biodiversity protection;
- facilitate destination-based visitation;
- clarify trailhead standardization (e.g., RBG, NEPOSS, Nodal Park, Cootes to Escarpment EcoPark System logos); and
- support educational programming.

Trail use within the Heritage Lands primarily consists of walking, jogging, hiking (ranging from casual outings by local residents, to more serious day-hikers) and dog walking. The primary use of the nature trails in this region is for educational programming associated with RBG, and nature appreciation. Only on-leash dog-walking is allowed, there being no designated off-leash areas within these Heritage Lands. Cycling is permitted on City of Burlington lands; however, opportunities are generally limited within the Lower Grindstone Heritage Lands. Some cycling occurs on a regular basis on roads within the Heritage Lands and within Hidden Valley Park, however, this use is not permitted on trails owned and maintained by RBG. Cross-country skiing is also not permitted on RBG trails, and trails are not maintained for this use, nor are they suitable for it. Running/jogging is also not permitted on RBG trails, though this does take place. Generally, the current level of recreational use appears to be having little impact on the surrounding natural system. However, there are some specific locations where there is an unacceptable amount of bare soil, root exposure, erosion, mud, flooding, etc. These areas would benefit from trail management or closure or even relocation, in cases where trails are regularly flooded by the watercourse, with commensurate restoration, and management to address existing impacts. These issues are described in section 3.3 and recommendations are provided in Section 4.3.4.

Unsanctioned trails also occur within the Heritage Lands. In some cases, trails external to the Current EcoPark System Lands on neighbouring private property extend into the Heritage Lands. Cooperation between RBG/City of Burlington and adjacent private landowners will be required to address the management of these trails. It is important to note that unsanctioned trail and structure development

i.e., mountain biking pump tracks, is prohibited within Heritage Lands. The increased use of both sanctioned and unsanctioned 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 impacts to the natural environment as a result of recreational uses, will be necessary to prevent future degradation.

Access to the trails within the Lower Grindstone Heritage Lands, although less of a problem than in most other Heritage Lands, could benefit from enhancements. Issues related to access and also parking is generally related to safety (some poor sightlines from access points to roadway) and way-finding signage.

Cootes to Escarpment EcoPark System Lower Grindstone Heritage Lands

Figure 3: Trails, Parking and Access Locations

Legend

Trails

- RBG Trails
- City of Burlington Trails

Access Locations

- Access Locations
- Parking and Access

- Slopes > 25%
- Heritage Lands

N W E S

0 100 200 400

Meters

Cootes to Escarpment EcoPark System

October 29, 2019

2.4 Natural Heritage

The following is a summary of the physical and natural heritage characteristics of the Heritage Lands. A more detailed account is provided in the Lower Grindstone Heritage Lands Inventory, Issues and Opportunities report (North-South Environmental, 2019)

2.4.1 Physiography and Surface Geology

The main natural landscape features of this area are forested ravines, Grindstone Creek, and floodplain marshes. The northern portion of the Grindstone Creek is situated in a major Escarpment re-entrant valley within the City of Burlington. South of Highway 403, within the current Heritage Lands boundary, the area broadens into a well-developed flood plain that extends into Hamilton Harbour. The underlying bedrock in the area is Queenston Shale (which was the source for clay used for making pipe and bricks).

2.4.2 Surface Water

The Lower Grindstone Heritage Lands are located in the Grindstone Creek Watershed, which drains approximately 9,000 ha of land. It conveys about 14% of water that flows into Hamilton Harbour/Burlington Bay. Grindstone Creek and the associated valley is the dominating feature of the Heritage Lands and essentially divides the Heritage lands into three sections: the area south and east of the valley, the valley itself, and the area north and west of the valley. Grindstone Creek has its origins north of the Niagara Escarpment, flowing southward and draining into Hamilton Harbour. The Grindstone Creek is ecologically important since it is one of only two coldwater streams that outlet into Hamilton Harbour (Axon et al. 1989), and although it currently only supports non-native rainbow trout, there are historical records for brook trout. Water quality monitoring shows that several of the smaller Grindstone Creek tributaries are significant sources of sediment and are impairing water quality. Although sediment contributions are considered to be natural, they are exacerbated by increases in peak flows (Conservation Halton 2013).

2.4.3 Vegetation Communities

Approximately 77% (113 ha) of the Lower Grindstone Heritage Lands are characterized by natural vegetation communities, including deciduous forest, mixed forest, mixed meadow, deciduous swamp, thicket swamp, meadow marsh, shallow marsh, floating-leaved shallow aquatic, submerged shallow aquatic, and open water (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 Lower Grindstone Heritage Lands. The remaining 23% (34 ha) of the Heritage Lands consists of anthropogenic and cultural vegetation communities, including cultural meadow, cultural thicket, cultural savannah, 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 consists of mowed lands, parking lots, roads, etc.

Table 1. Vegetation Communities of Current EcoPark System Lands in the Lower Grindstone Heritage Lands

ELC Code	# of Polygons	Hectares	% of Current EcoPark System Lands
CUM – Cultural Meadow	13	7.50	5.09

ELC Code	# of Polygons	Hectares	% of Current EcoPark System Lands
CUS – Cultural Savannah	1	0.32	0.21
CUT – Cultural Thicket	11	5.21	3.54
CUW – Cultural Woodland	4	1.42	0.97
FOD – Deciduous Forest	41	71.35	48.44
FOM – Mixed Forest	6	0.70	0.47
MAM – Meadow Marsh	24	11.08	7.52
MAS – Shallow Marsh	10	7.02	4.77
MEM – Mixed Meadow	2	0.61	0.42
OAO – Open Aquatic	7	5.13	3.49
SA – Shallow Water	13	0.26	0.17
SAF – Floating-leaved Shallow Aquatic	3	5.05	3.43
SAS – Submerged Shallow Aquatic	3	3.07	2.08
SWD – Deciduous Swamp	12	4.35	2.95
SWT – Thicket Swamp	29	4.70	3.19
ANTH - Anthropogenic	45	19.52	13.25
TOTAL:		**147.29**	**100.0**

Forested communities dominate the Lower Grindstone Heritage Lands. Wetlands, which consist of both swamp and marsh communities border Grindstone Creek in the center of the Heritage Lands, whereas the upland areas of Lower Grindstone support primarily forested communities with patches of cultural woodland, thicket and meadow.

There are 5 provincially significant vegetation communities present within the Lower Grindstone Heritage Lands:

- Dry - Fresh Hackberry Deciduous Forest Type (FOD4-3)
- Fresh - Moist Black Maple Lowland Deciduous Forest Type (FOD7-5)
- Fresh - Moist Sassafras Deciduous Forest Type (FOD8-2)
- Fresh - Moist Shagbark Hickory Deciduous Forest Type (FOD9-4)

There are several areas within Lower Grindstone that contain prairie indicator species such as big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), round-headed bush clover (*Lespedza capitata*), butterfly milkweed (*Asclepias tuberosa*) and New Jersey tea (*Ceanothus americanus*).

Some of the vegetation communities found within the Current EcoPark System Lands may qualify as Significant Wildlife Habitat, which includes rare vegetation communities or specialized habitat for wildlife including old growth forest, other rare vegetation communities, and seeps and springs (MNRF 2015). These communities often also support species considered Threatened or Endangered, although these are very likely under-reported, especially bats. Identification and delineation of Significant Wildlife Habitat and the habitat of Threatened and Endangered Species contributes to the

identification of habitat to protect as well as provides guidance for targeted restoration and management activities. Coordination with current and future planned uses should have regard for Significant Wildlife Habitat and the habitat of Threatened and Endangered species.

Cootes to Escarpment EcoPark System Lower Grindstone Heritage Lands

Figure 4: Ecological Land Classification

Legend

Ecological Land Classification

ANTH - Anthropogenic
CUM - Cultural Meadow
CUS - Cultural Savannah
CUT - Cultural Thicket
CUW - Cultural Woodland
FOD - Deciduous Forest
FOM - Mixed Forest
MAM - Meadow Marsh
MAS - Shallow Marsh
MEM - Meadow
OAO - Open Water
SA - Shallow Water
SAF - Floating-leaved Shallow Aquatic
SAS - Shallow Water
SWD - Deciduous Swamp
SWT - Thicket Swamp

Heritage Lands Boundary

0 100 200 400
Meters

Cootes to Escarpment EcoPark System

October 29, 2019

2.4.4 Flora

A conservative approach was used to summarize flora within the Lower Grindstone Heritage Lands; records without specific location information and that could not be confirmed to have been documented within the Lower Grindstone Heritage Lands were not included in this summary.

A total of 828 flora species have been documented in the Lower Grindstone Heritage Lands of which 552 (67%) are native, 253 (30.6%) are non-native species and 23 (2.8%) were identified to Genus only, and consequently their status could not be confirmed. The Native Floristic Quality Index (FQI) of the Lower Grindstone Heritage Lands is 121.04, 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 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. A total of 348 significant flora species have been identified within the study area, including four provincially endangered species and one provincially threatened species, 27 provincially rare species (S1-S3 provincially ranked), 79 regionally rare and 125 regionally uncommon species in Halton Region (Halton 2006) and 219 species rare on RBG properties (Barr 2014).

Invasive species have been identified as one of the greatest threats to the integrity of the ecosystems of the Lower Grindstone Heritage Lands. Major invasive plant species found within the Lower Grindstone Heritage Lands include: Garlic Mustard (*Alliaria petiolata*), Japanese Knotweed (*Polygonum cuspidatum*), Phragmites (*Phragmites australis),* Purple Loosestrife (*Lythrum salicaria*), Reed Canary Grass (*Phalaris arundinacea*), non-native honeysuckles (e.g., *Lonicera tatarica*), Common Buckthorn (*Rhamnus cathartica*), Multiflora Rose (*Rosa multiflora*), Manitoba Maple (*Acer negundo*) and Black Locust (*Robinia pseudo-acacia)*.

2.4.5 Fauna

The Lower Grindstone Heritage Lands provide important habitat for many wildlife species including 490 species (470 native and 20 introduced):

- 69 species of butterfly or moth;
- 53 species of dragonfly or damselfly;
- 49 species of fish;
- 11 species of mussels;
- 16 species of amphibian;
- 17 species of reptile; and
- 236 species of bird (144 considered to possibly breed within the Current EcoPark System Lands); and
- 21 species of mammals.

A conservative approach was used to summarize fauna within the Lower Grindstone Heritage Lands; records without specific location information and those that could not be confirmed to have been documented within the Lower Grindstone Heritage Lands were not included in this summary. For example, 185 species of bird have been confirmed by partner agencies within the Lower Grindstone Heritage Lands, however public forums document higher species counts (228 recorded at Valley Inn and 213 recorded at Hendrie Valley [eBird 2019]).

A total of 13 significant fauna species have been identified within the Current EcoPark System Lands: 1 butterfly, 3 dragonfly, 1 amphibian, 6 reptile, 11 fish, 1 mollusc, 29 bird and 4 mammal species.

2.4.6 Natural Heritage Corridors

Lower Grindstone is part of the provincial-scale Niagara Escarpment and Lake Ontario corridors. To the north of the Lower Grindstone Heritage Lands, much of the landscape is open and relatively undeveloped. However, Highway 403 and the CN rail line are significant barriers to movement for wildlife species.

In terms of inter-Heritage Land connections, creek valleys generally provide natural corridors for species movement. However, northward and westward movement from the Lower Grindstone Heritage lands is curtained by the CNR rail corridor and Hwy 403. Grindstone Creek Valley serves as the only reasonable linkage to the north by providing connection beneath the railway and Highway 403, but even this connection is largely consumed by Lemonville Road. Similarly, westward, Grindstone Creek provides opportunity for linkage where it flows beneath the rail line and Hwy 403, but this linkage is marginal for terrestrial species. Residential development restricts movement to the south and east, with the exception that the cemetery lands provide some connection to Lake Ontario, though as they are maintained (i.e., are not natural), that function is limited.

Within Lower Grindstone Heritage Lands, Current EcoPark System Lands are contiguous and thus are reasonably well connected. However, the area is bisected by Plains Road West, Spring Gardens Road, Unsworth Ave, Lemonville Road and Hidden Valley Road (Figure 2).

Significant wildlife corridor issues have been identified with major roadways within the Cootes to Escarpment EcoPark System, and within the Lower Grindstone Heritage Lands. Locations with wildlife corridor issues within the Lower Grindstone Heritage Lands include Plains Road West, Spring Gardens Road and Unsworth Ave at multiple points where the existing culverts are undersized relative to wildlife and where regular at-grade crossing occurs by wildlife.

2.4.7 Natural Heritage Summary

Table 2 summarizes the natural heritage features and designations of the Lower Grindstone Heritage Lands. It is also important to note that much of the Heritage Lands are designated as Natural Heritage System by the City of Burlington.

Table 2. Natural Heritage Summary of the Lower Grindstone Heritage Lands

Features	Lower Grindstone Heritage Lands
Environmentally Significant Area (ESA)	▪ Grindstone Creek Valley
Area of Natural and Scientific Interest (ANSI)	▪ Grindstone Creek Regional Life Science ANSI
Provincially Significant Wetland (PSW)	▪ Hendrie Valley-Lambs Hollow Wetland
Species at Risk ▪ based on provincial ESA ▪ excluding historical records, planted species and non-breeding species	▪ 4 END (ESA/SARA) and 1 THR (ESA/SARA) flora species ▪ 1 SC (ESA/SARA) and 1 SC (ESA) butterfly/moth species ▪ 3 THR (ESA/SARA) and 2 SC (ESA/SARA) turtle species ▪ 1 END (ESA) and 1 END (ESA/SARA) fish species ▪ 1 END (ESA/SARA) and 1 END (SARA) mussel species ▪ 4 END (SARA and ESA), 4 SC (SARA and ESA), 2 SC (ESA)/END (SARA), 1 THR (ESA)/SC (SARA), 1 END (ESA), 1 THR (ESA), 1 SC (ESA) bird species
Significant Wildlife Habitat	Examples of Significant Wildlife Habitat within the Lower Grindstone Heritage Lands include: ▪ Seasonal Concentration Areas of Animals ▪ Bat Hibernacula ▪ Bat Maternity Colonies ▪ Migratory Butterfly Stopover Areas ▪ Landbird Migratory Stopover Areas ▪ Deer Winter Congregation Areas ▪ Waterfowl Stopover and Staging Areas (aquatic) ▪ Turtle Wintering Areas ▪ Rare Vegetation Communities ▪ Savannah ▪ Old Growth Forest ▪ Other Rare Vegetation Communities ▪ Specialized Habitat for Wildlife ▪ Woodland Raptor Nesting Habitat ▪ Seeps and Springs ▪ Woodland Area-sensitive Breeding Bird Habitat ▪ Shrub/Early Successional Bird Breeding Habitat ▪ Waterfowl Nesting Area ▪ Turtle Nesting Areas ▪ Habitat for Species of Conservation Concern ▪ Special Concern and Rare Wildlife Species ▪ Marsh Breeding Bird Habitat ▪ Animal Movement Corridors ▪ Amphibian Movement Corridor
Surface water and fisheries resources	▪ Grindstone Creek provides important fish habitat ▪ Cold-water fish habitat

Features	Lower Grindstone Heritage Lands
Flora ▪ based on provincial ESA ▪ excluding historical records and planted species	▪ 828 flora species; 552 native flora species ▪ 27 Carolinian Indicators; 25 Prairie-Savannah Indicators ▪ 121.04 FQI; 5.15 Mean C ▪ 4 END (ESA/SARA) flora species ▪ 27 S1-S3 species ▪ 79 regionally rare and 125 uncommon species in Halton
Butterflies and Moths ▪ based on provincial ESA ▪ excluding historical records	▪ 69 species; 67 native species ▪ 1 SC (ESA/SARA) species, 1 SC (ESA) ▪ 4 S1-S3 species ▪ 2 regionally rare species in Halton
Dragonflies and Damselflies ▪ based on provincial ESA ▪ excluding historical records	▪ 53 native species ▪ 4 S1-S3 species ▪ 1 regionally rare species in Halton ▪ 1 regionally uncommon species in Halton
Fish and Mussels ▪ based on provincial ESA ▪ excluding historical records and stocked species	▪ 49 species fish; 38 native fish species ▪ 11 species of mussel ▪ 2 S1-S3 species of fish; 3 S1-S3 species of mussels ▪ 2 regionally rare species of fish in Halton
Amphibians ▪ based on provincial ESA ▪ excluding historical records	▪ 16 native species ▪ 2 species rare in Halton ▪ 3 species uncommon in Halton
Reptiles ▪ based on provincial ESA ▪ excluding historical records	▪ 17 species; 16 native species ▪ 4 S1-S3 species ▪ 2 THR (SARA and ESA), 2 SC (SARA and ESA) ▪ 3 regionally rare species in Halton
Birds ▪ based on provincial ESA ▪ based on bird species known to breed in the City of Hamilton ▪ excluding historical records	▪ 236 species; 234 native species ▪ 4 END (SARA and ESA), 4 SC (ESA and SARA), 2 END (SARA)/SC (ESA), 1 SC (SARA)/ SC (ESA), 1 END (ESA), 1 THR (ESA), 1 SC (ESA) ▪ 30 S1-S3 species ▪ 1 regionally rare species in Halton ▪ 1 regionally uncommon species in Halton ▪ 14 area-sensitive species
Mammals ▪ based on provincial ESA ▪ excluding historical records	▪ 21 species ▪ 1 regionally rare species in Halton ▪ Note: bat surveys not completed to date

2.5 Cultural Heritage

The following is a brief summary of the major cultural features of the Lower Grindstone Heritage lands. A comprehensive account of the occupation and settlement of the area and a description of the current cultural features and their significance is provided in the Lower Grindstone Heritage Lands Inventory, Issues and Opportunities report (North-South Environmental, 2019).

The cultural heritage of the Lower Grindstone Heritage Lands reflects a long history of human use extending from its initial occupation by Indigenous communities, early settlement by Empire Loyalists and early European settlers. The Lower Grindstone Heritage Lands are extremely rich in pre-contact history and some sites located in the vicinity have been dated to the earliest period (early Paleo-Indian) in Ontario (Catherine Dupont pers. comm.). This aspect of the cultural history was not part of the project scope and needs to be pursued to fully inventory the cultural heritage of these Heritage Lands and develop appropriate management responses in concert with ongoing consultation with Indigenous communities by the individual EcoPark System partners.

The construction of the Canadian Pacific Railway through Grindstone Creek valley in 1910-1911 and the Queen Elizabeth Way in the 1930s are the early major transportation features, followed by Hwy 403 in the 1960s. The cultural heritage themes associated with these Heritage Lands includes William and John Applegarth and milling on Grindstone Creek, the history of William Hendrie and his Valley Farm, development of Hendrie Park, Laking Garden and RBG Centre for purposes of civic improvement and scientific study, and the history of Hidden Valley Park as a recreation site. Quarrying is a minor theme, associated with Valley Farm and William Hendrie on land that is now adjacent to the Heritage Lands. The establishment of the RBG in the late 1920s, now a world-class botanical garden and National Historic Site, represents the dominant cultural feature of the Heritage Lands.

3.0 Management Issues

The Inventory, Issues and Opportunities report (North-South Environmental 2019) identified 51 issues and provided preliminary recommendations in the form of “opportunities” for addressing each of the issues. Recommendations for each of the Issues are provided in Section 4.0. The recommendations that address each of the issues are provided in parentheses () following each Issue. There are some references to “Management Units” in the issue descriptions. These are illustrated on Figure 5 and explained in the Inventory, Issues and Opportunities report (North-South Environmental et al 2019).

Some current uses in the Lower Grindstone Heritage Lands, both with respect to the type of use and/or the intensity are resulting in degradation of the natural features and functions of the Heritage Lands. Impacts noted are based on 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 Cootes to Escarpment EcoPark System Issues

Several management issues are not specific to the Lower Grindstone Heritage Lands and span the entire Cootes to Escarpment EcoPark System. Although strictly beyond the mandate of this Management Plan (which is restricted to Current EcoPark System Lands in the Lower Grindstone Heritage Lands), it was deemed important to bring them forward for consideration, as they have in previous Management Plans (Waterdown-Sassafras Woods Management Plan Clappison-Grindstone Management Plan, Borer's Falls-Rock Chapel Management Plan and Cootes Paradise Management Plan). These issues are primarily 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.

Classification per NEPOSS and Zoning per NEPOSS (1 and 2)

These are not issues per se, and were not identified as issues in the Inventory, Issues and Opportunities report. The classification and zoning of all Heritage Lands was a requirement for all Management Plans to comply with the requirements of the Niagara Escarpment Plan, for properties that fall within the Niagara Escarpment Plan Area. Although the Lower Grindstone Heritage Area is totally outside of the NEPA, the Steering Committee for the project decided that the NEPOSS classification and zoning should still be applied to assist with maintaining consistency with the management of other Cootes to Escarpment Heritage Lands.

Awareness of the Cootes to Escarpment EcoPark System (3 and 10)

The Cootes to Escarpment EcoPark System is a relatively recent initiative and is novel in its concept. Each of the partner agencies operate 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 EcoPark System.

Cootes to Escarpment EcoPark System Lower Grindstone Heritage Lands

Cootes to Escarpment EcoPark System

Hillsdale Avenue
Lower Grindstone 5
Lower Grindstone 1
Highway 403
York Road
Canadian National Railway
Lennonville Road
Lower Grindstone 6
Works Yard
Lower Grindstone 3
Lower Grindstone 1
Hidden Valley Park 4
Hidden Valley Park 3
Lower Grindstone 2
Hidden Valley Park 2
Hidden Valley Park 1
Howard Road
Unsworth Avenue
Spring Gardens Road
Lower Grindstone 7
Botanical Drive
Lower Grindstone 4
Lower Grindstone 3
Plains Road West

0 100 200 400
Meters

Figure 5: Management Issues and Opportunities

Legend

Heritage Lands Boundary

Management Issues and Opportunities

- Access Issues
- Cultural or Environmental Education Opportunities
- Dumping (incl. pool drainage)
- Erosion
- Invasive Species
- Parking Issues
- Poaching and Plant Foraging
- Signage Opportunity (Interpretation Wayfindings)
- Signage (Safety Issue)
- Stormwater Management Issue
- Vandalism/Theft
- Trail Issues
- Trail Structure and Flooding Issues
- Unsanctioned Trails
- Unsanctioned Use
- Water Quality Issues
- Wildlife Conservation
- Wildlife Crossing
- Wildlife Feeding
- Wildlife Viewing

Bank Erosion Sensitivity (GEO-Morphix Ltd. 2016)

- Sensitive
- Relatively Stable
- Very Stable

Views

- External
- Internal
- Management Units

December 17, 2019

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.

To promote identity, some signage has been posted along roadways to identify the boundaries of the system and more signage is planned for installation in the future; however, at present the signage is scattered and it is very difficult to determine when a user is in the EcoPark System or leaving it. The lack of signage and generally poor general public knowledge of where and what the EcoPark System is hinders opportunities to engage the public in stewardship, educate EcoPark System users about the cooperative arrangement among the partners, the importance of managing use, and garnering support for management. It is important to note that awareness is continuing to increase through Cootes to Escarpment EcoPark System stewardship programming and community events. Notably, the substantial fund-raising event "A Dinner on the Bridge" held in the summer of 2017 served to raise the general awareness of the EcoPark System. Events such as that, held on a regular basis, are important for increasing the general awareness of the initiative.

Delineation of Current EcoPark System Lands (4 and 10)

Generally, within the EcoPark System, it is often difficult for users to determine when they are within the Current EcoPark System Lands. This is not an issue *per se* in the Lower Grindstone Heritage Lands as there are no Privately-owned Outreach Areas; however, the concern can also relate to unclear demarcation within the partner-owned lands. For example, it apparently is unclear to some trail users when RBG lands changes to City Lands across Unsworth Avenue. In many locations, the Heritage Lands abut private residential properties. At these locations it is practically impossible to enforce policies regarding use and encroachment in areas at 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).

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

Each partner agency has their own set of policies and rules that respond to 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 RBG only allows pedestrian traffic on their trails; however, cycling is permitted by the City of Burlington in Hidden Valley Park. Not only is this mixture of permitted uses confusing to EcoPark System users, but users are often 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. Also, to the extent that it is possible within their individual mandates, the partner agencies for each of the Current EcoPark System Lands should identify and build on commonalities to better promote the overall connection between Lake Ontario and the Niagara Escarpment that is achieved through the EcoPark System.

Population and Use (6)

A major overarching management issue is the anticipated increase in use that will result from future development adjacent to all the Heritage Lands and the associated population growth. Increased use from this growth has the potential to degrade the natural, recreational and cultural resources unless mitigation in the way of carefully planned management initiatives is implemented. Such developments will be desirable communities to live in partly because of the proximity of the aesthetic beauty and recreational opportunities provided by the Heritage Lands. It is thus fitting that management or mitigation of any population-induced negative impacts on nearby Heritage Lands resulting from development, and the increased cost of management needs, should be contributed to by development proponents, where appropriate.

At present, there are no policies that would directly facilitate the implementation of relevant management recommendations in the Management Plan through development approvals. However, where geographic-specific park or public land Management Plans exist, the Greenbelt Plan 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 in their assessment of development applications.

Several planning policies in local and Regional Official Plans 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 is 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 for future development, this higher value should be considered when determining 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 and adjacent to the Heritage Lands (in the case of the Lower Grindstone Heritage Lands these are the City of Burlington, Region of Halton 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 the approach to management taken by the partner agencies. These differences should not be at the expense of the asset that the designation of the Cootes to Escarpment EcoPark System brings. Individual partners manage lands in a variety of models, from pay to use to free to use. 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. Cootes to Escarpment EcoPark System does not own land; partnering agencies do and manage them according to their own policies. Funding estimates will not be included in the 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.

Desire and Need for Trail Connections and Recreation Plan (8 and 10)

Pedestrian and cycling use along Plains Road West has been identified as a recreation issue within the Lower Grindstone Heritage Lands, mainly due to safety concerns. Plains Road West is a well-travelled vehicular commuter route, but it is also a desirable commuter cycling route. The Waterfront Trail, as a signed, on-road route runs along Plains Road and Gorton Avenue to North Shore Boulevard.

There is also a desire for trail connections through the Lower Grindstone Heritage Lands that does not require cycling along Plains Road West. Furthermore, the Cootes to Escarpment EcoPark System does not currently have a recreation plan in place to provide guidance on trail-related issues that span individual Heritage Lands boundaries.

Desire and Need for a Wildlife Crossing Plan (9)

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 impact the safe passage of wildlife, and ultimately wildlife populations.

3.2 Access, Parking and Infrastructure Issues

Issues and opportunities related to access, parking and infrastructure are described below. It is acknowledged that transportation is an important issue in order to bring users to the lands but addressing this is beyond the scope of the Management Plan.

Parking, Access and Signage (13)

Several issues related to parking and access have been identified in association with the Lower Grindstone Heritage Lands:

- Cherry Hill Gate: This parking lot is situated near a major arterial road generating queuing on the road as vehicles enter and exit the lot on busy weekends. The lot is chaotic with pedestrians and vehicles, and without proper wayfinding signage and pathways to reach the main trail access point there are inherent safety concerns at this location.

- RBG Centre: The large parking lot with space for up to 320 vehicles is well organized with proper sightlines and egress points from all sides. Similar to other RBG lots there is little wayfinding signage and no defined pedestrian pathway system in which to safely navigate through the parking lot to the front door of the building or the gardens.
- Pedestrian Crossing of Plains Road West: Municipal bus stops are located on both sides of the road in front of the RBG Centre and it is the only bus stop in this general area. The bus stop is called the "Royal Botanical Gardens" stop and is a key access for visitors taking public transit system, with connections to the GO transit system. RBG visitors and staff, as well as other users, require a safe way to get from the north side bus stop across the road.
- Valley Inn (Burlington): Within the flood zone at the mouth of the Grindstone Marshes Trail parking is available for a small number of vehicles. Roadside parking is not preferred but is a secondary option many visitors take. It is a safety concern to have visitors access the Heritage Lands on foot along the road.
- Grindstone Marshes Trailhead (RBG): Parking and trail access to the Grindstone Marshes Trail are prone to seasonal closure/ inaccessibility due to flooding.
- Laking Garden: seasonally isolated by flooding on Spring Garden Road. Spring Garden Road includes a bridged causeway built across Grindstone Marsh/Creek. Winter maintenance of the railway crossing pedestrian bridge to maintain a link from Plains Rd at Laking Garden to Valley Inn is very challenging. This bridge also poses accessibility issues with the steepness of the ramp, and the hill descending towards Valley Inn.
- Snake Rd Trail Access: Although not intended for trail users, a parking area in the adjacent cemetery provides an option for short term parking at this location. Discussions with the cemetery superintendent should be held to agree on a shared parking arrangement to avoid potential issues.
- Unsworth Avenue Trail Access: Roadside parking at this location is perpendicular to the roadway and is situated around a blind corner on the roadway which is posted at 50 km/ hr. In the absence of warnings, signage and line-marking it is unclear to drivers that they are approaching a trail crossing, thus creating a safety issue.
- Hidden Valley Parking Lots: Four parking lots combine to provide over 200 spaces within Hidden Valley Park. Generally, this is sufficient for park uses, however it is noted that during large picnic events in the summer, the parking can be temporarily over capacity. The parking lots and access roads include both paved and gravel surfaces. There is a lack of line-marking to organize where to park cars and this can affect the movement of pedestrians through the parking area. During busy periods this could lead to pedestrian safety issues.
- Hendrie Park: there are 3 links from the formal gardens of Hendrie Park to the Hendrie Valley nature sanctuary trail system which are gated and locked. These gates are only unlocked for special programing (ex. school programs, camps, special events, tours etc.), however they are noted on the visitor maps. This is frustrating for RBG visitors who are unable to find access to the nature sanctuaries from Hendrie Park.

Trail Structure (15, 18)

Most of the existing boardwalks and pedestrian crossings are in a state of good repair. However, many of the features have not yet been updated to current accessibility codes but will be when they are scheduled for renewal. There are no staircases incorporated into the trail system other than two sets of stairs integrated with two footbridges that cross the creek at the Creekside Walk Trail. In the case of existing timber boardwalks, where rot is a concern, there may be an opportunity to replace the aging

superstructure with steel secured upon a helical pile system to minimize impact to trees, mitigate erosion and boost the longevity of these structures. There are also sections of the trail where new boardwalks or a trail re-route should be considered. For example, the section of muddy trail along the Creekside Walk Trail would be a high priority for an addition of a boardwalk if it was to remain in its current location. Other locations where the trail crosses seepage areas currently are addressed through the addition of woodchips to the trail surface. While this provides a short-term solution, over time if there has been a heavy cover of woodchips applied, they can work into the surrounding vegetative cover and suppress natural regeneration. Addressing the issue with a well-constructed boardwalk should be considered, utilizing steel and rough-hewn natural wood projects such as hemlock or Douglas Fir selected for longevity and durability.

Drainage Structure (16)

All of the trails could benefit from enhancements to drainage. Currently, drainage is left to cross trails in an uncontrolled fashion leading to erosion and rut-formation. Although not a problem in all situations, it has led to erosion in places and may do so in others in the future. Currently there are few locations where culverts are installed and maintained.

3.3 Recreation Issues

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 Cootes to Escarpment EcoPark System in general. The provision of recreational opportunities must be balanced with natural and cultural heritage protection in order to minimize impacts. However, in order to provide long-term sustainability and to not degrade the resources that make the Lower Grindstone EcoPark System so desirable to visit, primacy must be placed on preserving natural and cultural resources. Issues related to recreation are described below.

Flooding on Trails (18)

A significant proportion of the trail network and a number of parking access points are located in the floodplain. Floodplain environments create obvious management issues where trails and other recreational infrastructure may be located. Maintenance is expected to be on-going to keep recreational assets in safe, usable condition. While the experience of nature for many users is an important drawcard, management of trail conditions and safety issues should include signage to alert users of potential dangers while recreating in floodplain areas.

Trail Overuse and Erosion (19)

The majority of the existing trail network is frequently used throughout the Lower Grindstone Heritage Lands. With the addition of the boardwalks to the Grindstone Marshes Trail, large numbers of nature photographers and birders have been attracted to the area. The trails surrounding the boardwalks are being impacted through over-use. 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 trails/creation of new trails to circumvent areas that periodically flood. Trail overuse has resulted in soil erosion in places. Some erosion, compaction, and water ponding are considered acceptable on trails within natural areas and as long as it is sustainable (i.e. not expanding) and not impacting significant species, habitats or hydrological functions. Use of unsurfaced footpaths is considered to be part of the trail experience for

some users. Unacceptable erosion on trails was noted and can be attributed to inappropriate trail surface for the location and/or level of use, 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. This is most evident along much of the Creekside Walk Trail where the trail is located along the bank of Grindstone Creek and multiple trails have formed to avoid floodwater (or ponding by beavers) at certain times of the year. Periodic flooding is also an issue on the continuation of this trail through Hidden Valley Park, again owing to its location within the floodplain of the Creek. On steeper sections of trails where some erosion or unevenness can lead to trip hazards, the use of grade bars (i.e., hewn logs or concrete bars for enhanced durability) could help to successfully prevent erosion. All sections where trails traverse steeper slopes are showing some form of erosion, although there is some improvement through the application of woodchips to limit impacts to tree roots and reduce drainage issues due to seepage.

Unsanctioned Cycling Use (20)

While it is the RBG's policy to prohibit cycling within the Heritage Lands under their ownership, it is an on-going management issue on some trails. Continued efforts to educate, sign post and enforce this behavior will be required.

Cycling Route Connectivity (21)

Currently there is good connectivity between the Creekside Walk Trail and on-road cycling routes along Lemonville Road and Unsworth Road. However, the condition of the asphalt sidewalk on the south/ west side of the roadway connecting to the trail, is in poor condition and in need of repair. Northward, connecting routes extend from Lemonville Road and Unsworth; however, an additional one could be considered along Snake Road.

Plains Road West is a well travelled automobile commuter route and is also a desired route of commuting cyclists. Pedestrian and cycling use along Plains Road West has been described as a significant recreation issue within the Lower Grindstone Heritage Lands, mainly due to safety concerns related to the high volume and speed of traffic along Plains Road West. The relatively narrow area within the shoulder of the roadway is not a cycling facility. There is a desire for trail connections through the Lower Grindstone Heritage Lands that do not require cycling on Plains Road West. The Waterfront Trail provides a regional bike route along Gorton Avenue. Although not ideal, limited use of roads to provide connectivity for recreational cycling trails is sometimes necessary and there are existing examples such as the Waterfront Trail in Toronto.

Since cycling is not allowed on RBG lands, there is a disconnect in the trail system between the RBG and Hidden Valley. Cyclists traveling westbound in Hidden Valley, who are unfamiliar with the area (or with RBG's policies), encounter confusing signage that makes decision-making difficult whether to continue west of Unsworth Avenue on the RBG trail system. Cycling along Unsworth Avenue, although marked as a "shared route" between motorists and cyclists, is narrow with poor sightlines and therefore, not conducive to cycling, especially for certain cyclists (e.g. family groups or younger cyclists).

Other Trail Connectivity (22)

Overall, trails connect well within the Lower Grindstone Heritage Lands study area forming loops in several locations. However, east of Unsworth Avenue there are no loops in either the Creekside Walk Trail or the Hidden Valley Trail system. Consideration to formalize some of the informal mown trails and

provide an additional creek crossing may offer an opportunity to generate loops. This will reduce the incentive to create unsanctioned trails.

There is also a desire to provide connection(s) to the creek. An abundance of unsanctioned access paths to the creek have been formed off the main trail system, generally where fall salmon viewing is best. Consideration for formalized access points to the creek coupled with signage about the impact of trampling upon the creek banks should be considered.

Unsanctioned Trails (23)

Overall, the development of unsanctioned trails is far less of an issue than in other Heritage Lands within the EcoPark System. Within RBG lands there are very few unsanctioned trail closures and no new trail development. The current lack of a looped system of trails east of the North and South Bridle Trail network may be resulting in unsanctioned trail creation in this area as users are looking to generate other experiences "off the beaten track". These are often situated in meadows/clearings in tree canopy, and the periphery of wetlands and the creek.

Within Hidden Valley there are erosion areas along unsanctioned paths created from users trying to gain views to the Queenston Shale bluff along the creek. There are multiple unsanctioned trails to gain access to Grindstone Creek within Hidden Valley Park, probably to facilitate fishing and as a result of dog walkers looking for access to allow dogs to get drink or play in the creek. There were also unsanctioned footpaths in Hidden Valley Park in the area that was conveyed from the Province (Figure 5), however these appear to have become over-grown, and may no longer be used. However, this area should be evaluated to determine how it functions with the rest of the Park and the footpaths should be examined as part of that exercise to determine if they require management, e.g., planting, re-alignment and/or be incorporated into the Park trail system. Overall, the unsanctioned trails in Hidden Valley Park should be periodically monitored to evaluate if they are sustainable as footpaths in their current condition, or whether they should be formalized or closed.

Trail Proliferation/Widening (24)

This issue is confined to places where wet conditions persist and have led to a muddy trail surface. Users have continually widened the path or created new paths through vegetation to circumvent the problem area, thereby trampling understorey vegetation. In limited locations some single-track bike use has led to multiple narrow trails resulting in "braiding" of the trail system.

Wayfinding and Information Signage (10 and 25)

In general, the Grindstone Heritage Lands are inconsistently signed and the Cootes to Escarpment EcoPark System logo is not always present on signage. Partner agencies are encouraged to include the Cootes to Escarpment EcoPark System logo on future signage and indicate that the parcel is part of the larger EcoPark System. The logo should also be included on park furniture, waste bins and public shelters owned by the EcoPark partners.

Site-specific issues and opportunities related to signage include the following:

1. Lack of wayfinding/ directional signage along trails. The distance of a trail to the next destination point or to complete a loop is currently not sign posted.
2. Inclusion of a small version of the EcoPark map graphic at all sanctioned access points is an opportunity to promote the EcoPark brand and promote awareness of the many features visitors to the Heritage Lands can enjoy.

3. The trail crossing at Unsworth Avenue is currently not well signposted and there is little warning to drivers on Unsworth coming around the blind corner near the crossing location. There are opportunities for the City of Burlington to improve safety of this crossing by adding signage, line-marking and potentially a flashing signal to warn motorists approaching the pedestrian crossing.
4. Popular destination points such as the outlook at the foot of the Kicking Horse trail, certain vantage points over the valley along the South Bridle Trail or the observation point within Hidden Valley Park of the Queenston Shale bluff, are not well presented given the popularity of the outlook point. There is an opportunity to enhance the experience of these destinations with improved infrastructure and improved signage. In some cases, such as the Queenston Shale bluff feature, erosion, fire pits, and debris are emerging from use of this popular site for picnics and gatherings. Enhancements to improve the viewability of the feature without compromising the surrounding natural heritage system should be considered.

User Conflicts (26)

Particular uses such as biking, cross-country skiing, running/jogging and motorized vehicle use have been prohibited on parts of the trail system due to the fact that the terrain and sensitivity of the natural area warrants prevention of such use, or it is not perceived as being consistent with the overall goals/mission and/or policies of the land-owning partner. Conflicts typically arise when prohibitions are ignored. There is evidence bike use is occurring within RBG lands and this is focused along Creekside Walk Trail and also the valley slopes above the Grindstone Marshes Trail (below the Beth Jacob Cemetery). There is no direct evidence that this activity is creating problems for users of these trails; however, if cycling is also occurring along the boardwalks, the prohibition should be heavily enforced due to potential safety/conflict issues as well as the potential to compromise the experience of a large number of people that enjoy the experience of walking and nature viewing along boardwalks.

Although designated for multi-use, sections of the Hidden Valley Trail are narrow, with poor sightlines and the surface material is loose. This makes it difficult for different user groups such as cyclists, dog walkers, and hikers to safely share the travelled path. Opportunities should be explored to improve sightlines, apply more reliable binding agents to granular surfaces if this type of surface is preferred, or provide boardwalks or granular trails that are properly designed to handle spring flooding and convey drainage. In limited situations short sections of asphalt trail may be appropriate e.g. steeper slopes where erosion may be a problem. Mitigation techniques are available to limit impacts to the Natural Heritage System when installing asphalt trails. This includes the use of small tracked vehicles to limit soil disturbance and compaction during installation, use of a geogrid product to limit the depth of compacted sub-base, thereby limiting impact on tree roots and use of a ground, recycled asphalt in which the hydrocarbons have already been leached, limiting impacts to water quality, placed and rolled to a hard surface as ordinary asphalt pavements. This material is available free-of-charge from large suppliers such as Miller Paving, therefore, only the labour cost of installation is involved. Some recycled asphalt requires a binder agent which could consist of natural resins to improve the cohesion of the asphalt.

Wildlife Viewing (27)

Wildlife observers/photographers and fishermen frequent who frequent Valley Inn often congregate on Spring Gardens Rd. by the bridge. Wildlife observers have been known to cut back vegetation along the edge of the marsh in an attempt to view or photograph wildlife.

Wildlife Feeding Along Trails (28)

This issue is described in sections 7.6.1 and 7.6.2. Trail users actively feeding birds, chipmunks, ducks, geese, swans, and other wildlife is a specific concern that is most prevalent in the Grindstone Marshes Trail system. It is so prevalent that the behavior of wildlife has appeared to have adapted and now have an expectation of being fed. Signage has no apparent impact on preventing feeding, which is a practice that may be spread by word of mouth and social media, and has rapidly become widely known amongst the community and visitors. Education, more assertive signage, active enforcement for a limited period of time, and spreading the message to youth through outdoor classrooms and other programs will likely be required to resolve this problem.

Off-leash Dogs (29)

Unsanctioned off-leash dog use in natural areas and on trails is an issue that is prevalent within all Heritage Lands, often leading to user conflicts and improperly disposed excrement which, apart from aesthetic considerations, affects soil nutrition and possibly could negatively affect water quality. Education, signage and enforcement is required to deter this activity. The City has a process by which residents can submit an application to request a site for a leash free area. The requests are evaluated against a number of criteria that include proximity to playgrounds, splash pads, natural areas and other constraints; and are subject to Council approval. Hidden Valley has several recreational features, picnic areas and sensitive natural areas, and likely will not meet the criteria for a new leash free area. With the presence of both recreational features, picnic areas and sensitive natural areas, it is unlikely that Hidden Valley park would be a candidate site for a new leash free area.

Motorized Vehicle Use (30)

As noted elsewhere, other than the use of motorized vehicles to mow defined grassed trails, there is little evidence that this activity is occurring within the Lower Grindstone Heritage Lands.

Fishing (31)

A seasonal provincial fish sanctuary exists on Grindstone Creek upstream from the Plains Rd bridge. Fishing is not permitted in the RBG lands but is in Hidden Valley Park. Fishing is permitted in the Lower Grindstone estuary from Plains Rd. West bridge to Carroll's Bay/Valley Inn. Fishing is an issue in the Valley Inn Area which is recommended to become a seasonal sanctuary. The issues are user conflicts, hooking/entangling of birds residing within the nature sanctuary, as well as hooking of endangered turtles.

Provincial "No Fishing" signage is posted along the South Bridle Trail which provides access to the edge of the open water in the marsh. It is suspected that the boardwalks also provide good access to fishing areas and enforcement in that area may be required in the future.

Poaching of spawning salmon and harassment of the fish by visitors is common in the fall along Creekside Walk Trail. Spawning habitat is limited in Grindstone Creek and this particular section of the creek is the primary salmon spawning area.

Fire Pits and Party Spots (32)

Little evidence of fire pits and "bush-party" gatherings were noted, possibly due to the RBG lands being more managed and, in some cases, not adjacent to residential areas. Also, there is an accessible City

park that provides large gathering spaces and open space for active recreation in the east part of the Heritage Lands, and this may remove some of the incentive for unsanctioned party spots. Overall the presence of garbage within the Lower Grindstone Heritage Lands was very limited; a testament to good management which has instilled into users the sense that that this is a special place. Despite this, it was noted that there are very few garbage bins along the trail system and as usership is expected to increase in the future, planning for additional bins at key locations along the trail system is suggested.

Vandalism/Theft (33)

A significant issue at multiple locations often associated with locations in close proximity to the rail corridor. Laking Garden in particular has been a regular target for theft and vandalism in recent years. Similar issues arise at Hendrie Park and at Hendrie Park parking lot.

3.4 Encroachment Issues

The Lower Grindstone Heritage Lands are surrounded by various land uses, including residential development and urban development (refer to section 2.1). Various impacts associated with encroachment have been noted on Current EcoPark System Lands, particularly from residences abutting the Current EcoPark System Lands. Encroachment works both ways, with EcoPark System users trespassing on adjacent private lands, and adjacent private landowners accessing and/or encroaching illegitimately on Current EcoPark System Lands. Many by-laws exist to address encroachment; however, due to the lack of staffing resources within municipalities it is often difficult to enforce them.

Private Unsanctioned Trails (34)

A number of private residential properties back onto the Lower Grindstone Heritage Lands. Where this occurs, homeowners should be made aware of the impacts of their actions on the natural environment. For example, trail creation can lead to soil compaction and downcutting into soft soils on steep slopes that can lead to erosion and impacts to the roots of trees. Private access gates and trail creation is an on-going issue in areas where private residential lots back onto the Heritage Lands.

Structures and “Yard Extension” (35)

Several structures such as garden sheds, seating areas and storage areas, have been noted in rear lots at or within the Heritage Lands. It is unfortunately a common practice for many homeowners that back onto natural areas to utilize the relative seclusion to dump yard waste and build private structures. Some owners intentionally clear space behind their properties in order to open sightlines to the natural area. Generally, homeowners are not aware that these activities suppress sensitive understorey plants and reduce biodiversity. Education and outreach, including perhaps a letter drop to homeowners, is often the most effective way to address this issue.

Dumping (36)

There are several locations where dumping was either observed in the field or noted by the partner agencies (Figure 5). This includes refuse left over from construction projects, brush piles/timber believed to be from tree removals (App 9, Fig 2.0, photo 27), yard waste from adjacent residential properties, old sites (typical pre-1950s informal dumps sites) where garbage such as metal, glass and old concrete had been dumped, as well as garbage and litter left behind from group gatherings and parties. Locations where pool water was being drained from adjacent properties was also mapped as dumping on Figure 5. Dumping should carry fines, and this should be sign posted if not done already. Locations where dumping has occurred within the RBG include:

- former access off the west side of Grandview and Plains Rd towards the marsh;
- road access (south corner) to the water for general access; and
- from construction pertaining to Plain Rd bridge (north corner property – but south corner of the bridge).

Although not all these instances of dumping are a result of adjacent land-owner activities, the issue is addressed as an encroachment issue in the recommendations.

Vegetation Trampling (37)

In sections of the existing trail system, secondary trails have been created alongside the creek system. In other areas trails have widened considerably to avoid muddy areas. Vegetation is trampled and ground flora is suppressed in these areas. To a lesser degree similar impacts have been observed in natural heritage features surrounding open spaces which attract large group gathering and active recreation such as within the Hidden Valley Park. Encroachment into natural areas for a quick stroll, picnic by the creek or to have a fire at night, are activities that lead to trampling and often are associated with garbage left behind.

Septic & Pool Drainage (38)

Although not confirmed to be a specific issue within this Study Area, direct disposal of pool water and/ or of septic systems either intentionally or unintentionally through leaks, is a common issue where private residential lands abut the Heritage Lands. There are a number of in-ground pools situated at the edge of the Heritage Lands, two septic systems in Hidden Valley Park, and one at the cemetery. Although unconfirmed, there is the potential that direct drainage of pool water or septic systems into high quality marshes and wetlands, could potentially lead to elevated levels of chemicals, hydrocarbons and pathogens in the hydrological system.

Cats/Domestic Pets (50)

Domestic pets, in particular cats, can 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 throughout North America each year (Marks and Duncan 2009). Education is the principal solution to this issue.

3.5 Hydrologic Issues

High Run-off and Peak Flows (39)

Within the Current EcoPark System Lands, concentrated run-off and peak flows have caused some erosion along Grindstone Creek and on slopes off trails at higher elevations (Figure 5). Generally, mitigation and control of run-off through employing Low Impact Development (LID) techniques or ecological restoration (e.g., buffer plantings) should be encouraged.

Drainage and Erosion (40)

Impacts from surface run-off and subsequent erosion can impact riparian vegetation and can affect water quality. Grindstone Creek has natural rates of erosion that result in natural down-cutting, which slowly increases the incised nature of the valleys. In some places, vertical banks occur. This can lead to unstable slope conditions, exacerbating erosion. Although some rates of erosion have been accelerated due to higher peak runoff volumes, experienced in heavy storm events, much of the Lower Grindstone Heritage Lands have not undergone significant land-use change due to this activity. The majority of

down-cutting is natural and a result of the topographic difference between the Niagara Escarpment and Lake Ontario.

Bank erosion sensitivity has been mapped for Lower Grindstone Creek from just upstream of Lemonville Road to approximately Spring Gardens Road (i.e., it excludes a short reach of the creek within Hidden Valley Park and the extreme downstream reach) (App D, Fig 5.3d, GEO-Morphix Ltd. 2016). Upstream of Unsworth Avenue, the Creek has been classified as "sensitive", while the reaches downstream of Unsworth Avenue are classified as "relatively stable" and "very stable". The GEO-Morphix Report recommends geomorphology monitoring at locations where Rapid Assessments were undertaken, however, none of them are located within the Lower Grindstone Heritage Lands. The report also recommends more complete characterization of bank and bed materials and hydrometric monitoring throughout their study area, including at the outlet of Grindstone Creek.

In some areas, the combined effects of flooding and trail use has resulted in erosion. This occurs in multiple locations along the Creekside Walk Trail, which flanks Grindstone Creek. Much of the trail system is wide, muddy and eroded. This can be seen in the photographs mapped at locations marked by photos 2 through 12, Appendix 9, Figure 1.0.

There are several erosion sites on Grindstone Creek within Hidden Valley Park. These should be addressed as part of the current EA being undertaken in that area (Grindstone Creek Erosion Control EA, Waterdown Road to Hidden Valley Park). These erosion issues include:

- A major erosion site upstream of the Lemonville Road bridge crossing (Figure 5). The banks require stabilization in this area to reduce the excessive erosion and minimize sedimentation and turbidity in the creek. The banks of the creek have been stabilized on the south (down-stream) side of the bridge; however, the north side would benefit from this treatment. The erosion area can be seen in photo 34, App 9, Figure 3.0.
- Upstream and downstream of the pedestrian bridge (upstream of Lemonville Road and across from the washroom facilities), a large beaver dam has impacted the realigned channel and associated fascines and plantings. The dam has been removed, but numerous shrubs were lost, and the channel banks were eroded as they were inundated due to the back-water effect. On the upstream side, some fascines were damaged and/or lost so additional bank stabilization may be required through this reach (upstream). The downstream side appears to have recovered but did not have as much original damage.
- The pedestrian bridge structure may need to be assessed as flows from the dam were directed at the bridge footings and are beginning to erode the adjacent banks. This may have been done at the time of the dam removal, but it is unclear if that was ever completed.
- There is some erosion associated with the grouted vortex weirs down-stream of the pedestrian bridge. These may need to be stabilized and should be investigated.

Water Quality (41)

A number of water quality issues have been identified in the Lower Grindstone Heritage Lands:

- Parts of the Lower Grindstone Heritage Lands may be exposed to residential septic system overflows;
- Chloride from de-icing agents discharge into creek systems from roads and snow-dumps during snowmelt in the spring;
- Turbidity and warmed water caused by stormwater runoff, erosion, siltation, limited vegetative

buffer on coldwater streams, etc.;
- Issues with water contamination in shallow groundwater resulting from up-steam rural and agricultural runoff and improperly functioning septic systems;
- It has been reported that there is an incomplete understanding of water quality in Grindstone Creek, largely related to the paucity of sampling locations; and,
- Local funeral homes have posted on their websites that cremated remains (ashes) can be scattered in various parts of the EcoPark System, including Grindstone Creek. Given the proximity of the funeral homes, this would likely occur up-stream of the Lower Grindstone Heritage Lands. This activity is not sanctioned and has the potential to negatively impact water quality. 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 be removed from their website and associated platforms.

Polluting Spills (42)

Due to the presence of roadways, pipelines and railway lines within the Heritage Lands, there is a potential for polluting spills to occur. Spill prevention and response protocols, as well as associated management plans, should be reviewed and where necessary refined by ensuring that spill prevention plans, contingency plans and emergency response plans are updated and disseminated among all relevant agencies for the purpose of protecting natural features along roads, railway lines and pipelines, as well as human safety.

Road salt (43)

As noted above under water quality, de-icing agents applied to roads during winter months mixes with surface run-off and is eventually discharged in the nearest watercourse. This issue is likely most prevalent along Plains Road West, as run-off would be directed to Grindstone Creek and because Plains Road is a major, busy arterial that would receive substantial applications of de-icing agents to maintain road safety. The specific discharge locations on Plains Road should be confirmed, and discharge locations on other roads that are prone to conveying de-icing agents specifically identified. The City follows a Salt Management Plan utilizing best management practices to minimize the application of road salt while providing safe road conditions. It would be beneficial to engage in discussions with the City to review the Salt Management Plan in the Heritage Lands area.

3.6 Ecosystem Management Issues

Management issues and opportunities related to ecosystem management are aimed at conserving major ecological services and restoring natural communities. It is recognized that to the extent possible the Heritage Lands must also meet recreational needs, but this must be accommodated within the capacity of the natural resources to ensure that ecological integrity, including biological diversity, is maintained and where possible improved. The principal objective of ecosystem management is the restoration of natural ecosystems, the maintenance and improvement of ecological services, preservation of significant species, as well as efficient maintenance and ethical use of natural resources.

Ecological restoration is underway at several of the management units in the Current EcoPark System Lands as discussed in this section of the report. For example:
- RBG has used Christmas tree barriers at the mouth of Grindstone Creek to restore the floodplain ponds by protecting them from destructive Common Carp activity;

- RBG has reduced slope erosion by removing the asphalt road from the Old Snake Road Trail followed by the addition of soil and vegetation. Water can now freely infiltrate the slope, significantly reducing erosion. The eroded sections of the slope were rehabilitated with the addition of soil and vegetation. A rain garden now captures the water that runs off from the remaining paved section of Snake Rd draining into the RBG property- further reducing water erosion;
- RBG has almost eliminated *Phragmites australis* from Hendrie Valley. Sites where Phragmites has been eliminated have been revegetated with native plants;
- RBG is currently developing a plan to control *Glyceria maxima*;
- Other invasive species are also being managed (ex. Garlic Mustard, Dames Rocket, Lesser Celandine, Pale Swallowwort, Yellow Iris, Himalayan Balsam, Japanese Knotweed and invasive shrubs); and
- Restoration plans for the Lower Grindstone area include stream and flood plain restoration, and wetlands.

Portions of the Current EcoPark System Lands were historically farmed (e.g., Hidden Valley Park 1 and 2), and all wetlands in the area would have been removed in the process. Thus, any opportunities to confirm historic wetland locations and restore them, where feasible should be explored.

Decline in Natural Feature Quality (10 and 44)

An overall decline in the overall quality of natural features, and a reduction in biodiversity, has resulted from increased pressures from adjacent lands and intensification of recreational uses. Forest monitoring is beginning to show compositional changes in the forest structure. For example, Ash species and Norway Maple are increasing in numbers, and native shrub species are in decline in Hendrie Valley forest monitoring plots (Radassao et al. 2019). A key theme in the Management Plan will be to provide recommendations on how the Current EcoPark System Lands can be managed for biodiversity values in the face of habitat fragmentation, invasive species, climate change, human uses, etc.

Conservation and Recovery of Species at Risk (45)

The current conservation and recovery of species at risk in the Lower Grindstone Heritage Lands is focused on conserving and restoring habitat for turtles (e.g., Snapping Turtle, Blanding's Turtle, and Map Turtles), as well as plan species (e.g., American Chestnut (*Castenea dentata)*, American Columbo (*Frasera caroliniensis*), and Wood Poppy (*Stylophorum diphyllum).*

Management activities focused on the conservation and recovery of species at risk and their habitats in the Current EcoPark System Lands include:

- Between 1995 to 2000, planting Wood Poppy in Hendrie Valley in *ex situ* populations;
- 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 (e.g., trail closure on the south side of Pond 4);
- maintaining open woodland characteristics for species at risk that rely upon gaps in the canopy (e.g., American Columbo);
- Developing a site-specific recovery plan for turtles on RBG lands (Harrison and Theysmeyer 2014); and
- Monitoring and stewardship programming.

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.

Forest Fragmentation (46)

Within the Current EcoPark System Lands, some forest patches are fragmented and poorly configured, which provides restoration opportunities to increase forest area, especially where it will create additional interior habitat. In the past, the majority of tableland forests in and adjacent to the Current EcoPark System Lands were removed for development and agriculture. There is a need to restore the north side of the valley in Lower Grindstone 1 and 2, to increase forest area and reduce forest edge habitats. There is also an opportunity to restore the old Rifle Range location in Lower Grindstone 4; however this may require an unexploded ordnance survey and site remediation to ensure there are no risks to human health and the environment associated with the historic uses of the site (e.g., lead bullet fragments).

Forest Health Decline (47)

Several factors are currently impacting the health of forests in Lower Grindstone. Oak Decline, Beech Bark Disease, Emerald Ash Borer, Gypsy Moth, Fall Cankerworms, 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 noted in the area but is a potential threat. Non-native European earthworms also appear to be contributing to the decline of forest health, particularly impacting the diversity of the ground flora, soil micro-invertebrate communities (with subsequent issues higher up in the food chain) as well as soil structure and chemistry. 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. Tree blowdowns associated with the death of trees, and slope erosion can also impact the health of forests by creating large gaps in forest canopy. If within the natural range in terms of extent and intensity, tree death, and natural slope erosion are part of providing habitat heterogeneity within an ecosystem and may not be an issue. Many of the forest pests, such as Cankerworm, are causing significant death and dieback of trees, which create hazard tree and safety issues. Garlic mustard (*Alliaria petiolata*) may also be affecting forest health. Garlic mustard has been shown to disrupt mutualistic relationships between native tree seedlings and mycorrhizal fungi suppressing native plant growth (Stinson et al. 2006; Wolfe et al. 2008). Gaining access to and managing dead trees creates a secondary management issue, along with invasive species management. Proper disposal of infected trees is also a concern in areas of poor access. Fortunately, Red Maple and Red Oak dominate the forest canopy and ash is a relatively minor component of the forest ecosystem within the Heritage Lands.

Invasive Species (50)

Table 6 summarizes 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. Some of these are very difficult and/or resource-intensive to eradicate. RBG has developed an Invasive Plant Strategy for the Terrestrial Lands (Barr 2016) in addition to species-specific management plans (e.g., Common Buckthorn, Ornamental Honeysuckles) to help manage the spread of non-native species. Site-specific examples of current invasive species management include the following:

- Invasive plant removal and replanting at Cherry Hill Gate;
- Targeted invasive shrub and other non-native trees, shrub and plant removal (estimated 6,000

plants) within Lower Grindstone 1, 2 and 3;
- The current initiative to develop a management protocol to eliminate *Glyceria maxima*;
- Common Buckthorn removal and replanting in Lower Grindstone 6 at the Grindstone Marshes Trail west entrance; and,
- The almost total eradication of *Phragmites australis* from Hendrie Valley.

A small population of Himalayan Balsam has been identified along Grindstone Creek. It is though that it may originate from an upstream source. Its occurrence in Hidden Valley should be investigated and if so, management should be implemented.

RBG is currently completing an Invasive Species Strategy for the entire organization and has adopted an Invasive Species Policy.

Noxious Plants (51)

Poison ivy and other noxious native 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 been noted within the Current EcoPark System Lands (Appendix 5).

Wildlife Feeding (53)

Hendrie Valley has been experiencing high-intensity wildlife feeding for a number of years. In a recently published report by RBG, Lower Grindstone 2 and 3 (Grindstone Marshes Trail between Cherry Hill Gate and the boardwalk) had the highest number of visitors observed and is where the most wildlife feeding occurred. Consequently, wildlife in these areas have become extremely habituated to human presence. An alarming 90% of transect visits to Cherry Hill (Lower Grindstone 3) had wildlife feeding by visitors observed (Peirce 2019). High numbers of Mallards, House Sparrows, chickadees, and chipmunks show that these species are congregating to feed on supplemental food, which can increase the risk of disease spread, increase rodent predation on ground-nesting birds, and can lead to nutritional deficiencies (Peirce 2019). This issue has also resulted in extensive turtle nest predation by racoons, skunks and other small mammals.

Urban-adapted Wildlife (54)

Some wildlife species benefited from the forest cutting and agricultural intensification that followed European settlement in North America, resulting in an increase in their population sizes and ranges (Naughton 2012, p. 517). Some of these species have also become well-adapted to urban life. Within the Lower Grindstone Heritage Lands, urban-adapted wildlife species include squirrels, racoons, coyotes, skunks and deer. Over-population of some meso-predators, such as raccoons and skunks, impact other wildlife through predation, resource depletion and by dominating habitat. Their ability to capitalize on urban land use provides them with a competitive advantage over other wildlife. However, coyotes likely contribute to maintaining a balance by preying on some smaller mammals. The City of Burlington provides on-line education and guidance for living with urban wildlife, including coyotes: https://www.burlington.ca/en/services-for-you/wildlife.asp.

Fragmented landscapes favour White-tailed Deer, a species which prefers forest edges. In addition, the added complexity of intense highway development adjacent to the Lower Grindstone Heritage Lands interrupts natural wildlife movement patterns, as well as being a cause of mortality. Urban areas also have few natural predators and no hunting. 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 Haudenosaunee to organize a cull which resulted in the removal of seven deer. Conservation Halton has in places a hunting model for a nearby conservation area (Dundas Valley) but not within the Heritage Lands. Although controversial, deer management of some kind must continue within the Current EcoPark System Lands in order to address impacts to natural heritage and human safety.

Wildlife Crossing/Corridors (55)

Wildlife mortality associated with road crossing has been identified as a major issue of concern within the Cootes to Escarpment EcoPark System in general and is a particular issue in the Lower Grindstone Heritage Lands. 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 crossroads and railways in order to access lands that are required for fulfilling their various life processes (e.g., nesting, foraging, over-wintering, dispersal, etc.). Plains Road West serves as a significant barrier to both north-south and east-west wildlife movement through the Lower Grindstone Heritage Lands. Vehicular speed and wildlife collision on roads severely impact the safe passage of wildlife, and ultimately wildlife populations. Likewise, the CNR/Hwy 403 transportation corridor along the north boundary of the Lower Grindstone Heritage Lands without doubt limits wildlife movement, although the extent of road mortality does not appear to have been investigated. The main issue related to wildlife crossing and corridors that has been identified relates to reptiles, particularly Blanding's Turtle, which has been reported as nesting in the RBG Works Yard adjacent to Plains Road West. The population of this species is being impacted by mortality on Plains Road West (i.e., movement from candidate overwintering areas to foraging and reproduction areas).

3.7 Cultural Heritage Issues

The issues identified through the inventory and evaluation of cultural heritage resources are addressed in the following Issues.

Dated Information (57)

The description of character-defining features of RBG currently posted on the Canadian Register of Historic Places website is out of date. Some of the gardens identified as features in Hendrie Park have been replaced with new gardens. An inaccurate or out-of-date description of critical features may present management problems if it necessary to defend the conservation of existing garden areas or boundaries.

The listing of RBG on the Canadian Register of Historic Places does not provide protection as a cultural heritage resource. Consideration should be given to cultural heritage designation of RBG through the Ontario Heritage Act to strengthen protection.

Milling (59)
Milling in early settlement history is a significant theme of Grindstone Creek. Extant cultural heritage resources associated with milling are limited, making any remaining resources more significant in conveying the story of milling along the length of Grindstone Creek.

Cultural Heritage Interpretation (59)
Commemorative markers and plaques on the grounds of Hendrie Park and Laking Gardens vary widely in format, message and location.

Climate Change Impacts (60)
Impacts on character-defining garden features may result from precipitation and temperature changes associated with climate change. Specific species collections may be costly to maintain. Low lying trails conflict with increasing flooding.

4.0 Heritage Lands Management Recommendations

The Lower Grindstone Heritage Lands differ from the other Heritage Lands in that they are for all intents entirely within two well-established areas (RBG and Hidden Valley Park) with a long history of management and use. Thus, some of the issues that are prevalent in some other Heritage Lands are not as prevalent (e.g., lack of parking capacity and a proliferation of mountain bike trails). None-the-less, there are similar management needs relating to trail maintenance, signage, invasive species management, impacts from adjacent uses (e.g., encroachment from adjacent lands and roadways) correction of past inappropriate use (e.g., dumping), etc. that need to be addressed. There are more cultural resources in Lower Grindstone than in most other Heritage Lands that are also in need of management. In general, the recreation infrastructure is nearing, and in some places has exceeded, its serviceable life and/or design capacity, and with the anticipated increased in use in the future, management is required to prevent increased in impacts to natural and cultural features.

This section of the Management Plan provides recommendations grouped into “Management Themes” that address each of the Issues in the preceding section. The Management Themes correlate directly with the Issues in Section 3 for the most part, however, some additional Themes that evolved as recommendations were being developed and refined have been added. There are a total of 61 Management Themes.

The recommendations have been developed predicated on the expectation that use is going to increase as a result of increased human population from several approved development applications adjacent to or in close proximity to the Heritage Lands, and the possibility of additional approvals in the future. All of the Heritage Lands in the EcoPark System, including the Lower Grindstone Heritage Lands are at a critical juncture; if management is not implemented, current and anticipated increases in impacts will likely 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 Lower Grindstone Heritage Lands, there are also pressures being placed on 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.

Each Management Theme is numbered solely to allow easy reference; 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 have been 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.

As pointed out in section 1.2, none of the Lower Grindstone Heritage Lands are located within the Niagara Escarpment Plan (NEP) area and are thus are not subject to the NEP. However, for consistency with the Management Plans for the other Heritage Lands, the Steering Committee decided to apply the NEPOSS classification and zoning guidelines within the Lower Grindstone Heritage Lands. 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 Lower Grindstone Heritage Lands.

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 Lower Grindstone 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 is 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 Lower Grindstone Heritage Lands contain two Classifications, Natural Environment and Recreation.

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 (MNR 2012) provides six zones and each one serves a specific purpose and provides direction on planning and management. The revised Niagara Escarpment Plan (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”. For the zoning recommended in this report, the label “Historical-Cultural Heritage” is used in recognition that the terminology of the NEEPOSS Planning Manual has yet to be updated. The changes in the name of the zones do not appear to change the intent of their management direction and permitted uses. The Lower Grindstone Heritage Lands contain seven Zones:

Nature Reserve, Natural Environment, Access, Historical-Cultural Heritage, Development, Recreation 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 Lower Grindstone Heritage Lands is provided in Appendix 1.

4.2 Overarching Management Recommendations

There are a number of recommendations that are better to be addressed within Guidelines and can be applied throughout the EcoPark System and are not specific to the Lower Grindstone Heritage Lands. Not all the Management Themes below are relevant to the Lower Grindstone Heritage Lands (e.g., rail crossings), but are retained as they are EcoPark-wide themes (these Management Themes also appear in the Management Plans for other Heritage Lands with the exception of Burlington Heights). Recommendations that can be addressed in Guidelines are organized according to the Management Themes identified in Section 3.0 and are provided below (numbers assigned to Management Themes correspond to those used in Section 5 and Table 3).

3. Awareness of the Cootes to Escarpment EcoPark System

- Initiate a survey to determine the awareness of the EcoPark System, how the area is currently being used, what the desires of the EcoPark System users are, etc.;
- 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 (e.g., cycling being permitted in Hidden Valley Park, but not on RBG lands).

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.
- 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 BTC, 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 adjacent development and the cost of additional management to mitigate impacts should be borne by the development community 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 Lower Grindstone 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 Lower Grindstone Heritage Lands these are the City of Burlington and Conservation Halton) 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. Desire and Need for Trail Connections and Recreation 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; and
- Prepare a Recreation Plan (this has been referred to as a "Trail Plan" in previous Management Plans) 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. The Hamilton Burlington Trail Council should be engaged to provide comment and review of the Recreation Plan, the City of Burlington Community Trails Strategy (2015), the City of Hamilton Recreational Trails Master Plan (2016), the City of Burlington Cycling Plan (2019a, draft) and the City of Hamilton Draft Transportation Master Plan Review and Update (2018) should be referenced. Note this is different from the Trail EcoPark Guideline, discussed below in Theme 10, which primarily addresses trail design and maintenance issues.

9. Desire and Need for a Wildlife Crossing Plan

- Improve the continuity and integrity of current movement corridors throughout the Cootes to Escarpment EcoPark, including within the Lower Grindstone Heritage Lands, particularly across major roads;
- Investigate the need for and feasibility of implementing wildlife corridors and wildlife crossings when ever an Environmental Assessment process is initiated. 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 representatives from 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 webpages, etc., in order to contribute to peer to peer information sharing and the continued improvement in the field of road ecology.

10: 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.

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 description of 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 other future system-wide Plans that will provide direction for actual implementation. Both the EcoPark System Guidelines and other 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 Recreation 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 followed by implementation (including detailed design and construction), and monitoring.

4.3 Lower Grindstone 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.

11: Develop Vision

It is recommended that the Steering Committee for the Lower Grindstone 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 Lower Grindstone 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 Lower Grindstone Heritage Lands play in preserving biodiversity and the ecological integrity of the Cootes to Escarpment EcoPark System;
- the significance of Grindstone Valley, including the marsh and the National and Provincial designations to protect it;
- the value of Royal Botanical Gardens as a unique cultural landscape within Canada;
- the value of the Lower Grindstone 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 Lower Grindstone Heritage Lands. Given the evolving context of the surrounding landscape and anticipated development and urbanization, 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

12: Permitted Uses per NEPOSS Classification

This section of the Management Plan provides general directions on permitted uses for each park Classification based on the NEPOSS Planning Manual. Specific management recommendations are provided in Sections 4.1 through 4.3.9 to address the management issues identified in Section 3.0. Even for lands within the Niagara Escarpment Plan Area (NEPA) Landowners have the ability to further refine recommended Classifications and permitted uses, however as the Lower Grindstone Heritage lands are completely outside of the NEPA, there is complete freedom to change the classifications and establish permitted uses.

Natural Environment Classification:

It is recommended that the RBG Lands be identified as a Natural Environment classification. The intent of Natural Environment class parks is to protect existing natural heritage features and allow for moderate intensity recreational activities. 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:

- 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, birdwatching, etc.); and
- other existing low-impact activities, for example fishing, 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.

Specific management recommendations aimed at minimizing impacts from recreation and other uses are provided in Section 4.0.

Recreation Classification

It is recommended that Hidden Valley Park be classified as Recreation. 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, 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.

Specific management recommendations aimed at minimizing impacts from recreation and other uses are provided in Section 4.3.5.

Unclassified
The small facility owned and maintained by the Region of Halton just off of Sandcherry Drive is unclassified as there is no suitable classification in the NEPOSS Planning Manual.

13: 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. As noted above for the Classifications, the land-owning partners have complete freedom to alter the zoning as the Lower Grindstone Heritage Lands are not within the NEPA.

Nature Reserve Zone:
Nature Reserve Zone covers the largest area of all zones in the Lower Grindstone Heritage Lands (Appendix 1, Figure 1 and Table 3). On the RBG lands it comprises nearly all of the Grindstone Creek Valley and associated slopes, and in Hidden Valley Park includes the actual creek and associated floodplain. 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, they could be tolerated and 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 Plans.

Natural Environment Zone:
Natural Environment Zone comprises the second largest zone area in the Lower Grindstone Heritage Lands (Appendix 1, Figure 1 and Table 3). There are two Natural Environment Zones on the RBG lands.

In Hidden Valley Park, Natural Environment Zone covers the majority of the area that is not used for active recreation, as well as excluding the creek itself, which is a 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:

- 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:

Access Zones identified in the Lower Grindstone Heritage Lands (Appendix 1, Figure 1 and Table 3) represent a relatively small total area consisting of existing parking lots and access roads. 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 Historical-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 resulting from an increase in permeable surfaces (e.g., access roads and parking lots); and
- consider ecological restoration opportunities in Access Zones where manicured turf is not required.

Historical-Cultural Heritage Zone:

There is one Historical-Cultural Heritage Zone identified in the Lower Grindstone Heritage Lands (Appendix 1, Figure 1 and Table 3). As noted in Section 2.5, an investigation of pre-contact cultural resources was not within the scope of the current project. This should be undertaken in the future at which time additional Historical-Cultural zones may be identified. 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 Historical-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 Historical-Cultural Heritage Zone, cultural heritage resources should be conserved using appropriate techniques and practices that are consistent with Municipal, Provincial and Federal policies and standards.

Development Zone:
There is one Development Zone identified in the Lower Grindstone Heritage Lands comprising the RBG Centre (Appendix 1, Figure 1 and Table 3). 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 resulting from an increase in permeable surfaces (e.g., if a large pavilion is installed in Sheppard Quarry, consideration could be given to including a rainwater harvesting tank to reduce runoff to the stormwater management facility); and
- the Development Zone should have a minimal negative impact on natural heritage features and cultural heritage features, the natural landscape and watersheds.

Recreation Zone:
There are three Recreation Zones identified in the Lower Grindstone Heritage Lands (Appendix 1, Figure 1 and Table 3), comprising Laking Garden and Hendrie Garden on the RBG lands, and active recreation areas in Hidden Valley Park. The NEPOSS Planning Manual does not include guidance for permitted uses in Recreation Zones, as this is a zone that was established by the Niagara Escarpment Commission after the current NEPOSS Planning Manual was issued.

Resource Management Zone:
There are three Resource Management Zones identified in the Lower Grindstone Heritage Lands, all within the RBG lands (Appendix 1, Figure 1 and Table 3). One of these is a narrow zone behind the private properties on Sandcherry Drive, where restoration requirements have been noted. 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.

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.

14: Parking Access and Signage

- There are several parking/access issues identified in Section 3.2 that relate to safety concerns including:
    - Cherry Hill Gate parking area;
    - need for safe crossing of Plains Road West at bus stops in front of the RBG Centre;
    - Hidden Valley parking areas; and
    - the pedestrian crossing on Unsworth Avenue between Hidden Valley Park and RBG lands.

  These safety issues need to be investigated and addressed.
- Provide additional branding and signing of the EcoPark logo at park and trail entry points;
- Display highly visible maps of the Lower Grindstone Heritage Lands and trails in the context of the larger EcoPark System as an important opportunity to showcase and promote the significance of the EcoPark System in the RBG, the Region and Greater Toronto and Hamilton Area;
- Reduce Hendrie Park parking lot to one entrance and fence border between lot and road;
- At any such time that the seasonal flooding issue on Spring Garden Road is ever investigated, ensure that the current multi-use trail function is retained and explore other opportunities for trail connectivity; and
- Continue discussions with City of Burlington to consider transferring entrance control and management of the Valley Inn area to RBG.

15: Trail Structure

- Develop a trail design standard for the EcoPark System that clearly denotes trail widths, surfacing and treatments in various conditions and terrains. This would be done within the proposed Trail Guidelines (Management Theme 10);
- Develop standards for addressing safety and accessibility on trails within Heritage Lands. This would be done within the proposed Trail Guidelines (Management Theme 10); and
- Seek to balance the natural surface trail experience (i.e., footpaths) with hard surface treatments designed to mitigate of erosion and sedimentation into Grindstone Creek and wetlands.

16: Drainage Structure

- Evaluate areas on trails where drainage across the trail is resulting in erosion and formation of ruts and potholes and determine if it is severe enough to warrant installation of a culvert or construction of drainageways across the trail.

4.3.4 Recreation Recommendations

This section of the Management Plan provides management recommendations for recreation-related issues identified in Section 3.4.

17: General Trail Recommendations

- All future trail construction and reconstruction should continue to be undertaken to meet or exceed Ontario building code and, where applicable, AODA standards, noting that some sections of the trail system cannot be made accessible to all owing to natural topography, soil conditions, habitat sensitivities, etc.;
- Continue to promote and improve public education and awareness of trail use for all user groups (e.g., hikers, walkers, on-leash dog walking and cyclists) through signage, pamphlets, newsletters, webpage news, etc.;
- investigate specific locations along the trail system which provide significant valley views (Figure 5), including the view from the Barbara Laking Gazebo overlooking Hamilton Harbour, and internal views to natural features, with an aim to preserve them and enhance the experience by providing amenities such as benches, interpretive signage and overlook structures where appropriate;
- Continue to work with bike shops in the area to educate cyclists about appropriate trail use and trail etiquette. Although there is limited opportunity because cycling is not allowed in the RBG lands, where feasible the cycling community should be engaged in bicycle trail planning, as well as building and maintenance. Consider including a trail use pamphlet with the sale/maintenance of bicycles in area cycling shops;
- Engage cyclists and educate on appropriate use of the trail system;
- Provide guidance on trail closure, rationalization and formalization in the proposed Trail Guidelines (see section 5.2) with the following considerations:
    - encourage increased dialogue with all trail user groups to ensure that opinions and users' needs are being heard and incorporated into trail management considerations;
    - limit access to physically and ecologically sensitive habitats, including creek banks and seepage areas, as trail location should be placed in a manner which creates the least disturbance to habitat and wildlife;
    - identify perennially wet areas and/or areas of erosion and evaluate if trail needs to be re-aligned;
    - where access to sensitive habitats is deemed appropriate, trail design should be undertaken to minimize impact (e.g., boardwalks, railings, greater attention to drainage, etc.);
    - ensure appropriate routing of trails and limit trail activities as to minimize impacts to natural heritage features, 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;
    - where possible and appropriate (i.e., respecting existing use policies of land-owning partners), consider adopting the approach of 'preferred' trail use rather than promoting

single-use trails (e.g., bike and hiking trails);
- 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, recognizing that this imposes an operational and enforcement challenge, as closure signs (and possibly gates to enforce the closure) need to be installed/removed at appropriate times;
- improve way-finding signage, trail marking (e.g., blazes and strategic placement of signs at trail decision points);
- 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 span erosion and wet trail conditions where issues are perennial, re-alignment is not feasible or undesirable, segments constitute key connections in the trail system (i.e., can't be closed seasonally), or where they result in unacceptable impacts;
- investigate alternative trail surfaces that are commensurate with the intensity and type of trail use and location; and
- prepare a protocol, including post-closure monitoring, for active trail closure.

18: Trail Flooding and Erosion (waterside trails)

- Review and evaluate the location of trails and access points/parking within the flood zone within both RBG and Hidden Valley Park (e.g., Creekside Walk and the Hidden Valley multi-use trail).
    - The areas along Creekside Trail in particular should be monitored to identify whether they are degrading, and if so, this may become a high priority for remediation;
    - As part of the investigation/evaluation of issues associated with Creekside Trail, consider option of re-opening former trail that leads to the old observation tower; and
    - Consider the constructability of trails within the flood zone and consider enhancements such as a boardwalk or an elevated trail surface with free-draining subsurface materials.

19: Trail Overuse and Erosion

- Continue to monitor for trail erosion and implement appropriate trail construction and remediation measures on steeper slopes and in flood-prone areas, where warranted, especially along unsanctioned trails. There is one area in the RBG on the North Bridle Trial where there is substantial erosion and root exposure that should be addressed soon to prevent it getting worse.

20: Unsanctioned Use

- As cycling activity was noted on some RBG trails, it is recommended that cycling activity be monitored, and appropriate action taken if it is seen to be habitual or increasing in frequency. This may require further enforcement of cycling in unauthorized areas; and
- Ensure local ordinances and by-law policies are updated and posted to include prohibition of the more prevalent and/or damaging unsanctioned uses in natural areas. This is necessary to be able to engage by-law enforcement officers when needed.

21: Cycling Route Connectivity

- Create an EcoPark System-wide Recreation Plan, including a plan for hiking trails and cycling use. This plan should build on the existing trail and/or cycling plans such as the City of Burlington's Community Trail Strategy. This could be done as two separate but coordinated initiatives by RBG and the City of Burlington. It should address all trails, viewpoints, cultural points of interest, etc., and identify problems/issues and prioritize management issues. The Plan should, to the extent possible, provide consistent design and for trails and structures meet the provincial standards for accessibility and safety;
- When undertaking bicycle trail planning and/or upgrades to Plains Road West, continue to explore options and engage the cycling community for input to increase the safety of cyclists. Also, ensure that alternate cycling routes are clearly marked for the benefit of recreational cyclists or family groups who desire to avoid the traffic on Plains Road West; and
- Evaluate signage at entrance to the RBG trail at Unsworth Avenue to determine if it 1) appropriately communicates that cycling on RBG trails is not permitted, and 2) offers alternatives either in the form of facilities to park and secure bikes and continue on foot, or alternative cycling routes.

22: Other Trail Connectivity

- Generate a comprehensive trail map developed with input from all partners that combines RBG and City of Burlington trails into a single map that spans the entire Lower Grindstone Heritage Lands. The map should illustrate connections to the on-road cycling network and links to public transportation to reflect the true multi-modal system. The combined map would reduce potential mixed messaging for each jurisdiction. These should be made available at all entry points;
- In conjunction with assessing unsanctioned trails that connect the main trail to the creek, assess where sanctioned trails could be provided that enable access to the creek, are surfaced and located in a manner to minimize impacts to natural features; and
- Complete an accessible boardwalk to the base of the hill for the Woodland Garden; and
- Ensure there is safe at-grade pedestrian crossing at Unsworth Avenue between Hendrie Valley and Hidden Valley.

23: Unsanctioned Trails

- Evaluate the various unsanctioned trails that access the banks of Grindstone Creek (e.g., Creekside Walk and multi-use trail in Hidden Valley) to assess where they should be closed or formalized. In undertaking this assessment consider the following:
    - recognize that access to the creeks is desirable from a trail experience perspective and that if it is not provided/planned for, then unsanctioned trails will persist;
    - provide access for fishing in Hidden Valley (it is not permitted in RBG);
    - provide access to accommodate views of the Queenston Shale bluff in Hidden Valley;
    - provide clear signage to dog walkers to collect waste and not allow pets off-leash; and
    - acknowledge the value the experience that unsurfaced trails (footpaths) provide and only up-grade if necessary to mitigate erosion issues or mitigate over-use issues.
- Undertake a study of the area in Hidden Valley Park that was conveyed from the Province to determine how it functions with the rest of the Park and explore the potential for developing trails in the area, incorporating any unsanctioned footpaths as appropriate.

24: Trail Proliferation/Widening

- In conjunction with monitoring for trail over-use and erosion, identify where trail widening and/or creation of alternate routes around muddy areas occur and assess if the problem is serious enough to warrant construction of an at-grade boardwalk and/or closure/rehabilitation of alternate trails.

25: Education/Awareness and Signage

- Engage area businesses in promoting the EcoPark System. For example, contact the Tim Horton's café immediately adjacent to the Lower Grindstone Heritage Lands, to explore opportunities to establish a partnership with them to promote the EcoPark brand at the café providing leaflets and educational materials to customers.
- The Tim Horton's corporation also has a history of involvement with youth camps and promotion of outdoor activities for children. There may be an opportunity to engage Tim Horton's camps that could offer educational environmental-based camps through the EcoPark System partners.
- Engage with local schools, day-cares and community centres to determine if there is an opportunity to promote the EcoPark System mission while offering environmental education in the form of outdoor classroom activities, hikes and wildlife identification. The limitation of introducing groups from outside of RBG would be potential impact to other user groups whose experience of the marshes and trails of the Lower Grindstone EcoPark System may be affected.
- Consider alternatives to traditional signs. Signs are not always effective tools for informing trail users and are often targeted for vandalism/removal. Suggestions that could be considered include: use of sign graphics/ iconography instead of words, placards with 'bitly's' (weblinks to access additional educational or instruction information), messaging through art integrating various cultural and natural heritage narratives in handrails, guard rails, screen fencing, trail-head gateway features etc.;
- Post signage indicating permitted uses including an educational component that identifies impacts associated with unsanctioned uses (e.g., cycling, cross-country skiing, running/jogging, motorized vehicles), and stating fines for illicit uses;
- Provide signage along trails that provides the distance to the next destination point or to complete a loop;
- Include a small version of the EcoPark System map graphic at all sanctioned access points as an opportunity to promote the EcoPark System brand and promote awareness of the many features visitors to the Heritage Lands can enjoy;
- Improve safety at the Unsworth Avenue crossing by:
    - providing sign-posting warning and reduced speeds to drivers on Unsworth coming around the blind corner approaching the crossing; and
    - improve safety of this crossing by adding signage, line marking and a potential flashing signal to warn motorists approaching the pedestrian crossing.
- Provide interpretive signage at popular destination points such as the outlook at the foot of the Kicking Horse trail, certain vantage points over the valley along the South Bridle Trail and the observation point within Hidden Valley Park of the Queenston Shale bluff;
- Enhance the experience of popular destinations with upgraded infrastructure and improved signage to enhance the viewability of features without compromising the surrounding natural heritage system;
- Provide consistent signage that clearly explains permitted uses (e.g., cycling permitted), or

conversely, uses that are prohibited (e.g., dogs must be on-leash, no cycling); and
- At the RBG Centre, there is an opportunity to install a sign for staff parking and to direct visitors to the location for program drop-offs.

26: User Conflicts
- Continue to monitor and enforce the prohibition of cycling within the RBG lands, with particular emphasis on improving accessibility on boardwalks owing to safety issues and compliance with provincial legislation (AODA);
- As noted in the Wayfinding and Information Signage Theme, ensure that permitted uses (and conversely prohibited uses) are clearly signed in an effort to prevent user conflicts; and
- Within Hidden Valley Park:
    - evaluate if trail re-alignment or trimming of vegetation along trail edges is warranted to improve sight-lines on multi-use trails to improve safety and minimize cycling/walking conflicts; and
    - evaluate suitability of surface materials to accommodate multi-use function.

27: Wildlife Viewing
- Construct a viewing platform at Valley Inn to relocate wildlife observers off of Spring Gardens Road and to provide them with improved views.

28: Wildlife Feeding Along Trails
- Given the apparent ineffectiveness of existing signage regarding the impacts of wildlife feeding, consider more assertive messaging on signage combined with active enforcement, at least over a limited period;
- Consider posting clear messaging/ visible signage at RBG Centre to prohibit wildlife feeding; and
- Look for other opportunities to raise awareness of impacts to wildlife from feeding through education/interpretation programs within the RBG Centre.

29: Off-leash Dogs
- Ensure that signage clearly indicates that all dogs must be kept on-leash within the RBG and Hidden Valley Park;
- Ensure that there are appropriate by-laws in place to enforce the on-leash policy, and that the by-law control is also signed at all access points and bins for disposing of dog waste; and
- If possible, ensure that by-law officers periodically patrol the RBG and Hidden Valley Park areas to enforce the by-laws.

30: Motorized Vehicle Use
- Ensure there is signage prohibiting motorized vehicle use at the barricaded access point on Unsworth Avenue where ATVs appear to be accessing the Hydro ROW. Signage should reference the appropriate by-law and associated penalties for violations.

31: Fishing
- Ensure that there are by-laws in place to enforce the prohibition of fishing and that the by-law and associated penalties for violations are included in messaging on signage, where fishing is prohibited;

- Ensure there is adequate signage at locations where fishing has been noted or suspected to occur, particularly on boardwalks. If and when the proposed sanctuary is established at the Grindstone Creek Marsh, ensure that it is signed and includes prohibited uses such as fishing;
- Continue to manage for improved water quality (Themes 39-42) to maintain and improve habitat for migratory salmonids and their resident juveniles; and
- Recognize Indigenous rights associated with harvesting.

32: Fire Pits and Party Spots

- Although there was little evidence of this issue, any unsanctioned party spots should be cleaned up and rehabilitated, including the access paths, soon after detection, in order to discourage this activity.

33: Vandalism/Theft

- Consider upgraded security systems at Laking Garden, including video surveillance when RBG is closed, to deter this issue and assist in catching violators; and
- Monitor the occurrence of all thefts and acts of vandalism and ensure they are documented. Ensure that Halton Regional Police are aware of the issue if monitoring confirms it is persistent and on-going.

4.3.5 Recommendations for Encroachment

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

34: Private Unsanctioned Trails

- Contact any adjacent private landowners that have developed unsanctioned trails from the rear of their residences and explain the impacts and policies regarding encroachment, including dumping of garden refuse and draining of pool water. These trails need to be closed, including the removal of gates; and
- Clarify Current EcoPark System Lands boundaries to prevent accidental trespassing as noted in the over-arching recommendation 4. For example, private residential lot boundaries should be fenced.

35: Structures and “Yard Extension”

- Continue outreach and stewardship activities with owners of properties that exhibit encroachment to explain the impacts of planting non-native and potential invasive species and issues related to building of structures, dumping pool water, etc.;
- Enhance edge vegetation, for example living fencing, where Current EcoPark System Lands are bordered by residential development to better delineate Current EcoPark System Lands boundary, improve buffer and mitigate impacts, including “property creep” and dumping of garden refuse; and
- Post signage, include text in educational pamphlets and develop interpretive material to educate the public about the impacts associated with encroachment.

36: Dumping

- Identify locations of dumped garbage and yard waste, and facilitate clean up; and
- Initiate a program to clean up old dump sites within RBG lands.

37: Vegetation Trampling

- Encourage users to stay to defined paths using signage and low (3 ft height) cedar post and rail fencing where sensitive vegetation exist and trampling is evident.

38: Septic & Pool Drainage

- Verify the water quality in the Grindstone Creek and develop a better understanding of the potential impact to Current EcoPark System Lands of potential contamination sources identified (i.e., pool water and septic discharge) and seek potential solutions.

4.3.6 Recommendations for Hydrologic Impacts

This section of the Management Plan provides management recommendations for hydrologic impact-related issues identified in section 3.6.

39: High 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 2014 addressing urban runoff in Burlington and Hamilton with municipal, conservation authority, provincial, federal, RBG and community stakeholder representatives which identifies opportunities for Low Impact Development (Bay Area Restoration Council 2014);
- Any planned impervious surfaces as part of future infrastructure within the EcoPark System should be required to present and evaluate options for Low Impact Development solutions; and
- There is an opportunity to improve climate change resiliency in the area through the creation of a comprehensive and long-term regional plan for climate change mitigation and adaptation, with particular attention paid to impacts resulting from spring flooding and heavy storm events. This is an issue that transcends the Current EcoPark System Lands and would be led by another agency, and would benefit from representation of EcoPark System partners.

40: Drainage and Erosion

- Ensure that the several erosion issues on Grindstone Creek within Hidden Valley Park are addressed in the current and on-going Environment Assessment on erosion control in Grindstone Creek; and
- Investigate opportunity for stormwater management at RBG's "rifle range" adjacent to the Woodland Garden (LG 3).

41: Water Quality

- Look for opportunities to increase area of vegetated buffers along Grindstone Creek and manage them with the intent of creating native vegetation communities; and
- Undertake a review of the current water quality sampling program in the Lower Grindstone Heritage Lands, starting from Unsworth Avenue downstream to the Plains Road West bridge. The review should address the number of sampling locations and what is being monitored, with particular reference to the need to include heavy metal analysis.

42: Polluting Spills

- Improve communication of 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; and
- Reach-out to local funeral homes to educate on the potential impacts of scattering cremated remains (ashes) in natural areas, and to request that the suggestion be removed from their website and associated platforms.

43: Road salt
- Initiate discussion with the City of Burlington to review the Salt Management Plan, with the intent of looking for opportunities to minimize the impacts of de-icing agents where run-off discharges into Grindstone Creek, particularly along Plains Road West. This could include review of the type of de-icing agent used to select the least toxic option, application rates, and the feasibility and potential to provide pre-treatment of run-off that is prone to carrying de-icing agents. The discussion should acknowledge that this is an issue that extends well beyond the Heritage Lands and is part of a broader water quality concern for Hamilton Harbour and the Great Lakes.

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 3.7.

44: Decline in Natural Feature Quality
- Discourage off-trail use by:
  - closing unsanctioned trails;
  - education regarding the impacts of off-trail use;
  - not permitting orienteering as a sanctioned use; and
  - providing sanctioned trail access to points of interest (thus discouraging off-trail hiking).
- Prioritize management to improve biodiversity values including the implementation of recommendations provided in this management plan; and
- Enhance buffers and discourage encroachment through edge plantings with native species along Heritage Lands boundaries bordered by residential development.

45: Conservation and Recovery of Species Including SAR
- Continue and expand ongoing monitoring of the populations of significant plants and wildlife found in the Lower Grindstone Heritage Lands;
- Improve turtle nesting areas in Lower Grindstone 4;
- Develop interpretive signage and increase awareness in Lower Grindstone 6 on the pathogen Ranavirus and its transmission, including waterborne exposure (i.e., transfer between waterbodies via equipment such a canoes, kayaks, paddles). Include contact information for organizations responsible for handling sick reptiles and amphibians if found;
- Continue and expand the conservation and recovery of Species At Risk in the Current EcoPark System Lands, especially within Lower Grindstone 1, 2 and 6 management units;
- Employ the recommendations outlined in the RBG American Columbo (*Frasera caroliniensis*) Site Specific Recovery Plan (Richer 2019) and consider land acquisition opportunities in areas with and/or adjacent to Endangered American Columbo occurrences where it would enhance its protection and management;
- Propagate SAR plants in decline in Lower Grindstone Heritage Lands including American

Chestnut (*Castanea dentata)* and Butternut (*Juglans cinerea)*;
- Develop and implement Species At Risk recovery strategies, including the Turtles of RBG Site Specific Recovery Plan (Harrison and Theysmeyer 2014) applicable to the Current EcoPark System Lands. Recovery strategies should be ecosystem-based (i.e., where possible manage communities to benefit a wide range of flora and fauna) and where possible integrated with broader restoration initiatives. Species-specific restoration should be implemented only where necessary;
- Continue and expand ongoing inventory and mapping of flora and fauna in the Current EcoPark System Lands, with an emphasis on Species At Risk and rare species;
- Undertake an analysis of current trail locations (including unsanctioned trails) with respect to their proximity to rare and/or significant species and communities to identify where there are potential conflicts and ensure that trails and recreational uses are not impacting Species At Risk and rare species habitat;
- Continue and further develop partnerships with businesses and adjacent landowners to improve awareness (e.g., educational pamphlets) and stewardship support;
- Support research efforts that focus on heavy metals sources in sediment, water (including groundwater) and aquatic invertebrates along Grindstone Creek (Radassao et al. 2019); and
- Maintain breeding bird surveys to monitor presence/absence of SAR birds such as Wood Thrush throughout the Lower Grindstone Heritage Lands. Explore opportunities for additional targeted SAR bird surveys in the Lower Grindstone Management Units to monitor for presence and abundance of SAR birds.

46: Forest Fragmentation
- Look for opportunities to expand Lower Grindstone Heritage Lands through ongoing acquisition to increase the extent of natural features in public ownership, including areas that can be restored to native communities; and
- Undertake forest restoration initiatives as recommended in under Ecosystem Rehabilitation, Restoration, and Naturalization (Management Theme 48).

47: Forest Health Decline
- Engage in and support research into management of forest pathogens, as well as non-native earthworms;
- Given the relatively small area of forest, monitor for blowdown events and restore affected areas to forest as soon as possible to mitigate effects of fragmentation;
- Prioritize the management of invasive species that may be allelopathic and/or affect soil mycorrhizal relationships;
- Restore degraded woodlands;
- 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 RBG's Ecological Land Classification Report (Barr 2014).

48: Ecosystem Rehabilitation, Restoration, and Naturalization
- Where feasible and beneficial, restore habitat features that are under-represented in the landscape, for example pit and mound forest restoration;

- Develop a map that identifies and prioritizes potential forest restoration areas, including opportunities to increase the area of forest interior habitat;
- Promote the succession of forest habitat and prioritize restoration that increases the area to edge ratio of forests (i.e., maximizes forest area relative to its edge);
- Identify ecosystem restoration targets for the Lower Grindstone Heritage Lands, based on historical and current composition:
    - include considerations for reference ecosystems and adaptability to climate change;
    - include considerations for habitat creation for Species At Risk (SAR) and the restoration/management of provincially rare vegetation communities; and
    - incorporate land use impacts to the study area and sub-watershed, such as the amount of impervious surfaces and threat to wetlands.
- Where feasible and appropriate, explore opportunities to restore rare and uncommon ecosystems;
- Where feasible and if the opportunity arises, support restoration of tableland wetlands as part of managing surface run-off (see Hydrologic Issues). Wherever possible, tableland restoration should aim to achieve pre-settlement run-off conditions to reduce peak flows to Grindstone Creek (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);
- Continue to discourage off-trail use and disturbance to minimize impacts to native ground vegetation layer and understory;
- Implement management recommendations provided in RBG's Ecological Land Classification (Barr 2014) and Environmental Review of Hendrie Valley Report (Radassao et al. 2019), which include:
    - Increase interior forest cover and promote the natural succession of a native forest community;
    - Plant other native species in areas where there is a high presence of die-back to mitigate some of the impacts of diseases impacting tree canopy;
    - Review rare plant lists from inventories, in addition to known rare plant occurrences for potential propagation opportunities to assist with plant re-establishment.
- As part of ecosystem restoration, look for opportunities to re-establish features that have been historically removed;
- Relocate the Works Yard, also known as the "the Lodge', and restore the area; and
- Explore opportunities to enhance wildlife habitat through pit and mound restoration, ephemeral pond creation and the addition of woody debris where soil conditions permit.

49: Stream Habitat Improvement

- Continue restoration efforts along Grindstone Creek within Lower Grindstone 2 including removal of Common Reed (*Phragmites australis*), in-stream habitat improvements, and planting native vegetation in the riparian area to improve buffer function;
- Continue to manage for improved water quality (Themes 39-42) to maintain and improve habitat for migratory salmonids and their resident juveniles (also see Theme 31);
- Addressing issues with Creekside Walk and Hidden Valley multi-use trail including potential re-alignment and closure of unsanctioned side-trails (see Recreation Management Themes 18 and 23); and
- Update the seasonal Fish Sanctuary zone to include the Grindstone Creek Marsh area in the Valley Inn Area.

50: Invasive Species

- Coordinate management efforts to control/remove invasive species populations among Cootes to Escarpment EcoPark System partners. This is particularly germane in the Lower Grindstone Heritage Lands as invasive species likely disperse up and down Grindstone Creek Valley, thus necessitating coordination between the City and RBG (as well as other land-owners up-stream of the Heritage Lands) in order to effectively manage invasive species;
- Continue to document and map the locations of major aggressive invasive species;
- Continue efforts and improve the buffer along forest edges through ecological restoration and removal of invasive, non-native species;
- Determine if Himalayan Balsam occurs in Hidden Valley Park, and if so undertake management as to prevent its further spread downstream in Hendrie Valley;
- Implement invasive species management recommendations provided in RBG's Ecological Land Classification (Barr 2014) and Environmental Review of Hendrie Valley Report (Radassao et al. 2019), which include:
    - Control invasive species, especially in proximity to trails;
    - Address seed sources and initiate a Norway Maple removal project starting at South Pasture Swamp in Lower Grindstone 2 and continue removal efforts throughout the Heritage Lands;
    - Coordinate removal and treatments for ornamental escapes from adjacent RBG gardens for species including Common Butternut, Common Barberry, Chocolate Vine, Porcelain Berry, Black Jetbead, Winged Euonymus and Amur Cork Tree;
    - Continue targeted ornamental non-native invasive plant removal and develop a best management practice document for managing Lesser Celandine;
    - Employ rapid responses to new introductions and satellite populations of ornamental invasive plants before their populations expand. Focus areas include the residential properties along Patricia Drive and Sandcherry Drive which back onto Lower Grindstone 1;
    - Continue outreach and stewardship activities which address the impacts of planting ornamental invasive plants and yard waste dumping (introductions of non-native invasive species, etc.) and offer options to local homeowners for proper yard waste disposal (see Encroachment Recommendations); and
    - Plant other native species in areas where there is a high presence of die-back to mitigate some of the impacts of Emerald Ash Borer and other diseases impacting tree canopy.
- Remove the grove of dead ash (from Emerald Ash Borer) that occurs along the multi-use trail in Hidden Valley Park;
- Explore opportunities and funding for an invasive species department or task force at RBG to manage both terrestrial and aquatic invasive species establishment and spread;
- 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.
- Continue the monitoring and removal/control of priority invasive plant species;
- Continue to educate the public on the impact that invasive plants have on biodiversity and the cost of controlling them once established. Targeting the residential properties along Sandcherry Drive that back onto the Heritage Lands in Lower Grindstone 1 is highly recommended;
- Address the issue of feral and domestic cats within the Current EcoPark System Lands by

disseminating educational material to adjacent landowners and establishing an acceptable approach to trapping/removal of free-ranging cats where persistent issues are identified;
- Review and evaluate the effectiveness of existing by-laws and identify gaps in by-laws to facilitate the enforcement of use policies. This could include a cat control by-law which would facilitate the removal of free-roaming cats in much the same manner that free-roaming dogs would be controlled; and
- Install boot brushes and invasive species education at trailheads.

51: Noxious Plant Species

- Post educational signage noting the identification and toxic properties of Poison Ivy in a few key trailhead locations within the Heritage Lands where this species is abundant; and
- Similarly, post signage warning about Giant Hogweed (e.g., along the multi-use trail in Hidden Valley Park) and continue to monitor and remove populations as they are encountered.

52: Poaching and Plant Foraging

- Install signage at known salmon poaching locations indicating: i) it is illegal ii) fines (if any) that could be levied, and iii) encourage reporting of violations;
- The provision of a salmon-viewing structure that would facilitate viewing of the salmon run without interfering with the fish should be investigated in future planning.
- Install signage at principal trailheads clearly indicating that the collection of any plants or animals is not permitted;
- Monitor known salmon poaching areas to gain a better understanding of the extent of the issue and enforce regulations;
- Through monitoring and investigation (including questioning of visitors caught carrying plant material out of the Heritage Lands), determine i) what species of plants are being removed and for what purpose, and ii) the location from which plants are being removed;
- Convey the issue of poaching and plant collecting to security and operations staff and encourage them to report any violations they observe. Where within their job responsibilities, encourage City/RBG staff to question visitors seen removing and/or transporting plants from natural areas within the Heritage Lands; and
- Review relevant by-laws to determine what charges/fines can be levied against visitors violating poaching and plant collecting regulations. Assess if by-laws are adequate to discourage these activities and if warranted, pursue amending them.

53: Wildlife Feeding

- Implement recommendations provided in RBG's Supplemental Feeding of Wildlife in Hendrie Valley Report (Peirce 2019) and the Environmental Review of Hendrie Valley Report (Radassao et al. 2019) which include:
    - Discontinue the advertising of feeding wildlife, including chickadees, in the Lower Grindstone management units;
    - Develop a factsheet outlining reasons why RBG has a bylaw regarding not feeding wildlife and effects observed in the Lower Grindstone management units for outreach, stewardship and staff training;
    - Increase supervision and management in high visitor traffic areas during popular visiting times. Explore opportunities to offer more frequent guided hikes by RBG staff and

volunteers to engage the public on the trails and communicate the potential impacts of feeding wildlife;
- Adjust RBGs education programming with bird feeding to cultural land areas only (i.e., manicured gardens) such as the Kippax Garden and the Woodland Garden in Lower Grindstone 4. Ensure messaging is provided that wildlife cannot be fed in the natural areas (Lower Grindstone 1, 2, 3 and 6);
- Reasons why all wildlife (including birds) do not need to be fed in natural areas, as well as potential risks to feeding wildlife, should be the main emphasis of stewardship and outreach activities; and
- Further explore by-law enforcement opportunities (municipal, RBG security, conservation officers) for wildlife feeding violations.

54: Urban Adapted Wildlife

- Continue to educate and advise the public with respect to urban wildlife, particularly coyotes, for example through the City's on-line guidance on urban wildlife https://www.burlington.ca/en/services-for-you/wildlife.asp;
- 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.

55: Wildlife Crossings/Corridors

- Develop a program to track and analyze roadkill data in order to quantify the magnitude of the issue and identify the location(s) where mitigation (e.g., control fencing and/or eco-passages) should be implemented. This should include a data collection protocol for road-killed wildlife that tracks the number of animals killed, the species, date, the location and the source of the information (e.g., City of Burlington, RBG staff, etc.). This is particularly important along Plains Road West;
- Investigate the possibility of formalizing an arrangement with the City of Burlington department that is responsible for clearing up road-killed animals to report the species that are killed and its location and provide this information to RBG;
- Continue to look for opportunities to enhance the continuity and integrity of natural corridors, particularly across Plains Road West and Spring Gardens Road;
- Identify additional areas where wildlife habitually crosses the roads within the Lower Grindstone Heritage Lands to gain a better understanding of where wildlife passages or other mitigation needs to be initiated. This may include:
    - continue to collect and map roadkill data from municipal and other sources;
    - establish a program that encourages the reporting of all roadkill from the public and partner agencies, and enters it into a database to facilitate analysis and mitigation efforts;
    - include wildlife impact analyses into the Terms of Reference of major road reconstruction projects within the Heritage Lands; and
    - stay informed of current and future alternatives for improving wildlife road crossings, traffic calming, signage, etc. through review of relevant literature, participating in conferences, workshops, etc., addressing wildlife road mortality.
- Develop a strategy to prioritize and upgrade existing crossing structures (e.g., road culverts) where they may be used by wildlife. Partner agencies could investigate culverts scheduled for

replacement to determine if they are used for by wildlife (e.g., track studies, short-term camera monitoring) to determine if larger culverts or more sophisticated eco-passages are warranted;
- Where eco-passages cannot be developed install wildlife barriers where wildlife (particularly turtles) are hit;
- Contribute to long-term monitoring opportunities by continuing to monitor wildlife crossing and road mortality; and
- Continue to explore options for managing deer populations within the Current EcoPark System Lands.

4.3.8 Cultural Heritage Recommendations

This section of the Management Plan provides management recommendations for cultural heritage resource-related issues identified in Section 3.0.

56: 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.

57: Cultural Heritage Conservation

- Contact the Canadian Register of Historic Places and pursue updating the information currently presented on their website; and
- Pursue evaluation and designation of Hendrie Park and Laking Garden as cultural heritage landscapes under the Ontario Heritage Act.

58: Mining

- Clay extraction has been identified as an interpretive theme relevant to other heritage lands. An interpretive theme exists to connect this theme to the former NATCO site adjacent to the Lower Grindstone on Unsworth Avenue and the commemorative marker already in place.

59: Cultural Heritage Interpretation

- Commemorative marker policy: A policy on the format, message and location of markers and plaques should be developed to limit and control placement of commemorations of all types on Heritage Lands and will facilitate updating the markers and plaques in Hendrie Garden and Laking Garden;
- Commemorative trail development: Markers and plaques on this site tell a story of the people who have been involved in building RBG. Connecting the markers and plaques via website and through a self-guided trail should be undertaken to demonstrate all who have contributed to the site and the many organizations that support it today;
- Heritage Tree interpretation: The presence of Heritage Trees in the Lower Grindstone presents the opportunity to communicate the heritage value of trees and the factors that limit or enhance their lifespan;

- Horticulture history: The history of Hendrie Park and Laking Gardens is connected to the history of early growers in the Aldershot area. An opportunity exists to develop local and regional awareness of this history and to support tourism for those interested in the horticultural heritage of this part of Ontario, linking these resources to the St. Catharines and Niagara regions. An interpretive message should be developed and incorporated into current education and awareness programs;
- Applegarth Mill: Develop an interpretive feature in Hidden Valley Park incorporating authentic millstone(s) to communicate the cultural history of Lower Grindstone Creek and the importance of early mills that throughout the Heritage Lands. Local interest in this mill provides an opportunity for citizen engagement;
- Valley Farm interpretation: With local interest in horses and riding, the origins and evolution of Valley Farm present an opportunity to communicate the story of William Hendrie and his impact on horse breeding;
- 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. On-going consultation and meaningful engagement in recognition of Indigenous Peoples rights and traditions should be continued as part of developing interpretation and management strategies for the heritage lands, as well as advancing reconciliation;
- Because of the traditional use of the Lower Grindstone Heritage Lands by Indigenous communities, there are substantial opportunities for interpretation and commemoration of their use. It is recommended that the traditional use and location of significant pre-contact resources be documented in consultation with Indigenous communities and used to develop specific interpretive themes and messaging; and
- Indigenous garden: Significant interest has been shown in Indigenous gardens in Canadian botanical gardens in recent years, including those at Montreal, UBC and University of Alberta. In addition to the recently opened Indigenous trail at Cootes Paradise, an Indigenous garden could be developed to offer further opportunity for meaningful outreach and consultation and shows respect for the original inhabitants of this landscape.

60: Climate Change Impacts

- Evaluate the existing collections in the RBG, including heritage trees, with respect to vulnerability to climate change, and determine what, if any, management and precautionary measures can be initiated to mitigate potential impacts.

4.3.9 Project Implementation Recommendation

61: Review and Refine Schedule for Monitoring Management Themes (See Section 6.1)

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

5.0 Implementation

It is recognized that human 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 high priority management tasks that address natural heritage and cultural features that are subject to impacts that may l result in their loss if not addressed in the immediate future; and 2) identifying common management needs among the six Heritage Lands and developing solutions that can be used throughout the EcoPark System. To implement this second approach, it is recommended that the series of "EcoPark System Guidelines" (section 5.2) be developed. The EcoPark System Guidelines and recommended Trail Plan will address a large portion of the issues identified for the Lower Grindstone Heritage Lands. Although this Management Plan applies only to lands owned by the partner agencies with land holdings in the Lower Grindstone Heritage Lands, many of the issues and recommendations provided are relevant throughout the EcoPark System and are thus of interest to all partner agencies.

In view of the above, implementation of the management recommendations discussed in section 4.0 have 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 Lower Grindstone Heritage Lands, and these are thus identified as being both Guideline recommendations and site-specific recommendations. Management Themes are marked as high priority because they contain 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

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 Cootes to Escarp. EcoPark System		x	x		x	
4: Delineation of Current EcoPark System		x	x		x	
5: Better Communicate Multi-Agency Management		x	x		x	
6: Population and Use		x	x		x	
7: Funding	x					
8: Desire/Need for Trail Connections & Recreation Plan	x	x				
9: Desire and Need for a Wildlife Crossings Plan	x					x
10: EcoPark System-wide Guidelines		x	x	x	x	
Heritage Lands Management Plan Recommendations						
11: Develop Vision						x
Recommended Management Directions						
12: Permitted Uses per NEPOSS Classification		x	x			x
13: Permitted Uses per NEPOSS Zone		x	x			x
Access, Parking and Infrastructure Recommendations						

Management Themes	High Priority Tasks	EcoPark System Guidelines				Other / Site-specific Management Tasks
		Trail	Education and Signage	Vegetation Management	Edge Management	
14: Parking, Access & Signage	x		x			x
15: Trail Structure		x				x
16: Drainage Structure		x				x
Recreation Recommendations						
17: General Trail Recommendations		x	x			
18: Trail Flooding and Erosion (waterside trails)	x	x				x
19: Trail Overuse and Erosion	x	x	x			x
20: Unsanctioned Uses						x
21: Cycling Route Connectivity		x				x
22: Other Trail Connectivity			x			x
23: Unsanctioned Trails	x	x	x			
24: Trail Proliferation		x	x			
25: Education/Awareness and Signage		x	x			x
26: User Conflicts		x	x			
27: Wildlife Viewing	x					
28: Wildlife Feeding Along Trails	x					
29: Off-Leash Dogs			x			
30: Motorized Vehicle Use			x			x
31: Fishing			x			x
32: Fire Pits and Party Spots			x			x

Management Themes	High Priority Tasks	EcoPark System Guidelines				Other / Site-specific Management Tasks
		Trail	Education and Signage	Vegetation Management	Edge Management	
33: Vandalism/Theft						x
Recommendations for Encroachment						
34: Private Unsanctioned Trails		x	x		x	x
35: Structures and 'Yard Extension'			x		x	x
36: Dumping			x		x	x
37: Vegetation Trampling			x			x
38: Septic and Pool Drainage						x

Management Themes	High Priority Tasks	EcoPark System Guidelines				Other / Site-specific Management Tasks
		Trail	Education and Signage	Vegetation Management	Edge Management	
Recommendations for Hydrologic Impacts						
39: High Run-off and Peak Flows	x			x		
40: Drainage and Erosion						x
41: Water Quality	x					
42: Polluting Spills						x
43: Road Salt						x
Ecosystem Management and Restoration Recommendations						
44: Decline in Natural Feature Quality		x	x	x		
45: Conservation & Recovery of Species incl. SAR	x	x	x	x		x
46: Forest Fragmentation			x	x		x
47: Forest Health Decline		x		x		
48: Ecosystem Rehab., Restoration & Naturalization				x		
49: Stream Habitat Improvement		x		x		x
50: Invasive Species	x		x	x		x
51: Noxious Plant Species			x	x		
52: Poaching and Plant Foraging			x			x
53: Wildlife Feeding						x
54: Urban-adapted Wildlife			x			x
55: Wildlife Crossings/Corridors	x		x			x
Cultural Heritage Recommendations						

Management Themes	High Priority Tasks	EcoPark System Guidelines				Other / Site-specific Management Tasks
		Trail	Education and Signage	Vegetation Management	Edge Management	
56: Historic and Current Use by Indigenous Peoples			X			
57: Cultural Heritage Conservation						x
58: Mining						x
59: Cultural Heritage Interpretation			x			x
60: Climate Change Impacts						x
Project Implementation of Recommendations						
61: Review & Refine Schedule for Monitoring	x					

5.1 High Priority Management Tasks

There are some high priority management needs that should be completed as soon as possible to address safety concerns, enable implementation of management initiatives and address existing high priority impacts. Table 4 lists the tasks that are considered to be the highest priority management tasks and includes recommendations for the partner agency responsible. There are many issues identified in Section 3.0 could be considered obvious candidates for immediate action, however, not all recommendations can be high priority and in this assessment an attempt was made to identify tasks that if not implemented would lead to substantial impacts or loss of features, and/or were human safety issues. There are other issues that are deemed high priority owing to the responsibilities and/or mandates of the partner agencies. 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 Lower Grindstone Heritage Lands.

High Priority Management Recommendations	Partner Agency Responsible
1. Funding: Applying for and otherwise securing funding to undertake management is an ongoing and challenging task that is essential to enable implementation of most management recommendations. (Management Theme 7).	All partners in Cootes to Escarpment EcoPark System
2. Trail Connections & Recreation Plan: This is an EcoPark System-wide recommendation that was identified as high priority in previous Management Plans and is thus identified as such here. Even though it may not be a huge priority in the Lower Grindstone Heritage Lands, there are two recommendations associated with this issue (Management Themes 8, 21 & 22).	All Partners in Cootes to Escarpment EcoPark System
3. Wildlife Crossing Plan: This is an EcoPark System-wide recommendation that was identified as high priority in previous Management Plans. For Lower Grindstone, it is directed principally at the road mortality associated with Plains Road (Management Theme 9 & 55).	All Partners in Cootes to Escarpment EcoPark System
4. Parking, Access and Signage: This is deemed high priority mainly owing to the potential pedestrian safety issue in parking areas and the need for safe road crossings (Management Theme 14).	Royal Botanical Gardens, City of Burlington
5. Trail Flooding and Erosion: More frequent high-water levels in Lake Ontario and Grindstone Creek are increasing the occurrence of flooding of trails along the Creek is inter-acting with increased use (see Trail Over-Use below) to create erosion issues. The issue is anticipated to worsen if not addressed soon (Management Theme 18)	Royal Botanical Gardens, City of Burlington
6. Trail Over-use and Erosion: Although most of this issue can be addressed through regular maintenance, there is one on the North Bridle Trail that is a high priority to address (Management Theme 19).	Royal Botanical Gardens
7. Unsanctioned Trails: The unsanctioned trails that have been created to gain access to Grindstone Creek, particularly from Creekside Trail and the Hidden Valley multi-use trail, need to be addressed to prevent further degradation (Management Theme 23, but also related to issues 18 and 19).	City of Burlington
8. Wildlife Viewing: On-going impacts from the popularity of viewing and photographing wildlife and the need to provide a better user experience in the Valley Inn area justifies addressing this issue as a high priority. (Management Theme 27)	Royal Botanical Gardens
9. Wildlife Feeding along Trails: This issue is serious enough that it needs to be addressed promptly and RBG is in the process of refining their education message to address this problem. It will be a focal point in the RBG's next winter exhibit. (Management Theme 28)	Royal Botanical Gardens
10. High run-off and Peak Flows: Although this is an issue that is primarily a result of activities beyond the Lower Grindstone Heritage Lands, it impacts other high priority issues such as water quality (Theme 41) and flooding (Theme 19), and thus should be a high priority to address. (Management Theme 39)	Royal Botanical Gardens, City of Burlington

High Priority Management Recommendations	Partner Agency Responsible
11.Water Quality: As Grindstone Creek is a major watercourse draining into Hamilton Harbour, addressing water quality issues is a high priority to respond to the Hamilton Harbour Remedial Action Plan. (Management Theme 41)	Royal Botanical Gardens, City of Burlington
12. Conservation & Recovery of Species incl. SAR: maintaining species populations and in particular securing healthy populations of Species at Risk is essential to maintain and improve biological diversity, which is an implicit component of the Vision for the EcoPark System. (Management Theme 45).	Royal Botanical Gardens, City of Burlington
13.Invasive Species: Invasive species are a major threat to preserving biodiversity and their management is key to several issues, including High Priority Theme 7 above. (Management Theme 50).	Royal Botanical Gardens, City of Burlington
14.Wildlife Crossings/Corridors: This is considered to be a high priority item because it involves some SAR, and because road mortality is often under-estimated and there is a need to gain a better understanding of the issue so it can be better prioritized. (Management Theme 55).	Royal Botanical Gardens, City of Burlington
15. Review and Refine Schedule for Monitoring: This is an EcoPark System-wide recommendation that was identified as high priority in previous Management Plans. Monitoring of the implementation of the Management Plan recommendations is considered important to demonstrate progress, but also to identify where management is lacking and thus identify the need for better funding and implementation. (Management Theme 61).	Royal Botanical Gardens and City of Burlington

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 10). 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. 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 trail maintenance standards) before other partners wish to or are able to engage in it. The absence of these Guidelines should not prevent individual partners moving forward with such initiatives independently of the other partners in the EcoPark System (i.e., partners can move forward with initiatives before the Guidelines are prepared if the opportunity or need arises).

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;
- **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 in appropriate 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 parks 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
The development of the Guidelines is not intended to be an onerous or protracted task. The Guidelines are envisioned as short, pithy, technical documents to give guidance on the various areas of management they address. They should refer the reader back to the Inventory, Issues and Opportunity, and Management Plan reports for detailed information and not repeat it.

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 in previous Heritage Lands Management Plans).

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 the Management Plans 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 are specific to the Lower Grindstone Heritage Lands and thus would not be addressed through the proposed EcoPark System Guidelines. Some of these are also high priority items (see Section 5.1). Although some over-arching management recommendations are relevant to Lower Grindstone Heritage Lands, they are omitted below as they are more than just site-specific issues. Likewise, there are some recommendations in most of the themes that are best addressed through one of the Guidelines, and these are also omitted from the lists below.

Classification and Zoning Recommendations (Management Themes 1 and 2)

- Because the Lower Grindstone Heritage Lands are not within the Niagara Escarpment Plan Area this task is not essential but to be consistent with other Heritage Lands, the Classification and Zoning, along with the associated permitted uses, should be adopted by the partner agencies.

Heritage Lands Management Plan Recommendations (Management Theme 11)

- The Vision for the Lower Grindstone Heritage Lands should articulate the long-term intent for the protection and use of the Lower Grindstone Heritage Lands and thus should be agreed-on by the Steering Committee to guide all management initiatives.

Recommended Management Directions (Management Themes 12 and 13)

- Like the Classification and Zoning recommendations, these are site-specific and although not a high priority need to be implemented for consistency with the other Management Plans.

Access, Parking and Infrastructure Management Recommendations (Management Themes 14, 15, 16)

- There are several parking/access issues identified in Section 3.2 that relate to safety concerns including:
    - Cherry Hill Gate parking area;
    - need for safe crossing of Plains Road West at bus stops in front of the RBG Centre;
    - Hidden Valley parking areas; and
    - the pedestrian crossing on Unsworth Avenue between Hidden Valley Park and RBG lands.

  These safety issues need to be investigated and addressed.;
- Display highly visible maps of the Lower Grindstone Heritage Lands and trails in the context of the larger EcoPark System as an important opportunity to showcase and promote the significance of the EcoPark System in the RBG, the Region and Greater Toronto and Hamilton Area;
- Reduce Hendrie Park parking lot to one entrance and fence border between lot and road;
- At any such time that the seasonal flooding issue on Spring Garden Road is ever investigated, ensure that the current multi-use trail function is retained and explore other opportunities for trail connectivity; and
- Continue discussions with City of Burlington to consider transferring entrance control and management of the Valley Inn area to RBG.

Recreation Management Recommendations (Management Themes 18, 19, 20, 21, 22, 23, 25, 27, 28, 30, 31, 32, 33)

- Review and evaluate the location of trails and access points/parking within the flood zone within both RBG and Hidden Valley Park (e.g., Creekside Walk and the Hidden Valley multi-use trail).
    - The areas along Creekside Trail in particular should be monitored to identify whether they are degrading, and if so, this may become a high priority for remediation;
    - As part of the investigation/evaluation of issues associated with Creekside Trail, consider option of re-opening former trail that leads to the old observation tower; and
    - Consider the constructability of trails within the flood zone and consider enhancements such as a boardwalk or an elevated trail surface with free-draining subsurface materials.
- Continue to monitor for trail erosion and implement appropriate trail construction and remediation measures on steeper slopes and in flood-prone areas, where warranted, especially

along unsanctioned trails. There is one area in the RBG on the North Bridle Trial where there is substantial erosion and root exposure that should be addressed soon to prevent it getting worse;

- As cycling activity was noted on some RBG trails, it is recommended that cycling activity be monitored, and appropriate action taken if it is seen to be habitual or increasing in frequency. This may require further enforcement of cycling in unauthorized areas;
- Ensure local ordinances and by-law policies are updated and posted to include prohibition of the more prevalent and/or damaging unsanctioned uses in natural areas. This is necessary to be able to engage by-law enforcement officers when needed;
- Monitor cycling activity on RBG land, and appropriate action taken if it is seen to be habitual or increasing in frequency. This may require further enforcement of cycling in unauthorized areas;
- When undertaking bicycle trail planning and/or upgrades to Plains Road West, continue to explore options and engage the cycling community for input to increase the safety of cyclists. Also, ensure that alternate cycling routes are clearly marked for the benefit of recreational cyclists or family groups who desire to avoid the traffic on Plains Road West;
- Evaluate signage at entrance to the RBG trail at Unsworth Avenue to determine if it 1) appropriately communicates that cycling on RBG trails is not permitted, and 2) offers alternatives either in the form of facilities to park and secure bikes and continue on foot, or alternative cycling routes;
- Generate a comprehensive trail map developed with input from all partners that combines RBG and City of Burlington trails into a single map that spans the entire Lower Grindstone Heritage Lands. The map should illustrate connections to the on-road cycling network and links to public transportation to reflect the true multi-modal system. The combined map would reduce potential mixed messaging for each jurisdiction. These should be made available at all entry points;
- In conjunction with assessing unsanctioned trails that connect the main trail to the creek, assess where sanctioned trails could be provided that enable access to the creek, are surfaced and located in a manner to minimize impacts to natural features;
- Complete an accessible boardwalk to the base of the hill for the Woodland Garden; and
- Ensure there is safe at-grade pedestrian crossing at Unsworth Avenue between Hendrie Valley and Hidden Valley;
- Evaluate the various unsanctioned trails that access the banks of Grindstone Creek (e.g., Creekside Walk and multi-use trail in Hidden Valley) to assess where they should be closed or formalized. In undertaking this assessment consider the following:
    - recognize that access to the creeks is desirable from a trail experience perspective and that if it is not provided/planned for, then unsanctioned trails will persist;
    - provide access for fishing in Hidden Valley (it is not permitted in RBG);
    - provide access to accommodate views of the Queenston Shale bluff in Hidden Valley;
    - provide clear signage to dog walkers to collect waste and not allow pets off-leash; and
    - acknowledge the value the experience that unsurfaced trails (footpaths) provide and only up-grade if necessary to mitigate erosion issues or mitigate over-use issues.
- Undertake a study of the area in Hidden Valley Park that was conveyed from the Province to determine how it functions with the rest of the Park, and explore the potential for developing trails in the area, incorporating any unsanctioned footpaths as appropriate;
- Engage with local business for Ecopark promotion. As there is a Tim Horton's café immediately adjacent to the Lower Grindstone Heritage Lands, there may be an opportunity to establish a

partnership with them to promote the EcoPark brand at the café providing leaflets and educational materials to customers;

- The Tim Horton's corporation also has a history of involvement with youth camps and promotion of outdoor activities for children. There may be an opportunity to engage Tim Horton's camps that could offer educational environmental-based camps through the EcoPark System partners;
- Engage with local schools, day-cares and community centres to determine if there is an opportunity to promote the EcoPark System mission while offering environmental education in the form of outdoor classroom activities, hikes and wildlife identification. The limitation of introducing groups from outside of RBG would be potential impact to other user groups whose experience of the marshes and trails of the Lower Grindstone EcoPark System may be affected;
- Improve safety at the Unsworth Avenue crossing by:
    - providing sign-posting warning and reduced speeds to drivers on Unsworth coming around the blind corner approaching the crossing; and
    - improve safety of this crossing by adding signage, line marking to warn motorists approaching the pedestrian crossing.
- Provide interpretive signage at popular destination points such as the outlook at the foot of the Kicking Horse trail, certain vantage points over the valley along the South Bridle Trail and the observation point within Hidden Valley Park of the Queenston Shale bluff;
- At the RBG Centre, there is an opportunity to install a sign for staff parking and to direct visitors to the location for program drop-offs;
- Construct a viewing platform at Valley Inn to relocate wildlife observers off of Spring Gardens Road and to provide them with improved views;
- Given the apparent ineffectiveness of existing signage regarding the impacts of wildlife feeding, consider more assertive messaging on signage combined with active enforcement, at least over a limited period;
- Consider posting clear messaging/ visible signage at RBG Centre to prohibit wildlife feeding; and
- Look for other opportunities to raise awareness of impacts to wildlife from feeding through education/interpretation programs within the RBG Centre;
- Ensure there is signage prohibiting motorized vehicle use at the barricaded access point on Unsworth Avenue where ATVs appear to be accessing the Hydro ROW. Signage should reference the appropriate by-law and associated penalties for violations;
- Ensure that there are by-laws in place to enforce the prohibition of fishing and that the by-law and associated penalties for violations are included in messaging on signage, where fishing is prohibited;
- Ensure there is adequate signage at locations where fishing has been noted or suspected to occur, particularly on boardwalks. If and when the proposed sanctuary is established at the Grindstone Creek Marsh, ensure that it is signed and includes prohibited uses such as fishing;
- Continue to manage for improved water quality (Themes 39-42) to maintain and improve habitat for migratory salmonids and their resident juveniles;
- Although there was little evidence of this issue, any unsanctioned party spots should be cleaned up and rehabilitated, including the access paths, soon after detection, in order to discourage this activity;
- Consider upgraded security systems at Laking Garden, including video surveillance when RBG is closed, to deter this issue and assist in catching violators; and

- Monitor the occurrence of all thefts and acts of vandalism and ensure they are documented. Ensure that Halton Regional Police are aware of the issue if monitoring confirms it is persistent and on-going.

Management Recommendations for Encroachment (Management Themes 34, 35, 36, 37, and 38)

- Continue outreach and stewardship activities with owners of properties that exhibit encroachment to explain the impacts of planting non-native and potential invasive species and issues related to building of structures, dumping pool water, etc.;
- Contact any adjacent private landowners that have developed unsanctioned trails from the rear of their residences and explain the impacts and policies regarding encroachment, including dumping of garden refuse and draining of pool water. These trails need to be closed, including the removal of gates;
- Identify locations of dumped garbage and yard waste, and facilitate clean up;
- Initiate a program to clean up old dump sites within RBG lands;
- Encourage users to stay to defined paths using signage and low (3 ft height) cedar post and rail fencing where sensitive vegetation exist and trampling is evident; and
- Verify the water quality in the Grindstone Creek and develop a better understanding of the potential impact to Current EcoPark System Lands of potential contamination sources identified (i.e., pool water and septic discharge) and seek potential solutions.

Management Recommendations for Hydrologic Impacts (Management Themes (40, 42, and 43)

- Ensure that the several erosion issues on Grindstone Creek within Hidden Valley Park are addressed in the current and on-going Environment Assessment on erosion control in Grindstone Creek;
- Investigate opportunity for stormwater management at RBG's "rifle range" adjacent to the Woodland Garden (LG 3);
- Reach-out to local funeral homes to educate on the potential impacts of scattering cremated remains (ashes) in natural areas, and to request that the suggestion be removed from their website and associated platforms; and
- Initiate discussion with the City of Burlington to review the Salt Management Plan, with the intent of looking for opportunities to minimize the impacts of de-icing agents where run-off discharges into Grindstone Creek, particularly along Plains Road West. This could include review of the type of de-icing agent used to select the least toxic option, application rates, and the feasibility and potential to provide pre-treatment of run-off that is prone to carrying de-icing agents. The discussion should acknowledge that this is an issue that extends well beyond the Heritage Lands and is part of a broader water quality concern for Hamilton Harbour and the Great Lakes.

Ecosystem Management and Restoration Recommendations (Management Themes 45, 46, 49, 50, 52, 53, 54, 55)

- Continue and expand ongoing monitoring of the populations of significant plants and wildlife found in the Lower Grindstone Heritage Lands;
- Improve turtle nesting areas in the vicinity of the Hendrie Park barn in Lower Grindstone 4;
- Develop interpretive signage and increase awareness in Lower Grindstone 6 on the pathogen Ranavirus and its transmission, including waterborne exposure (i.e., transfer between waterbodies via equipment such a canoes, kayaks, paddles). Include contact information for

organizations responsible for handling sick reptiles and amphibians if found;

- Continue and expand the conservation and recovery of Species At Risk in the Current EcoPark System Lands, especially within Lower Grindstone 1, 2 and 6 management units;
- Employ the recommendations outlined in the RBG American Columbo (*Frasera caroliniensis*) Site Specific Recovery Plan (Richer 2019) and consider land acquisition opportunities in areas with and/or adjacent to Endangered American Columbo occurrences where it would enhance its protection and management;
- Propagate SAR plants in decline in Lower Grindstone Heritage Lands including American Chestnut (*Castanea dentata)* and Butternut (*Juglans cinerea)*;
- Develop and implement Species At Risk recovery strategies, including the Turtles of RBG Site Specific Recovery Plan (Harrison and Theysmeyer 2014) applicable to the Current EcoPark System Lands. Recovery strategies should be ecosystem-based (i.e., where possible manage communities to benefit a wide range of flora and fauna) and where possible integrated with broader restoration initiatives. Species-specific restoration should be implemented only where necessary;
- Continue and expand ongoing inventory and mapping of flora and fauna in the Current EcoPark System Lands, with an emphasis on Species At Risk and rare species;
- Undertake an analysis of current trail locations (including unsanctioned trails) with respect to their proximity to rare and/or significant species and communities to identify where there are potential conflicts and ensure that trails and recreational uses are not impacting Species At Risk and rare species habitat;
- Continue and further develop partnerships with businesses and adjacent landowners to improve awareness (e.g., educational pamphlets) and stewardship support;
- Support research efforts that focus on heavy metals sources in sediment, water (including groundwater) and aquatic invertebrates along Grindstone Creek (Radassao et al. 2019);
- Maintain breeding bird surveys to monitor presence/absence of SAR birds such as Wood Thrush throughout the Lower Grindstone Heritage Lands. Explore opportunities for additional targeted SAR bird surveys in the Lower Grindstone Management Units to monitor for presence and abundance of SAR birds;
- Look for opportunities to expand Lower Grindstone Heritage Lands through ongoing acquisition to increase the extent of natural features in public ownership, including areas that can be restored to native communities;
- Undertake forest restoration initiatives as recommended in under Ecosystem Rehabilitation, Restoration, and Naturalization (Management Theme 48);
- Continue restoration efforts along Grindstone Creek within Lower Grindstone 2 including removal of Common Reed (*Phragmites australis*), in-stream habitat improvements, and planting native vegetation in the riparian area to improve buffer function;
- Addressing issues with Creekside Walk and Hidden Valley multi-use trail including potential re-alignment and closure of unsanctioned side-trails (see Recreation Management Themes 18 and 23);
- Continue to manage for improved water quality (Themes 39-42) to maintain and improve habitat for migratory salmonids and their resident juveniles (also see Theme 31);
- Update the seasonal Provincial Fish Sanctuary zone to include the Grindstone Creek Marsh area in the Valley Inn Area;
- Coordinate management efforts to control/remove invasive species populations among Cootes to Escarpment EcoPark System partners. This is particularly germane in the Lower Grindstone

Heritage Lands as invasive species likely disperse up and down Grindstone Creek Valley, thus necessitating coordination between the City and RBG (as well as other land-owners up-stream of the Heritage Lands) in order to effectively manage invasive species;

- Continue to document and map the locations of major aggressive invasive species;
- Continue efforts and improve the buffer along forest edges through ecological restoration and removal of invasive, non-native species;
- Determine if Himalayan Balsam occurs in Hidden Valley Park, and if so undertake management as to prevent its further spread downstream in Hendrie Valley;
- Implement invasive species management recommendations provided in RBG's Ecological Land Classification (Barr 2014) and Environmental Review of Hendrie Valley Report (Radassao et al. 2019), which include:
    - Control invasive species, especially in proximity to trails;
    - Address seed sources and initiate a Norway Maple removal project starting at South Pasture Swamp in Lower Grindstone 2 and continue removal efforts throughout the Heritage Lands;
    - Coordinate removal and treatments for ornamental escapes from adjacent RBG gardens for species including Common Butternut, Common Barberry, Chocolate Vine, Porcelain Berry, Black Jetbead, Winged Euonymus and Amur Cork Tree;
    - Continue targeted ornamental non-native invasive plant removal and develop a best management practice document for managing Lesser Celandine;
    - Employ rapid responses to new introductions and satellite populations of ornamental invasive plants before their populations expand. Focus areas include the residential properties along Patricia Drive and Sandcherry Drive which back onto Lower Grindstone 1;
    - Continue outreach and stewardship activities which address the impacts of planting ornamental invasive plants and yard waste dumping (introductions of non-native invasive species, etc.) and offer options to local homeowners for proper yard waste disposal (see Encroachment Recommendations); and
    - Plant other native species in areas where there is a high presence of die-back to mitigate some of the impacts of Emerald Ash Borer and other diseases impacting tree canopy.
- Remove the grove of dead ash (from Emerald Ash Borer) that occurs along the multi-use trail in Hidden Valley Park;
- Explore opportunities and funding for an invasive species department or task force at RBG to manage both terrestrial and aquatic invasive species establishment and spread;
- 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.
- Continue the monitoring and removal/control of priority invasive plant species;
- Continue to educate the public on the impact that invasive plants have on biodiversity and the cost of controlling them once established. Targeting the residential properties along Sandcherry Drive that back onto the Heritage Lands in Lower Grindstone 1 is highly recommended;
- Address the issue of feral and domestic cats within the Current EcoPark System Lands by disseminating educational material to adjacent landowners and establishing an acceptable approach to trapping/removal of free-ranging cats where persistent issues are identified;
- Review and evaluate the effectiveness of existing by-laws and identify gaps in by-laws to facilitate the enforcement of use policies. This could include a cat control by-law which would facilitate the removal of free-roaming cats in much the same manner that free-roaming dogs

would be controlled;
- Install boot brushes and invasive species education at trailheads;
- Install signage at known salmon poaching locations indicating: i) it is illegal ii) fines (if any) that could be levied, and iii) encourage reporting of violations;
- The provision of a salmon-viewing structure that would facilitate viewing of the salmon run without interfering with the fish should be investigated in future planning;
- Install signage at principal tailheads clearly indicating that the collection of any plants or animals is not permitted;
- Monitor known salmon poaching areas to gain a better understanding of the extent of the issue and enforce regulations;
- Through monitoring and investigation (including questioning of visitors caught carrying plant material out of the Heritage Lands), determine i) what species of plants are being removed and for what purpose, and ii) the location from which plants are being removed;
- Convey the issue of poaching and plant collecting to security and operations staff and encourage them to report any violations they observe. Where within their job responsibilities, encourage City/RBG staff to question visitors seen removing and/or transporting plants from natural areas within the Heritage Lands;
- Review relevant by-laws to determine what charges/fines can be levied against visitors violating poaching and plant collecting regulations. Assess if by-laws are adequate to discourage these activities and if warranted, pursue amending them;
- Implement recommendations provided in RBG's Supplemental Feeding of Wildlife in Hendrie Valley Report (Peirce 2019) and the Environmental Review of Hendrie Valley Report (Radassao et al. 2019) which include:
    - Discontinue the advertising of feeding wildlife, including chickadees, in the Lower Grindstone management units;
    - Develop a factsheet outlining reasons why RBG has a bylaw regarding not feeding wildlife and effects observed in the Lower Grindstone management units for outreach, stewardship and staff training;
    - Increase supervision and management in high visitor traffic areas during popular visiting times. Explore opportunities to offer more frequent guided hikes by RBG staff and volunteers to engage the public on the trails and communicate the potential impacts of feeding wildlife;
    - Adjust RBGs education programming with bird feeding to cultural land areas only (i.e., manicured gardens) such as the Kippax Garden and the Woodland Garden in Lower Grindstone 4. Ensure messaging is provided that wildlife cannot be fed in the natural areas (Lower Grindstone 1, 2, 3 and 6);
    - Reasons why all wildlife (including birds) do not need to be fed in natural areas, as well as potential risks to feeding wildlife, should be the main emphasis of stewardship and outreach activities; and
    - Further explore by-law enforcement opportunities (municipal, RBG security, conservation officers) for wildlife feeding violations;
- Continue to educate and advise the public with respect to urban wildlife, particularly coyotes, for example through the City's on-line guidance on urban wildlife https://www.burlington.ca/en/services-for-you/wildlife.asp;
- Continue to pursue opportunities to control deer populations, including options that engage Indigenous communities;

- Install deer exclusion fencing in areas which have been recently restored/planted;
- Develop a program to track and analyze roadkill data in order to quantify the magnitude of the issue and identify the location(s) where mitigation (e.g., control fencing and/or eco-passages) should be implemented. This should include a data collection protocol for road-killed wildlife that tracks the number of animals killed, the species, date, the location and the source of the information (e.g., City of Burlington, RBG staff, etc.). This is particularly important along Plains Road West;
- Investigate the possibility of formalizing an arrangement with the City of Burlington department that is responsible for clearing up road-killed animals to report the species that are killed and its location and provide this information to RBG;
- Continue to look for opportunities to enhance the continuity and integrity of natural corridors, particularly across Plains Road West and Spring Gardens Road;
- Identify additional areas where wildlife habitually crosses the roads within the Lower Grindstone Heritage Lands to gain a better understanding of where wildlife passages or other mitigation needs to be initiated. This may include:
    - continue to collect and map roadkill data from municipal and other sources;
    - establish a program that encourages the reporting of all roadkill from the public and partner agencies, and enters it into a database to facilitate analysis and mitigation efforts;
    - include wildlife impact analyses into the Terms of Reference of major road reconstruction projects within the Heritage Lands; and
    - stay informed of current and future alternatives for improving wildlife road crossings, traffic calming, signage, etc. through review of relevant literature, participating in conferences, workshops, etc., addressing wildlife road mortality.
- Develop a strategy to prioritize and upgrade existing crossing structures (e.g., road culverts) where they may be used by wildlife. Partner agencies could investigate culverts scheduled for replacement to determine if they are used for by wildlife (e.g., track studies, short-term camera monitoring) to determine if larger culverts or more sophisticated eco-passages are warranted;
- Where eco-passages cannot be developed install wildlife barriers where wildlife (particularly turtles) are hit;
- Contribute to long-term monitoring opportunities by continuing to monitor wildlife crossing and road mortality; and
- Continue to explore options for managing deer populations within the Current EcoPark System Lands.

Cultural Heritage Recommendations (Management Themes 57, 58, 59 and 60)

- Contact the Canadian Register of Historic Places and pursue updating the information currently presented on their website;
- Pursue evaluation and designation of Hendrie Park and Laking Garden as cultural heritage landscapes under the Ontario Heritage Act;
- Evaluate the existing collections in the RBG, including heritage trees, with respect to vulnerability to climate change, and determine what, if any, management and precautionary measures can be initiated to mitigate potential impacts;
- Develop interpretive theme for the historic clay extraction at the former NATCO site;
- Commemorative marker policy: A policy on the format, message and location of markers and plaques should be developed to limit and control placement of commemorations of all types on

Heritage Lands and will facilitate updating the markers and plaques in Hendrie Garden and Laking Garden;

- Commemorative trail development: Markers and plaques on this site tell a story of the people who have been involved in building RBG. Connecting the markers and plaques via website and through a self-guided trail should be undertaken to demonstrate all who have contributed to the site and the many organizations that support it today;
- Heritage Tree interpretation: The presence of Heritage Trees in the Lower Grindstone presents the opportunity to communicate the heritage value of trees and the factors that limit or enhance their lifespan;
- Horticulture history: The history of Hendrie Park and Laking Gardens is connected to the history of early growers in the Aldershot area. An opportunity exists to develop local and regional awareness of this history and to support tourism for those interested in the horticultural heritage of this part of Ontario, linking these resources to the St. Catharines and Niagara regions. An interpretive message should be developed and incorporated into current education and awareness programs;
- Applegarth Mill: Develop an interpretive feature in Hidden Valley Park incorporating authentic millstone(s) to communicate the cultural history of Lower Grindstone Creek and the importance of early mills that throughout the Heritage Lands. Local interest in this mill provides an opportunity for citizen engagement;
- Valley Farm interpretation: With local interest in horses and riding, the origins and evolution of Valley Farm present an opportunity to communicate the story of William Hendrie and his impact on horse breeding;
- 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. On-going consultation and meaningful engagement in recognition of Indigenous Peoples rights and traditions should be continued as part of developing interpretation and management strategies for the heritage lands, as well as advancing reconciliation; and
- Indigenous garden: Significant interest has been shown in Indigenous gardens in Canadian botanical gardens in recent years, including those at Montreal, UBC and University of Alberta. In addition to the recently opened Indigenous trail at Cootes Paradise, an Indigenous garden could be developed to offer further opportunity for meaningful outreach and consultation and shows respect for the original inhabitants of this landscape.

Table 5 provides guidance on the priority for implementing EcoPark Guidelines and Site-specific management recommendation. High Priority Management Recommendations are addressed separately in section 5.1. Note that “High Priority” in Table 5 is referring only to the relative importance of addressing just EcoPark Guidelines and Site-specific 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 Medium priority.

Table 5. Implementation Priority for Completion of EcoPark System Guidelines and Site-specific Management Tasks for the Lower Grindstone 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, Parking and Infrastructure Recommendations			x
Recreation Recommendations		x	
Recommendations for Encroachment		x	
Recommendations for Hydrologic Impacts			x
Ecosystem Management and Restoration Recommendations		x	
Cultural Heritage 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 60 Management Themes, each of which is a general management issue for the Lower Grindstone Heritage Lands. It is recommended that each of these themes be evaluated annually to determine, 1) if action on the theme has been initiated; and 2) has action been completed, or in the case of issues needing on-going 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 in Section 4.3.9.

Table 6: Outline for Tracking the Implementation and Completion of Management Themes for the Lower Grindstone 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 Cootes to Escarp. EcoPark System			
4: Delineation of Current EcoPark System			
5: Better Communicate Multi-Agency Management			
6: Population and Use			
7: Funding			
8: Desire/Need for Trail Connections & Recreation Plan			
9: Desire and Need for a Wildlife Crossings Plan			
10: EcoPark System-wide Guidelines			
Heritage Lands Management Plan Recommendations			
11: Develop Vision			
Recommended Management Directions			
12: Permitted Uses per NEPOSS Classification			
13: Permitted Uses per NEPOSS Zone			
Access, Parking and Infrastructure Recommendations			
14: Parking, Access & Signage			
15: Trail Structure			
16: Drainage Structure			
Recreation Recommendations			
17: General Trail Recommendations			
18: Trail Flooding and Erosion (waterside trails)			
19: Trail Overuse and Erosion			
20: Unsanctioned Uses			
21: Cycling Route Connectivity			
22: Other Trail Connectivity			

Management Themes	Agencies Involved	Task Initiated (date)	Task Completed (date)
23: Unsanctioned Trails			
24: Trail Proliferation			
25: Education/Awareness and Signage			
26: User Conflicts			
27: Wildlife Viewing			
28: Wildlife Feeding Along Trails			
29: Off-Leash Dogs			
30: Motorized Vehicle Use			
31: Fishing			
32: Fire Pits and Party Spots			
33: Vandalism/Theft			
Recommendations for Encroachment			
34: Private Unsanctioned Trails			
35: Structures and 'Yard Extension'			
36: Dumping			
37: Vegetation Trampling			
38: Septic and Pool Drainage			
Recommendations for Hydrologic Impacts			
39: High Run-off and Peak Flows			
40: Drainage and Erosion			
41: Water Quality			
42: Polluting Spills			
Ecosystem Management and Restoration Recommendations			
44: Decline in Natural Feature Quality			
45: Conservation and Recovery of Species including SAR			
46: Forest Fragmentation			
47: Forest Health Decline			
48: Ecosystem Rehab., Restoration & Naturalization			
49: Stream Habitat Improvement			

Management Themes	Agencies Involved	Task Initiated (date)	Task Completed (date)
50: Invasive Species			
51: Noxious Plant Species			
52: Poaching and Plant Foraging			
53: Wildlife Feeding			
54: Urban-adapted Wildlife			
55: Site-Specific Wildlife Crossings/Corridors			
Cultural Heritage Recommendations			
56: Historic and Current Use by Indigenous Peoples			
57: Dated Information			
58: Milling			
59: Cultural Heritage Interpretation			
60: Climate Change Impacts			
Project Implementation of Recommendations			
61: 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 defendable 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 lend 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 7.

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 likely be possible to develop metrics to measure and evaluate 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 (acknowledging that periodic monitoring should be conducted to determine if perimeter fencing has been damaged or cut, and/or if alternative routes have been created). 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 possible to establish Targets of Performance Indicators based on the information currently available.

Table 7: Guidance for Setting Targets and Performance Indicators for the Lower Grindstone 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	N/A
2: Zoning per NEPOSS	N	N/A
Overarching Management Recommendations		
3: Awareness of Cootes to Escarp. EcoPark System	N	
4: Delineation of Current EcoPark System	N	
5: Better Communicate Multi-Agency Management	N	
6: Population and Use	N	
7: Funding	N	
8: Desire/Need for Trail Connections & Recreation Plan	N	
9: Desire and Need for a Wildlife Crossings Plan	N	
10: EcoPark System-wide Guidelines	N	
Heritage Lands Management Plan Recommendations		
11: Develop Vision	N	N/A

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
Recommended Management Directions		
12: Permitted Uses per NEPOSS Classification	N	N/A
13: Permitted Uses per NEPOSS Zone	N	N/A
Access and Infrastructure Recommendations		
14: Parking, Access & Signage	N	• For most recommendations in this Management Theme, monitoring implementation is simply noting that the issues have been addressed or not.
15: Trail Structure	N	• For most recommendations in this Management Theme, monitoring implementation is simply noting that the issues have been addressed or not.
16: Drainage Structure	Y	• Completion of the evaluation component of this recommendation is simply noting if it has been completed. • Where installation is actually installed, targets could be set to determine if the erosion issue is resolved or not, i.e., the target would be complete elimination of erosions issues where structures are installed.
Recreation Recommendations		
17: General Trail Recommendations	Y	• Identify all potential trail connections in the EcoPark System (the target) and use proportion of connections achieved as a performance measure. • Use total number of trails to be closed as target and use proportion of trails successfully closed as performance measure. • Considerations for general condition could include: • owing to extensive trails system, select representative sections of trails to monitor (e.g., 10 100m long sections) including: “typical” sections, sections where issues are

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
		contemplated, areas with steep slopes, sections adjacent to Species at Risk, and sections in Natural and Nature Reserve Zones; • 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 trail was accessed by foot and/or bicycle. Evaluate success of closure, determine need for re-visiting closure protocol based on number of users and considering if use is increasing or decreasing.
18: Trail Flooding and Erosion (waterside trails)	Y	• The evaluation component of this Management Themes can be monitored by simply noting if it was completed or not. • Trail segments that are identified as displaying surface deterioration owing to periodic flooding should be selected and measured with respect to: o length and width (or area) of impacted area; and o a description of the severity of the issue. • Follow-up monitoring, initially annually and/or following flood events, should re-measure areas and determine whether there is improvement or further deterioration that warrants installation of a structure or trail re-alignment. • Note that some areas subject to flooding may be sustainable if impact is not too extensive and not deteriorating further.

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
19: Trail Overuse and Erosion	Y	• Use proportion of erosion sites addressed through structures being installed as 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. • Site-specific evaluation measures should be established for the erosion area on North Bridle Path trail following determination of the mitigation to be implemented.
20: Unsanctioned Uses	N	• This will likely be an on-going issue and the intent (target) will always be complete compliance with permitted use policies.
21: Cycling Route Connectivity	N	N/A; It is suggested that since the entirety of the Lower Grindstone Heritage Lands are within the City of Burlington, that cycling route connectivity be evaluated through the implementation of the City's Cycling Plan.
22: Other Trail Connectivity	N	• N/A; Recommendations for this Management Theme are all instances of noting if the task was completed or not.
23: Unsanctioned Trails	N	• N/A; For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not.
24: Trail Proliferation	Y	• Same suggestions as Management Theme 19
25: Education/Awareness and Signage	N	• N/A; For the recommendations in this Management Theme, monitoring implementations is simply noting that the recommendations have been implemented or not.
26: User Conflicts	N	N/A; For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not.

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
27: Wildlife Viewing	N	N/A; For the recommendation in this Management Theme, monitoring implementation is simply noting that the recommendation has been implemented or not.
28: Wildlife Feeding Along Trails		N/A; For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not.
29: Off-Leash Dogs	N	N/A; This will be an on-going enforcement issues and although total compliance will always be the goal, it is unrealistic set targets.
30: Motorized Vehicle Use	N	N/A For the recommendation in this Management Theme, monitoring implementation is simply noting that the recommendation has been implemented or not.
31: Fishing	N	N/A; For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not.
32: Fire Pits and Party Spots	N	N/A; For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not.
33: Vandalism/Theft	N	N/A; For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not.
Recommendations for Encroachment		
34: Private Unsanctioned Trails	Y	• Determine total number of unsanctioned structures and instances of inappropriate use, unsanctioned trail management (targets) and use proportion of structures and improvements removed as performance measures.

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
35: Structures and 'Yard Extension'	Y	• Determine total number of unsanctioned structures and instances of inappropriate yard extensions to set targets (i.e. 100% removal) and use proportion of structures and removal of yard extensions achieved (e.g., plantings) as performance measures.
36: Dumping	Y	• Target should be 100% removal. Performance can be measured by proportion of dump sites that are cleaned up and rehabilitated
37: Vegetation Trampling	N	N/A
38: Septic and Pool Drainage	Y	• Targets can be set in conjunction with "Structures and Yard Extensions" (Themes 35) to determining number of pipes that drain to the valley and measure the proportion removal as a performance indictor.
Recommendations for Hydrologic Impacts		
39: High Run-off and Peak Flows	N	Targets for these issues should be set at a watershed or sub-watershed scale.
40: Drainage and Erosion	N	Monitoring is best done and is recommended by Geo Morphix (2016)
41: Water Quality	Y	Water quality targets should be established at a sub-watershed scale and should be coordinated between RBG and Conservation Halton
42: Polluting Spills	N	N/A
43: Road Salt	N	N/A
Ecosystem Management and Restoration Recommendations		
44: Decline in Natural Feature Quality	N	N/A

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
45: Conservation and Recovery of Species including SAR	Y	• Targets and performance measures for Species at Risk are species dependant 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. • 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.
46: Forest Fragmentation	N	N/A
47: Forest Health Decline	Y	• 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. • 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. • 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

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
		patches (2500 - 10,000 m^2) 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.
48: Ecosystem Rehab., Restoration & Naturalization	Y	• Monitoring and targets should be established on a project-by-project basis.
49: Stream Habitat Improvement	Y	• Targets and performance measures would have to be addressed as part of species-specific management recommendations.
50: Invasive Species	Y	• 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, 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.
51: Noxious Plant Species	Y	• Where noxious species is non-native, targets and performance measures should be determined in concert with invasive species. • Targets and performance measures for native noxious species (poison-ivy) should focus on control along sanctioned paths and areas where access is facilitated.

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
52: Poaching and Plant Foraging	N	• This is a compliance issue and, like wildlife feeding and enforcement of off-leash regulations, is an on-going issue. Although the target is theoretically 100%, this is likely unrealistic.
53: Wildlife Feeding	N	• This is a compliance issue and, like poaching/plant collecting and enforcing off-leash regulations, is an on-going issue. Although the target is theoretically 100%, this is likely unrealistic.
54: Urban-adapted Wildlife	N	N/A
55: Site-Specific Wildlife Crossings/Corridors	N	• For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not. • Performance of individual crossing structures can be determined on a project-specific basis.
Cultural Heritage Recommendations		
56: Historic and Current Use by Indigenous Peoples	N	
57: Dated Information	N	• For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not.
58: Milling	N	• For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not.
59: Cultural Heritage Interpretation	N	• For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not.

Management Themes	Target/Performance Indicator Appropriate Y/N	Suggestions for Developing Targets and Performance Indicators
60: Climate Change Impacts	N	• For the recommendations in this Management Theme, monitoring implementation is simply noting that the recommendations have been implemented or not.
Monitoring the Implementation of Recommendations		
61: Review Schedule for Monitoring	N	N/A

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Appendix 1: Lower Grindstone Heritage Lands Land Classification and Zoning Report

Lower Grindstone Heritage Lands

CLASSIFICATION AND ZONING REPORT

Prepared for Cootes to Escarpment EcoPark System

December 2019

Cootes to Escarpment EcoPark System Partners

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Cover Photograph: Hendrie Valley, Markus Hillar, 2019

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1.0 Introduction

This report recommends classifications and zones for Lower Grindstone Heritage Lands in accordance with the Niagara Escarpment Parks and Open Space System (NEPOSS) as described in the Niagara Escarpment Plan (NEP) (MNRF 2017) and Niagara Escarpment Parks and Open Space System Planning Manual[1] (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 Lower Grindstone Heritage Lands 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 public agencies, including local municipalities, the Bruce Trail Conservancy and Royal Botanical Gardens. The NEPOSS balances protection, conservation and sustainable development to ensure that the Niagara Escarpment will largely remain 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.

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) in accordance with the NEPOSS Planning Manual. However, the Lower Grindstone Heritage Lands is entirely outside the NEP area and consequently does not include any parks and open space areas that are part of the NEPOSS. Consequently, it is not subject to the policies in the

[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).

NEP and there is no obligation for future projects within the Lower Grindstone Heritage Lands area to go through the NEPOSS approval process and no NEC requirement to undertake the Classification and Zoning exercise. Nonetheless, for consistency with approaches undertaken with the development of Management Plans for other Heritage Lands within the Cootes to Escarpment EcoPark System, it was decided by the Steering Committee (SC) that the NEPOSS Classification and Zoning excercise be undertaken for the Lower Grindstone Heritage Lands area as well. Thus, this report recommends classifications and zones for the Heritage Lands as if it were part of NEPOSS.

The 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 none of the Lower Grindstone 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. A discussion of the classifications and zones assigned to the Lower Grindstone 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 Lower Grindstone 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”.

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 park classifications are described in the NEP as follows (MNRF 2017):

Table 1. Park Classification Descriptions

Classification	Description
Nature Reserve	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. 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.

Classification	Description
Natural Environment	These lands are characterized by, and serve to protect, a variety of outstanding natural heritage resources and cultural heritage resources, and scenic resources. 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.
Recreation	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 un-serviced camper's cabins. Special purpose buildings that include overnight accommodations and meals for guests may also be permitted in accordance with Part 3.1.6.4 (MNRF 2017).
Cultural Heritage	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.
Escarpment Access	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 to support day use activities at points of interest (e.g., trailheads, picnic sites, scenic areas, fishing areas, beaches).
Resource Management Areas	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. 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.

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.
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" (MNRF 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

As previously discussed, within the Lower Grindstone Heritage Lands, no park and open space areas have been identified and classified in the NEP.

Classifications are recommended based on the description and management direction provided for each classification included in the NEPOSS Planning Manual (MNR 2012), and were informed by the Draft

Inventory, Issues and Opportunities Report for the Lower Grindstone Heritage Lands (North-South Environmental et al. 2019). 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 be suited to the natural character of the particular park. Such activities must occur in zones identified.

Facilities for overnight camping may be provided, including campgrounds, temporary yurts and tents, lean-to's and un-serviced 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.
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

Historical (changed to Cultural Heritage in the Niagara Escarpment Plan, 2017):
Historical parks or open spaces are intended to protect and interpret the distinctive features representative of the Escarpment's archaeological and historic heritage.

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 Lower Grindstone 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 identified based on the inventory and analysis undertaken in the Draft Inventory, Issues and Opportunities report (North-South Environmental et al. 2019). It included the location of Provincially Significant Wetlands (PSWs), Environmentally Sensitive Areas (ESAs), 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, consultation with the land-owning partners 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. Zoning boundaries should be confirmed, and if necessary refined as part of future park-specific master/management plans, should they be developed.

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 guidance for identifying zones 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.

Historical Zone (changed to Cultural Heritage in the Niagara Escarpment Plan 2017):
Management planning for archaeological or cultural heritage features may range from maintaining their present condition to restoring and/or reconstructing the site. With the change in the most recent Niagara Escarpment Plan to Cultural Heritage, the term “Historical-Cultural” is used in this report to reflect the terminology in both the Niagara Escarpment Plan and the NEPOSS Planning Manual.

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 area. 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 results in a classification as woodland.

Recreation:

At present, there is no Recreation Zone included in the NEP (MNRF 2017) or NEPOSS Planning Manual (MNR 2012). However, a Recreation Zone was created within City View Park in Burlington, within 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 Lower Grindstone 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 same approach has been taken with previous Management Plans in the Cootes to Escarpment EcoPark System. The proposed Recreation Zone as described in this report is only for the purpose of the Lower Grindstone 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 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 manicured gardens, open green space intended for passive recreation and facilities such as the existing splash pad in Hidden Valley Park. 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 intended for more intensive recreation.

In this report, the Recreation Zone has been applied only to existing intensive recreational sites within the Lower Grindstone Heritage Lands that do not support, or provide only minimal, natural heritage value. 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 no or minimal negative impact on natural and cultural heritage features, the natural landscape and watersheds.

For the Lower Grindstone Heritage Lands Management Plan, the proposed Recreation Zone is proposed for areas where there are existing intensive recreational uses at the Laking Garden, Hendrie Park and Hidden Valley Park.

2.3 Unclassified and Unzoned Lands

A small parcel in the Lower Grindstone 1 management unit is owned by Halton Region and supports a pumping station. Given its current use, public access to this area 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 Lower Grindstone Heritage Lands, including supporting rationale, are provided in Table 3. Figure 1 illustrates the recommended classifications and zones. For additional information on property boundaries and property ownership, refer to Figure 2 in the Lower Grindstone Inventory, Issues and Opportunities report (North-South Environmental et al. 2019).

The Lower Grindstone Heritage Lands include: a portion of a relatively intact urban forested ravine, Grindstone Creek, floodplain marshes and associated natural areas. The Heritage Lands currently support several uses including natural heritage protection, ecological restoration, education, recreation in various forms, and some municipal uses (e.g., pumphouse for stormwater management). These uses are reflected in the application of zones.

In assigning 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 Lower Grindstone Heritage Lands are located in close proximity to large urban populations and consequently are subject to a number of urban pressures, including existing recreational uses and proximity to major transportation structures. Many of the existing uses are well-established and, without management, are expected to escalate with the anticipated increase in use of Hidden Valley Park, the RBG Centre, Hendrie Park and the Hendrie Valley Nature Sanctuary (based on growth targets and urban intensification identified in the Growth Plan for the Greater Golden Horseshoe (MMA 2017)). Recognition of the natural and cultural heritage value of the Heritage Lands through classification and zoning, as well as appropriate recreational opportunities, helps convey their importance to the public (and thus assists in getting acceptance of restrictive management and limited use).

Table 3. Lower Grindstone Heritage Lands Classifications and Zones

Management Unit	Classification	Zoning	Rationale
Hidden Valley Park 1	Recreation	Nature Reserve	Grindstone Creek and immediately adjacent riparian area down-stream of Lemonville Road. Provides fish habitat and influences downstream Nature Reserve areas. Grindstone Creek Valley ESA
		Natural Environment	Wooded Valley floor and adjacent slopes, including wooded slope on east side of Lemonville Road, extending up to CN rail line
Hidden Valley Park 2		Nature Reserve	Grindstone Creek and immediately adjacent riparian area up-stream of Lemonville Road. Provides fish habitat and influences downstream Nature Reserve areas. Grindstone Creek Valley ESA
		Recreation	This includes existing maintained open space, primarily mowed grass, used for recreation, within which are the Access and Development zones described below.
		Access	This zone contains existing roads and parking areas
		Development	The development zone contains existing recreation facilities, including splash pad, baseball diamond, picnic and playground areas
Hidden Valley Park 3		Natural Environment	Valleyland/Deciduous Forest community. Grindstone Creek Valley ESA
Hidden Valley Park 4		Natural Environment	Deciduous Forest
Lower Grindstone 1	Natural Environment	Nature Reserve	This zone constitutes a principal part of the wooded Grindstone Creek Valley on the north side of the creek excluding the Creek and associated floodplains. Regional Life Science ANSI, Grindstone Creek Valley ESA

Management Unit	Classification	Zoning	Rationale
	Natural Environment	Natural Environment	Deciduous Forest, constituting two relatively small areas: one narrow strip between the residential area on Sandcherry Drive and the CN rail line, and the second immediately adjacent to Unsworth Avenue that is currently cultural meadow.
		Resource Management	Restoration opportunities, buffer plantings to mitigate run-off/encroachment from adjacent community
Lower Grindstone 2		Nature Reserve	This zone is comprised of Grindstone Creek and the associated floodplain. It includes Grindstone Creek Valley ESA, Provincially Significant Wetland, SAR, Fish Habitat, Regional Life Science ANSI
Lower Grindstone 3		Nature Reserve	This zone constitutes a principal part of the wooded Grindstone Creek Valley on the south side of the Creek excluding the Creek and associated floodplains. Includes Grindstone Creek Valley ESA, SAR and Deciduous Forest
Lower Grindstone 4		Development	RBG Centre
		Recreation	Manicured open areas including Hendrie Gardens
		Historical-Cultural	Hendrie Gates
		Access	Roads, Parking lots
Lower Grindstone 5		Recreation	Manicured open area and interpretive gardens associated with Laking Garden

Management Unit	Classification	Zoning	Rationale
Lower Grindstone 6	Natural Environment	Nature Reserve	SAR, Fish Habitat, Grindstone Creek Valley ESA
Lower Grindstone 7		Resource Management	Restoration opportunities, cultural vegetation community
Works Yard		Resource Management	Restoration opportunity
Unclassified	Unclassified	N/A	Pumping Station (Halton Region)

Cootes to Escarpment EcoPark System Lower Grindstone Heritage Lands Classification and Zoning

Figure 1: Classification and Zoning

Legend

Classification

- Recreation
- Natural Environment
- Heritage Lands Boundary
- Unclassified

Zones

- Access
- Development
- Historical - Cultural Heritage
- Natural Environment
- Nature Reserve
- Recreation
- Resource Management

Management Units

Hillsdale Avenue
Lower Grindstone 5
Lower Grindstone 1
Highway 403
York Road
Canadian National Railway
Lennorville Road
Hidden Valley Park 4
Hidden Valley Park 3
Hidden Valley Park 1
Hidden Valley Park 2
Works Yard
Lower Grindstone 6
Lower Grindstone 3
Lower Grindstone 1
Lower Grindstone 2
Lower Grindstone 3
Howard Road
Unsworth Avenue
Spring Gardens Road
Botanical Drive
Lower Grindstone 7
Lower Grindstone 4
Plains Road West

N W E S

0 100 200 400
Meters

Cootes to Escarpment EcoPark System

December 17, 2019

4.0 Permitted Uses

As has been noted in Management Plans for other Heritage Lands in the Cootes to Escarpment EcoPark System, the guidance for permitted uses in the NEPOSS Planning Manual does not always anticipate their more urban nature. Also, as note above, the Lower Grindstone Heritage lands are actually outside the Niagara Escarpment Planning Area. Despite this, the guidance from the Manual on permitted uses for Natural Environment and Recreation Park classifications and associated zoning is (subject to management planning) is provided below.

4.1 Permitted Uses per Classification

Permitted uses for Natural Environment and Recreation Class Parks per the NEPOSS Planning Manual are provided in Table 4 below.

Table 4. Permitted Uses per Classification

Classification	Permitted Uses
Natural Environment	• 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	• Facilities for overnight camping may be provided, including campgrounds, temporary yurts and tents, lean-tos and un-serviced 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.

4.2 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	• 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	• 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	• Development may include minimal facilities to support Nature Reserve, Natural Environment and Cultural Heritage Zones. Examples include roads, signs, trailheads and parking lots.
Development	• 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	• 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 (Historical in the NEPOSS Manual)	• 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 Lower Grindstone 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 Lower Grindstone Heritage Lands. These may result in unacceptable impacts; thus, it is essential that access and recreational activities are managed. Limiting access and permitted uses are policies currently used to protect natural and cultural heritage values of the area. For example, the Royal Botanical Gardens (RBG) currently prohibits 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 may occur, 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 flexibility to educate the public about what the preferred use of an area is, without providing an outright prohibition on uses that do not strictly conform to the intent of NEPOSS guidelines. For example, within a Nature Reserve Zone, the zoning guidance is generally to not encourage access, but the preferred use

may allow limited access on footpaths and "tolerate" low-impact hiking. The preferred use concept provides flexibility and is a realistic approach to managing recreational use and impacts to natural areas. Strict implementation of very restricted access in the Nature Reserve Zone that includes Grindstone Creek is probably unrealistic owing to its historical use, pressure for passive recreation and connectivity within the existing trail system. The preferred use concept would encourage and facilitate strictly passive uses, including public education. However, it would tolerate a higher intensity of use and recognize the high natural values of the zone and support ongoing and future efforts to maintain a high level of natural values.

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 Conclusion

The NEPOSS classifications and zones have been applied to the Lower Grindstone Heritage Lands as a means of categorizing and guiding future management directions. Two classifications have been applied: Natural Environment and Recreation. All six of the NEPOSS zones have been applied: Nature Reserve, Natural Environment, Historical-Cultural, Access, Development and Resource Management. An additional zone, Recreation, has also been applied to existing intensive recreational uses in the Lower Grindstone 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 Lower Grindstone Heritage Lands, existing incompatible uses include cycling in Nature Reserve zoned lands.

Park classification and zones set the management direction for Lower Grindstone Heritage Lands. Following the review and approval of the recommended classifications and zones by the Steering Committee and Stakeholder Advisory Committee, the recommended classifications and zones will be provided in the Lower Grindstone Management Plan.

6.0 References

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Appendix 2: Lower Grindstone Heritage Lands Stakeholder Advisory Committee Members

Appendix 2: Lower Grindstone Heritage Lands Stakeholder Workshop

Workshop Attendees

Thomas Douglas – City of Burlington
Joan Downing – Burlington Historical Society
Paul Schnepf – Bicycle Works
Judy Worsley – Aldershot BIA

Staff and Consulting Team

Tomasz Wiercioch – Cootes to Escarpment EcoPark System
Mirek Sharp – North-South Environmental
Melissa Tonge – North-South Environmental
Markus Hiller – Schollen & Company
Cecilia Paine – Cultural Heritage Planner
Susan Hall – LURA Consulting
Ryan Adamson – LURA Consulting

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, 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.