

Cootes to Escarpment EcoPark System: A Plan for the Burlington Heights Heritage Lands

August 2014

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Executive Summary

The purpose of this Plan for the Burlington Heights Heritage Lands is to develop a set of structured guidelines for the management of lands owned by the City of Burlington, City of Hamilton and Royal Botanical Gardens within the Burlington Heights Heritage Lands area. This Plan will inform the protection, enhancement, and communication of the important natural and historic features within the Burlington Heights Heritage Lands, one of the six core natural areas within the Cootes to Escarpment EcoPark System.

Development of this Plan for the Burlington Heights Heritage Lands involved community consultation to identify priorities and concerns as well as compilation of information on the history and resources of the area (detailed in the *Inventory and Issues* report in Appendix B of this document). The Plan was developed using the Niagara Escarpment Parks and Open Space System (NEPOSS) planning framework.

The significance of the Burlington Heights Heritage Lands area is categorized by natural heritage features, cultural heritage features, and transportation corridors. The lands contain a high concentration of natural heritage features that provide important habitat for many plant and animal species, including species that are provincially and federally considered rare, threatened, and/or of special concern. Historic significance is also abundant as evidenced by the existing three National Historic Sites, five provincial heritage plaques, and several local commemorations. This Plan recognizes that transportation corridors characterize the historic and current use of the site and aims to respect and improve historic transportation routes.

The overall vision for the Burlington Heights Heritage Lands is a space in which the significant natural and cultural resources of the site are protected, conserved, and appropriately managed. It reflects the vision for the Cootes to Escarpment EcoPark System, which 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."

Ontario's Greenbelt is almost 2 million acres of protected land. It extends as far north as Tobermory and stretches 325 kilometres from Rice Lake in Northumberland County to the Niagara River. The Greenbelt also wraps around the Greater Golden Horseshoe — the area that surrounds the western end of Lake Ontario. One of the fastest growing regions in North America, by 2031 the population of the Greater Golden Horseshoe is expected to increase to more than 11 million.

Niagara Escarpment Planning and Open Space System (NEPOSS) Zone categories have been applied to the partner-owned properties within the Burlington Heights Heritage Lands area as a

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means of categorizing and defining appropriate management actions for the various areas of the Burlington Heights Heritage Lands.

Although it is the smallest of the heritage lands areas in the Cootes to Escarpment EcoPark System, Burlington Heights contains a diverse range of natural and cultural environments. This diversity should be maintained and future management actions should be balanced to minimize impacts of competing needs. The long-term vision recognizes that Burlington Heights is the most urban of the six heritage land areas. Major local and regional transportation routes and infrastructure are located within and adjacent to the Burlington Heights Heritage Lands area. Changes within the surrounding urban areas and within the adjacent transportation corridors should be managed to minimize any impacts on the Burlington Heights Heritage Lands.

This report recommends several actions for consideration for future management of the Burlington Heights Heritage Lands. The recommendations are organized into three categories:

- Recommendations related to the management of land use;
- Recommendations related to transportation and access; and
- Recommendations related to communication and interpretation of natural resources (including terrestrial and wetland habitats) and the cultural resources which include archaeology, built heritage and cultural heritage landscapes.

Summary of Recommendations for the Management of Land Use

Nature Reserve Zone

- Primary activity limited to conservation, habitat restoration and research related activities
- Undertake a complete inventory of all plant and animal species
- Restore habitat and control invasive species
- Discourage access and creation of informal trails
- Reduce impact of recreational activities
- Limit physical access but increase access to information
- Restore marsh vegetation through invasive species control and water quality improvements
- Re-establish prairie habitat
- Create restoration plan for historic refuse dumping areas

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Natural Zone

- Encourage landowner stewardship to maintain as natural landscape
- Maintain and extend tall grass prairie ecosystem
- Permit trails constructed in an economical and sensitive manner
- Relocate maintenance yard
- Discourage high-powered motorized watercraft

Access Zone

- Enhance parkway nature of York Boulevard through detailed design
- Clearly demarcate parking and allow during daytime hours
- Relocate the parking lot entrance at Dundurn National Historic Site to align with Hamilton Cemetery entrance
- Construct additional landscaping and pedestrian connections for parking pull off areas along York Boulevard
- Consider a new transit stop in the York Boulevard northbound lane
- Improve interpretative and way finding signage
- Consider low impact development techniques
- Ensure appropriate levels of security through visibility, safe access, and Crime Prevention Through Environmental Design (CPTED) principles
- Extend sidewalk or multi-use trail along East side of York Boulevard

Historic Zone

- Conserve cultural resources consistent with Provincial and Federal standards
- A complete inventory of cultural heritage resources should be undertaken
- Maintain lands primarily as a designed landscape
- Restore tallgrass prairie habitat
- Maintain significant views
- Consider pedestrian crossing points on York Boulevard to allow for access to sites
- Ensure new facilities provide visitor amenities, are small in scale and have heritage character
- Create initiatives to communicate heritage resources

Development Zone

- Develop interpretive and wayfinding signage in the new Rock Garden visitor centre
- Connect new Rock Garden visitor centre to pedestrian and cycling network

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Infrastructure and Services

- Consider impacts of new or planned infrastructure on resources within Burlington Heights Heritage Lands
- Ensure partner agency participation in the review process for infrastructure projects
- Address stormwater management

Adjacent Lands

- Provide copies of this Plan to all adjacent landowners
- Develop working relationship with owners of major transportation corridors
- Participate in processes initiated by adjacent landowners to monitor impact on Burlington Heights Heritage Lands

Summary of Recommendations for Transportation and Accessibility

- Consider redesigning York Boulevard to be a grand boulevard or parkway linking Hamilton and Burlington
- Enhance landscape design of new and existing parking areas and connect to pedestrian network
- Design all cycling and multi-use trails to City of Hamilton and City of Burlington Trail Standards
- Maintain or improve cycling facilities on both sides of York Boulevard
- Extended the pedestrian network for the entire length of York Boulevard with crossing points
- Ensure all new pedestrian facilities are consistent with A.O.D.A. standards for accessibility
- Prioritize physical accessibility for trails and interpretive facilities
- Develop a plan for the parking area at Valley Inn Road
- Develop an overall parking strategy
- When bridges are upgraded or replaced, consider railing styles that permit views from bridges

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Summary of Recommendations for Communication and Interpretation

- Develop a comprehensive interpretive program including information and interpretive signage
- Install entrance signs for the Cootes to Escarpment EcoPark System at each end of the York Boulevard transportation corridor
- Install interpretive nodes at Dundurn parking lot, the planned new Rock Garden visitor centre and along the Harbourfront Trail at the Desjardins Canal
- Use this Plan as an input to infrastructure development plans



Burlington Heights aerial photo looking south (Photo provided by D. Galbraith)

1.0 Background

The Cootes to Escarpment EcoPark System area covers approximately 3,650 hectares of public and private land. This area is dominated by two of the region's most important features: Cootes Paradise Marsh and the Niagara Escarpment. The area is remarkable and unique in Canada because of the density of natural and cultural resources within an urban context.

In 2007, a number of public agencies and organizations came together to form the Cootes to Escarpment EcoPark System. 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" (Wong, 2009).

Ontario's Greenbelt is almost 2 million acres of protected land. It extends as far north as Tobermory and stretches 325 kilometres from Rice Lake in Northumberland County to the Niagara River. The Greenbelt also wraps around the Greater Golden Horseshoe — the area that surrounds the western end of Lake Ontario. One of the fastest growing regions in North America, by 2031 the population of the Greater Golden Horseshoe is expected to increase to more than 11 million.

The Burlington Heights Heritage Lands are one of six core areas within the Cootes to Escarpment EcoPark System. The Burlington Heights Heritage Lands are located within the City of Burlington and the City of Hamilton adjacent to Hamilton Harbour and Cootes Paradise. They are shown as the highlighted area in Figure 1. The total land area within the Burlington Heights Heritage Lands is approximately 215 hectares.

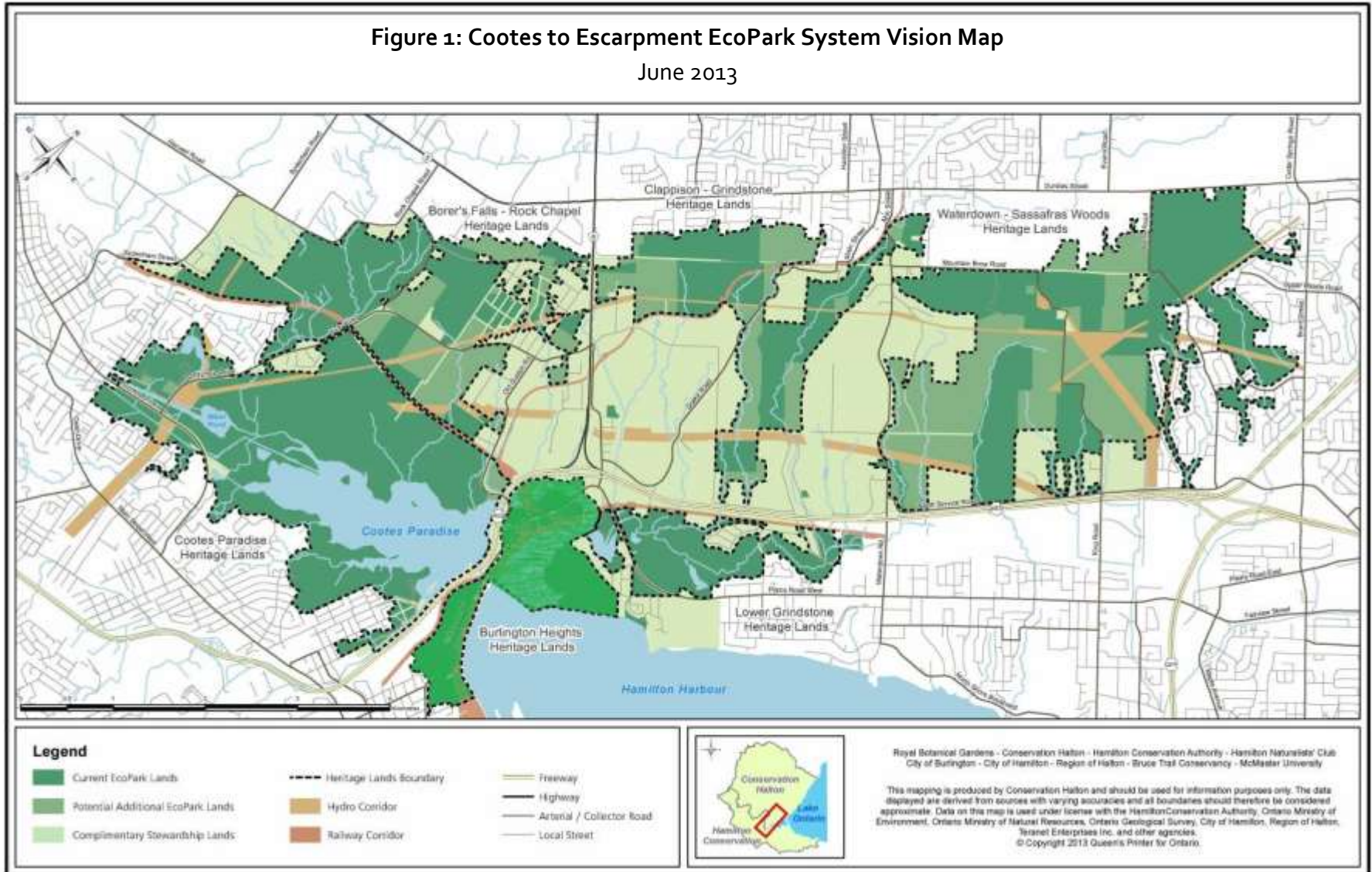
1.1 Purpose of the Plan

The purpose of this Plan for the Burlington Heights Heritage Lands is to provide a single, coherent management framework for the properties owned by the City of Burlington, City of Hamilton, and Royal Botanical Gardens in the Burlington Heights Heritage Lands area. The Plan is intended to enhance the protection of important natural and cultural features, improve sustainable recreation and education opportunities, and serve as a pilot for developing similar plans for the other five Heritage Lands areas of the Cootes to Escarpment EcoPark System.

Not all of the lands within the Burlington Heights Heritage Lands are owned by the partner agencies (i.e. City of Hamilton, City of Burlington and Royal Botanical Gardens). While this plan applies only to the properties owned by the three partner agencies, adjacent land owners are encouraged to consider the principles and recommendations of the Plan when planning for changes on their lands.

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Figure 1: Cootes to Escarpment EcoPark System Vision Map
June 2013



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The plan is intended to address:

- The protection and sustainable use of natural heritage resources;
- The protection, sustainable use, and interpretation of cultural heritage resources;
- The pressures and issues of concern identified by the three partner agencies, as well as stakeholders and the public;
- Infrastructure maintenance, creation and decommissioning, including transportation infrastructure, visitor amenities and utilities;
- The identification of recreation, education and research opportunities that are compatible with preserving the natural and cultural heritage of the area;
- The identification of criteria and indicators for evaluation of the implementation and effectiveness of the management framework and an ongoing monitoring program to consistently collect supporting information.

1.2 Plan Process

The preparation of this plan occurred in several phases. The first phase involved 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 plan. During this phase, a steering committee and stakeholder advisory committee for the project were formed.

The second phase of the project culminated in the preparation of an Inventory and Issues report (see Appendix B) that identified the significant natural and cultural heritage resources in the study area, and discussed the challenges and opportunities that would be addressed in the plan. The Inventory and Issues report was subject to review by the steering committee, stakeholder advisory committee and the community through a public consultation session.

During the third phase of the project, land classifications and zones for the Burlington Heights Heritage Lands were established, based on the Niagara Escarpment Parks and Open Space System (NEPOSS) Planning Manual framework. The Burlington Heights Heritage Lands are not within the Niagara Escarpment Plan area, therefore approval under NEPOSS is not required for these lands, but the intent is to use the NEPOSS planning approach as a planning tool as most of the Cootes to Escarpment EcoPark System Heritage Lands are within this system. The application of land use areas based on the NEPOSS categories provides a framework for identifying the appropriate uses to coincide with the natural and cultural heritage resources in various parts of the Burlington Heights Heritage Lands. The identification of these land use areas was also subject to review by the steering committee, stakeholder advisory committee and the community through a public consultation session (a summary of input and comments from the public engagement sessions can be found in Section 3.1). Designation using NEPOSS

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terminology of a land use area is based on existing and potential character and does not exclude the incorporation of complementary uses.

This Plan is the culmination of the information and input generated in the preceding phases of the project. The Plan summarizes the history and resources identified during preparation of the Inventory and Issues Report, and strives to manage the challenges also identified for the study area. The land use categories identified using the NEPOSS framework provide defined areas through which management goals and policies can be directed and achieved, in order to maintain and continue the conservation of the unique natural and cultural heritage resources found within these areas.

1.3 The Plan in Context

This Plan is a compilation of detailed information about the Burlington Heights Heritage Lands and the articulation of the partners' joint vision for the holistic management of their lands in Burlington Heights. It provides a framework for future planning and implementation actions at the level of individual sites within Burlington Heights.

Figure 2 illustrates the role of this Plan within the larger planning and land management process. At the top of the figure, the *Cootes to Escarpment Park System Conservation and Land Management Strategy*, finalized in late 2009 following a two year research and community consultation process, articulates a vision for the Cootes to Escarpment Park System and a set of specific implementation actions.

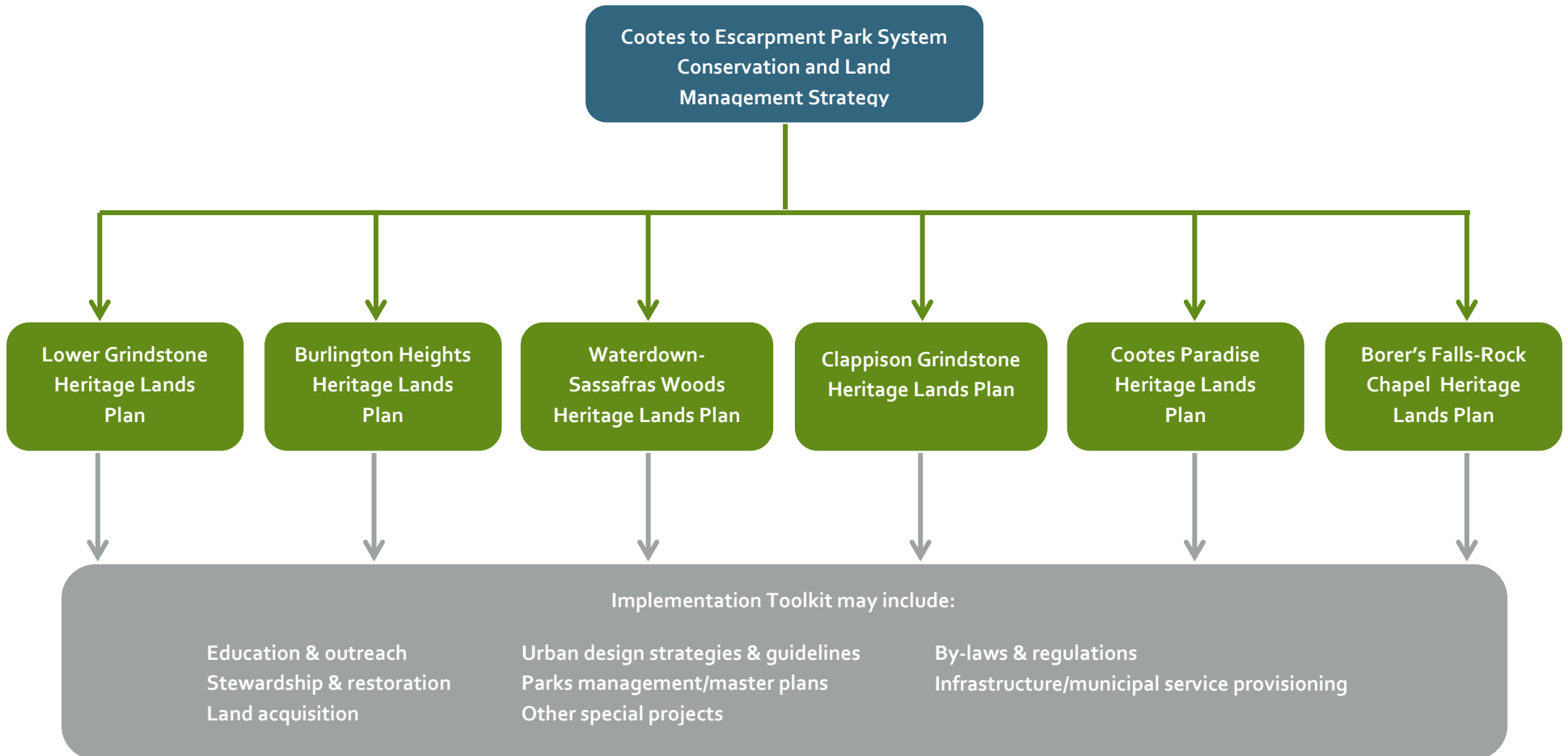
The *Cootes to Escarpment Park System Conservation and Land Management Strategy* defines the six core Heritage Lands areas. Coherent plans for each of the six Heritage Lands are in the second layer of Figure 2. The plan for Burlington Heights is the first of the six.

Each of the Heritage Lands plans will provide a framework to guide future planning and other implementation actions within the respective Heritage Lands area, as shown in the bottom layer "Implementation Toolkit."

1.4 Report Organization

This report contains a summary of the background and context of the Burlington Heights Heritage Lands area followed by a Statement of Significance and Value. Further detailed information can be found in the Inventory and Issues Report in Appendix B. Section 4 discusses issues and challenges, followed by the plan recommendations and the monitoring and implementation of the plan. A discussion on how the Plan was developed, including the Niagara Escarpment Parks and Open Space System (NEPOSS) classifications and zones, can be found in Appendix A.

Figure 2: Cootes to Escarpment EcoPark System – Land management planning process



2.0 Context: Why are the Burlington Heights Heritage Lands Important?

The Burlington Heights Heritage Lands have a long history of human interaction with the natural environment, including aboriginal fishing and hunting in Cootes Paradise and Burlington Bay. The area contains both cultural and natural heritage resources. Natural resources include the Hamilton Bar geologic feature, Grindstone Creek Escarpment Valley Environmentally Sensitive Areas and the restoration potential of a rare tallgrass prairie habitat. Spatially, the area is situated at the west end of Lake Ontario between Cootes Paradise (a shallow basin of open water and marsh habitat) to the west and Hamilton Harbour to the east. The area is located at a junction where climatic, physiographic and hydrologic processes merge and give rise to a unique ecology.

Cultural resources at Burlington Heights have historical associations with aboriginal use, military history during the War of 1812, and the 20th century influence of Thomas McQuesten. Twentieth century design changes to the area were motivated by the City Beautiful Movement with important early designers such as John Lyle, Carl Borgstrom, and Howard and Lorrie Dunnington-Grubb. Current historic landmarks include the Dundurn National Historic Site (associated with the area's first European settler Richard Beasley and subsequently Sir Allan MacNab), the Hamilton Cemetery and the Woodland Cemetery, the High Level Bridge, and the Rock Garden of the Royal Botanical Gardens (associated with Thomas McQuesten). Within the Burlington Heights Heritage Lands there are many physical remnants of these historical associations. In other cases, there may be no physical remnants left, but the associative or intangible values of the sites remain (See Figure 3). Special designations are assigned to the area because of its natural and cultural heritage values which include a density of artifacts that cover thousands of years of natural and human activity. This remarkable collection of significant resources is within one of the most populated corridors in Southern Ontario and is surrounded by urban development, making it extremely rare and its management challenges more critical.

Historically, the Burlington Heights Heritage Lands were used as a major transportation route. Today, many people still cross the site daily in their travels between Hamilton and Burlington. The area is an important transportation corridor which links Hamilton to the urban areas east of Lake Ontario and includes commuter and freight rail systems, highway 403, and York Boulevard. Many cycling and pedestrian trails exist along York Boulevard and along the Hamilton Harbour shoreline. Future trails are planned for the east harbour area, as outlined in the Hamilton Recreational Trails Master Plan.



Source: April, Conservation Hub - 2012; Pro/Bow Solutions - 2012

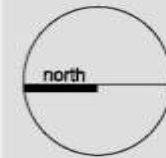
LEGEND

- Cultural Heritage Resources
- Natural Heritage Resources

1. Commemoration of Bridges & Toronto-Hamilton Highway Entrance
2. Commemoration of Soldiers, Immigrants and Citizens
3. Commemoration of Thomas Baker McQuesten
4. Commemoration of Mattias (Mati) Broman
5. Commemoration of High Level Bridge
6. Commemoration of High Level Bridge
7. Commemoration of Entrenchment of 2nd Line of Defence
8. 17 Mile Marker for Around the Bay Road Race

9. Commemoration of William Sherring
10. Commemoration of the Burlington Heights National Historic Site
11. Commemoration of the 1st Line of Defense
12. Commemoration of Ramparts and War of 1812
13. Commemoration of Sir John Harvey
14. Commemoration of the United Empire Loyalists
15. Commemoration of Dundum Castle
16. Commemoration of Dundum Castle
17. Commemoration of Sir Allan Napier MacNab
18. Commemoration of War of 1812 Defense
19. Commemoration of 1st Line of Defense during War of 1812
20. Commemoration of Matt Broman
21. Desjardins Canal Memorial

**Cootes to Escarpment EcoPark System:
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**Figure 3
Natural & Cultural
Heritage Resources**

DATE: June 2014

PREPARED BY: CAC

SCALE: NTS

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2.1 Geologic History

The physiographic region in which the Burlington Heights Heritage Lands are situated is the Lake Iroquois Plain. This is a flat terrace of land below the escarpment that is approximately 3 kilometres in width bordering the shore of Hamilton Harbour (Karrow 1959). Most of the City of Hamilton is built on part of this plain. Lake Iroquois was a lake formed following the retreat of the Wisconsin glacier by melting glacial ice in the Lake Ontario basin approximately 10,000 years ago. Drainage to the east was prevented by a remnant ice plug in the St. Lawrence Basin creating water levels in Lake Iroquois that are estimated to have been 30 metres higher than present day Lake Ontario (Karrow 1959).

The defining landscape features of the Burlington Heights Heritage Lands are the Hamilton Bar and Aldershot Bar; these are elevated regions of land formed of beach alluvium concretions and sand deposited by wave action along the historic shoreline of Lake Iroquois (Chapman & Putnam, 1984). The Hamilton Bar separates Cootes Paradise from Hamilton Harbour and extends approximately 6 kilometres north from present day Hamilton City Hall to the Burlington Heights Heritage Lands (J. K. Dwyer, 2003). Cootes Paradise drains into Hamilton Harbour through the Desjardins Canal, a cut made through the Hamilton Bar in 1853-1854 (J. K. Dwyer, 2003). Historically, Burlington Heights were separated from the north shore by water flowing from Cootes Paradise. The creation of the canal changed the outlet. The Aldershot Bar extends from Carroll's Point approximately 4.5 kilometres to the northeast and confines the lower section of Grindstone Creek behind it to form Carroll's Bay.



Burlington Heights arboretum context (Photo provided by D. Galbraith)

2.2 Natural History

The Cootes to Escarpment EcoPark System is one of the most biologically rich areas of Canada. Within the 3,650 hectares of public and private land exists almost 25% of Canada's wild plants as well as over 50 species at risk (Cootes to Escarpment EcoPark System, 2014). The Cootes to Escarpment Ecopark is the last intact ecological connection between Lake Ontario wetlands and the Niagara Escarpment (Cootes to Escarpment EcoPark System, 2014).

As one of the six core natural areas within the EcoPark System, the Burlington Heights Heritage Lands are abundant in biodiversity and exist as an important habitat for many plant and animal species. To the west of the Burlington Heights Heritage Lands lies Cootes Paradise, the largest and most diverse wildlife sanctuary (600 hectares) owned by Royal Botanical Gardens. To the south lies the Niagara Escarpment, designated as a UNESCO World Biosphere Reserve for its ecological significance.

The Burlington Heights Heritage Lands are at the confluence of two major watersheds. To the west, Spencer Creek drains a 29,000 hectare watershed and outlets to Cootes Paradise. Many small tributaries contribute to the Spencer Creek system or drain directly into Cootes Paradise, including: Fletcher Creek, Flamborough Creek, Logie's Creek, Westover Creek, West Spencer Creek, Ancaster Creek, Borer's Creek, Chedoke Creek, Spring Creek, Tiffany Creek, Sulphur Creek, Sydenham Creek, and Westdale Creek. To the east, Grindstone Creek drains a 99 square kilometre watershed and outlets to Hamilton Harbour at Carroll's Bay (the last remaining coastal wetland on the shores of Hamilton Harbour). Most of the streams in the Grindstone Creek watershed (approximately 85%) are small unnamed tributaries with the remainder of the system confined to the main branches.

Burlington Heights is in Hill's Site Region 7E (Site District 7-3: Grimsby) which is an area of land characterized by a relatively uniform macroclimate (Hills, 1959). Here the climate is warmer due to its position below the Niagara Escarpment and the moderating effect of Lake Ontario. Site District 7-3 forms a part of the Eastern Deciduous Forest Region also known as the Carolinian Life Zone that in Ontario stretches in a narrow band across the northwest shore of Lake Ontario to Grand Bend and south to Lake Erie. The Carolinian Life Zone is one of four life zones in Ontario and is one of the most biologically diverse areas within Canada (Daigle & Havinga 1996). It is characterized by a relatively warm climate, deciduous forests with patches of prairie and savannah, and many species not found elsewhere in Ontario but which are common farther south in the United States.

The ecology of the Burlington Heights Heritage Lands has developed in response to the unique physical attributes and functional interfaces between the climate, land and water. The first vegetation communities to emerge following the retreat of the last glacial period would have been herb dominated tundra succeeding to shrub communities and finally a boreal woodland

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habitat at approximately 12,000 years before present (Larson et al., 1999). Remains recovered from Lake Iroquois deposits indicate the presence of mammals such as woolly mammoth, American mastodon, Torontoceras (a large deer), giant beaver, musk-ox and caribou (Theberge, 1989). Mammoth rib fragments, part of a femur and a scapula were found during the excavation of the Desjardins Canal in 1848. Additional mammoth specimens were found in 1852 and 1876, and these are currently housed in the Museum of Nature in Ottawa (Earth Sciences Museum, 2009).

Gradually, upland forests colonized the landscape with many of the species familiar today: oaks, maples, hickories, white pine and black cherry (Larson et al., 1999). A climatic shift occurred between four to six thousand years before present that gave rise to warmer, drier conditions and resulted in the extension of the Great Plains prairies into Southern Ontario. This precipitated the development of prairie and oak savannah communities over much of the sandy, well drained soils associated with the Hamilton and Aldershot Bars. Remnants of these historic prairies persist today. Throughout these periods wetland communities were abundant in the shallow waters along the coast of Cootes Paradise and Hamilton Harbour providing valuable spawning habitat for the freshwater fish populations of Lake Ontario as well as habitat for both resident and migratory species of waterfowl and other avifauna.

The early 1800s marked the beginning of significant changes to the landscape. British settlement of the area increased due to immigration of loyalists fleeing the American Revolution (Conservation Halton, 2005). Clearing activities reduced the extent of forest cover and, combined with over harvest, led to the extirpation of species such as black bear, wolf, lynx, elk and eastern cougar (Conservation Halton, 2005). The passenger pigeon was an abundant species at this time, favoured as a game bird, but similar stresses led to its gradual extinction. The impacts of land development were also felt in the local water systems. The original outlet for Cootes Paradise drained through the Grindstone Creek river mouth at Carroll's Bay until the Desjardins Canal was constructed. The link between Cootes Paradise and Carroll's Bay was permanently disconnected following the construction of the rail lines during the 1850s.

Increased human settlement in the region and lake level regulation in Lake Ontario further stressed these marshes and the native marsh and species diversity declined. By 1985, only 5.1 hectares of emergent aquatic vegetation remained in the river mouth, a decline from 37.8 hectares since 1934. Carp became the dominant fish species. Since 1990, efforts to restore these marshes and increase the available spawning habitat for northern pike and other fish species have been under way, and include multiple small scale carp barriers. (Bowlby et al., 2009).

Present day natural cover has been drastically reduced in area and extent and so too have many of their functional attributes including the ability to recover from disturbances. The pre-settlement forested landscape was a natural mosaic of interconnected, interacting

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communities which has now been replaced by a matrix of recreational, commercial, residential, infrastructure and urban uses with abundant agriculture in the upstream and headwater regions of the drainage basins. The processes of woodland succession that rely on recruitment of species from the surrounding landscape are now profoundly influenced by habitat fragmentation and the stresses of the intervening anthropogenic matrix.

Ecological Land Classifications located within the Burlington Heights Heritage Lands area include Anthropogenic, Cultural, Forest, Prairie, Aquatic and Wetland Communities. These classifications are based on factors such as bedrock, climate, physiography and corresponding vegetation (Ontario Ministry of Natural Resources, 2007). Of significance, tallgrass prairie has been introduced along York Boulevard to restore and re-establish the highly-disturbed remnant prairie community. Detailed discussion of the Ecological Land Classifications is contained within the Inventory and Issues Report attached as Appendix B (see Section 4.4.1).

As shown in Table 1, approximately 37% of the Burlington Heights land area is made up of forest, prairie and wetland communities. These are the most ecologically sensitive areas and they provide important habitat for many of the plant and animal species within Burlington Heights. The remaining 63% of the land area is made up of anthropogenic and cultural ecological land classification communities. These areas have had a high degree of change as a result of human use and activity. Lands classified as anthropogenic represent the designed landscapes and gardens associated with some of the historical features and also include the roads, parking lots and railways. The cultural communities represent areas with varying stages of meadow and woodland habitat. The majority of the lands in this category consist of the Hamilton and Woodland cemeteries, Dundurn National Historic Site, and the Royal Botanical Garden's Rock Garden.

Table 1: Ecological Land Classification Major Community Groups

ELC Community Series	% Burlington Heights Heritage Lands Area
Anthropogenic	16.0%
Cultural	47.3%
Forest	10.4%
Prairie	0.4%
Wetland	26.5%

Burlington Heights Heritage Lands are located within an Important Bird Area (IBA), (Bird Studies Canada, 2012). The area is a flyway for birds, particularly birds of prey and aerial

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insectivores. The Burlington Heights Heritage Lands also represents important breeding habitat for many reptile species, most of which are Threatened or of Special Concern. The area represents the second largest population (at least 431 individuals in Carroll's Bay) of Northern Map Turtles (Clayton, 2010), and is one of only a few areas in Canada where this turtle is found.

The Woodland Vole, one of four mammal species in this area, is recognized as a Species of Special Concern. The other three species (beaver, muskrat and mink) are common and widespread in Southern Ontario. The waters in, and adjacent to, the Burlington Heights Heritage Lands serve as significant spawning habitat and nursery areas for many fish species. The complete inventory of the plant and animal species found within (or adjacent to) the Burlington Heights Heritage Lands are provided in Appendix B (see Section 4.4).

2.3 Cultural History

Human use of the Burlington Heights Heritage Lands area dates before the arrival of European explorers and settlers. The fertile soil in the area and its location at the head of Lake Ontario would have made the area ideal for aboriginal use. Archaeological reports prepared for work at Dundurn National Historic Site suggest that there are 11 registered aboriginal archaeological sites within two kilometres, many on Burlington Heights, with finds dating from the early, middle and late woodland periods (2,000-500 years ago). Local historians suggest that the Hamilton area was once occupied by a group of Native Peoples that the French, upon contact, called the Neutrals, as they remained neutral between the Iroquois and the Hurons, the two dominant groups in the southern Ontario area. Many Neutral peoples died of disease and disputes after European contact. Much of the area once traveled by the Neutrals was later occupied by Mississaugas of the Ojibwa Nation (now known as Anishinaabe) (Freeman 10, 2006).



Photo provided by D. Galbraith

2.3.1 European Settlement and the War of 1812

The land on which Dundurn National Historic Site stands was transferred from the Crown to Colonel Richard Beasley, a merchant, in 1799. Beasley settled on the site with his wife, and built the first log cabin in the district. During the War of 1812, Beasley was forced to leave his property, and British soldiers constructed stone and earth berms on the west section of the

A Plan for the Burlington Heights Heritage Lands

property in order to look over the bay and defend Hamilton as well as left a cemetery at the northern end. When the war ended, Beasley returned to his property, and in 1832 sold it to John Solomon Cartwright, his cousin and trading partner, who subsequently sold to Allan MacNab.

The early 1800s marked the beginning of significant changes to the landscape. British settlement of the area increased due to immigration of loyalists fleeing the American Revolution (Conservation Halton, 2005). Burlington Heights (now a National Historic Site) was occupied by the British during the War of 1812, as it was an important defensive position with a key vantage point, straddled roads leading to Niagara, Amherstburg and York, and served as a supply depot for defense of the Niagara peninsula and the Navy on Lake Ontario. The site played a role in two separate battles: the assembly point for the successful British attack on American forces in June 1813, at the Battle of Stoney Creek; and the assembly point for the recovery of Fort George and the taking of Fort Niagara in December 1813. After the Americans retreated from Fort George, General John Vincent had two lines of earthworks built across the peninsula, and ordered the construction of gun batteries, magazines, blockhouses, barracks and storehouses. After the War of 1812 ended, the military still considered the site to be defensible, but the buildings were allowed to deteriorate (Parks Canada, 2013).

After the War, settlement in the surrounding communities of Hamilton, Burlington and Dundas continued to increase, bringing new forms of development and change to the Heights, including a temporary cholera treatment centre, the estate of Sir Allan MacNab (Dundurn National Historic Site), cemeteries, the Desjardins Canal and railways. Prior to the 1840s, burial grounds in Hamilton were formed on private land, as there were no formally established municipal burial grounds. Private estates like Dundurn sold plots on their private grounds to family members, or burials were conducted in churchyards (prior to 1830 these were also on private land, as churches other than the state church, the Church of England, were not permitted to own property). The urban growth of Hamilton in the 1840s presented the need for additional burial grounds outside the city so as to not contaminate the city water supply.

The Hamilton Cemetery was the first municipally owned and operated cemetery in Canada and was different than previous cemeteries and burial grounds within the city: the grounds were fenced and graded with roads and pathways leading to “gardens of graves in a picturesque atmosphere”. The Cemetery was an early planned landscape and park setting near the City, with grounds open to the public for viewing. By the mid-1920s, the Hamilton Cemetery totaled 97 acres, and was becoming crowded, resulting in the 1921 opening of nearby Woodland Cemetery.

During the War of 1812, the Woodland Cemetery site had a stockade for defensive purposes. The location, facing Hamilton Harbour, later housed the “Rock Bay Castle” estate of Peter Carroll. The stone building was used in 1870 as a resort hotel, and in the 1900s as a club house. The property was abandoned in 1908 after the interior was destroyed by fire. The City of

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Hamilton purchased the site from the Town of East Flamborough in 1919, and the castle ruins were dismantled, using the rubble to build the road system through the cemetery. The cemetery has several sections with military graves, and features a memorial to those who lost their lives in the 1956 Hungarian uprising (City of Hamilton).

2.3.2 Industry and Civic Beautification

Pierre Desjardins, a clerk in the Dundas area, is credited with the idea to form a canal from Dundas to Burlington Bay. Desjardins hoped that with a canal and access to the Bay, the town could compete with Hamilton to be the main port, reaping economic benefits for the community. The canal was completed in 1837 and was operated by tolls. It operated for twenty years, but faced several challenges, namely that only small vessels could travel the passage through the marsh, limiting the amount that could be exported from Dundas.

A group of businessmen and entrepreneurs, among them Allan MacNab, formed a group in 1834 to obtain a charter for the name and construction of a railway in southwestern Ontario between London and Burlington. First called the London and Gore, the name was changed to the Great Western Railway, and mileage was extended to Windsor and Niagara. MacNab's influence allowed the line to pass through Hamilton (on land fill at the base of his own property at Dundurn), rather than travelling through Brantford as originally intended. The railway was constructed in 1851 and 1854, and in combination with Hamilton's port, attracted several new industries to the city, leading it to become a major industrial hub. In 1852 the Desjardin canal connection to the harbour was relocated to the narrowest point in the centre of Burlington Heights, shortening the length of the canal and facilitating two railing links across the north western and eastern tips of the peninsula. The infilling at the two locations to bridge the former outflow of Cootes Paradise Marsh left a remnant body of water called Long Pond.

The Great Western Railway eventually merged with the Grand Trunk Railway, and in the 1920s, became part of Canadian National Railways (Hamilton Public Library, 2013 C). The acquisition of the Grand Trunk Railway in the 1880s of the Great Western and North Western Railway Companies led a group of Hamiltonians to establish plans for new railroad line between Toronto, Hamilton and Buffalo, incorporated in 1884 as the Toronto, Hamilton and Buffalo Railway (Toronto, Hamilton and Buffalo Railway Historical Society, 2011). The line was desired to prevent the Grand Trunk from having such a strong monopoly in the area. The industrial centre of Hamilton also needed access to the nearby US market through Buffalo. The Toronto, Hamilton and Buffalo Railway amalgamated with the Canadian Pacific Railway in the late 1980s.

Harvey Park is another cultural heritage resource located within the Burlington Heights Heritage Lands. Formerly known as Burlington Heights Park, it is located along York Boulevard next to Dundurn National Historic Site. It was re-named in 1894 honouring Sir John Harvey, a

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soldier in the War of 1812 and the Rebellion of 1837. Presently, Harvey Park contains two cannons used during the War of 1812, a historical plaque commemorating Burlington Races and the centennial of the War of 1812, and a memorial plaque commemorating the lives of the soldiers lost during the war (Hamilton Public Library, 2013).

A provincial plaque by the Ontario Heritage Foundation Ministry of Culture and Communications is located on the east side of York Boulevard on a rise of land overlooking the Bay to commemorate Thomas Baker McQuesten, local lawyer, member of the City of Hamilton's Board of Parks Management and Minister of Highways. McQuesten was integral to the redevelopment of Burlington Heights (particularly the High Level Bridge) during the 1930s and for establishing public parks and garden spaces like Royal Botanical Gardens.

In 1927, Burlington Heights came under the jurisdiction of the Board of Parks Management in Hamilton. The Board was chaired by Thomas Baker McQuesten. The idea for a restoration project and grand entranceway surfaced, and a design competition was held to collect submissions of the redevelopment of the northwest entrance to the City and the bridge. Awards would be given to the top three contestants, and the first prize winner would be awarded the contract for redesigning the area. First place was awarded to Toronto-based Wilson, Bunnell and Borgstrom, an engineering and landscape architectural firm.

The winning plan was streamlined in design, and called for reducing the height of the ridge at the canal. A low level bridge, travelling along the shore of Cootes Paradise would provide access across the Heights during construction of the new bridge, and after completion of the high-level bridge, would act as an alternative route. Borgstrom's plan also proposed constructing an art gallery overlooking Cootes Paradise.

Landscaping for the project began in June 1929, but with the arrival of the depression, the plans needed to be scaled down significantly. John Lyle was hired to produce a new bridge design in 1930. His modified design called for a 60 foot wide bridge (double the size of standard bridge platforms) with colonnades and an obelisk. However the design needed to be further simplified, and the final plans were a bridge 54 feet in width with four 40-foot tapered pylons faced with Queenston limestone, featuring a statue niche and the City crest. Although the Board of Control objected to the cost of the plans and attempted to remove its decorative elements, City council overruled their decision and the construction of the bridge began in 1931 by the Hamilton Bridge Works.

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Perspective drawing for Northwestern Entrance Design Competition 1927 (Provided by the Royal Botanical Gardens Archives)



Plan for the Northwestern Entrance Design Competition 1927 (Provided by the Royal Botanical Gardens Archives)

McQuesten's idea for the area was for a grand gateway and formal ceremonial route linking the cities of Burlington and Hamilton, but the effect of the depression required the scaling back of the recommended improvements. The High Level Bridge remains one of the most visible outcomes of that original vision. In 1988, the bridge was named the Thomas B. McQuesten High Level Bridge in recognition of McQuesten's role in the development of the bridge, and a

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plaque dedicated to McQuesten was unveiled by Princess Margaret at the re-dedication ceremony (Hamilton Public Library, 2013 F).

McQuesten was very influential in the improvement schemes that took place in Hamilton and Burlington Heights in the early 20th century. He was instrumental in the creation of the Queen Elizabeth Way and the beginnings of the southwestern Ontario highway system. He was dedicated to including aesthetic design in highway and bridge engineering. McQuesten served as chairman of the Niagara Parks Commission, and was devoted to the City Beautiful movement, creating public park spaces for the benefit and betterment of society. McQuesten was also instrumental in the formation of the Rock Garden and the beginnings of Royal Botanical Gardens (McQuesten Historical Plaque).

Construction of the Rock Garden was a result of the improvement implementations for the northwest entrance to Hamilton. The Rock Garden, designed by Borgstrom and overseen by Matt Broman, was constructed in an abandoned sand and gravel pit on Burlington Heights. The completed Rock Garden was a two acre site with man-made water circulation system, waterfall and two large pools. It was initially planted with approximately 45,000 perennials, many of which were alpine plants. The Rock Garden became part of Royal Botanical Gardens (already established at the Sunken Gardens), and quickly became a popular attraction for local residents and tourists (Laking, 2006).

2.4 Statement of Significance and Value

The significance of the Burlington Heights Heritage Lands is the result of a very high concentration of natural and cultural heritage features within a small land area. The natural heritage features of the area span thousands of years and include the post glacial landforms that give the area its distinctive rising profile and mammoth and mastodon bone fragments, discovered in the 19th and 20th centuries. The unique ecology of the area provides a habitat for a number of plant and animal species, including a number of species considered to be rare, threatened or of special concern both provincially and federally. The Burlington Heights Heritage Lands are located in an Important Bird Area and represent important breeding habitat for many reptile species, in addition to habitat for Northern Map Turtles, the Woodland Vole and various fish species.

The Burlington Heights Heritage Lands contain a rich concentration of historic resources, including three sites recognized as National Historic Sites of Canada that are of importance to all Canadians (Burlington Heights, Dundurn and Royal Botanical Gardens), five provincial heritage plaques commemorating people, places and events that contribute to provincial heritage (Burlington Races, William Sherring, Sir John Harvey, Dundurn and Thomas Baker McQuesten), and several local commemorations or recognition (The High Level Bridge and

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northwest entrance, Matt Broman, War of 1812 defense lines and earthworks, soldiers from the War of 1812, the death of immigrants and citizens of cholera, United Empire Loyalists and the Around the Bay Road Race, Hamilton Cemetery and Woodland Cemetery).

The wealth of cultural heritage features in the Burlington Heights Heritage Lands also span a considerable length of time, from aboriginal use of the area to 20th century civic beautification projects that have shaped much of the current appearance along York Boulevard. In the last two centuries, the site has been the site of activity for United Empire Loyalist and Euro-Canadian settlement and immigration, British military engagement in the War of 1812, key transportation routes by road, rail and boat, and numerous civic beautification and designed landscape projects.

As noted from the previous descriptions and information contained in the *Inventory and Issues Report*, the significance of the area can be categorized by three main themes:

- Natural heritage,
- Cultural heritage and
- Transportation corridors

While the themes of natural heritage and cultural heritage also encompass resources and several important sub-themes, the overarching themes group the resources in the area and are applicable to management objectives that fit within the Niagara Escarpment Parks and Open Space System (NEPOSS) framework. The theme of transportation characterizes the site as a whole, from historic to current use, and transportation networks within and adjacent to the site have the potential to change in the future. It is crucial to understand the role and thematic importance of transportation in the Burlington Heights Heritage Lands in order to identify management objectives that provide a balanced approach to respecting and improving historic transportation routes.

3.0 Issues and Opportunities

Through the background review and development of the Inventory and Issues report, a number of issues and opportunities were identified:

- Burlington Heights Heritage Lands boundary – A number of minor corrections were made so that the boundary has a more regularized edge, follows the harbour edge, and the edge of Highway 403.
- Site complexity – There are a variety of natural and cultural heritage features that occur within the study area and immediately adjacent. Three types of cultural heritage landscapes are found within the study area which creates unique challenges.
- Site views – There are a number of potentially significant view areas present, given the area's location.
- Organization of land uses – The site does not have easy access, the various site features are located in distinct nodes, and there is not a clear 'destination' that visitors can go to when they first arrive on the site.
- Transportation network – The transportation system provides flexibility for different means of access to the site, and also provides a challenge in ensuring all visitors to the area have a clear identity of Burlington Heights.
- Gateway initiative – The Burlington Heights area has potential to become a gateway to the Cootes to Escarpment EcoPark System, given its location in relation to existing transportation corridors as well as being the first area to be examined in detail as part of the initiative.
- Natural heritage features – The following threats affect the stability and resilience of the remnant natural resources: invasive species, habitat loss, disturbance from human use, and pollution.

In addition to these issues, the feedback received from the community through the public process identified that the history, the natural resources, and the cultural resources of the Burlington Heights Heritage Lands and its value are not well understood by the broader community. An important outcome of the Plan should be to raise the level of knowledge and understanding of the area.

The purpose of this Plan is to enhance the protection of the natural and cultural features and improve sustainable recreation and education opportunities within the Burlington Heights Heritage Lands area. The lands contain a rich and complex array of natural and cultural heritage features as discussed in the preceding sections (for details see the Inventory and Issues Report in Appendix B).

A Plan for the Burlington Heights Heritage Lands

A key challenge that this Plan addresses is how to best balance objectives in instances where there may be competing objectives for an area that contains both natural heritage and cultural heritage resources. The approach of the Plan to identify different land use categories or “zones” with different management actions is one way of addressing this challenge.

A second challenge is how to best balance the need to protect and conserve the area resources and recognize that the Burlington Heights Heritage Lands function as a major regional transportation corridor. The impacts of these major transportation corridors and any impacts resulting from changes or expansions to these corridors is an issue for the partner agencies and the community. Included in this is the challenge of coordinating approved development strategies of each of the three partner agencies, such as Transportation Master Plans, Trail Master Plans, bike lane expansion, municipal zoning, official plans, and Royal Botanical Gardens policies.

A third challenge is that while it is a goal of the Plan to increase the opportunities for visits to the site this must be balanced with the need to protect the areas’ resources – which sometimes requires limiting access. The Plan addresses this challenge by applying different management actions and levels of access for different areas of the site depending on the sensitivity of the resources.

4.0 Plan for the Burlington Heights Heritage Lands

4.1 Vision

The overall vision for the Burlington Heights Heritage Lands is to create a space in which the significant natural and cultural resources of the site are protected, conserved, interpreted/programmed, and appropriately managed. Conservation and management of the resources will be balanced with appropriate future changes to the site, which is an important transportation route.

The desired future state for the Burlington Heights Heritage Lands is an area that has improved linkages between the site resources, to allow increased visitation and recreational opportunities, and improved interpretation and communication of the resources. Over time, future changes in the area will be based on an understanding and respect for the conservation of existing site resources, bolstering interpretation, achieving appropriate accessibility, and management practices that are environmentally, economically and socially sustainable.

Although it is the smallest of the heritage lands areas in the Cootes to Escarpment EcoPark System, Burlington Heights contains a diverse range of natural and cultural environments. This diversity should be maintained and future management actions balanced to minimize impacts of competing needs. The long-term vision recognizes that Burlington Heights is the most urban of the six heritage land areas. Major local and regional transportation routes and infrastructure are located within and adjacent to the Burlington Heights Heritage Lands area. Changes within the surrounding urban areas and within the adjacent transportation corridors should be managed to minimize any impacts on the Burlington Heights Heritage Lands.

4.2 Classification

The Burlington Heights Heritage Lands are most appropriately classified as Historical. The NEPOSS provides six classifications which characterize parks and open space areas within the Niagara Escarpment Plan area. The Historical classification is described in the NEPOSS Manual as *"characterized by the variety and combination of outstanding natural heritage features, cultural heritage features and outstanding landscape"*. This description is consistent with the variety and combination of natural and cultural resources and outstanding landscapes (both natural and designed) within the Burlington Heights Heritage Lands. The area has a unique natural history, and the existing landform and ecological areas provide a habitat for numerous species of plants and animals. Human activity in the Burlington Heights Heritage Lands has resulted in numerous changes to the area that culminate in its current appearance, with transportation networks, monuments to historical events and figures, and the coexistence of designed and naturalized landscapes. Further detail on NEPOSS classifications can be found in Appendices A and C.

4.3 Plan Recommendations

The following sections outline the potential actions that are recommended for consideration for future management of the Burlington Heights Heritage Lands. The recommendations are organized into three categories:

- Recommendations related to the management of land use;
- Recommendations related to transportation and access; and
- Recommendations related to communication and interpretation of natural resources (including terrestrial and wetland habitats) and the cultural resources which include archaeology, built heritage and cultural heritage landscapes.

4.3.1 Management of Land Use

The Niagara Escarpment Planning and Open Space System (NEPOSS) Zone categories have been applied to the partner-owned properties within the Burlington Heights Heritage Lands area as a means of categorizing and defining appropriate management actions for the various areas of the Burlington Heights Heritage Lands. Five of the NEPOSS Zones have been applied: Nature Reserve Zone; Natural Zone; Access Zone; Historical Zone; and Development Zone. The Resource Management Zone has not been applied to any lands within the Burlington Heights Heritage Lands. The location of each of the zones is shown in Figure 4. The designation of a zone acknowledges that a range of activities may take place. For more information on NEPOSS zones, see Appendices A and C.

Plan Recommendations in the Nature Reserve Zone

The Nature Reserve Zone has been applied to the Burlington Heights Heritage Lands in Long Pond, Sunfish Pond, Carroll's Bay Marsh and the shoreline adjacent to Carroll's Bay including the shoreline adjacent to Woodland Cemetery. Lands within the study area not owned by the project partners have also been identified as potential Nature Reserve Zones (shown on Figure 4 as "Lands Owned by Others"). Although there is limited ability to implement the management actions on lands owned by others, the goal should be to work with these landowners to promote land use activities consistent with the Nature Reserve Zone management actions.

The purpose of the Nature Reserve Zone is to ensure the conservation of the natural features and their functions within these areas. The Nature Reserve Zone includes the majority of the wetland and aquatic communities and the majority of the forest community (as per the Ecological Land Classification – see Section 4.4 of Appendix B). The Nature Reserve Zone lands

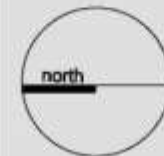


Source: David Conservation Nature - 2013, Pro Nam Subarea - 2012

LEGEND

- Historical Zone
- Natural Zone
- Nature Reserve Zone
- Access Zone
- Development Zone
- Lands Owned by Others

**Cootes to Escarpment EcoPark System:
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**Figure 4
Land Management
(NEPOSS Zones)**

DATE: May 2014

PREPARED BY: CAC

SCALE: NTS

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are home to diverse range of plant and animal species including important turtle wetland and nesting habitat as well as other Species at Risk. Public access to these areas should be limited in order to minimize impacts. Conservation and research related activities are permitted and encouraged to continue. Notwithstanding that considerable knowledge of the plant and animal species exists, a complete inventory should be undertaken for all of the lands within Burlington Heights.

Recommended Actions

- The primary land use activity within the Nature Reserve Zone should be limited to conservation and research related activities, and habitat restoration.
- Control of invasive species should be continued. Table 2 (next page) provides a list of invasive species within the area and a reduction and removal plan should be implemented recognizing that the species listed and their impacts are subject to change over time.
- An inventory of all plant and animal species should be undertaken for the lands within Burlington Heights.
- The unauthorized access and the creation of informal trails should be discouraged. Signs and information are effective tools to inform people of appropriate behavior. Where appropriate, vegetation can be used to discourage inappropriate access through natural areas.
- This Plan recognizes that recreational activities (such as fishing, canoeing, and ice skating) occur on Sunfish Pond and the portion of Carroll's Bay Marsh that is located within the Nature Reserve zone. The impacts of these activities could be minimized by the following measures:
 - Designated fishing areas could be identified with appropriate signage and fishing outside of these areas should be discouraged.
 - Sensitive reproduction seasons should be highlighted (warm water fish and breeding birds) and access to activities should be limited during these periods.
 - Canoe launch points should be identified by appropriate signage.
 - Motorized watercraft should continue to be prohibited from operating in the area that is zoned Nature Reserve.
 - Access to Long Pond should be restricted, with the exception of service trail access.
 - Activities that interfere with flora and fauna growth and reproductions should be discouraged.

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- Physical access to the lands within the Nature Reserve Zone should be limited, but information about the area should be made more accessible. This could include information via interpretive panels on site or displays at existing Royal Botanical Garden facilities or virtual tours accessible through online or digital formats.
- Activities to restore 26 hectares of marsh vegetation in this area through invasive species control and water quality improvements should continue as per the Hamilton Harbour Remedial Action Plan.
- Re-establishment of a prairie habitat also used for turtle nesting should be completed on the west shore of the Carroll's Bay Marsh as per The Royal Botanical Gardens Turtle Site Specific Recovery Plan.
- A restoration plan is recommended for areas where refuse dumping from the hill top into the forest hill slope areas has occurred in the past.

Table 2: List of Invasive Species

Common Name	Scientific Name	Dominant
Common Carp	<i>Cyprinus carpio</i>	x
European Manna Grass	<i>Glyceria maxima</i>	x
Common Buckthorn	<i>Rhamnus carthartica</i>	x
Dog Strangling Vine	<i>Cynanchum rossicum</i>	x
Garlic Mustard	<i>Alliaria petiolata</i>	
Mono Maple	<i>Acer pictum</i> subsp. <i>mono</i>	
Phragmites	<i>Phragmites australis</i>	
Reed Canary Grass	<i>Phalaris arundinacea</i>	
Siberian Elm	<i>Ulmus pumila</i>	x
Smooth Brome Grass	<i>Bromus inermis</i>	x
Tartarian Honeysuckle	<i>Lonicera tatarica</i>	x
Tree of Heaven	<i>Ailanthus altissima</i>	x
White Poplar	<i>Populus alba</i>	

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Plan Recommendations in the Natural Zone

Natural Zones have been applied to the lands along the waterfront that contain the Harbourfront Trail, the southern portion of Carroll's Bay, the area where tallgrass prairie rehabilitation is occurring, and a segment of land north of the Hamilton Cemetery near the High Level Bridge. The Natural Zone includes the remainder of the wetland and forest communities and all of the prairie community. The Natural Zone includes lands that have been previously disturbed or used for other purposes and are now being re-naturalized.

The intent of the management actions for lands in the Natural Zone is to protect the existing natural heritage features and allow for moderate intensity recreational activities.

Recommended Actions

- The lands within the Natural Zone should be maintained as a natural landscape. Landowners are encouraged to actively manage natural succession using maintenance activities such as selective mowing, removal of invasive species and replanting with appropriate species.
- The tall grass prairie ecosystem should be maintained and extended to other areas that are within the Natural Zone where appropriate.
- Trails are permitted within the Natural Zone. Trails should be constructed in an economical manner using durable and easily maintained materials that are sensitive to the environmental features of the area. This may include establishing viewing areas or interpretive devices for people to view the resources of this area, such as the raptor bird nesting grounds to generate interest in the site, but maintaining visitor distance to ensure sustainability of the natural populations.
- A portion of the Royal Botanical Gardens lands that are adjacent to Old Guelph Road are used as a maintenance yard. Over time and when opportunity permits, relocation of the maintenance yard should be considered to allow the lands to naturalize.
- The portion of Carroll's Bay that is within the Natural Zone is often used as sheltering point by sailboats and used by canoeists, kayakers and other recreational users. It is recommended that high-powered motorized watercraft be discouraged from using these waters to the extent possible.

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Plan Recommendations in the Access Zone

The Access Zone has been applied to York Boulevard and to the existing parking lots at the Royal Botanical Gardens Rock Garden, Dundurn National Historic Site, the small parking area adjacent to Sunfish Pond, and the portion of the former Valley Inn Road that is used as a parking area. Uses within the Access Zones are limited to roads and parking lots and associated pedestrian walkways.

Recommended Actions

- Over the long term through detailed design a variety of techniques could be used to enhance the parkway nature of York Boulevard, visually reducing the impact of the driving lanes and improving the pedestrian and cycling environment, and connections over the 403 on-ramp.
- Existing parking areas should be evaluated to determine how well they provide access to the features in the Historical Zones that they support, and whether barrier-free accessibility could be improved.
- Parking areas should be more clearly advertised and parking should be allowed during daytime hours.
- Improvements are being made to the parking lot at Dundurn National Historic Site. As part of these improvements the entrance to the parking lot should be relocated and aligned with the entrance to the Hamilton Cemetery so that vehicle turning movements to and from York Boulevard are simplified
- Existing pull off parking areas could be improved with additional landscaping along York Boulevard. Pedestrian walkways should connect these parking areas to the sidewalk and multi-use trail networks.
- A transit stop is recommended on the York Boulevard northbound lane to provide access to the McQueston Bridge and waterfront trail access stairs.
- Interpretive and way finding signage should be developed at all designated parking areas and integrated into a broader communication strategy for the Burlington Heights Heritage Lands.
- Over time, as parking lots and roads undergo maintenance, Low Impact Development techniques should be considered to reduce environmental impact.

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- Ensure appropriate levels of security are provided including addressing adequate lighting visibility, safe access and traffic calming, and Crime Prevention Through Environmental Design (CPTED) principles.
- A pedestrian sidewalk or multi-use trail on the east side of York Boulevard should be extended for the entire length of York Boulevard.

Plan Recommendations in the Historic Zone

The Historical Zone has been applied to a large portion of the study area including the historical landform of Burlington Heights, the High Level Bridge, the former Valley Inn Road, the Woodland and Hamilton Cemeteries, the Rock Garden and Royal Botanical Gardens lands containing the Memorial Garden, T.B. McQuesten Memorial, Broman Lands, Dundurn National Historic Site and Harvey Park.

The purpose of the Historical Zone is to conserve and provide appropriate interpretation of the cultural heritage features of the lands within the Historical Zone. Although the Historic Zone has been applied to lands that have been considerably altered by human activity, the natural heritage features and functions of these lands should also be conserved and protected.

While there are significant resources within the Historic Zone, not all have been properly inventoried. For example, there are remnant earthworks related to the War of 1812 that have become hidden by vegetation and have not been properly inventoried. A full inventory of cultural heritage resources should be undertaken.

Recommended Actions

- All cultural resources within the Historic Zone should be conserved consistent with Provincial and Federal standards using appropriate techniques and practices.
- A complete inventory of cultural heritage resources should be undertaken.
- The lands within the Historic Zones should be maintained primarily as a designed landscape. Naturalized landscapes are also appropriate in the Historic Zone however, these areas should be clearly identified by mowed buffer strips, signs or other means to ensure it is understood that they are naturalized areas and not areas that are overgrown or neglected. New plantings are recommended to be either site suitable native species of the area or ornamental plantings reflective of the historical theme of Burlington Heights.
- Consider restoration of tallgrass prairie habitat in historical zones where manicured turf is not required.

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- Significant views should be maintained. The City of Hamilton has already designated a number of openings in the naturalized vegetation on the bank where historically a view of the Bay was available. The practice of regularly removing overgrown vegetation at these viewpoints should continue.
- Pedestrian and cycling trails and walkways are permitted on lands within the Historic Zone. Encourage barrier-free accessibility, balanced with need for conserving cultural heritage resources. Pedestrian links and crossing points should be considered for access to sites on both sides of York Boulevard.
- It is not anticipated that new facilities, such as buildings or structures, will be developed in the Historic Zone; however, if new facilities are necessary, they should be only for visitor amenities not currently at the site, small in scale (compared to existing buildings), and contribute to the heritage character of the area.
- Initiatives to communicate heritage resources within the study area should be considered. Resources within the Historic Zones could be better linked with physical accessibility: sites must be easy to get to, easy to stop at, and easy to access.
- Management actions for Historical Zones, like the other zones, must be guided by security principles to ensure the preservation of the cultural heritage resources. These may include appropriate lighting, visibility, increased or managed visitation, and CPTED principles.

Plan Recommendations in the Development Zone

The Development Zone has been applied to the lands owned by Royal Botanical Gardens that are located adjacent to York Boulevard across from the existing Rock Garden parking lot. It is intended that a new visitor centre will be developed at this location. The new visitor centre has the potential to act as a hub for visitors to the Rock Garden and surrounding area of the Burlington Heights Heritage Lands.

Recommended Actions

- While the new visitor centre is intended to add to the Royal Botanical Gardens facilities and support the activities at the Rock Garden, the new visitor centre has the potential to act as a hub for visitors to the broader Burlington Heights Heritage Lands. Consideration of interpretive signage and wayfinding signage related to the Burlington Heights Heritage Lands should be included in the design of the new centre.
- The new visitor centre at the Rock Garden should connect to the pedestrian and cycling network within Burlington Heights

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Infrastructure and Services

Changes to the area for infrastructure and servicing may be required in the future. This may include new infrastructure or upgrades and maintenance to sewers, water mains or other underground infrastructure. All of the lands considered in this Plan are owned by the partner agencies – the City of Hamilton, City of Burlington or Royal Botanical Gardens. The majority of infrastructure, such as water mains, sewers, roads, and trails, is owned by the City of Hamilton or City of Burlington and upgrades are within the control of the partner agencies. In most cases, plans for new infrastructure or upgrades to existing infrastructure would be undertaken through a public process (such as Environmental Assessment). Therefore, the impacts on natural and cultural resources would need to be evaluated and considered as part of any decisions. However, as a general recommendation, the partner agencies should consider the objectives and recommendations of this Plan when undertaking all maintenance, construction, and rehabilitation of infrastructure within the Burlington Heights Heritage Lands areas.

Other types of infrastructure, particularly the transportation infrastructure on adjacent lands such as the Highway 403 and the rail lines, are outside of the scope of this Plan for Burlington Heights and under the control of other agencies. Major expansions or upgrades would occur through a public process. The partner agencies should participate in these processes to ensure that the objectives of the Plan are considered and that any impacts on the Burlington Heights Heritage Lands are minimized.

The following recommended actions should be considered when planning to replace or update existing infrastructure and services, or when planning for new infrastructure and services:

- Planning new infrastructure or infrastructure upgrades on lands owned by the partner agencies (City of Hamilton, City of Burlington, and Royal Botanical Gardens) should consider the direct and indirect impacts on the resources within the Burlington Heights Heritage Lands. Low Impact Design (LID) measures should be considered as part of all infrastructure upgrades.
- The partner agencies should participate in the review processes where new infrastructure, or infrastructure upgrades are planned for lands adjacent to Burlington Heights to ensure the objectives of this Plan are maintained.
- Stormwater management, particularly the management of road run off that may contain chlorides, should be addressed when road and street rehabilitation projects are planned.

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Adjacent Lands

The actions and directions of this Plan are directly applicable to the lands in the study area owned by the partner agencies (City of Burlington, City of Hamilton and Royal Botanical Gardens). However, some of the lands within or adjacent to the Burlington Heights Heritage Lands are owned and/or operated by others such as the Ontario Ministry of Transportation (MTO), Canadian National railways (CN), Canadian Pacific Railways (CPR), and Metrolinx. It is hoped that adjacent lands will be managed in a compatible manner and that these guiding principles may be considered during planning of future work.

The following actions are recommended for the management of adjacent lands:

- Copies of the Plan should be provided to all adjacent landowners
- The Cootes to Escarpment EcoPark System management team should develop a working relationship with the owners of the major transportation corridors (such as MTO, CN, CP and Metrolinx) to encourage them to manage their lands in ways that are consistent with the objectives and actions in the management framework.
- The Cootes to Escarpment EcoPark System management team (and its partner organizations) should participate in processes initiated by adjacent landowners (such as Environmental Assessments for roadway expansions) to ensure that proposed changes on adjacent lands do not negatively impact the Burlington Heights Heritage Lands.

4.3.2 Transportation and Accessibility

Transportation to and within the Burlington Heights Heritage Lands and access to the cultural heritage and natural heritage resources within the lands was identified as a major consideration for the Plan. It was identified that although there are major transportation routes within the lands (i.e. York Boulevard) and adjacent to the lands (i.e. Highway 403) which make it easy to travel through Burlington Heights, it is difficult for motorists to stop within Burlington Heights.

Concern was expressed by community members during the study that York Boulevard and the amount of traffic on York Boulevard is a major impediment to improving Burlington Heights and conserving the natural and cultural heritage resources within it. Many suggested that traffic be reduced or that York Boulevard be limited to pedestrians and cyclists only.

Removing vehicle traffic from York Boulevard is not recommended by this Plan. York Boulevard is an important and necessary part of the City of Hamilton's transportation system. It provides an important connection from Downtown Hamilton to Highway 403 and an important connection between Burlington and Hamilton via Plains Road. This Plan recommends that

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improvements could be made to York Boulevard but it does not encourage the widening of the road to increase vehicle capacity.

York Boulevard is the spine that connects the component parts of the Burlington Heights Heritage Lands. The objective of this Plan is that York Boulevard should remain as an important transportation corridor but should be improved and enhanced so that it provides better access to the various resources, monuments and places of interest within Burlington Heights. Improvements could be made so that York Boulevard recaptures some of the original design intent for it to be a grand boulevard and a ceremonial entrance to the City of Hamilton.

Pedestrian access within Burlington Heights is equally important. The lands are well connected to the major cycling and pedestrian trail systems in Hamilton and Burlington (including connection to the Harbourfront Trail) but the connections within Burlington Heights are disjointed, not well connected and need improvement. Some of the key improvements include providing a complete sidewalk and/or trail along the east side of York Boulevard; and providing safer pedestrian crossings across York Boulevard. Illustrative pedestrian improvements and additional crossing points on York Boulevard are shown on Figure 5.

Wildlife crossings and the ability of wildlife to move through Burlington Heights are important and were considered as part of the study. While wildlife crossings will be an important part of the management plans for other areas within the Cootes to Escarpment EcoPark System, no new wildlife crossings are recommended within Burlington Heights.

The following actions are recommended to maintain and improve transportation and access in the Burlington Heights Heritage Lands.

- York Boulevard should be maintained as a transportation corridor but should be redesigned to be a grand boulevard / parkway linking Hamilton and Burlington through Royal Botanical Gardens. The City of Hamilton should consider a design study for York Boulevard to address design improvements such as traffic calming measures, gateway features, boulevard landscaping, signage and improved safe pedestrian and cycling links and crossing points.
- Additional small pull-off parking areas could be developed along York Boulevard. New and existing parking areas should have enhanced landscape design and be connected to the pedestrian network. Potential design examples are shown in Concept Sketch 1 and Concept Sketch 2 on page 31. The pull off parking areas could be incorporated with pedestrian crossings on York Boulevard (see Concept Sketch 2).
- All cycling and multi-use trails should be designed to City of Hamilton and City of Burlington Trail Standards.

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- Maintain or improve cycling facilities on both sides of York Boulevard. A pedestrian sidewalk or multi-use trail on the east side of York Boulevard should be extended for the entire length of York Boulevard within the Burlington Heights Heritage Lands, with crossing points provided to the Hamilton Cemetery, Memorial Garden, and Old Guelph Road.

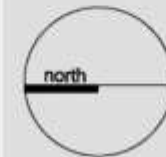


Source: Aerial: Commission of Inquiry - 2010; Top View: Robinson - 2012
 Trail Network - Hamilton Trails Master Plan - Third One, City of Hamilton - Nov. 2007
 Trail Network - Trails, Trails and Tractors, City of Burlington - May 2010

LEGEND

- Burlington Heights Heritage Study Area
- Existing on-street routes
- Existing cycling and pedestrian off-street routes
- ↔ Existing pedestrian crossings
- ↔ Potential pedestrian crossings

**Cootes to Escarpment EcoPark System:
 A Plan for the Burlington Heights Heritage Lands**



**Figure 5
 Pedestrian & Cycling Routes**

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- Where possible, ensure all new pedestrian facilities are consistent with A.O.D.A. standards for accessibility.
- Prioritize physical accessibility (barrier-free access) for existing or proposed trails and interpretive facilities. Provide appropriate signage, displays or virtual devices to communicate the presence and significance of key resources in these areas.
- Valley Inn Road is no longer open to vehicle traffic. It is open for pedestrians and cyclists and functions as part of the trail network for the area. A portion of Valley Inn Road (at the intersection with York Boulevard) is used for parking by visitors to the area. The parking area was established through the Environmental Assessment process that was undertaken when the road was closed. However, there is concern with the parking as presently configured. The City of Hamilton and Royal Botanical Gardens should work together to develop an appropriate plan for this parking area. Options include a property transfer of the closed Valley Inn Road to Royal Botanical Gardens with the road to be incorporated into the visitor trail network and maintained as a multi-user trail by Royal Botanical Gardens.
- A parking strategy for the Burlington Heights Heritage Lands should be considered. The strategy should include consistent signage, coordinated parking regulations (such as the time of day that parking is permitted) and a clear plan that links parking areas to the pedestrian network and points of interest.
- When bridges are upgraded or replaced, consider railing styles that permit views from bridges into the valleys and landscape below.

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A potential solution might look like this. The conceptual images below show improvements to York Boulevard in terms of access, pedestrian crossings, parking pull-offs and design improvements such as median plantings.



Conceptual example of a pedestrian crossing near the Memorial Garden



Conceptual example of a parking area adjacent to Hamilton Cemetery

4.3.3 Communication and Interpretation

Through the process of developing this Plan and consultation with the steering committee, stakeholder advisory committee and the community, challenges with communication and interpretation in the study area were identified. The Burlington Heights Heritage Lands contain a wealth of natural and cultural heritage resources. Some are prominent and well known, while others are not well known and often bypassed due to the nature of the transportation corridor or their less visible or accessible locations. The following actions are recommended to improve interpretation of the valuable resources of the area, and to improve communication regarding management and change in the Burlington Heights Heritage Lands.

Increasing the knowledge and understanding of Burlington Heights and the resources contained within the lands is a form of protection. It is expected that as more members of the community (including elected representatives) become more aware of Burlington Heights, its history and its resources and become more aware of the area's value, the more likely they will be to support Burlington Heights and assist in ensuring that changes on adjacent lands do not negatively impact Burlington Heights and its natural and cultural heritage resources.

Recommended Actions

- A comprehensive interpretive program for the Burlington Heights Heritage Lands should be developed. The interpretive program should be a combination of interpretive signs at appropriate locations in Burlington Heights and information provided at Royal Botanical Gardens, Dundurn National Historic Site and other venues. The interpretive program should be coordinated with the Cootes to Escarpment EcoPark System website as well as the partner organization websites.
- Entrance signs for the Cootes to Escarpment EcoPark System could be installed and located at each end of the York Boulevard transportation corridor with an overall enhanced visual profile accommodating cycling, pedestrians, as well as local traffic.
- Interpretive nodes could be developed at Dundurn parking lot, the planned new visitor centre at the Rock Garden and along the Harbourfront Trail at the Desjardins Canal. Route maps and interpretive information about Burlington Heights Heritage Lands and the Cootes to Escarpment EcoPark System could be provided at these nodes.
- This Plan should be used as an input to infrastructure development plans. The partners should provide copies of the Plan to MTO, Metrolinx, CNR and other agencies and encourage them to adopt management practices for their lands that are consistent with the Plan.

5.0 Implementation and Monitoring

5.1 Implementation

In general, the implementation of this Plan for the Burlington Heights Heritage Lands will be the responsibility of the partner organizations. A table with target timelines for the implementation of the recommended actions is included as Appendix D. The Plan only applies to lands owned by Royal Botanical Gardens, City of Burlington and City of Hamilton, and does not apply to lands owned by other agencies or private citizens. The partner agencies are part of the Cootes to Escarpment EcoPark System Management Committee and have a direct role in implementation of the Plan by continually communicating and coordinating among themselves and with the other Cootes to Escarpment EcoPark System partner organizations the importance of implementing the Plan and recommendations, and including the recommended actions into work plans and capital and operating budgets of the City of Hamilton, the City of Burlington and Royal Botanical Gardens.

Detailed implementation related to specific natural and cultural resources are, in many cases, governed by the applicable legislation and best practices and standards related to those resources. For example, the City of Hamilton has been undertaking the conservation of cultural resources at Dundurn National Historic Site for many years. The conservation of archaeological and built heritage resources has been governed by the relevant provincial legislation, such as the Ontario Heritage Act, and monitored by the City's heritage professionals.

5.2 Monitoring

The Plan will be self-monitoring and it is recommended that the steering committee create mechanisms for communicating with organizations to ensure understanding of the Plan recommendations and the importance of implementing them. A coordinated monitoring program for the status of the natural heritage should be undertaken as part of the development of individual site management plans. An update should be provided every 10 years with regards to capital budgets, work plans, and operating budgets associated with individual management plans were possible.

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Appendix A – How was the Plan developed?

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Appendix A: How was the Plan developed?

Community Consultation

The significance of the Burlington Heights Heritage Lands was articulated by the community in public information sessions held during preparation of the Plan. These meetings were held in June 2013, October 2013, and June 2014. Members of the community provided additional feedback during the preparation of the Inventory and Issues Report.

It is clear through the community consultation that members of the community value the Burlington Heights Heritage Lands and value both the natural and cultural heritage resources contained within those lands. A primary theme that emerged from the consultation was that the natural and cultural resources in the Burlington Heights Heritage Lands should be protected and conserved.

A related theme that also emerged through the community consultation was that while many people noted that they themselves may be aware of Burlington Heights and the history and/or significance of the area, it was their view that despite the presence of a number of high profile sites, such as Dundurn Castle and the Royal Botanical Gardens Rock Garden, most people in the broader community have very little awareness and understanding of the importance of the Burlington Heights Heritage Lands. It was recommended that more should be done to communicate to the community and educate people about Burlington Heights and its history and resources.

Another recurring theme was the desire for improvements to transportation systems and better access to and within the lands. People value the existing trails and recent improvements, but would like to see better connections – particularly better parking and better pedestrian linkages. At the same time, there is concern that increased visitation and use of the lands must be managed to ensure that the natural and cultural heritage resources are appropriately protected.

This Plan is the culmination of the information and input generated from the Inventory and Issues Report, the NEPOSS framework, and input from the steering committee, stakeholder advisory committee and the community. The Plan summarizes the rich history and resources identified during the preparation of the Inventory and Issues report, and is intended to provide direction, objectives and actions to resolve the challenges identified for the study area and to manage the significant resources within the different land use areas.

In order to generate specific and effective management objectives and directions, different land use categories were assigned to the Burlington Heights Heritage lands, based on the classification and zone categories outlined in the Niagara Escarpment Parks and Open Space System (NEPOSS) and the nature of the different resources found there. Although the Burlington Heights Heritage Lands are located outside of the Niagara Escarpment Plan Area,

A Plan for the Burlington Heights Heritage Lands

Appendix A: How was the Plan developed?

the Plan has been prepared in the context of the Niagara Parks and Open Space System using the NEPOSS Manual and provincial standards as a guide.

Principles to Guide Planning

Through the community consultation, a set of guiding principles have been identified. These principles provide the basis for the Plan and apply to both natural heritage and cultural heritage resources within the study area. The guiding principles are drawn from current best practices and help address the issues and opportunities identified in the *Inventory and Issues Report*. The guiding principles are:

- Conservation
 - Study area resources should be preserved whenever possible.
 - Study area resources should be restored whenever possible.
 - Study area resources should be rehabilitated whenever possible, or new and compatible uses should be found whenever possible.
- Accessibility
 - Study area resources should be physically accessible, including barrier free access or design, wherever possible. Increased linkages between suitable sites and resources to allow visitor access should be encouraged.
 - Information about the wealth of natural and historical resources in the study area should be made accessible to the community, including interpretive material and linkages to the various sites and resources.
- Sustainability
 - Existing or proposed activities in the study area should be environmentally sustainable.
 - Existing or proposed activities in the study area should be economically sustainable.
 - Existing or proposed activities in the study area should be socially sustainable, meaning that effort should be made to ensure the area and its resources are continually relevant to present and future generations to ensure interest and use of the site.
- Security
 - Existing or proposed activities should be designed for the security and safety of pedestrians, cyclists and other visitors to the study area. Land use and

A Plan for the Burlington Heights Heritage Lands

Appendix A: How was the Plan developed?

transportation planning should be done in a manner consistent with security concerns.

- Existing or proposed activities should encourage the security of the natural and cultural resources of the study area, to prevent damage from trespassing, theft, vandalism, fire or other threats.

Niagara Escarpment Parks and Open Space System

The Niagara Escarpment Parks and Open Space System (NEPOSS) classification and zoning system is a product of the *Niagara Escarpment Plan* (NEP). The Burlington Heights Heritage lands are located adjacent to the Niagara Escarpment, particularly areas that have been identified as Escarpment Natural Areas, Escarpment Protection Areas, and Open Space Public Areas (Niagara Escarpment Plan Map 2 City of Hamilton, 2012). The *Niagara Escarpment Plan* (NEP) contains several objectives, as follows:

- To protect unique ecologic and historic areas;
- To maintain and enhance the quality and character of natural streams and water supplies;
- To provide adequate opportunities for outdoor recreation;
- To maintain and enhance the open landscape character of the Niagara Escarpment in so far as possible, by such means as compatible farming or forestry and by preserving the natural scenery;
- To ensure that all new development is compatible with the purpose of the Plan;
- To provide for adequate public access to the Niagara Escarpment; and
- To support municipalities within the Niagara Escarpment Plan Area in their exercise of the planning functions conferred upon them by the *Planning Act*.

The Niagara Escarpment Plan contains a set of objectives specifically related to the Niagara Escarpment Parks and Open Space System (NEPOSS). The NEPOSS comprises a series of public open space areas that are owned and managed by a number of conservation authorities and agencies, including Royal Botanical Gardens and local municipalities. The objectives of the Niagara Escarpment Parks and Open Space System are as follows:

- To protect unique ecological areas;
- To provide adequate opportunities for outdoor education and recreation;
- To provide for adequate public access to the Niagara Escarpment;
- To complete a system of major parks and open space through additional land acquisition and park and open space planning;

A Plan for the Burlington Heights Heritage Lands

Appendix A: How was the Plan developed?

- To secure a route for the Bruce Trail;
- To maintain and enhance the natural environment of the Niagara Escarpment;
- 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 UNESCO World Biosphere Reserve Designation through sustainable park planning, ecological management, community involvement environmental monitoring, research and education.

The NEPOSS classification and zoning system is a product of the Niagara Escarpment Plan (NEP). While the Burlington Heights Heritage Lands are not in the escarpment, they are adjacent to it. As such, tools outlined in the NEPOSS Planning Manual will be utilized to guide land management of the area, in combination with other guiding principles based on best practices. The following contains a summary of the NEPOSS methods of classifying and zoning lands and the uses permitted in each area.

NEPOSS Classifications

The NEPOSS provides six classifications which characterize parks and open space areas within the Niagara Escarpment Plan area. These classifications are used to guide the planning process and are listed as follows:

- Nature Reserve
- Natural Environment
- Recreation
- Historical
- Escarpment Access
- Resource Management Area

The Burlington Heights Heritage Lands are most appropriately classified as Historical. The Historical classification is described in the NEPOSS Manual as "*characterized by the variety and combination of outstanding natural heritage features, cultural heritage features and outstanding landscape*". This description is consistent with the variety and combination of natural and cultural resources and outstanding landscapes (both natural and designed) within the Burlington Heights Heritage Lands. The area has a unique natural history, and the existing landform and ecological areas provide a habitat for numerous species of plants and animals.

A Plan for the Burlington Heights Heritage Lands

Appendix A: How was the Plan developed?

Human activity in the Burlington Heights Heritage Lands has resulted in numerous changes to the area that culminate in its current appearance, with transportation networks, monuments to historical events and figures, and the coexistence of designed and naturalized landscapes.

NEPOSS Zones

The use of zoning is outlined in the Niagara Escarpment Plan as “*essential to the orderly planning, development and effective management of a park or open space area*”. Niagara Escarpment Plan zoning is intended to work within the land classification to assign uses to the land in parks and open spaces based on the significant resources, their need for protection, and the potential for recreation or other activities. The NEPOSS Manual provides six zones and each one serves a specific purpose and provides direction on planning and management. The six zones are as follows:

- Nature Reserve Zones
- Natural Zones
- Access Zones
- Historical Zones
- Development Zones
- Resource Management Zones

Through the plan development process five of the NEPOSS Zones have been identified as appropriate for the Burlington Heights Heritage Lands: Nature Reserve, Natural, Access, Historical, and Development.

The following text from the NEPOSS Planning Manual provides a description of each zone identified in the Burlington Heights Heritage Lands, and the types of uses that are considered appropriate with the zone description. A detailed description of each zone provided by the NEPOSS Manual is included in Appendix B.

Nature Reserve Zones

Nature Reserve Zones include significant natural heritage features or areas that require careful management to ensure the long-term protection of their natural features. This type of zone should ensure ecological diversity and provide long-term protection for significant natural heritage features such as the following:

- *Habitat of endangered, threatened or rare species or species of special concern*
- *Wildlife and fish habitat*
- *Hydrological systems (e.g., streams, wetlands, ponds)*

A Plan for the Burlington Heights Heritage Lands

Appendix A: How was the Plan developed?

- Woodlands
- ANSIs

Recommended uses for Nature Reserve Zones include trails, signs, interpretive facilities, temporary research facilities and conservation practices.

Natural Zones

Natural Zones include aesthetic landscape in which a minimum of development is recommended to support low-to-moderate intensity recreational activities. This type of zone includes natural landscapes and high-quality natural settings. Permitted uses in Natural Zones include low-to-moderate intensity recreational activities, such as trails, signs and minimal interpretive facilities.

Access Zones

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 and Historical zones. Recommended uses in Access Zones include minimal facilities to support the activities in Nature Reserve, Natural or Historical Zones, including roads, signs, trailheads and parking lots.

Historical Zones

Historical Zones include significant archaeological or cultural features or areas that require management that will ensure the long-term protection of significant features. Recommended uses in Historical Zones include activities aimed at protecting or interpreting the historical features of the zone, including interpretive or educational signage, research and management facilities, trails, or restoration/rehabilitation of historic resources.

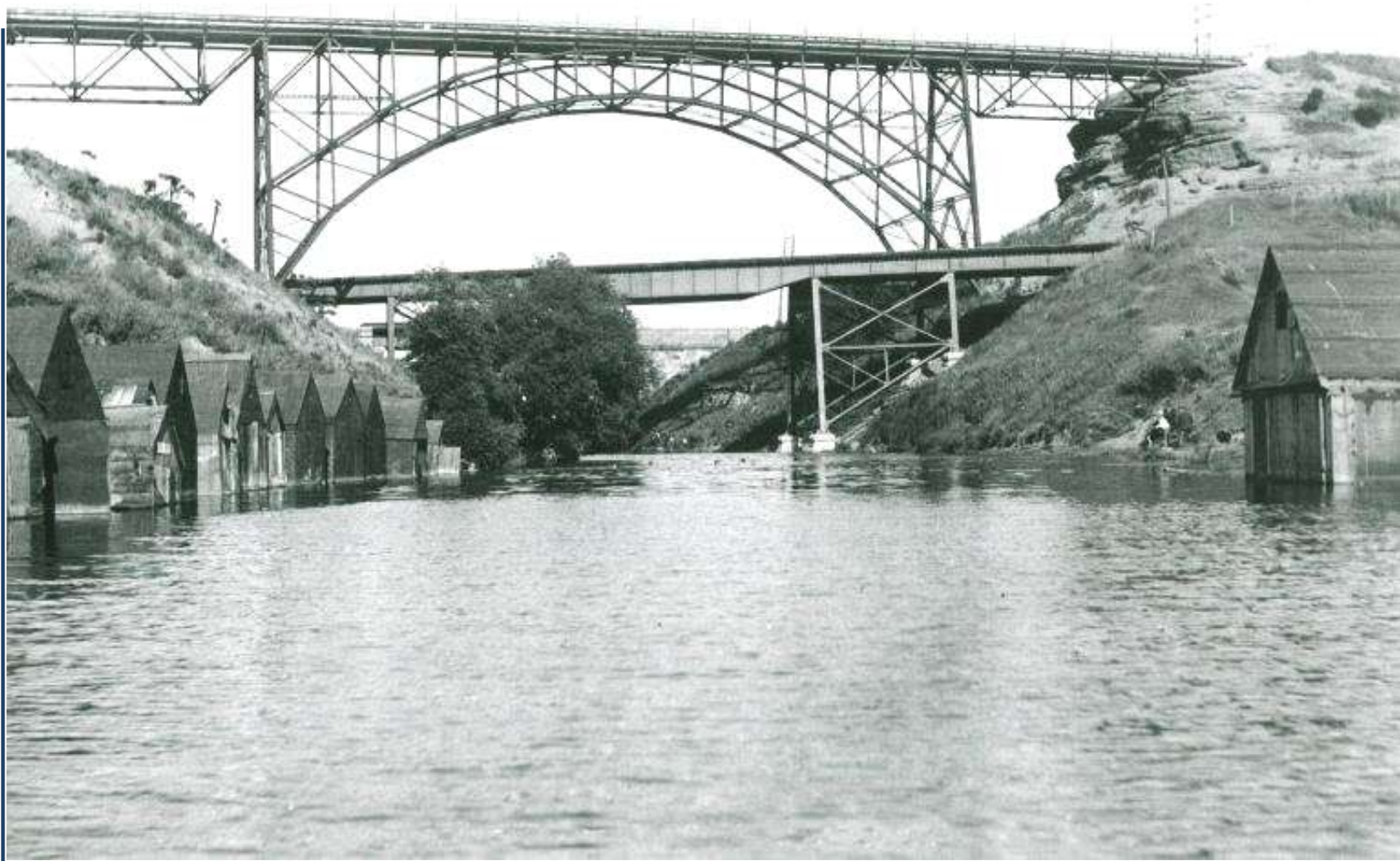
Development Zones

Development Zones provide the main access to the park or open space, and facilities and services to support the recreational activities available. Recommended uses include visitor and park facilities, roads and parking lots, beaches, picnic areas, campgrounds and interpretive, educational, research and maintenance facilities.



A Plan for the Burlington Heights Heritage Lands

Appendix B – Inventory and Issues Report



Inventory and Issues Report FINAL

Burlington Heights
Heritage Lands Management Plan

October 2013

File 12127A



Burlington Heights
Heritage Lands Management Plan

Inventory and Issues Report
FINAL

October 2013

Prepared by:

MHBC

In association with

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

Between 2007 and 2009, a group of public agencies and organizations (including Royal Botanical Gardens, Hamilton Conservation Authority, Conservation Halton, City of Hamilton, City of Burlington, Region of Halton, 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/Hamilton Harbour. Based on extensive background research and public and stakeholder consultation, the *Cootes to Escarpment Park System Conservation and Land Management Strategy* (also called the Phase II Report) articulates the vision for a new park system in this area. The Phase II report divides the Cootes to Escarpment Park System into six core natural areas called Heritage Lands, which reflect the natural and cultural components of their respective areas: (see Figure 1):

- Cootes Paradise Heritage Lands;
- Borers-Rock Chapel Heritage Lands;
- Clappison-Grindstone Heritage Lands;
- Waterdown-Sassafras Woods Heritage Lands;
- Lower Grindstone Heritage Lands;
- Burlington Heights Heritage Lands.

One of the actions recommended in the Phase II report is the preparation of management plans for each of the Heritage Lands areas. The purpose of the management plans is to protect and conserve the valuable natural and cultural heritage resources located within the Heritage Lands areas, and guide future development and management efforts. The management plans created for the Burlington Heights Heritage Lands and other areas within the proposed Cootes to Escarpment Ecopark System will provide a means of continually preserving and enhancing the areas through a collaborative approach supported by stakeholders and community members. This will achieve the vision of the Cootes to Escarpment Ecopark System for the area 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”.

The first area selected for the preparation of a management plan is the Burlington Heights Heritage Lands. The Burlington Heights Heritage Lands are a unique environment with many natural and cultural heritage attributes, which are to be conserved and managed through a comprehensive plan. Natural resources include the Hamilton Bar geographic feature, part of the Cootes Paradise and Grindstone Creek Escarpment Valley Environmentally Sensitive Areas, and their restoration potential as a rare tallgrass prairie habitat. Cultural resources include the association with the site as an aboriginal transportation trail, the association with military history during early European settlement of the area,



the 20th Century influence of Thomas Blake McQuesten, Dundurn National Historic Site, High Level Bridge, and the Rock Garden, Memorial Garden and Laking Garden areas of the Royal Botanical Gardens.

1.2 SCOPE OF WORK

The goal of this project is to develop a single, coherent management plan for properties owned by the City of Burlington, City of Hamilton and Royal Botanical Gardens within the Burlington Heights Heritage Lands area as identified in Figure 1. The Management Plan will enhance protection of important natural and cultural features, improve sustainable recreation and education opportunities, and serve as a pilot for cross-jurisdictional management planning in the other five Heritage Lands areas. The Management Plan will meet the requirements of all affected parties and be supported by community members and stakeholders.

The Management Plan for the Burlington Heights area will be balanced to equally address all resources, their significance and values, and their unique needs for protection. Within the Burlington Heights Heritage Lands, there are areas of natural resources and areas of cultural heritage resources, whose boundaries may overlap. It is important that the Management Plan address these boundaries, and provide a balanced approach to their protection throughout the management and use of the land.

The Management Plan will address the social, economic, and natural environment heritage of the site. Although the Burlington Heights Heritage Area is outside the Niagara Escarpment Plan Area, the Management Plan is being prepared in the context of the Niagara Escarpment Parks and Open Space System (NEPOSS) Planning Manual, using the NEPOSS manual and provincial standards as a guide.

The Management Plan will be based on a resource inventory of the natural and cultural heritage, planned and current infrastructure, and planned and current land uses for the area. Human activity on the site has co-existed with the environment, and the management plan will ensure this co-existence continues into the future. Throughout the project, research and fieldwork will be undertaken to refine the boundary of the planning area and provide information to suggest use, access and management of the planning area. The plan will identify potential issues, risks and challenges faced by the site.

Related to the NEPOSS management system, the process of creating the Management Plan will identify land classifications and zones, and include management and monitoring policies and development or infrastructure plans. With input from the community and stakeholders, the classification zones, management policies and development / infrastructure plan will be finalized.

1.3 PROJECT MILESTONES

The Management Plan for the Burlington Heights Heritage Lands builds upon the work completed to date on the Cootes to Escarpment Park System project. This study contains a number of important

steps, and extensive community engagement and consultation with the project partners at various stages throughout the work plan. The major components of the project are:

1. Prepare Project Charter (complete)

The Project Charter was undertaken as part of the project initiation phase, and was formulated based on discussions with and feedback from the Steering Committee. The Project Charter introduces the study area, outlines the goals and objectives for the project, provides an overview of the project scope, and introduces the planning team.

2. Prepare a Resource Inventory and Issues Report (May-June 2013)

The Resources Inventory and Issues Report provides an inventory of existing natural heritage and cultural heritage resources pertaining to the site, based on fieldwork and desktop research. The Report will be presented at a public meeting for comment.

3. Prepare draft Land Classifications and Zones (October 2013)

Following the finalization of the Resource Inventory and Issues Report, the project team will prepare a draft land classification (guided by the NEPOSS Planning Manual). This stage will include the preparation of management policies and development and infrastructure planning based on the zones. These classification zones and policies will be presented to the community and stakeholders for comment and feedback.

4. Finalize Land Classifications and Zones (December 2013)

Based on the input received from the community and stakeholders regarding the draft Land Classifications and Zones, the land classifications and zones will be finalized. This phase will ensure the appropriate fit between the desired uses and the significance and sensitivity of the resources on the site. Boundaries for each zone, as well as a description of anticipated uses and activities will be prepared during this phase.

5. Prepare draft Management Plan (December 2013)

Following the finalization of the Land Classifications and Zones, a draft Management Plan will be prepared and released for comment.

6. Public Meeting to Present Draft Management Plan (January 2014)

Public consultation will be held to get stakeholder and community feedback on the draft Management Plan.

7. Finalize Management Plan (March 2014)

This stage involves the finalization of the Management Plan and implementation strategies, and the presentation of the document to the community.

Throughout the project, consultation with the community and the various stakeholder groups will be important to help shape the final Management Plan. Consultation will also help ensure that the final report meets the needs of the community and the stakeholder groups, and provides guidance to aid in the management of this important natural area in the future.

1.4 GENERAL OVERVIEW OF BURLINGTON HEIGHTS

As noted above, the Burlington Heights Heritage Lands is a unique area containing a variety of natural heritage and outstanding cultural heritage features. The concentration of significant cultural heritage resources at the site is extremely high, and marks Burlington Heights as one of the richest cultural heritage sites in Ontario. The Burlington Heights Heritage Lands area falls within the jurisdiction of multiple organizations that have an interest in the protection of the area's resources. These include lands owned by: City of Burlington, City of Hamilton, Royal Botanical Gardens, commercial enterprises, private residents, CN and CP railways, Ministry of Transportation, and Department of National Defence Military Graves.

The planning area includes open space, waterfront property, the Hamilton Bar geologic feature, a section of York Boulevard, Woodland Cemetery, Hamilton Cemetery, Grindstone Creek wetland and trail system, Dundurn National Historic Site, Burlington Heights National Historic Site, High Level Bridge, the entrance to the Desjardins Canal and the Rock Garden and Memorial Garden areas of Royal Botanical Gardens, as well as numerous interpretive plaques and markers commemorating historical people and events associated with Burlington Heights.

1.5 ENVIRONMENTAL OVERVIEW OF BURLINGTON HEIGHTS

Burlington Heights study area, located at the west end of Lake Ontario, between Cootes Paradise and Hamilton Harbour, is a unique ecosystem. It has a relatively warm climate due to the moderating effect of Lake Ontario and its position below the Niagara Escarpment. Many species are unique to this area of Southern Ontario, but are common further south. Spencer Creek and Grindstone Creek watersheds drain into Cootes Paradise and Hamilton Harbour at Carroll's Bay, respectively.

The ecology of the Burlington Heights Heritage Lands has changed quite dramatically due to settlement in the area. Clearing of forest cover, land development and subsequent impacts on local water systems, as well as the construction of Desjardins Canal have stressed the habitat and ecosystems.

The Ecological Land Classification of the Management Plan area indicates that approximately 15% of land use is Anthropogenic (landscaped areas, roads, railways, parking lots), approximately 47% is Cultural (Meadow, Savannah, Thicket and Woodland), approximately 10% is Forest (mostly Deciduous, some Coniferous), less than 1% is Prairie (Tallgrass Prairie), and approximately 27% is Wetland (Deciduous Swamp, Meadow Marsh, Mixed Shallow Aquatic, Open Aquatic).

Many of the plant and animal species found in the Burlington Heights Heritage Lands have been identified as Endangered, Threatened, or Species of Special Concern, both Provincially and Federally. Twenty-nine species of plants that are found here are ranked as Rare, Very Rare or Extremely Rare by the Natural Heritage Information Centre (NHIC) with six identified as Endangered, Threatened or of Special Concern both Provincially and Federally. Burlington Heights Heritage Lands are an important area for breeding birds, migratory birds and wintering ducks. Eight bird species were identified as Endangered, Threatened or of Special Concern both Provincially and Federally. Four species of mammals have been identified in Burlington Heights, with one of these species recognized as of Special Concern Provincially and Federally. Burlington Heights hosts several species of reptiles, all of which are recognized as Endangered, Threatened or of Special Concern. Fifteen of the fish species found in Burlington Heights are ranked as Rare, Very Rare or Extremely Rare, with seven identified as Endangered, Threatened or of Special Concern Provincially and Federally.

1.6 HISTORICAL OVERVIEW OF BURLINGTON HEIGHTS

This section provides a general overview of human activity at Burlington Heights, from aboriginal use of the site to the present day. Detailed histories of the individual cultural heritage resources, which include descriptions of key people and events can be found in Section 3.0.

Human use of the Burlington Heights area dates before the arrival of European explorers and settlers. The fertile soil in the area and its location at the head of Lake Ontario would have made the area ideal for aboriginal use. Archaeological reports prepared for work at Dundurn National Historic Site suggest that there are 11 registered aboriginal archeological sites within two kilometres, many on Burlington Heights, with finds dating from the early, middle and late woodland periods (2000-500 years ago). Local historians suggest that the Hamilton area was once occupied by a group of Native Peoples that the French, upon contact, called the Neutrals, as they remained neutral between the Iroquois and the Hurons, the two dominant groups in the southern Ontario area. Many Neutral peoples died of disease and disputes after European contact, while many more are thought to have been killed in mid-17th century attacks by the Iroquois, which legend tells may have occurred at Burlington Heights. Much of the area once traveled by the Neutrals was later occupied by Mississaugas of the Ojibwa Nation (Freeman 10, 2006).

By the mid-18th century, control of what is now known as Ontario had passed from the French to the English. A number of the early settlers in the Hamilton/Burlington area were supporters of the British cause, and were United Empire Loyalists fleeing from the American Revolution. The first settlers to the Burlington Heights area began to arrive in the late 18th century. By the 1790s, United Empire Loyalist Richard Beasley acquired 200 acres at Burlington Heights at the south shore and built the area's first log dwelling (Freeman, 14-15, 2006). Despite Beasley's construction of a dwelling and outbuildings, ownership of the lot was disputed by the Lotteridge family, which was not settled until 1798 (Fraser, 2013). In 1796, Governor John Graves Simcoe and his wife Lady Elizabeth Simcoe passed through the Beasley property and Burlington Heights, providing one of the earliest descriptions and visual

depictions of the area, recorded by Lady Simcoe by painting and in her diary. She describes their visit to the area as follows:

The river and bay were full of canoes; the Indians were fishing; we bought some fine salmon off them. When we had near crossed the bay [Richard] Beasley's house became a very pretty object. We landed at it and walked up the hill from whence is a beautiful view the lake, with wooded points breaking the line of shore and Flamborough in the background. The hill is quite like a park with large oak trees dispersed but no underwood...further west of this terrace we saw Coote's Paradise, so called from a Captain Coote, who spent a great deal of time shooting ducks in this marshy tract...it abounds with wild fowl and tortoises...(Robertson, 1911).

From the earliest accounts, it is clear that Burlington Heights were greatly used for transportation and hunting by both aboriginal groups and early settlers, and contained diverse wildlife and scenic views.

Governor Simcoe ordered the surveying of the Townships in what would become the counties of Ontario. These surveys transformed the un-cleared land into a grid of transportation networks (sideroads and concession roads) and agricultural lots. Barton Township, located on the south shore of Burlington Bay was surveyed by Augustus Jones in 1791. Flamborough Township was surveyed in 1792 (it was divided into East and West Flamborough Townships in 1854). Settlement in the new townships increased moderately, with the arrival of more settlers and the establishment of early mills, trades and businesses. York Road, linking the emerging settlement of Hamilton and other communities on the south shore of Lake Ontario to York (Toronto) travelled across Burlington Heights. The road, like others in the early years of settlements, was likely little more than a cleared trail, and only much later became widened, gravelled or macadamized and finally paved.

By 1812, use of Burlington Heights became pivotal during the War for British troops to set up military barracks on the vantage point and have access to Lake Ontario. The Heights also served as a rallying point for the Battle of Stoney Creek in June 1813. After the war, settlement in the surrounding communities of Hamilton, Burlington and Dundas continued to increase, bringing new forms of development and change to the Heights, including a temporary cholera treatment centre, the estate of Dundurn National Historic Site, cemeteries, the Desjardins Canal and railways.

By the 20th century Hamilton had become a significant industrial city, and Burlington Heights its northwestern gateway. The first half of this decade marked several changes to the Heights including a bird/nature sanctuary, the removal of a boathouse community of squatters and local workers, a grand landscape plan, the beginnings of Royal Botanical Gardens and public park spaces, and improved and increased transportation networks for the increase of motor vehicle traffic.

The multitude of resources within the boundary outlined for the Burlington Heights Heritage Lands study area blend together physically and in their shared histories. The site has been used as an important transportation route from the pre-contact era to present-day. The modifications to the site by human activity are evident in the landscape in the form of earthworks, canals, roads, railways, bridges, designed landscapes, buildings and burial grounds (see Section 3.0). Important people

influential in the creation of the province and the nation and events at the site have been commemorated with several plaques and markers at the site, discussed in section 3.2.

Some resources extend outside the study area boundary (the former location of the boathouse community, Highway 403), but shall be included in the discussion because of their interconnectedness to other resources within the area. Section 3.0 contains a description of the cultural heritage resources in the area.

2.0 PLANNING BACKGROUND

2.1 LAND USES

The Burlington Heights Heritage Lands area contains a variety of land uses, although the vast majority of the area is utilized for recreation / open space purposes. Current uses of the lands include passive recreational activities within the existing parks and open space system, attendance at National Historic Sites and Royal Botanical Gardens, and use of the cemeteries. The area is also within and abutting an important transportation corridor linking Hamilton to urban areas to the east along Lake Ontario, and has been the focus of past rail and road construction projects. Uses adjacent to the area include additional lands of Royal Botanical Gardens, cemeteries, residential properties, commercial properties, trail systems, and transportation networks. Figure 2 (following) includes an aerial photo of the subject area, depicting the various trails, roads, and corridors within the study area and surrounding lands.

The City of Hamilton has established detailed land use designations for the study area as part of the Official Plan review process, which was recently completed. These designations not only provide guidance regarding permitted uses, but also direct future development within the study area. Planning policies regarding current and future land uses are reviewed in the following section.

2.2 CURRENT POLICY FRAMEWORK

The Burlington Heights area is governed by a number of inter-related planning documents, including provincial plans, the Official Plans of the City of Burlington and City of Hamilton, and other local and provincial documents. The most relevant documents are reviewed in this section, in order to provide a current land use planning framework upon which to base future recommendations.

Growth Plan

The Growth Plan for the Greater Golden Horseshoe was approved by the Province in June 2006, and provides a long-term land use planning strategy related to population growth and infrastructure within the Greater Golden Horseshoe (which includes the Burlington Heights area). The Growth Plan has identified the majority of the subject lands as 'Built-Up Area – Conceptual', which means that it is part of the urban area of Hamilton, and there are policies which direct how and at what density new development is expected to occur. Small portions of the study are also identified as Existing Major Highways, Existing Rail Lines, and Greater Golden Horseshoe Growth Plan Area. Schedule 5 of the Growth Plan has also conceptually identified 'Improved Higher Order Transit' in the vicinity of the subject lands, which reflects the desire to ensure that there is a strong transportation connection to other areas of the Greater Golden Horseshoe.

Greenbelt Plan

The Greenbelt Plan was released by the Province in February 2005, and applies to a large tract of land that includes the Niagara Escarpment, Oak Ridges Moraine, and nearby areas located generally outside



of settlement areas. The Burlington Heights area is within the built-up area of the City of Hamilton, and the Greenbelt Plan does not apply.

Niagara Escarpment Plan

The Niagara Escarpment Plan was originally approved by the Province in 1985, and has been subsequently updated. The Burlington Heights Heritage Lands are not within the Niagara Escarpment Plan Area. However, given the overall project goal and the location in close proximity to the Niagara Escarpment, the Niagara Escarpment Parks and Open Space System (NEPOSS) evaluation system will be utilized during the second phase of this study.

Parkway Belt West Plan

The Parkway Belt West Plan was approved by the Province in 1978, and formed the basis upon which subsequent land use plans were built. The Burlington Heights lands are identified as part of the 'Escarpment Link' area, which includes portions of Hamilton and Burlington. The lands are further identified as 'General Complementary Use Area' and 'Public Open Space and Buffer Area', which recognizes that there are lands used for both public and private uses within the area, as well as the generally open space / recreational character of a portion of the study area. Various Utility, Road, and Inter-urban Transit designations also traverse portions of the subject lands, highlighting the importance of this area as a transportation and utility corridor as well.

Metrolinx: The Big Move

Metrolinx is an agency of the Province of Ontario (formerly Greater Toronto Transportation Authority - GTTA), and was created in 2006. The agency was created to improve and further develop and integrated transportation system across the GTA and Hamilton areas.

In 2008, Metrolinx released their long-term regional transportation plan, entitled 'The Big Move'. This document provides long-term direction related to investments in transportation and public transit throughout the GTA and Hamilton region. A review of the plans for 15-year, and 25-year timeframes revealed that there are plans to strengthen (which may involve widening) existing transportation corridors (e.g. rail lines) that traverse the study area but there do not appear to be plans to create new transportation corridors through the study area.

Niagara to GTA Corridor Planning Study and Environmental Assessment

The Provincial Ministry of Transportation (MTO) began an Environmental Assessment study in 2007 that is focused on the efficient movement of people and goods from the Niagara area to the Greater Toronto Area. A Final Transportation Development Strategy was released in September 2013 for public comment and review. This document details the recommended strategy for future transportation needs within this high growth area of Ontario.

The strategy recommends a number of future highway improvements in the Hamilton-Niagara area, including some areas for future study to consider the establishment of new transportation corridors.

Related to the Burlington Heights Heritage Lands area, there are no improvements recommended to Highway 403 or Highway 6. Nearby, additional lanes are recommended along the Burlington Skyway, and on Highway 403 where there are presently two lanes west of the study area.

MTO Southern Highways Program

Each year, the MTO publishes a report outlining a 5-year investment program in Provincial Highways within Southern Ontario. The most recent report (published in November 2012) covers the period from 2012-2016. The document is broken up into a number of areas: expansion projects; rehabilitation projects; projects beyond 2016; and completed projects from the previous year.

A review of this document indicates that there are no expansion projects indicated for the area of Burlington Heights during the period of 2012-2016. Related to rehabilitation projects, there is resurfacing identified for Highway 403 abutting the Burlington Heights study area, as well as bridge rehabilitation. There are no longer-term projects identified in the vicinity of Burlington Heights.

City of Hamilton Official Plan

The City of Hamilton adopted a new Official Plan for the urban areas of the municipality in July 2009. This Official Plan was later approved by the Province in March 2011. The Plan was subsequently appealed to the Ontario Municipal Board (OMB), but is relevant here in that it provides future direction for land use planning within the study area.

As noted above, the vast majority of the Burlington Heights study area is proposed to be designated as Open Space (as shown on Figure 3). The other land use designations include "Institutional" (applied to the Dundurn National Historic Site lands) and "Utility" (applied to the lands associated with the railway corridor). The Open Space designation permits a range of recreational uses, such as: active and passive parks; recreation / community centres; historic sites; pathways and trails; marinas; wildlife management; and cemeteries.

A small portion of the Burlington Heights study area is within the West Harbour – Setting Sail secondary plan area, and is part of separate appeals. Designations proposed for this area include further Open Space areas, Institutional, and Utility designations. These are reviewed in more detail below.

The Official Plan designations are reflective of the current uses of the subject lands, and do not suggest significant future plans for large-scale development.

City of Hamilton West Harbour Secondary Plan

As a component of the City of Hamilton process, a secondary plan was undertaken for a portion of the Burlington Heights study area. This plan is known as the West Harbour Secondary Plan, and the recommended designations were incorporated into the approved City of Hamilton Official Plan. This





secondary plan is currently part of a separate OMB appeal and is therefore not yet in effect, but the designations are relevant to consider as they provide direction for future land uses.

As noted on the Figure 4, the secondary plan area applies to the eastern portion of the Burlington Heights area. The rail yard areas are designated as Utility, which permits utility corridors, works yards, transportation yards and rail yards. The area surrounding Dundurn National Historic Site is proposed to be designated as Institutional and also identified as a Heritage Site. The Institutional designation permits uses such as hospitals, long-term care facilities, day nurseries, schools, libraries, museums, places of worship, and social services. Open Space areas are shown along the shoreline of Hamilton Harbour, and also along York Boulevard.

The planned designations as part of the West Harbour Secondary Plan area demonstrate that the Burlington Heights area is planned to continue to be utilized much as it is at present, with no substantive changes in the future.

City of Hamilton Recreational Trails Master Plan

The City of Hamilton completed a Recreational Trails Master Plan in 2007, which identified existing and future trail connections within the municipality. This document is meant to guide future investment and development of the trails system within Hamilton.

Existing trails are identified along York Boulevard (west harbour) and along the Hamilton Harbour shoreline. Future trails are identified in the east harbour area, and through Woodland Cemetery. The east harbour area is also identified as an area for further study. Future projects are identified related to additional trail links (1-3, 1-4, 1-5), as well as a new on-street trail along York Boulevard (1-12). The current and future trail development plans appear to be compatible with the predominantly open space character of the study area from a land use planning perspective.



Trails within the study area, as well as areas identified for future trail improvement projects.

City of Burlington Cycling Master Plan

The City of Burlington completed a Cycling Master Plan in 2009, with the purpose to guide the expansion of the City's network of off-road multi-use trails and on-road bike lanes. Although primarily applicable outside the study area, this document is relevant in that trail development immediately adjacent to the Burlington Heights area is applicable to trail use through the study area.

A review of the recommendations indicates that existing bike lanes on York Boulevard / Plains Road are proposed to be maintained in the future. In addition, bicycle priority is to be given on Spring Garden Road, and a future multi-use trail will link Spring Garden Road to the trail system for Burlington Heights.

City of Hamilton Strathcona Transportation Master Plan

The City of Hamilton has been working through a Transportation Master Plan exercise to identify transportation needs and required improvements for the Strathcona Neighbourhood. The Strathcona Neighbourhood is located adjacent to the southern end of the Burlington Heights Heritage Lands area. The Master Plan process has recommended a number of changes and improvements to the roads in the area, such as the widening of sidewalks and boulevards, and adding parking in some areas. The road section most pertinent to the Burlington Heights Heritage Lands area is York Boulevard, where the preferred option is to remove one lane of traffic in each direction and add bike lanes with a separation from traffic lanes. The completed report was placed on public review starting October 18th, and following the 30-day review period the various improvements will proceed according to budget considerations.

2.3 FUTURE PLANNED USES

Based on the plans reviewed in Section 2.2, there is limited potential for large-scale land use plans to present further challenges within the study area. Highway corridors and rail corridors are well-established, and any future plans appear to take place within the presently-defined corridors. There is potential for additional trail development. It will be important for the Management Plan to define what types of changes would be acceptable and appropriate within the Burlington Heights Heritage Lands area, in order to provide guidance to future land use planning initiatives.

2.4 RECREATION AND TOURISM WITHIN THE STUDY AREA

As a major transportation route between Burlington and Hamilton, large numbers of people cross the site daily. However there are three key reasons that people may visit the site rather than just crossing it: passive recreation, tourism, and research / education.

There are different types of visitors that come to the Burlington Heights area. The first group are local visitors from the City of Hamilton, City of Burlington and nearby area that use the site for passive recreational activities such as trail walking, dog walking and visiting parks. The Burlington Heights area is a popular spot for Hamilton and Burlington residents to visit and make use of the trails and open space system. As outlined above, a large portion of the study area is utilized for open space, and there are trails and parks throughout the area. Royal Botanical Gardens feature garden areas are within the Burlington Heights area and add to the area's attractiveness and create an additional tourism draw. It is expected that as the area continues to develop for open space / recreation uses, the number of visitors

to the area will continue to be high. This creates a positive benefit in that people are making use of the area, but care must be taken so that future management respects the area's natural and cultural heritage resources.

The second group of visitors come to the Burlington Heights area for programmed visits at Dundurn National Historic site or Royal Botanical Gardens. This second group can be described as Cultural Tourists, those with an interest in arts, history and culture. Current research suggests that cultural tourists are characteristically from a well educated demographic, and tend to spend more time and more money when visiting cultural tourism related sites.

A third group may visit sites at Burlington Heights, particularly the Rock Gardens and Memorial Garden areas of Royal Botanical Gardens, for research or education purposes. As the only Royal Botanical Garden in North America, and one of only 12 Royal Botanical Garden sites in the world, it attracts a broad community of researchers, gardeners, horticulturists, botanists and others who have interest the site.

The Management Plan will need to cater to all three groups, to ensure that the values of each visitor community are addressed. The Management Plan must balance the needs of each visitor group in order to conserve the individual resources of the site that the visitor groups are interested in, as well as balance the needs and values of the project stakeholders. The opportunities and challenges to the tourism component of the Burlington Heights Management Plan are discussed in section 5.0.

3.0 CULTURAL HERITAGE

This section of the report comprises the inventory of cultural heritage resources located within the Burlington Heights Heritage Lands study area (Figure 5). The area contains a rich concentration of historic resources, including three sites recognized as National Historic Sites of Canada that are of importance to all Canadians (Burlington Heights, Dundurn and Royal Botanical Gardens), five provincial heritage plaques commemorating people, places and events that contribute to provincial heritage (Burlington Races, William Sherring, Sir John Harvey, Dundurn and Thomas Baker McQuesten), and several local commemorations or recognition (The High Level Bridge and northwest entrance, Matt Broman, War of 1812 defense lines and earthworks, soldiers from the war of 1812, the death of immigrants and citizens of cholera, United Empire Loyalists and the Around the Bay Road Race, Hamilton Cemetery and Woodland Cemetery). The resources in the area are attributed to a number of themes including early settlement of the area, the War of 1812, the City Beautiful Movement and the vision of Hamilton as a great and prosperous city.

There are several resources and themes in the study area that are not marked as a historic site or commemorated with public interpretive material but are equally integral to the area's history (Figure 6). These include use of the site by first nations groups and the use of the site as a transportation route (historically and currently). The City of Hamilton Archaeology Management Plan identifies the Burlington Heights area as one of high potential for archaeological resources, due to the concentration of human activity in the region including aboriginal travel and camping at the site as well as Euro-Canadian activity. Archaeological studies at Dundurn National Historic Site and the general Burlington Heights area have uncovered a range of artifacts including middle-late woodland projectile points (dating between from 500-2000 years ago), as well as a number of Euro-Canadian resources from the War of 1812, and domestic artifacts from the various inhabitants of the Dundurn site (ASI 2008; Historic Horizon 2012). The theme of the site as a transportation route is recognized in part by local plaques commemorating the bridges at the site, but there is little formal recognition of York Boulevard, a major thoroughfare connecting Hamilton and Burlington based on the historic route between Hamilton and Toronto, the railways (associated with Sir Allan MacNab and the growth of Hamilton's industry), or the Desjardins canal, which although commemorated with interpretive material in Dundas, is not commemorated at the site.

The major historical resources and areas within the study area have been described below, followed by section 3.2 describing adjacent resources that are physically and thematically connected to the study area. Section 3.3 provides an inventory of the commemorative plaques and markers found within the study area.





3.1 STUDY AREA RESOURCES

Burlington Heights National Historic Site

Much of the Burlington Heights Heritage Lands have been designated as a National Historic Site of Canada. The Burlington Heights National Historic Site of Canada is located between Cootes Paradise and Hamilton Harbour, on an isthmus that rises 30 metres above the lake. The site was historically, and still is, a major transportation passage, now crossed by a major highway, municipal roadway, and railway lines. The site rises above the Desjardins Canal and is approximately 2.5 kilometres long, bounded by Dundurn National Historic Site, the Hamilton Cemetery and a 95 metre contour line. The area was designated as a National Historic Site in 1929 (Parks Canada, 2013).

The site was occupied by the British during the war of 1812, as it was an important defensive position with a key vantage point, straddled roads leading to Niagara, Amherstburg and York, and served as a supply depot for defense of the Niagara peninsula and the Navy on Lake Ontario. The site played a role in two separate battles: the assembly point for the successful British Attack on American forces in June 1813, at the Battle of Stony Creek; and the assembly point for the recovery of Fort George and the taking of Fort Niagara in December 1813. After the Americans retreated from Fort George, General John Vincent had two lines of earthworks built across the peninsula, and ordered the construction of gun batteries, magazines, blockhouses, barracks and storehouses (See Appendix A, Image 1 for proposed locations). After the war of 1812 ended, the military still considered the site to be defensible, but the buildings were allowed to deteriorate (Parks Canada, 2013). The character-defining elements of the site noted in its listing on the Canadian register of historic places are:

- *Its location on an isthmus 30 metres above Lake Ontario, separating the Hamilton Harbour from Cootes Paradise;*
- *Its setting in a parkland landscape adjacent to the City of Hamilton, featuring numerous historic building and site, including the 1837 Desjardins Canal, Dundurn National Historic Site of Canada, and part of the Royal Botanical Gardens National Historic Site of Canada;*
- *The integrity of evidence of General Vincent's fortifications, located on the grounds of Dundurn National Historic Site, including an earthwork and gun platform within the courtyard, a powder magazine in the cellar's fur vault, a defensive earthwork on the south lawn in line with the earthwork in the courtyard, and a defensive earthwork on the north lawn;*
- *The integrity of the evidence of the first line of defense, today existing across the cemetery into Harvey park;*
- *The integrity of any surviving or as yet unidentified archaeological remains which may be found within the site in their original placement and extent;*
- *Viewscapes between the heights, Cootes Paradise and the harbour* (Parks Canada, 2013)

Prior to their deterioration, the military barracks were also used in the 1830s to provide treatment space for numerous immigrants that arrived in the port of Hamilton who were ill or dying from cholera. The barracks were used because Hamilton did not have a municipal hospital to provide treatment to the large numbers of ill. In 1832, the barracks were deemed inadequate as treatment facilities, and new

temporary buildings were set up near the harbour, at present-day Brock and Catharine Streets (outside the study area boundary) (McMaster University, 2013). Though no longer used at this point, the location of the barracks is shown on Map 2 in Appendix A.

Dundurn National Historic Site

The land on which Dundurn National Historic Site stands was transferred from the Crown to Colonel Richard Beasley, a merchant, in 1799. Beasley settled on the site with his wife, and built the first log cabin in the district. During the War of 1812, Beasley was forced to leave his property, and British soldiers constructed stone and earth berms on the west section of the property in order to look over the bay and defend Hamilton. When the war ended, Beasley returned to his property, and in 1832 sold it to John Solomon Cartwright, his cousin and trading partner, who subsequently sold to Allan MacNab.

MacNab was a lawyer, and practiced law in Hamilton and was an entrepreneur specializing in land speculation. In 1830 he was elected to the Legislative Assembly of Upper Canada. MacNab played a role in suppressing the 1837 rebellion of Upper and Lower Canada, and was knighted for his services. He helped bring forward a bill that would compensate people whose property had been damaged or destroyed during the Lower Canada rebellion. He was also appointed to the Queen's Council, and in 1845 became president of the Great Western Railway. MacNab later served as leader of the Tory Party.

When MacNab acquired the property in 1832, he dismantled the barn and brick house constructed by Beasley and hired architect Robert Wetherell to design his new estate, modeled after his family home in Scotland. He named the estate Dundurn Castle. MacNab also landscaped the property, replacing crop fields with grass lawns, trees and a winding driveway, the Battery cottage (lodge) and stone archway entrance to the grounds. The house was completed in 1835, with 72 fully decorated rooms, some of which included running water and gas lighting by 1848.

MacNab and his family members were buried in the family burial plot, called Inchbuie, on the east side of the property. The plot was surrounded by a stone wall and a solid door. In 1908 a descendant of the family donated the land to the Parks Board, and the graves were relocated to the Hamilton Protestant Cemetery and the Roman Catholic Holy Sepulchre Cemetery.

MacNab had accumulated great debts with his lavish lifestyle, and after his death in 1862 the house needed to be sold. No private buyers were found, and the City of Hamilton declined to purchase the estate. It was abandoned for four years until purchased by the Provincial Government of Ontario, who rented the facility to the Upper Canada Institute for the Deaf and the Dumb. In the 1870s, the estate was sold to Senator McInnis. The City of Hamilton purchased the property in 1899. In 1900 the City opened the grounds as public park and used the house as a general museum of Hamilton. The museum closed for three years during the depression, but reopened with the help of a private donation by Stanley Mills. Renovations were made in to the house in conjunction with Canada's Centennial in 1967 to restore the house to 1856. Additional renovations were completed in the 1990s.

The park setting of the Dundurn grounds held a zoo in the early 1900s, and an aviary until the mid-1990s. Today, the grounds feature the museum (MacNab residence), former cockpit, stables and coachhouse, dove cote, gardener's cottage, kitchen garden (the largest restored Kitchen Garden in Canada), battery lodge, entrance gates, and a picnic pavilion (Hamilton Public Library, 2013 A).

Hamilton Cemetery

The first burials on the site occurred during the War of 1812, when 8 convicted traitors were hung and buried along the earthworks of Burlington Heights.

Prior to the 1840s, burial grounds in Hamilton were formed on private land, as there were no formally established municipal burial grounds. Private estates like Dundurn sold plots on their private grounds to family members, or burials were conducted in churchyards (prior to 1830 these were also on private land, as churches other than the state church, the Church of England, were not permitted to own property). The urban growth of Hamilton in the 1840s presented the need for additional burial grounds outside the city so as to not contaminate the city water supply. In 1847, the Wardens of Christ Church Cathedral and St. Mary's Cathedral acquired a large tract of land from Sir Allan MacNab on Burlington Heights to establish the Christ Church grounds – the beginning of the Hamilton Cemetery. In 1850, the City of Hamilton purchased 18 acres of land from the Wardens of Christ Church Cemetery, naming their purchase the Burlington Cemetery. The Church of the Ascension congregation purchased an additional three acres of Christ Church land in 1872, formerly known as Vauxhall Gardens.

The Hamilton Cemetery was the first municipally owned and operated cemetery in Canada. The cemetery lands owned by the city were different than previous cemeteries and burial grounds within the city: the grounds were fenced and graded with roads and pathways leading to "gardens of graves in a picturesque atmosphere". In 1865 the City chose plans and designs by William Hodgins and Thomas Kinrade for a rubble stone gothic cottage gate lodge, to serve as an office, chapel and home for the grounds caretaker. The City hired a small number of gardeners to plant trees and shrubs, although plot owners and family members were responsible for caring for their own plots. The Cemetery was an early planned landscape and park setting near the city, with grounds open to the public for viewing.

In the following decades, the City purchased additional parcels of land between York Boulevard and Cootes Paradise in 1867, and additional land from the Roman Catholic Diocese (1891). In 1892, the City reached an agreement with other surrounding burial ground landowners to transfer responsibility of their sites to the City, creating a single cemetery from the original three. By the mid 1920s, the Hamilton Cemetery totaled 97 acres, and was becoming crowded, resulting in the formation of nearby Woodland Cemetery.

A number of re-internments have taken place in Hamilton Cemetery from smaller cemeteries at St Pauls Presbyterian, Christ Church Cathedral, and the Hamilton Family Plot. Two family vaults have been built into the 1812 earthworks for the Tuckett and Watkins families. The Sandford Mausoleum, a classically inspired family burial space, is also located within the Cemetery. Although there is little space remaining, burials are still permitted for those owning deeds to vacant plots (City of Hamilton).

A monument to workers on the Desjardins Canal train derailment is located in the Cemetery. The monument names Alexander Burnfield, George Knight, Cecil H. Bright, James Scofield and William Wynne. Much of the text on the west side of the monument is illegible and the gold-plated brass locomotive that once capped the monument went missing in the 20th century (Robert Hamilton, Correspondence).

Desjardins Canal

Pierre Desjardins, a clerk in the Dundas area is credited with the idea to form a canal from Dundas to Burlington Bay. Desjardins hoped that with a canal and access to the Bay, the town could compete with Hamilton to be the main port, reaping economic benefits for the community. In 1825, Desjardins and five others (Edward John, William Leslie, Peter Paterson and John Paterson) became partners for the construction of the canal, later founding the Canal Corporation with four others. The company began building a canal in 1826, dredging a narrow canal through the Dundas Marsh. The canal was constructed by widening a natural passage along the northern tip of Burlington Heights (Bouchier and Cruikshank). Desjardins died the following year, and never saw construction of the canal (Hamilton Public Library, 2013 B).

The canal was completed in 1837 and was operated by tolls. It operated for twenty years, but faced several challenges, namely that only small vessels could travel the passage through the marsh, limiting the amount that could be exported from Dundas. The arrival of the railway increased port activity in Hamilton, posing significant competition for Dundas. In 1854 the Canal Corporation built a swing bridge across the canal filling in the natural passage and creating a new passage at the opening to Cootes Paradise at Burlington Heights in order to provide railway access to the town. In March 1857, a train from Toronto derailed while crossing the bridge. Of the 90 passengers on the train, only 20 survived. A monument to railway workers who died in the derailment is located in the Hamilton Cemetery (See Hamilton Cemetery Section). By the end of September 1857, a new swing bridge had been constructed. According to the Hamilton Spectator, the new bridge piles were driven into the canal bed, and the bridge frame was constructed at the Railway works in Hamilton, with castings and cradle from St. Catharines and large timber side beams from Chatham (Brooks, 2001).

Valley Inn

Valley Inn is located at the northwestern tip of Burlington Bay, formerly an access route to the Desjardins Canal. Historically, the Valley Inn Road was an important transportation connection that joined Burlington Heights with the road to Toronto (see Map 2 Appendix A). The road is now closed to vehicle traffic but is still an important linkage for pedestrians and cyclists. The former road also provides access to the water for canoeists and others and provides multiple locations for views of the harbour and Carrols Bay.

During the 1830s, the area served as a way station for grain and other cargo that had been shipped down the Canal on scows and would later be transferred to lake boats. The tavern at Valley Inn, complete with roulette wheel, became a regular stop for travellers passing between Hamilton and

Toronto. It was outside the corporate limits of Hamilton, and beyond the reach of Hamilton police authority. Raids in the late 1800s by county constables found a cockfighting pit in the woods beyond the tavern. Traffic passing to the Valley Inn slowed in 1922, when the Toronto-Hamilton Highway diverted traffic to the top of the heights. The Valley Inn was abandoned, and burnt to the ground in 1928 (Bouchier and Cruikshank, 8-9, 2003).

Great Western Railway

A group of businessmen and entrepreneurs, among them Allan MacNab, formed a group in 1834 to obtain a charter for the name and construction of a railway in southwestern Ontario between London and Burlington. It was difficult for the group to secure financing for the project and the charter lay dormant until 1845 when it was renewed and amended. First called the London and Gore, the name was changed to the Great Western Railway, and mileage was extended to Windsor and Niagara. MacNab's influence allowed the line to pass through Hamilton (on land fill at the base of his own property at Dundurn), rather than travelling through Brantford as originally intended. The railway was constructed between 1851 and 1854 (See Appendix A, Image 3), and in combination with Hamilton's port, attracted several new industries to the city, leading it to become a major industrial hub. In 1857, the Great Western Railway amalgamated the line constructed through Hamilton by the Hamilton and Toronto Railway Company. This line became the site of a tragedy when a passenger train derailed on the swing bridge across the Desjardins Canal at Burlington Heights in March of 1857. The Great Western Railway eventually merged with the Grand Trunk Railway, and in the 1920s, became part of Canadian National Railways (Hamilton Public Library, 2013 C).

Toronto Hamilton & Buffalo Railway

The acquisitions of the Grand Trunk Railway in the 1880s of the Great Western and North Western Railway Companies led a group of Hamiltonians to establish plans for new railroad line between Toronto, Hamilton and Buffalo, incorporated in 1884 as the Toronto, Hamilton and Buffalo Railway (Toronto, Hamilton and Buffalo Railway Historical Society, 2011). The line was desired to prevent the Grand Trunk from having such a strong monopoly in the area. The industrial centre of Hamilton also needed access to the nearby US market through Buffalo. In 1884, construction for the line was authorized, but a clause stipulated that the proposed railway company could not be sold or amalgamated with any other company, and this hindered investors from financing the project. By 1890 the agreement had been changed, permitting amalgamation with other companies, just not the Grand Trunk or Canadian Pacific Railway companies. In 1892 the company amalgamated with the Brantford, Waterloo and Lake Erie Railway and lines were built through Hamilton in the following years. The TH&B continued to operate in Hamilton as a separate entity when purchased by Canadian Pacific Railways in the 1970s, but in the late 1980s after court settlements (resulting from violating the early clauses) it was amalgamated with the C.P.R. (Hamilton Public Library, 2013 D; Toronto, Hamilton and Buffalo Railway Historical Society, 2011).

Harvey Park

Harvey Park, formerly known as Burlington Heights Park, is located along York Boulevard next to Dundurn National Historic Site. It was re-named in 1894 honoring Sir John Harvey, a soldier in the War of 1812 and the Rebellion of 1837. In 1813, Harvey led troops from the stronghold at Burlington Heights to the Battle of Stoney Creek. During the War of 1812, Burlington Heights had been occupied by Colonel Richard Beasley, who had settled on the land and built the first log cabin and brick house in the area. Beasley was forced to relocate during the War, as the British troops needed to occupy land along Burlington Heights for defence. Beasley returned to his land after the war, selling in 1832 to his cousin John Solomon Cartwright who in turn sold to Allan MacNab. Eventually, MacNab sold portions of his property, including the part that is now known as Harvey Park. The former barracks used by soldiers during the War of 1812 were located at Harvey Park.

Presently, Harvey Park contains two cannons used during the War of 1812, a historical plaque commemorating Burlington Races and the centennial of the War of 1812, and a memorial plaque commemorating the lives of the soldiers lost during the war (Hamilton Public Library, 2013 E).

Woodland Cemetery

The Woodland Cemetery opened in 1921 in response to over-crowding in the nearby Hamilton Cemetery. During the War of 1812 the site had a stockade for defensive purposes. The location, facing Hamilton Harbour, later housed the "Rock Bay Castle" estate of Peter Carroll. The stone building was used in 1870 as a resort hotel, and in the 1900s as a club house. The property was abandoned in 1908 after the interior was destroyed by fire. The City of Hamilton purchased the site from the Town of East Flamborough in 1919, and the castle ruins were dismantled, using the rubble to build the road system through the cemetery. The cemetery has several sections with military graves, and features a memorial to those who lost their lives in the 1956 Hungarian uprising (City of Hamilton).

High Level Bridge

High level bridges were built across Burlington Heights as early as the 1850s. Railway bridges carried train traffic, and the Desjardins Canal Corporation built and maintained a non-railway bridge. When the Canal Corporation declared bankruptcy, the bridge was no longer maintained and was damaged during a wind storm in 1869. The Hamilton-Milton Road Company crossed Burlington Heights in the latter half of the 19th century, and company decided to build an additional bridge. This bridge was poorly constructed and eventually closed down.

A steel arch bridge was constructed across the canal entrance in 1896, to carry pedestrians, horses and carriages. The increase in automobile traffic in the 20th century caused concern among engineers and City officials as to whether the bridge would continue to withstand the strain. In 1927, Burlington Heights came under the jurisdiction of the Board of Parks Management in Hamilton. The Board was chaired by Thomas Baker McQuesten. The idea for a restoration project and a grand entranceway surfaced, and a design competition was held to collect submissions of the redevelopment of the

northwest entrance to the City and the bridge. Awards would be given to the top three contestants, and the first prize winner would be awarded the contract for redesigning the area. First place was awarded to Toronto-based Wilson, Bunnell and Borgstrom, an engineering and landscape architectural firm (See Appendix A, Images 5 and 6). Second place was awarded to the landscape architect husband and wife team Howard and Lorrie Dunington-Grubb (See Appendix A, Images 7 and 8), and third place was awarded to architect John Lyle (See Appendix A, Images 9 and 10).

The winning plan was streamlined in design, and called for reducing the height of the ridge at the canal. The removed earth would be used to widen the roadway, to be lined with trees and hedges. A low level bridge, travelling along the shore of Cootes Paradise would provide access across the Heights during construction of the new bridge, and after completion of the high-level bridge, would act as an alternative route. Borgstrom's plan also proposed constructing an art gallery overlooking Cootes Paradise. The costs for the project were to be split between the City of Hamilton and the Board of Parks Management. Landscaping for the project began in June 1929, but with the arrival of the depression, the plans needed to be scaled down significantly. John Lyle was hired to produce a new bridge design in 1930. His modified design called for a 60 foot wide bridge (double the size of standard bridge platforms) with colonnades and an obelisk. Even with unemployment relief funding, the design needed to be further simplified. The final plans were a bridge of 54 feet in width with four 40-foot tapered pylons faced with Queenston limestone, featuring a statue niche and the City crest. Although the Board of Control objected to the cost of the plans and attempted to remove its decorative elements, City council overruled their decision and the construction of the bridge began in 1931 by the Hamilton Bridge Works. The bridge was dedicated on June 17, 1932, though statues were never installed in the pylon niches. In 1988, the bridge was named the Thomas B. McQuesten High Level Bridge in recognition of McQuesten's role in the development of the bridge, and a plaque dedicated to McQuesten was unveiled by Princess Margaret at the re-dedication ceremony (Hamilton Public Library, 2013 F). In addition to its role as a bridge for vehicle traffic, the bridge also provides an important link (via the stairway) between the pedestrian and cycling route along York Boulevard with the waterfront trail located below the bridge along the lake shore (Laking, 2006).

McQuesten was very influential in the improvement schemes that took place in Hamilton and Burlington Heights in the early 20th century. He was born in Hamilton and raised at Whitehern, a historic estate and now a National Historic Site. McQuesten was educated at the University of Toronto and studied Law at Osgoode Hall. After 11 years in a Hamilton Law practice, he was appointed to the Board of Parks Management in Hamilton. He later served as Minister of Highways from 1934-1943, and was instrumental in the creation of the Queen Elizabeth Way and the beginnings of the southwestern Ontario highway system. He was dedicated to including aesthetic design in highway and bridge engineering. McQuesten also served as chairman of the Niagara Parks Commission, and was devoted to the City Beautiful movement, creating public park spaces for the benefit and betterment of society. McQuesten was also instrumental in the formation of the Rock Garden and the beginnings of Royal Botanical Gardens (McQuesten Historical Plaque).

York Boulevard

York Boulevard is a historic transportation route across Burlington Heights. It has changed over time, particularly in the early 20th century during improvements to the Northwestern Entrance to Hamilton. A similar 19th century route across the Heights provided an important connection between Hamilton and Toronto. Trails across the Heights were also used by aboriginal groups prior to, and in the early years after contact with Euro-Canadians.

Royal Botanical Gardens Rock Garden and Memorial Gardens

Land now part of Royal Botanical Gardens was the subject of debate in the early 20th century. In 1925, a proposal was put forward by Captain George Midford, who hoped to operate a duck breeding farm and private hunting ground. The Dominion government authorized Midford to lease the land, but the Hamilton Harbour Commission and Thomas Baker McQuesten disagreed with the proposal. McQuesten, particularly, and members of the Hamilton Bird Protection Society supported by well-known North American ornithologist and bird conservationist Jack Miner, wanted the land to be used for a bird and wildlife sanctuary, and did not want to see private development of public land. McQuesten and other supporters argued that the Hamilton Harbour Commission had jurisdiction over the land and that the duck-farm deal was invalid. In May 1925 a court case ruled in favor of the harbour commission, and by October the land had been approved for a bird sanctuary (Hamilton Public Library, 2013 G).

Construction of the Rock Garden, located within the study area identified for the Burlington Heights Management Plan, was a result of the improvement implementations for the northwest entrance to Hamilton. The Rock Garden, designed by Borgstrom and overseen by Matt Broman, was constructed in an abandoned sand and gravel pit on Burlington Heights. A report to the Parks Board notes that rock to fill the gardens was being removed from the Harrick property in late October, 1929. Work on site began in the following weeks, just after the crash of the stock market, and nearly half a year after work on the northwest entrance project had begun. An estimated 10,000 tons of limestone were needed to construct the Rock Garden and were extracted from near Waterdown. By August 1930, the Parks Board was looking to secure government aid to provide labour relief for its workers. The following year, during the final phase of the project, a formal agreement was made with the City to cooperate in a relief labour program of 20% of total labour content on all the various Parks Board Projects. Construction of the Rock Garden was completed in December, 1931, with some remaining planting delayed to the following spring (Laking, 2006).

The completed Rock Garden was a two acre site with man-made water circulation system, waterfall and two large pools. It was initially planted with approximately 45,000 perennials, many of which were alpine plants. The Rock Garden became part of Royal Botanical Gardens (already established at the Sunken Gardens), and quickly became a popular attraction for local residents and tourists (Laking, 2006).

The Memorial Garden area is located on both sides of York Boulevard near the Thomas B. McQuesten High Level Bridge. The portion of the Memorial Garden on the east side of York Boulevard contains a commemoration plaque honouring Thomas B. McQuesten. The plaque is situated on a rise that provides a lookout with views of the harbour, the City of Hamilton and Carroll's Bay. The Memorial Garden in this area also hosts a War of 1812 Peace Garden. The Memorial Garden on the west side of York Boulevard overlooks Cootes Paradise and contains a commemoration plaque honouring fallen soldiers from the War of 1812 and honouring citizens and immigrants who died from cholera and ship fever in the 1840s and 1850s. The Memorial Garden in this area also contains a "sunken garden" with a landscaped area and the remnants of a formal garden with stone walls, stairs and reflecting pool.

3.2 ADJACENT RESOURCES

Descriptions of the following two resources have been included in this section because of their close proximity to the study area. The boathouse community was located at the foot of Burlington Heights facing the Dundas Marsh. The story of this community and its absence today is inextricable from the story of the northwest entrance improvements and development of Burlington Heights in the 20th century. Highway 403 is a major transportation corridor crossing the Heights, providing a vital link between Hamilton, Burlington and neighbouring communities.

Boathouse Community

Photographs suggest that the boathouse colony emerged around the time of the First World War, although there may have been earlier temporary accommodations during the period of canal and railway construction. The increasing industrial profile of Hamilton was attracting thousands of new arrivals to the city every year: doubling the city's population between the turn of the century and World War I. The construction boom before the war had not created enough new dwellings to fill the demand. As a result some workers began to look elsewhere, renting or squatting on land along Burlington Heights owned by local farmers, the City, and the Toronto Hamilton and Buffalo (TH&B) Railway. Structures in the community varied in size: some were two-storey buildings built on stilts above the water, with room for boats below and residents above; others were much smaller 'shacks'. The number of boathouses by the 1930s numbered over 100. The boathouses provided access to fish and game, either for sustenance or recreation and were located in a natural setting removed from the City's overcrowded working class neighbourhoods. A strong sense of community developed among those living in the area.

Fears of transients hopping the railway lines and camping near the boathouse community, the reputation of the nearby Valley Inn, and some rough behavior (drinking, moderate gambling and fighting) within the boathouse community itself led some Hamilton citizens to become concerned about the existence of the community. Coupled with a belief in the City Beautiful movement, 'moral reformers' and City planners embarked on a process to transform the boathouse area.

The first move in reforming the boathouse area were plans for a bird sanctuary proposed by the Hamilton Bird Protection Society (which later became the Hamilton Naturalists Club), supported by the

McQuesten family. Hunting was allowed by property owners along the marsh if they had a special permit allowing them to trap on their own lands. The members of the boathouse community were not considered legitimate properties owners and were denied the opportunity to use the lands as they once had.

Development plans for Burlington Heights grew to include a monumental entrance to the High Level Bridge. The area along the waterfront where the boathouse community was located became the focus of a design competition. City officials decided to evict boathouse dwellers in the late 1920s. The arrival of the depression significantly reduced funding for beautification projects, and the grand designs were scaled back and no longer required removal of the boathouses. Sympathy for retaining the boathouses was felt by other citizens during the troubling depression years. Additional dwellings were located atop the heights between Dundurn and what is now the High Level Bridge, and some beyond the present bridge site towards Aldershot. The houses south of the present bridge site faced Burlington Bay and were numbered 982 to 1104. The Board of Parks Management acquired these properties in 1927 and 1928, and by 1929 had removed them all (Correspondence with Murray Aikman, 2013).

A fire in the boathouse community in 1931 resulted in a coroner's jury recommendation to extend fire services to the area, or have it condemned. City officials were reluctant to extend services to the area and decided to have the boathouses removed. About half of the community, those who formally leased their land, took compensation and abandoned their houses. Others floated their boats to other locations around the marsh, engaging in a "squat-tag" game with local authorities. Yet others resisted eviction and battled the municipality in court, facing expensive litigation costs. Most boathouses were demolished by the late 1930s, though some remained until the late 1950s. Today, none remain (Bouchier and Cruikshank).

Highway 403

The Department of Highways first produced a conceptual drawing of what is now Highway 403 in 1937, wanting to build a highway between Hamilton and London. However at the time the priority was to complete work on the Queen Elizabeth Way, and after the end of the Second World War, the Department prioritized the work on Highways 401 and 400.

By 1955, a construction contract for the project was awarded. It was initially related to the relocation of the QEW, which would now bypass its original interchange at Plains Road, with the construction of a new directional interchange. The new interchange would allow a high-speed connection between the QEW and the new proposed Highway 403. Construction of Highway 403 itself was delayed until 1960. The first section of the highway was completed between the QEW and the Desjardins Canal bridge at Burlington Heights in December 1963. The second section was completed in 1965 from the Desjardins Canal bridge to Aberdeen Avenue in Hamilton. This connection created an additional transportation route across the Heights, and allowed access to downtown Hamilton, easing congestion on other local roadways (Bever, 2013).

3.3 PLAQUES AND COMMEMORATIVE MATERIAL

The study area contains numerous plaques and historical markers commemorating people, places and events associated with Burlington Heights (see Figure 6 for locations).

A plaque installed on a boulder at the Dundurn parking lot commemorates the United Empire Loyalists, and specifically, UEL Richard Beasley, who was the first settler in the area and built his log cabin at what is now Dundurn National Historic Site.

Many of the plaques commemorate events and people of the War of 1812, including a Provincial Plaque located in Harvey Park on the east side of York Boulevard that commemorates the Burlington Races, an event during the War of 1812, where a small fleet of British ships sought refuge in the safety of the Bay during an attack by American forces. Much of this story is now thought to have been mythologized, and the British ships may not have entered Burlington Bay after all, likely harbouring outside of it, near Bronte (Williamson, 1999: 12).

A Federal plaque located at the parking lot of Dundurn National Historic Site commemorates Burlington Heights as an important location during the War of 1812. The Heights served as an important vantage point and were a rallying point for troops during the Battle of Stoney Creek in June 1813, and in December 1813 when the British recaptured Fort George and carried Fort Niagara by assault. The battle of Stoney Creek marked the furthest advance of American troops into Canada, where they were defeated, resulting in a continuation of British tradition. As the rallying point and the location of the barracks, Burlington Heights played an important role in this pivotal battle.

A provincial plaque, also located at the Dundurn parking lot, honours Sir John Harvey for his role in leading the attack on the Americans at the Battle of Stoney Creek in June 1813. Harvey Park, located on the east side of York Boulevard between Dundurn and the High Level Bridge is named for Sir John Harvey.

In the Hamilton Cemetery, a large stone slab is set in the earthworks. The tablet commemorates the earthworks that were constructed during the war of 1812, and also commemorates Sir John Harvey and the Battle of Stoney Creek.

Three stone markers, located near the High Level Bridge, Hamilton Cemetery, and Dundurn National Historic Site denote the locations of the first and second lines of defense during the War of 1812. The markers were erected by the Wentworth Historical Society in 1914.

A Royal Botanical Gardens plaque installed on a large boulder north of the High Level Bridge on the east side of York Boulevard marks an area called "the Broman Lands", commemorating the work of landscape architect K.M. Broman. Broman was a Swedish trained landscape architect whose work included the Rock Garden at the northwest entrance to Hamilton that became part of the Royal Botanical Gardens, and the Spring Garden (now Laking Gardens), the Arboretum and the Lilac Gardens at Royal Botanical Gardens. Broman worked closely with friend and colleague Thomas Baker McQuesten, helping to transform Burlington Heights. Broman also worked on several other Hamilton

area projects including the fountain, bowling greens and tennis court at Gage Park, Dundurn National Historic Site, Churchill Fields, Mountain Brow Boulevard, Sam Lawrence Park, plans for Mohawk Sports Park, Chedoke Civic Golf Course, Beddoe Course, King's Forest Golf Course, and one of the first ski slopes in the area. Broman was hired as the first Superintendent of the Niagara Parks School of Horticulture – now the Niagara Parks Botanical Garden and School of Horticulture (Whitehern Museum and Archives). Many of the references to Broman's work are outlined in a 1989 obituary published in the Hamilton Spectator, found online through the Whitehern Museum and Archives collection. Dr. Galbraith of the RBG notes that this obituary was based on the reminiscences of a colleague, and may not be accurate in all its details.

A plaque installed on a boulder across from Valley Inn Road on the west side of York Boulevard commemorates the reconstruction of the Toronto-Hamilton Highway entrance in 1921 and the reconstruction of Bridges number 4 and 5 along York Boulevard in 1972.

The High Level Bridge contains two plaques, installed on the northern concrete pylons, commemorating the erection of the bridge in 1931/1932 and the replacement of the previous bridge that crossed the canal from 1896 to 1931.

A provincial plaque by the Ontario Heritage Foundation Ministry of Culture and Communications is located on the east side of York Boulevard on a rise of land overlooking the Bay to commemorate Thomas Baker McQuesten, local lawyer, member of the City of Hamilton's Board of Parks Management and Minister of Highways. McQuesten was integral to the redevelopment of Burlington Heights (particularly the High Level Bridge) during the 1930s and for establishing public parks and garden spaces like Royal Botanical Gardens. The plaque honouring McQuesten was unveiled by Princess Margaret in 1988, an event commemorated by a separate plaque at the base of the McQuesten plaque.

Across from the McQuesten commemoration on the west side of York Boulevard overlooking Cootes Paradise is a plaque that once marked the resting place of a number of soldiers from the war of 1812, and citizens and immigrants who died from cholera and ship fever in the 1840s and 1850s. During this era, former barracks from the war of 1812 were used as temporary shelter and treatment centres to immigrants and citizens with cholera or ship fever, diseases that were common to the long months of travel faced by many immigrants entering into the port at Hamilton.

A provincial plaque by the Ontario Heritage Foundation Ministry of Culture and Communications is located on the east side of York Boulevard south of the High Level Bridge to commemorate William Sherring. Sherring (1877-1964) was a Hamilton-born marathon runner who competed locally and won a gold medal in the 1906 Olympics. He competed in the Around the Bay marathon, the oldest long-distance road race in North America. The race began in 1894 and the course travels around Burlington Bay and Hamilton Harbour, crossing Burlington Heights. Near the provincial plaque, there is a stone marker that historically marked the 17-mile point of the race. Images and full text of these plaques can be found at: <http://www.eureka4you.com/historicalmarkers/BurlingtonHeights.htm>

4.0 NATURAL HERITAGE

4.1 POLICY FRAMEWORK

Legislation and policy were reviewed in the context of the study site in order to determine natural heritage constraints to planning of this site. Documents reviewed included:

LEGISLATION

Federal

Fisheries Act (1986)

The Fisheries Act applies to all fishing zones, territorial seas and inland waters. The Fisheries Act supersedes any provincial legislation. This legislation applies to the conservation and protection of fish habitat, management of fisheries and the protection of fish habitat from pollution. Fishing restrictions are established for sport fish within the Burlington Heights Heritage Lands within the mouth of Grindstone Creek, Cootes Paradise, Hamilton Harbour and the contributing watersheds. In addition, adequate protection of fish and fish habitat in Carroll's Bay is required.

Migratory Birds Convention Act (1994)

Most species of birds in Canada are protected under this act through the Migratory Birds Regulations and the Migratory Birds Sanctuary Guidelines. These policies and regulations ensure the protection of listed migratory bird species, their nests, eggs and offspring. To ensure that human activity is not altering the bird populations, there are no-boat restriction zones and limited use of the Grindstone Marsh system (comprised of Carroll's Bay Marsh, Long Pond and Sunfish Pond).

Species at Risk Act (2002)

Enacted in 2002, the Species at Risk Act (SARA) provides legal protection for species at risk. In addition, the act helps protect sensitive species from becoming extinct and secure the actions for their recovery. Several Species at Risk reside in the Burlington Heights Heritage Lands, including vascular plants, fish, mussels, mammals, birds and reptiles, each having its own habitat requirements.

Provincial

Endangered Species Act (2007)

This legislation provides protection for species at risk and their habitat. Legal protection is provided for species that have been identified in the Species at Risk (SARA) list as Endangered, Threatened and Special Concern. In addition, significant habitat of those species identified as Endangered or Threatened is protected from development and habitats of provincial Special Concern species are recognized under the Province's Significant Wildlife Habitat categories. A significant number of Endangered, Threatened and Species of Special Concern live in Burlington Heights Heritage Lands.

Ontario Regulation 161/06 (2006) - Hamilton Conservation Authority

The Hamilton Conservation Authority is authorized under Regulation 161/06 of the Conservation Authorities Act to implement and enforce the regulation of development, interference with wetlands and alterations to shorelines and water courses. Permits are required to identify potential interference in areas within the 100-year floodline, 15 metres of the shoreline, 15 metres within a valley's top bank, hazard lands and 120 metres around all Provincially Significant Wetlands and 30 metres of all other wetlands. Carroll's Bay is classified as Provincially Significant Wetland (PSW).

Ontario Regulation 162/06 (2006) - Conservation Halton

Conservation Halton is authorized under Regulation 162/06 of the Conservation Authorities Act to implement and enforce the regulation of development, interference with wetlands and alterations to shorelines and water courses. Permits are required to identify potential interference in areas within the 100-year floodline, 15 metres of the shoreline, 15 metres within a valley's top bank, hazard lands and 120 metres around all Provincially Significant Wetlands and wetlands greater than or equal to 2 ha, and 30 metres of wetlands less than 2 ha. . Carroll's Bay is classified as Provincially Significant Wetland (PSW).

POLICY

Federal

Great Lakes Wetlands Conservation Action Plan

In 1994, the Great Lakes Wetlands Conservation Action Plan brought together various government and non-government partners to conserve and rehabilitate wetlands. Through partnership, coordination and networking, they work to protect, rehabilitate and conserve wetlands through existing programs. Burlington Heights Heritage Lands is an area that would benefit from conservation under this plan, particularly Carroll's Bay, Long Pond and Sunfish Pond.

Great Lakes Water Quality Agreement (1972)

Signed in 1972, this agreement between Canada and the United States committed both nations to restore and enhance water quality in the Great Lakes Ecosystem. This agreement has established ecosystem-based management including the development of ecosystem objectives for the lakes. In 1987, annexes were initiated to develop and implement Remedial Action Plans (RAP's) to restore impaired water uses for significantly degraded areas (Areas of Concern) and Lakewide Management Plans (LaMPs) to address contamination by toxic substances. Hamilton Harbour was designated as an Area of Concern under the Great Lakes Water Quality Agreement (GLWQA). Wastewater treatment plants, industrial activity, and runoff from agriculture and urban development contributed to significant increases in nutrients in Cootes Paradise Marsh and Hamilton Harbour. Under the GLQWA, the RAP was developed to address these environmental problems in Hamilton Harbour (Clayton 2010). With this legislation, toxic substances in the harbour need to be eliminated. Considering that Carroll's Bay is directly connected to the harbour, this legislation has a direct impact on the bay.

Lake Ontario Bi-national biodiversity conservation agreement (2009)

Canada and Ontario work cooperatively with the United States federal and state governments to protect and restore Lake Ontario's natural diversity under the Lake Ontario Lakewide Management Plan. This management plan includes conservation of critical lands and waters; reduction of the impact of aquatic invasive species; restoration of natural connections and hydrology; restoration of native fish communities, native species and aquatic ecosystems; the restoration of nearshore waters; and planning and adaptation for climate change. The recovery of habitat within the Burlington Heights Heritage Lands would allow for the restoration of native vascular plant, fish, mussel, reptile, mammal and bird communities,

Provincial

Provincial Policy Statement (2005), Growth Plan for the Greater Golden Horseshoe, and MNR Technical Guidelines

The Provincial Policy Statement (PPS) is issued under the authority of Section 3 of the Planning Act. Section 3 requires that decisions affecting planning matters "shall be consistent with" policy statements under the Act. It should also be noted that Section 4.3 of the PPS establishes that the PPS is to be read in its entirety and all relevant policies are to be applied to each situation.

In that context, Section 2.1 of the Provincial Policy Statement (2005), which is the section that relates specifically to natural heritage, establishes clear direction on the adoption of an ecosystem approach, and the protection of resources that have been identified as 'significant': wetlands, habitats of endangered or threatened species, fish habitat, woodlands, valleylands, wildlife habitat, and areas of natural and scientific interest.

Natural heritage systems are currently defined under the Provincial Policy Statement (PPS) as follows:

"...a system made up of natural heritage features and areas, linked by natural corridors which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species and ecosystems. These systems can include lands that have been restored and areas with the potential to be restored to a natural state."

Furthermore the PPS states that:

"Planning authorities are encouraged to identify natural heritage features and areas that complement, link, or enhance natural systems."

In March 2010, the Province released the finalized Second Edition of the Natural Heritage Reference Manual (NHRM), which is intended to guide the implementation of the PPS (2005). This update explicitly recognizes linkages "between & among natural heritage features & areas, surface water features & ground water features, & hydrological functions" which are necessary for the ecological and hydrological integrity of watersheds.

The protection of significant ecological and hydrological linkages as well as woodlands, fish habitat, valleylands and wetlands will be relevant for preservation priorities and opportunities in the Burlington Heights Heritage Lands.

Strategic Plan for Ontario Fisheries

This strategic plan is a policy to guide fisheries management in Ontario based on an ecosystem approach. The objectives for the Strategic Plan are to protect healthy aquatic ecosystems, rehabilitate degraded aquatic ecosystems and to improve cultural, social and economic benefits from Ontario's fisheries resource. These objectives directly apply to the area defined by the Burlington Heights Heritage Lands.

Ontario Biodiversity Strategy (2005)

This strategy was developed to protect and conserve Ontario's biodiversity. This goal is achieved through a variety of measurable, time-bound targets. Partnership between government, private landowners, academic institutions, non-governmental agencies, industrial sectors, urban and rural communities, and Aboriginal communities is key to the success of the protection and sustainable use of biologic assets. To ensure sustainable use, the Ontario Biodiversity Strategy uses the concept of "sustainable use: the use of components of biodiversity in a way and at a rate that does not lead to their long-term decline, thereby maintaining the potential for future generations to meet their needs and aspirations" (OMNR, 2005). The biodiversity of Burlington Heights Heritage Lands' ecosystem is currently lacking due to habitat degradation of the area. It would be beneficial for this area to be included in this strategy for direction and recommendations.

Regional and Local

Hamilton Harbour and Watershed Fisheries Management Plan

The Hamilton Harbour and Watershed Fisheries Management Plan was developed directly as a result of the success of the Hamilton Harbour Remedial Action Plan (RAP) to restore water quality and fish habitat in Hamilton Harbour and its watershed (Bowlby et al., 2009). The goal of this plan is to "support diverse, well-balanced, and healthy aquatic ecosystems that provide sustainable benefits to meet society's present and future needs". The three objectives of the plan are to protect healthy aquatic ecosystems, rehabilitate degraded aquatic ecosystems, and improve cultural, social and economic benefits from the aquatic resources of Hamilton Harbour and its watershed.

Urban Hamilton Official Plan (2009; sections are currently under appeal to OMB)

The Official Plan sets the framework for a sustainable and healthy future for the City of Hamilton. This framework is based on the following guiding principles: environmental systems that are protected and enhanced; compact and healthy urban communities; a strong rural community protected by firm urban boundaries; balanced transportation networks; a strong, diverse economy; financial stability; and strategic and wise use of infrastructure services and existing built environment. Burlington Heights

Heritage Lands must fit into the Official Plan by ensuring that the ecosystem is protected and enhanced while meeting its' other relevant guiding principles.

4.2 OVERVIEW

The Burlington Heights Heritage Lands have a fascinating natural history. The area is located at a junction where climatic, physiographic and hydrologic processes merge and give rise to a unique ecology. Spatially the area is situated at the west end of Lake Ontario sandwiched between Cootes Paradise (a shallow basin of open water and marsh habitat) to the west and Hamilton Harbour to the east.

Burlington Heights is in Hill's Site Region 7E (Site District 7-3: Grimsby) which is an area of land characterized by a relatively uniform macroclimate (Hills, 1959). Here the climate is warmer due to its position below the Niagara Escarpment and the moderating effect of Lake Ontario. Site District 7-3 forms a part of the Eastern Deciduous Forest Region also known as the Carolinian Life Zone that in Ontario stretches in a narrow band across the northwest shore of Lake Ontario to Grand Bend and south to Lake Erie. The Carolinian Life Zone is one of four life zones in Ontario and is one of the most biologically diverse areas within Canada (Daigle & Havinga 1996). It is characterized by a relatively warm climate, deciduous forests with patches of prairie and savannah, and many species not found elsewhere in Ontario but which are common farther south in the United States.

The physiographic region in which the Burlington Heights are situated is the Lake Iroquois Plain. This is a flat terrace of land below the escarpment that is approximately 3 km in width that borders the shore of Hamilton Harbour (Karrow 1959). Most of the City of Hamilton is built on part of this plain. Lake Iroquois was a lake formed following the retreat of the Wisconsinan glacier by melting glacial ice in the Lake Ontario basin approximately 10000 years ago. Drainage to the east was prevented by a remnant ice plug in the St. Lawrence Basin creating water levels in Lake Iroquois that are estimated to have been 30m higher than present day Lake Ontario (Karrow 1959).

The defining landscape features of the Burlington Heights Heritage Lands are the Hamilton Bar & Aldershot Bar; elevated regions of land formed of beach alluvium concretions and sand deposited by wave action along the historic shoreline of Lake Iroquois (Chapman & Putnam, 1984). The Hamilton Bar separates Cootes Paradise from Hamilton Harbour and extends approximately 6km north from present day Hamilton City Hall to the Burlington Heights Heritage Lands (J. K. Dwyer, 2003). Cootes Paradise drains into Hamilton Harbour through the Desjardins Canal, a cut made through the Hamilton Bar in 1837 (J. K. Dwyer, 2003). The Aldershot Bar extends from Carroll's Point approximately 4.5km to the northeast and confines the lower section of Grindstone Creek behind it to form Carroll's Bay.

The Burlington Heights Heritage Lands are at the confluence of two major watersheds. To the west, Spencer Creek drains a 29,000 hectare watershed and outlets to Cootes Paradise. Many small tributaries contribute to the Spencer Creek system or drain directly into Cootes Paradise, including:

Fletcher Creek, Flamborough Creek, Logie's Creek, Westover Creek, West Spencer Creek, Ancaster Creek, Borer's Creek, Chedoke Creek, Spring Creek, Tiffany Creek, Sulphur Creek, Sydenham Creek, and Westdale Creek. To the east, Grindstone Creek drains a 99 square kilometre watershed and outlets to Hamilton Harbour at Carroll's Bay (the last remaining coastal wetland on the shores of Hamilton Harbour). Most of the streams in the Grindstone Creek watershed (approximately 85%) are small unnamed tributaries with the remainder of the system confined to the main branches.

The ecology of the Burlington Heights Heritage Lands has developed in response to the unique physical attributes and functional interfaces between the climate, land and water. The first vegetation communities to emerge following the retreat of the last glacial period would have been herb dominated tundra succeeding to shrub communities and finally a boreal woodland habitat at approximately 12000 years before present (Larson et al., 1999). Remains recovered from Lake Iroquois deposits indicate the presence of mammals such as woolly mammoth, American mastodon, *Torontoceras* (a large deer), giant beaver, musk-ox and caribou (Theberge, 1989). Mammoth rib fragments, part of a femur and a scapula were found during the excavation of the Desjardins Canal in 1848. Additional mammoth specimens were found in 1852 and 1876, and these are currently housed in the Museum of Nature in Ottawa (Earth Sciences Museum, 2009).

Gradually upland forests colonised the landscape with many of the species familiar today: oaks, maples, hickories, white pine & black cherry (Larson et al., 1999). A climatic shift occurred between four to six thousand years before present that gave rise to warmer, drier conditions and resulted in the extension of the Great Plains prairies into Southern Ontario. This precipitated the development of prairie and oak savannah communities over much of the sandy well drained soils associated with the Hamilton and Aldershot Bars. Remnants of these historic prairies persist today. Throughout these periods wetland communities were abundant in the shallow waters along the coast of Cootes Paradise and Hamilton Harbour providing valuable spawning habitat for the freshwater fish populations of Lake Ontario as well as habitat for both resident and migratory species of waterfowl and other avifauna.

The early 1800's marked the beginning of significant changes to the landscape. British settlement of the area increased due to immigration of loyalists fleeing the American Revolution (Conservation Halton, 2005). Clearing activities reduced the extent of forest cover and, combined with over harvest, led to the extirpation of species such as black bear, wolf, lynx, elk and eastern cougar (Conservation Halton). The passenger pigeon was an abundant species at this time, favoured as a game bird, but similar stresses led to its gradual extinction. The impacts of land development were also felt in the local water systems. The original outlet for Cootes Paradise drained through the Grindstone Creek river mouth at Carroll's Bay until the Desjardins Canal was constructed. The link between Cootes Paradise and Carroll's Bay was permanently disconnected following the construction of the rail lines during the 1850s.

Increased human settlement in the region and lake level regulation in Lake Ontario, further stressed these marshes and the native marsh and species diversity declined. By 1985, only 5.1 ha of emergent aquatic vegetation remained in the river mouth, a decline from 37.8 ha since 1934. Carp became the

dominant fish species. Since 1990, efforts to restore these marshes and increase the available spawning habitat for northern pike and other fish species have been underway, and include multiple small scale carp barriers.

(Bowlby et al., 2009).

Present day natural cover has been drastically reduced in area and extent and so too have many of their functional attributes including the ability to recover from disturbances. The pre-settlement forested landscape was a natural mosaic of interconnected, interacting communities which has now been replaced by a matrix of recreational, commercial, residential, infrastructure and urban uses with abundant agriculture in the upstream and headwater regions of the drainage basins. The processes of woodland succession that rely on recruitment of species from the surrounding landscape are now profoundly influenced by habitat fragmentation and the stresses of the intervening anthropogenic matrix.

4.3 RESOURCE TYPES

The natural heritage characterization has been developed through a desktop review of literature and data for the study area. This review allows us to develop general baseline conditions for both vegetation and wildlife resources.

Vegetation resources include Ecological Land Classification (ELC) for Southern Ontario and Significant vegetation species. Ecological Land Classification (ELC) data was supplied by Conservation Halton (CH) for the study area north of the overpass (opening between Cootes Paradise and Hamilton Harbour). The ELC units were completed to the Community Series (Lee et al. 1998) level only, and primarily for natural areas. No ELC data was available for the Hamilton Conservation Authority portion south of the overpass.

Wildlife resources include any background information for birds, mammals, reptiles and amphibians, and aquatic resources. The literature review also assesses whether any significant species had been previously recorded within the study area.

Literature and data consulted to provide the characterization included:

- Ecological Land Classification for Southern Ontario (Lee et al., 1998)
- NHIC Ontario Natural Heritage Information Centre Database Natural Heritage Geographic Query for rare element occurrences (NHIC, 2013)
- Ecological Survey of the Niagara Escarpment Biosphere Reserve for significant fauna in Cootes Paradise (Riley et al., 1996)
- 2012 colour digital orthogonally rectified imagery
- Hamilton Natural Areas Inventory 2003 – Site Summaries and Species Checklists (Dwyer, 2003)
- Carroll's Bay Recovery and Management Strategy (Clayton, 2010)

- Prescribed Burn Monitoring Report: 2003-2010 (Burtenshaw, 2011)
- Hamilton-Wentworth Natural Areas Inventory. Volumes I-II (Heagy, 1993; 1995)
- Nature Counts Project: Hamilton Natural Areas Inventory (Dwyer, 2003)
- The Vascular Plants of Hamilton, Ontario (Goodban, 2003)
- Important Bird Areas Canada query for West End of Lake Ontario; Hamilton, Ontario (Bird Studies Canada & Nature Canada, 2012)
- Ecological Survey of the Niagara Escarpment Biosphere Reserve. Volumes I-II (Riley, Jalava and Varga, 1996)
- Earth Sciences Museum Database of Mastodon and Mammoth Finds, University of Waterloo (2009)
- Atlas of the Mammals of Hamilton - Hamilton Naturalist Club (Vlasman, 2005)

This characterization was performed alongside policies and regulations, thereby highlighting any potential constraints. Literature and data consulted to provide policy context included:

- Urban Hamilton Official Plan (City of Hamilton, 2009)
- Natural Heritage Reference Manual (OMNR, 1999)
- Significant Wildlife Habitat Technical Guide (OMNR, 2000)
- Provincial Policy Statement (Government of Ontario, 2005)
- Fisheries Act (1986)
- Migratory Birds Convention Act (1994)
- Species at Risk Act (2002)
- Endangered Species Act (2007)
- Ontario Regulation 161/06 (2006) - Hamilton Conservation Authority
- Ontario Regulation 162/06 (2006) - Conservation Halton
- Great Lakes Wetlands Conservation Action Plan
- Great Lakes Water Quality Agreement (1972)
- Lake Ontario Bi-national biodiversity conservation agreement (2009)
- Provincial Policy Statement (2005), Growth Plan for the Greater Golden Horseshoe & MNR Technical Guidelines
- Strategic Plan for Ontario Fisheries
- Ontario Biodiversity Strategy (2005)
- Hamilton Harbour and Watershed Fisheries Management Plan

4.4 INVENTORY

4.4.1 Vegetation Resources

Ecological Land Classification

Using background documentation, and with the CH data as a basis, air photo interpretation was completed to provide full coverage of the Burlington Heights study area. Schedule B-4 of Hamilton's Urban Official Plan (2009) shows the point off of the Woodland Cemetery, and the landform north of the overpass projecting into Carroll's Bay as Key Natural Heritage and Key Hydrologic Feature Wetlands.

ELC units are summarized by Community Series in Table 1, and shown in Figure 7.

Table 1: Summary Community Series within Burlington Heights MP Study Area

ELC Community Series	No. Polygons	Hectares	% Study Area	Polygons (as shown on Fig. 7)
Anthropogenic (summary)	14	30.8	16.0%	
Anthropogenic	5	25.2	13.1%	10, 11, 23, 25, 51
Manicured	9	5.7	2.9%	6, 17, 20, 31, 36, 37, 38, 43, 56
Cultural (summary)	33	98.8	47.3%	
Cultural Meadow	8	4.5	2.2%	14, 15, 18, 27, 61, 62, 66, 69
Cultural Savannah	5	61.7	29.6%	4, 5, 7, 50, 60
Cultural Thicket	17	26.4	12.7%	1, 2, 3, 8, 19, 22, 24, 33, 34, 35, 48, 53, 55, 64, 65, 67, 68
Cultural Woodland	3	6.1	2.9%	12, 21, 52
Forest (summary)	8	21.7	10.4%	
Coniferous Forest	1	0.4	0.2%	40
Deciduous Forest	7	21.3	10.2%	16, 39, 41, 42, 54, 59, 63
Prairie (summary)	1	0.8	0.4%	
Tallgrass Prairie	1	0.8	0.4%	32

ELC Community Series	No. Polygons	Hectares	% Study Area	Polygons (as shown on Fig. 7)
Wetland (summary)	13	55.3	26.5%	
Deciduous Swamp	3	4.6	2.2%	26, 30, 47
Meadow Marsh	3	2.4	1.1%	28, 46, 57
Mixed Shallow Aquatic	4	43.2	20.7%	9, 13, 44, 58
Open Aquatic	3	5.1	2.4%	45, 49
Grand Total	69	208.2	100.0%	

Anthropogenic

Lands not classified under the ELC system have been deemed as anthropogenic. These lands include areas that have been cleared of natural vegetation and are in use for human activities. They have been further subdivided into the categories of ‘manicured’, which includes highly maintained softscapes such as lawns and gardens; and ‘anthropogenic’, which includes hardscaping such as roads, railways, parking lots and works yards. Due to the removal of natural habitats, features, and functions from these areas, these lands are considered to be low quality in terms of ecological significance.

Cultural Communities

Cultural Meadow - Cultural meadows represent a very early stage of natural succession. They lack woody species and are dominated primarily by opportunistic forbs and grasses. Depending on soil moisture regimes, these communities can vary from dry pasture grasses to the aster/goldenrod assemblages on fresh to moist substrates.

Cultural Savannah- Cultural savannahs are treed areas characterized by canopy coverage between 25 – 35%. In Burlington Heights, these communities are the two large cemeteries, and the plateau portion of RBG’s Rock Garden.

Cultural Thicket - Cultural thickets include areas in a somewhat later stage of succession than cultural meadow, where shrub cover is greater than 25% but tree cover remains below 25%. Cultural thicket communities are dominated by woody shrubs and often have an understory of forbs and grasses. In the Burlington Heights study area cultural thickets dominate the very steep slopes along roads and railways.



Cultural Woodland - Cultural woodlands are treed areas characterized by canopy coverage between 35 – 60%. These communities often represent the stage of natural succession between cultural thicket and forest, but may also represent a highly disturbed or fragmented forest. Of all the cultural vegetation community types, cultural woodlands generally have the greatest ecological function due to their similarity to natural forest communities.

Forest Communities

Deciduous forests are characterized by their canopy layer, which is dominated by deciduous species and has greater than 60% canopy cover. The deciduous forests of the Burlington Heights study area are found along the steep slopes, which lead down to the waters' edge, railways and roads.

Prairie Community

Tallgrass Prairie – Prairies are uncommon communities in southern Ontario that are dominated by prairie graminoids. York Boulevard Prairie (polygon #32) has been the site of restoration efforts to re-establish the highly-disturbed remnant prairie community. The first prescribed burn took place in 1997, and was subsequently burned six more times up to 2010. The site is dominated by Kentucky bluegrass (*Poa pratensis*), followed in abundance by Little Bluestem (*Schizachyrium scoparium*) (Burtenshaw, 2011). Monitoring data shows a general trend toward Tallgrass prairie species, and in 2010 Big Bluestem (*Andropogon gerardii*) and Indian grass (*Sorghastrum nutans*) were noted as dominant within the herbaceous layer (Burtenshaw, 2011).

Aquatic & Wetland Communities

Deciduous Swamp – Deciduous swamps are characterized by their canopy layer, which contain at least 75% hydrophytic deciduous species and often exhibit standing water or vernal pooling.

Meadow Marsh – Meadow marshes are characterized by their lack of woody vegetation and a dominance of emergent hydrophytic vegetation species. Meadow marshes can have permanent or ephemeral standing water up to 2m. Meadow marshes that do not exhibit standing water have a high water table below the ground surface that significantly influences the vegetation composition.

Mixed Shallow Aquatic – Mixed shallow aquatic communities are characterized by their the permanent presence of standing water up to 2m in depth, and a mixture of submerged and floating-leaved macrophytes. Polygon #58 appears to have developed the characteristics of a mixed shallow aquatic community due to the restoration efforts that have removed the invasive carp from the system. It is possible that polygon #45 could be classified as a mixed shallow aquatic community, but this should be verified through field investigation. Carroll's Bay composes that vast majority of the wetland communities of the study area. It is part of the 60 ha lower Grindstone Creek wetland complex (Clayton, 2010), which is comprised of a series of wetlands found at the mouth of Grindstone Creek. This complex is a Class 2 Provincially Significant Wetland (PSW).

Open Aquatic – Aquatic communities are typically low-lying areas dominated by open water, robust emergents, submerged or floating-leaved macrophytes, or plankton. Standing water in these communities is generally > 2m in depth.

Plants

See Appendix N for the plant species that have been found in the Burlington Heights study area through the Royal Botanical Gardens species records database (Theysmeyer, 2013). Three Species at Risk plants are found in the Burlington Heights Heritage Lands according to these records (Theysmeyer, 2013). These are Butternut (*Juglans cineria*), American Columbo (*Frasera caroliniensis*) and Hoary Mountain Mint (*Pycnanthemum incanum*), all of which are identified as Endangered both Provincially (OMNR 2012) and Federally (COSEWIC 2012).

The 32 species found in the NHIC database for the squares containing the study area (in addition to some adjacent lands), all are ranked as Rare, Very Rare or Extremely Rare in Ontario (NHIC 2013). Three were historically known in Ontario, but have not been recorded in the past 20 years (Appendix C). American Chestnut, Spotted Wintergreen, and Eastern Flowering Dogwood have all been identified as Endangered both Provincially (OMNR 2012) and Federally (COSEWIC 2012). White Wood Aster is Threatened and Broad Beech Fern is a Species of Special Concern Provincially (OMNR 2012) and Federally (COSEWIC 2012).

Invasive Species have been identified by RBG staff as the single largest issue threatening the integrity of the ecosystem of the Heritage Heights study area. The table below shows the major invasive species and indicates whether they are dominant in their respective habitat (Theysmeyer, 2013).

Table 2: Major Invasive Species

Common Name	Scientific Name	Dominant
Common Buckthorn	<i>Rhamnus carthartica</i>	x
Dog Strangling Vine	<i>Cynanchum rossicum</i>	x
Garlic Mustard	<i>Alliaria petiolata</i>	
Mono Maple	<i>Acer pictum</i> subsp. <i>mono</i>	
Phragmites	<i>Phragmites australis</i>	
Reed Canary Grass	<i>Phalaris arundinacea</i>	
Siberian Elm	<i>Ulmus pumila</i>	x
Smooth Brome Grass	<i>Bromus inermis</i>	x
Tartarian Honeysuckle	<i>Lonicera tatarica</i>	x
Tree of Heaven	<i>Ailanthus altissima</i>	x
White Poplar	<i>Populus alba</i>	

4.4.2 WILDLIFE RESOURCES

The NHIC Database (2013), The Ecological Survey of the Niagara Escarpment Biosphere Reserve Database (Riley et al.,1996), Important Bird Areas in Canada (Bird Studies Canada & Nature Canada, 2012), Atlas of the Breeding Birds of Ontario, as well relevant literature specific to the Burlington Heights Heritage Lands were checked for significant species for the area encompassing Burlington Heights Heritage Lands. The data obtained from these sources is not necessarily site specific to Burlington Heights Heritage Lands. Burlington Heights Heritage Lands are however, found within the referenced study areas or are in very close proximity to the Lands. Therefore, some of the species reported on below may not occupy Burlington Heights Heritage Lands. For example, the data from the Niagara Escarpment Biosphere Reserve Database (Riley et al.,1996) was gathered from an area that borders the western edge of Burlington Heights Heritage Lands.

Birds

Burlington Heights Heritage Lands are located within an Important Bird Area (IBA), Bird Studies Canada (2012). This area generally stretches from Port Credit on the north shore of Lake Ontario to the mouth of the Niagara River on the south shore, and bounded on the west by Burlington Bar. The NHIC database provides data for species in 1km X 1km squares. Of the twenty-two bird species found in the NHIC Database and The Ecological Survey of the Niagara Escarpment Biosphere Reserve (Appendix E) that cover the study area, half are recognized as being Rare, Very Rare, or Extremely Rare in Ontario (NHIC). Seventeen of these species are historical records. Of the remaining, five are identified as Endangered, Threatened, or Species of Special Concern, both provincially (OMNR 2012) and federally (COSEWIC 2012). These species are the Peregrine Falcon, Cerulean Warbler, Least Bittern, Prothonotary Warbler and Yellow Breasted Chat. In addition, the Bald Eagle was identified as a species of Special Concern Provincially (OMNR 2012). The breeding status of the birds in the NHIC database are not available. Black-crowned Night-heron has been observed roosting in large numbers along Carroll's Bay shore and Bald Eagles and Osprey have also been observed flying in the area, likely using the area as hunting grounds (Clayton 2010).

On-Site Breeding Birds

Due to a lack of breeding bird data specific to the Burlington Heights Management Plan study area, a breeding bird survey was conducted on June 30, 2013, following the protocols outlined by the Ontario Breeding Bird Atlas (OBBA 2001). A total of seven point counts were surveyed, as predetermined by Tys Theysmeyer, Head of Natural Lands, Royal Botanical Gardens.

An additional survey to search specifically for Common Nighthawk and Chimney Swift was conducted on June 29. This survey was done at dusk when the likelihood of detecting these two crepuscular species is greatest, and consisted of walking the entire Hamilton Cemetery site, looking and listening for the two target species. Results from these surveys can be found in Appendix H.

Nearby Breeding Birds

Breeding bird surveys for the Atlas of the Breeding Birds of Ontario show the Burlington Heights Heritage Lands and the adjacent lands contained in a 10km X 10km square. In that square there are 134 species using this land as potential breeding habitat (Appendix G), with confirmed evidence of breeding for 88 species, probable breeding for 27 species and possible breeding for 19 species.

Migratory Birds

Flocks of mainly diving ducks form notable congregations, primarily in late winter and early spring. Greater Scaup, White-winged Scoter and Long-tailed Duck occur here in numbers greater than 1% of their estimated North American population, hence the designation of IBA for the west end of Lake Ontario (Appendix D). It is important to note that Burlington Heights accounts for a small portion of the IBA, and as such, some of these ducks may not be utilizing that particular area. Both diving ducks and dabblers utilize Carroll’s Bay wetland as a wind shelter and to feed along their migration route (Kondrat, 2010). Data from migratory bird surveys in Carroll’s Bay can be found in Appendix F. Species diversity and species richness over a one year period declined by half from 15 species to only seven (Clayton 2010).

Mammals

Of the four species of mammals found in the NHIC Database and The Ecological Survey of the Niagara Escarpment Biosphere Reserve, only one species, the Woodland Vole is recognized as a Species of Special Concern (Appendix I). The other three species (beaver, muskrat and mink) are common and widespread in southern Ontario, with S-ranks of S₄ or S₅, but have not been observed in Carroll’s Bay (Clayton 2012).

The table below shows the mammal species that have been identified through the Atlas of the Mammals of Hamilton produced by the Hamilton Naturalist Club (Theysmeyer, 2013).

Table 3: Mammals of Hamilton

Common Name	Scientific Name
Beaver	<i>Castor canadensis</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Black Squirrel	<i>Sciurus carolinensis</i>
Chipmunk	<i>Tamias striatus</i>
Coyote	<i>Canis latrans</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Field Mouse	<i>Peromyscus maniculatus</i>
Little Brown Bat	<i>Myotis lucifugus</i>

Longtailed Weasel	<i>Mustela frenata</i>
Mink	<i>Mustela vison</i>
Muskrat	<i>Ondatra zibethicus</i>
Raccon	<i>Procyon lotor</i>
Red Fox	<i>Vulpes vulpes</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>
Shorttailed Shrew	<i>Blarina brevicauda</i>
Virginia Opossum	<i>Didelphis virginiana</i>
Whitefooted Mouse	<i>Peromyscus leucopus</i>
Whitetailed Deer	<i>Odocoileus virginianus</i>

Reptiles and Amphibians

Burlington Heights Heritage Lands are home to several turtle species (Appendix J). Five of the six species have been identified Rare in Ontario (NHIC) and as Species of Special Concern or Threatened, both Provincially (OMNR 2012) and Federally (COSEWIC 2012). Carroll's Bay supports a large population (at least 431 individuals) of Northern Map Turtles, a Species of Special Concern, making it one of the largest populations in Canada (Clayton 2010). Eastern Spiny Soft Shell, Blandings' Turtle, and Eastern Musk Turtle (Stinkpot Turtle) are all classified as Threatened Species. Snapping Turtle is classified as a Species of Special Concern. Only one species of snake was found in The Ecological Survey of the Niagara Escarpment Biosphere Reserve database. The milksnake is classified as a Species of Concern both Provincially and Federally (Appendix J).

Burlington Heights Heritage Lands represent important breeding habitat for many reptile species, most of which are Threatened or of Special Concern. This area also represents the second largest population of Northern Map Turtles in Canada, and is one of only a few areas in Canada where this turtle is found.

The table below shows the herpetile species that have been found in the Burlington Heights study area through the Royal Botanical Gardens species records database (Theysmeyer, 2013).

Table 4: Herptile Species of Burlington Heights

Species	Scientific Names	Provincial Rank	National Rank	Local Abundance
American Toad	<i>Bufo americanus americanus</i>	-	-	Rare
Leopard Frog	<i>Rana pipiens</i>	-	-	Rare
Green Frog	<i>Rana clamitans melanota</i>	-	-	Rare
Blandings Turtle	<i>Emydoidea blandingii</i>	Threatened	Threatened	Rare
Musk Turtle	<i>Sternotherus odoratus</i>	-	-	Rare
Map Turtle	<i>Graptemys geographica</i>	Special Concern	Special Concern	Common
Painted Turtle	<i>Chrysemys picta marginata</i>	-	-	Common
Snapping Turtle	<i>Chelydra serpentina serpentina</i>	Special Concern	Special Concern	Rare
Red eared Slider	<i>Trachemys scripta elegans</i>	-	-	Rare
Milksnake	<i>Lampropeltis triangulum triangulum</i>	Special Concern	Special Concern	Rare
Northern Watersnake	<i>Nerodia sipedon sipedon</i>	-	-	Rare
Garter Snake	<i>Thamnophis sirtalis sirtalis</i>	-	-	Rare
Redbacked Salamnder	<i>Plethodon cinereus</i>	-	-	Common
Brown Snake	<i>Storeria dekayi</i>	-	-	Common
Green Snake	<i>Opheodrys vernalis</i>	-	-	Rare

Other Terrestrial Species

Only three other species were identified in the NHIC database and The Ecological Survey of the Niagara Escarpment Biosphere Reserve database (Appendix K), Mudpuppy (amphibian), Two Spotted Skipper and Northern Cloudywing (butterflies). These species are common and wide-spread in Southern Ontario, with S-ranks of S-4 and S5 (NHIC 2013). The Royal Botanical Gardens species records database shows Monarchs within the study area (Theysmeyer, 2013), which have a status of Special Concern Provincially and Nationally.

Aquatic Resources

Spencer Creek and Grindstone Creek watersheds support a variety of warm and cold water fish species. Lake-run forage fish and sport fish utilise these creeks to forage and seek summer refuge. Species found in these systems include Salmonid species, Northern Pike, White Sucker, Largemouth Bass and Yellow Perch (Galbraith and Wong, 2007)

The waters in and adjacent to the Burlington Heights study area serve as significant spawning habitat and nursery areas for many fish species (Appendix L), of which 15 are recognized as Rare, Very Rare, or Extremely Rare in Ontario (NHIC, 2013). Spotted Gar is a Threatened species Provincially (OMNR 2012) and Federally (COSEWIC 2012).

Common Carp (*Cyprinus carpio*) are the dominant fish in the study area (Theysmeyer 2013). The reduction of carp in Cootes Paradise from the operation of the Cootes Paradise Fishway has led to a high abundance of this species in Carroll’s Bay. As a result, water quality and habitat in Carroll’s Bay remains in poor condition (Clayton 2010), thus reducing the ability for native species to spawn and live effectively in the area.

Three species of clams are present in Burlington Heights Heritage Lands. Eastern Floater and Paper Pondshell are both identified as Very Rare Provincially (OMNR 2012) and Lilliput is identified as Extremely Rare Provincially (OMNR 2012).

For a list of fish species found in the Burlington Heights study area through the Royal Botanical Gardens species records database, see Appendix M.

The table below shows the species of mussels that have been found in the Burlington Heights study area through the Royal Botanical Gardens species records database (Theysmeyer, 2013).

Table 5: Mussel Species of Burlington Heights

Common Name	Scientific Name	Provincial Rank	National Rank	Local abundance
Creek Heelsplitter	<i>Lasmigona compressa</i>	-	-	Rare
Cylindrical Floater	<i>Anodontoides ferussacianus</i>	-	-	Rare
Eastern Eliptio	<i>Elliptio complanata</i>	-	-	Rare
Eastern Pondmussel	<i>Ligumia nasuta</i>	Endangered	Endangered	Rare
Fat Mucket	<i>Lampsilis siliquoidea</i>	-	-	Rare
Fragile Papershell	<i>Leptodea fragilis</i>	-	-	Common
Giant Floater	<i>Pyganodon grandis</i>	-	-	Common
Lilliput	<i>Toxolasma parvum</i>	Endangered	Endangered	Common
Paper Pondshell	<i>Utterbackia imbecillis</i>	-	-	Common
Pink Heelsplitter	<i>Potamilus alatus</i>	-	-	Rare
Zebra Mussel	<i>Dreissena polymorpha</i>	-	-	Common

4.5 COMPILATION OF RESOURCES

Table 6: Summary of Natural Heritage Features & Areas

Features	Required Standard	Study Area
1.1 ESA or ANSI	<p>(a) Provincially Significant Life Science ANSI, as designated and mapped by OMNR.</p> <p>(b) Provincially Significant Earth Science ANSI, as designated and mapped by OMNR.</p> <p>(c) Regionally Significant Life Science ANSI, as designated and mapped by OMNR.</p> <p>(d) Regionally Significant Earth Science ANSI, as designated and mapped by OMNR.</p>	<ul style="list-style-type: none"> • Schedule B-6 of Hamilton’s Urban Official Plan (2009) shows virtually the entire study area as an Environmentally Significant Area (ESA), with the exception of the rail lines and Dundurn National Historic Site • ESA #42: Cootes Paradise (DUND-15) • Carroll’s Bay is an Area of Natural Scientific Interest (ANSI), and an Environmentally Sensitive Area (ESA)
1.2 Habitat for a species at risk	<p>(a) Habitat for species provincially designated END or THR in Ontario’s <i>Endangered Species Act</i>. Records considered historical (i.e., more than 20 years old) have not been applied for this criterion.</p>	<ul style="list-style-type: none"> • Records for five breeding bird species found in the Burlington Heights Heritage Lands are Endangered, Threatened or of Special Concern • Five turtle species have been identified as Species of Special Concern or Threatened • 15 fish species are recognized as Rare, Very Rare, or Extremely Rare in Ontario • Two species of clams are identified as Very Rare Provincially, and one is identified as Extremely Rare Provincially • 32 species of plants in the Burlington Heights Heritage Lands are ranked as Rare, Very Rare or Extremely Rare in Ontario
1.3 Significant Wildlife Habitat	<p>(a) Waterfowl overwintering areas; as defined and mapped by OMNR.</p> <p>(b) Provincially Significant Vegetation Types; ELC Vegetation Types Ranked as S1, S2, S3 or S3/S4 by NHIC (any size).</p> <p>(c) Habitat for Globally, Nationally and Provincially Significant Species (not captured by Criterion 1.2); includes species designated as THR or END by COSEWIC, Special Concern</p>	<ul style="list-style-type: none"> • Burlington Heights Heritage Lands are an important breeding area for over a hundred species of birds • The area supports several species of migratory ducks during spring and fall migrations. • This area represents one of only a few areas in Canada where the Northern Map Turtle is found.

Features	Required Standard	Study Area
	<p>(SC) by COSEWIC OR COSSARO, or identified as S₁, S₂, S₃ or S₃/S₄ by NHIC and confirmed in this or other studies.</p> <p>(d) Amphibian woodland breeding ponds</p> <p>(e) Migratory stopover area (song birds and butterfly)</p> <p>(f) Site potentially linked to an animal movement corridor</p> <p>(g) Fish nursery</p>	
1.4 Provincially Significant Wetlands	(a) Evaluated as a Provincially Significant Wetlands (PSW) as defined and mapped by OMNR.	<ul style="list-style-type: none"> Grindstone Creek wetland complex is a series of wetlands found at the mouth of Grindstone Creek; a Class 2 wetland (PSW)
1.5 Surface water or fisheries resources	<p>(a) Permanent streams (including ponds)</p> <p>(b) Cold-water fish habitat</p>	<ul style="list-style-type: none"> Schedule B-5 of Hamilton's Urban Official Plan (2009) shows all of Hamilton Harbour as Key Hydrologic Features Lakes and Littoral Zones Carroll's Bay, Cootes Paradise and Grindstone Marshes serve as significant spawning habitat and nursery areas for many fish species of which 15 are recognized as Rare, Very Rare, or Extremely Rare in Ontario
1.6 Regionally Significant Woodland	(a) Significant Woodlands as identified in Hamilton's Urban Official Plan (2009)	<ul style="list-style-type: none"> Two significant woodlands identified on Schedule B-2 of Hamilton's Urban Official Plan (2009) One is the deciduous forest along the south side of Grindstone Creek One is the forest strip between Plains Road and the rail lines.
1.7 Significant Valleyland	(a) Regulatory floodplain; rivers and associated valleylands to top of bank as defined and mapped by Conservation Halton and the Hamilton Conservation Authority	<ul style="list-style-type: none"> Regulated lands

5.0 ISSUES AND OPPORTUNITIES

Through the background review process, the study team has identified a number of issues and opportunities throughout the study area. These items set out below will help to guide the creation of the Management Plan for the study area.

Issue / opportunity #1: Study area boundary

Through the fieldwork and background review conducted as part of the first phase of the study, the study team identified an opportunity to undertake slight revisions to the study area boundary. There are a number of minor corrections that can be made so that the boundary follows the harbour edge, as well as follows the edge of Highway #403. It was also suggested through the public consultation process that parkland in the City of Burlington be included in the study area as well. The recommended additions to the boundary are shown in Figure 8.

These minor revisions will help the preparation of the Management Plan to ensure that it can address the full study area as part of future recommendations for the area.

Issue / opportunity #2: Site complexity

The Burlington Heights area is a complex site with many layers that are reflective of past activities. As such, there are a variety of natural and cultural heritage features that occur within the study area and immediately adjacent. This study process provides an opportunity to recognize the various types of features and identify guidance for future management activities.

Further complexities arise when examining the site as a cultural heritage landscape. There are three different typologies of cultural heritage landscapes as defined by the *UNESCO*: Designed landscapes, evolved landscapes and associative landscapes. All three types of cultural heritage landscapes are found within the study area, and there will be unique challenges that the Management Plan will have to address for an area that encompasses all three types, amongst other resources.

Issue / opportunity #3: Site views

Given the study area's location and proximity, there are a number of potentially significant view areas present. These include views across the site, and also views to areas beyond the study area to other parts of the Cootes to Escarpment Parks System and beyond.

These view areas will be explored further during the preparation of the Management Plan for the Burlington Heights study area.



Burlington Heights Heritage Study Area *Opportunities and Challenges*

LEGEND

-  Proposed Burlington Heights Heritage Study Area
-  Existing Burlington Heights Heritage Study Area
-  Proposed Additions to Burlington Heights Heritage Study Area

Source: Aerial, Commissionation - 2010
First Base Software - 2012

DATE: Aug. 2013	FIGURE 8	
SCALE: NTS	DRN: CAC	

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Issue / opportunity #4: Organization of land uses

Although the subject lands are relatively small in area, the existing transportation network as well as the nearby shorelines make the organization of land uses quite complex. The site does not have easy access, and the various site features are broken up into various nodes. In addition, there is not a clear 'destination' that visitors can go to when they first arrive on the site.

This will be a key issue to be investigated as the process continues to move forward and the Management Plan takes shape.

Issue / opportunity #5: Transportation network

The transportation network within and surrounding the subject site provides a number of ways to access and view the Burlington Heights area, including rail, trail, road, and water. There are also differing road classifications present on the site, including local roads and Provincial highways.

Burlington Heights serves as a thoroughfare between Hamilton and Burlington but also has to provide access to parking lots to a number of the cultural heritage resources in the area. The transportation system provides flexibility for different means of access to the site, and also provides a challenge in ensuring all visitors to the area have a clear identity of Burlington Heights.

Issue / opportunity #6: Gateway initiative

The Burlington Heights area has the potential to become a gateway to the Cootes to Escarpment EcoPark System, given its location in relation to existing transportation corridors as well as being the first area to be examined in detail as part of the initiative.

Issue / opportunity #7: Natural heritage features

The Burlington Heights Heritage Lands have a unique natural heritage that reflects its climate, landscape and water resources. Due to settlement patterns in southern Ontario and the relative flatness and fertility of the lands in the Carolinian Life Zone, much of the pre-settlement natural heritage landscape was converted to agriculture for many generations with urban, recreational, infrastructure and manicured landscapes (i.e. RBG Gardens & Cemeteries) as the dominant uses today.

The following key threats affecting the stability¹ and resilience² of the remnant natural resources have been identified and include:

- Invasive Species
- Pollution
- Climate Change
- Habitat Loss
- Habitat Fragmentation
- Ongoing Anthropogenic Disturbances
- Sediment Deposition from Upstream Watershed Erosion
- Increasing Impervious Surfaces in the Upstream Watershed

The Management Plan will further explore these threats and also examine potential opportunities for protection of natural heritage features, restoration, and enhancement.

The above issues and opportunities will be presented and discussed with the public and various stakeholder groups, and it is expected that they will form an integral part of the future Management Plan process for the Burlington Heights area.

¹ The ability of an ecosystem to withstand change or, when changed, to develop forces leading back to the original condition (Dunster, 1996).

² The ability of an ecosystem to recover and maintain the desired condition of diversity, integrity, and ecological processes following disturbances (Dunster, 1996).

6.0 CONCLUSION/NEXT STEPS

Following the release of this report, there will be opportunities to receive comments from the public and the steering committee. The report will then be finalized, and work will begin on the preparation of the Management Plan for the Burlington Heights area. A number of issues and opportunities have been identified to date, and these will be further discussed and refined as the project moves forward.

Preparation of the Management Plan includes preparing a land classification system based on the Niagara Escarpment Parks and Open Space System (NEPOSS) zones, followed by the development of the Management Plan that will guide future development. Further public consultation will occur through the development of the NEPOSS zones and the Management Plan, and public meetings will be held to obtain feedback.

It is anticipated that the project will be complete in early 2014.

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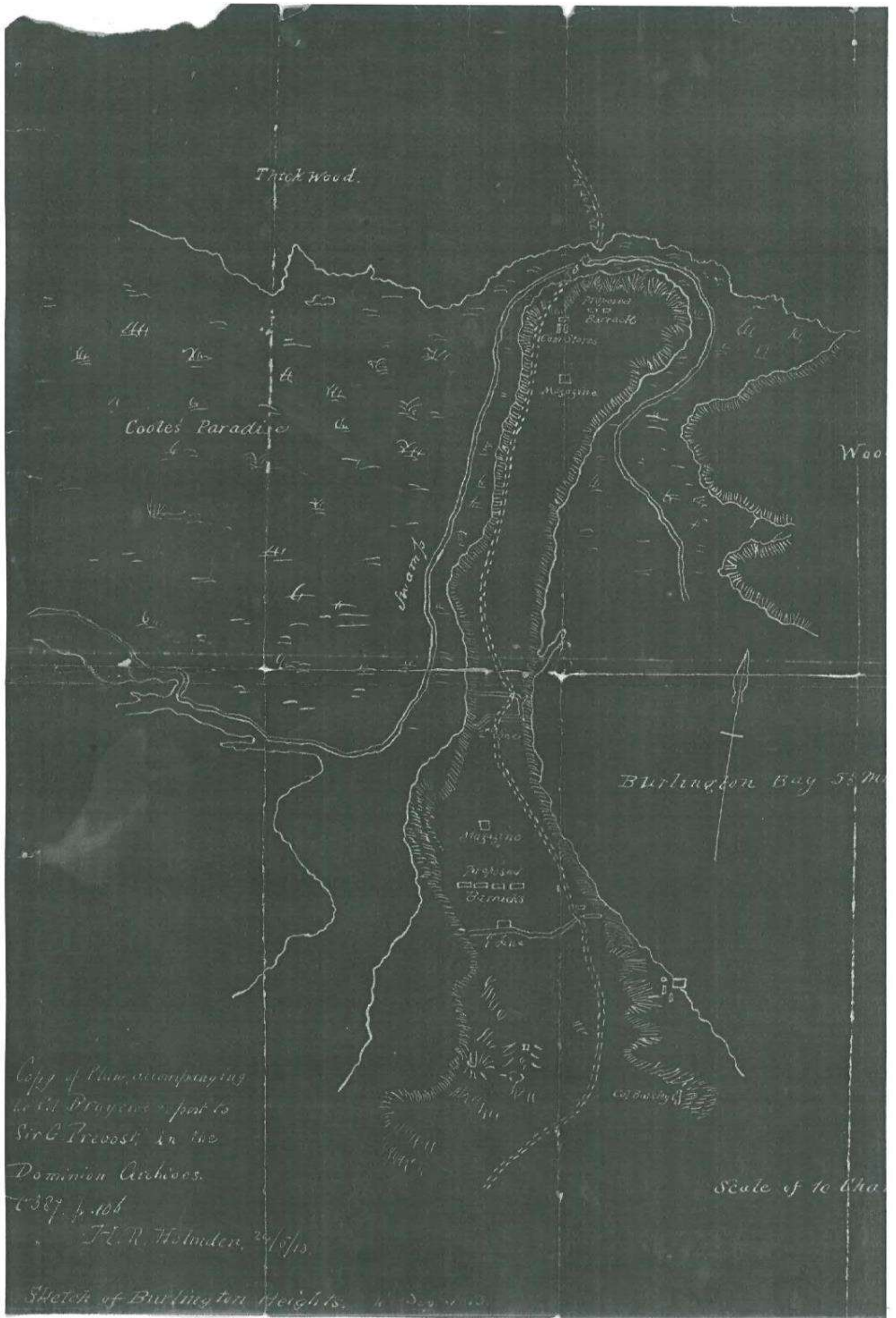
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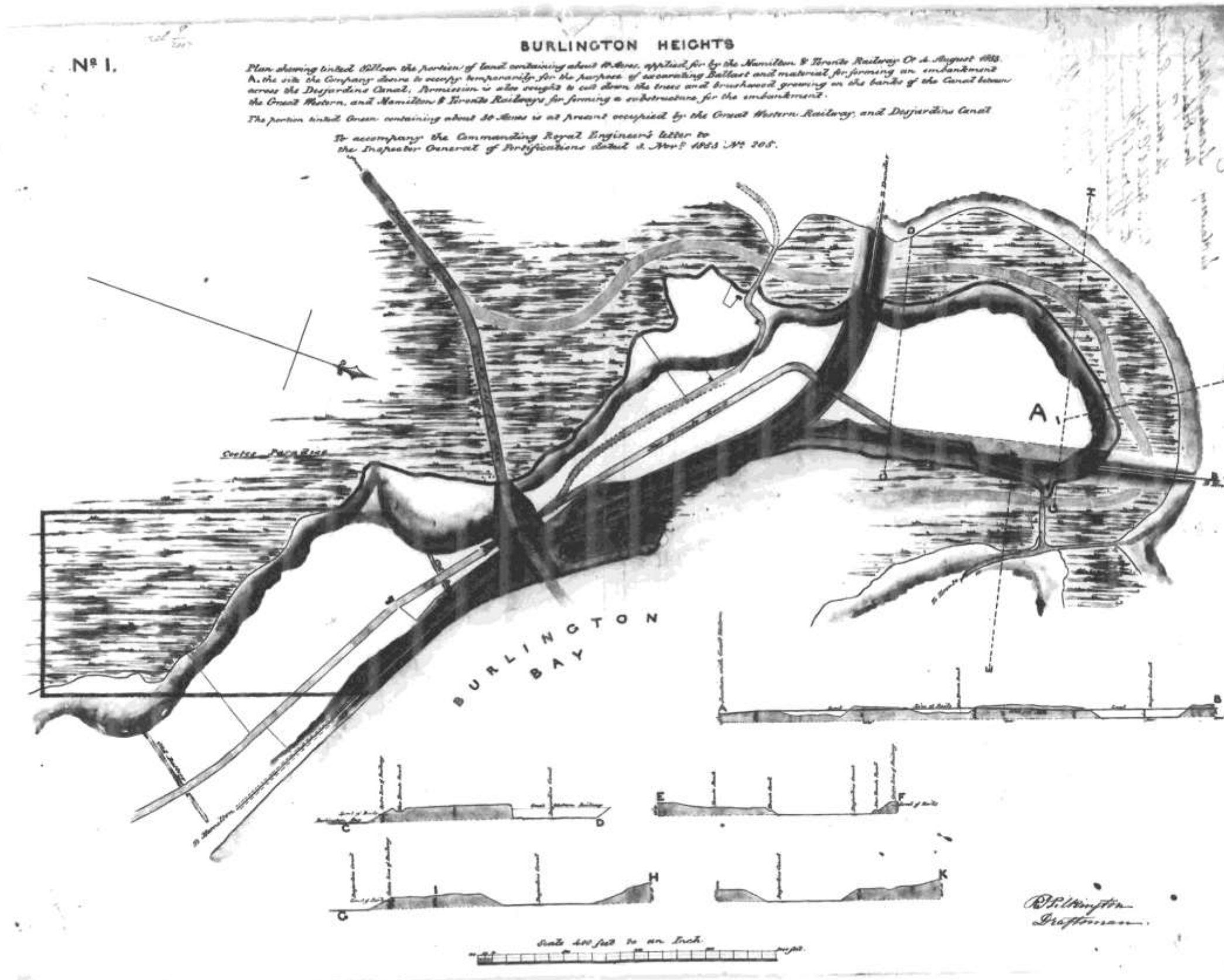
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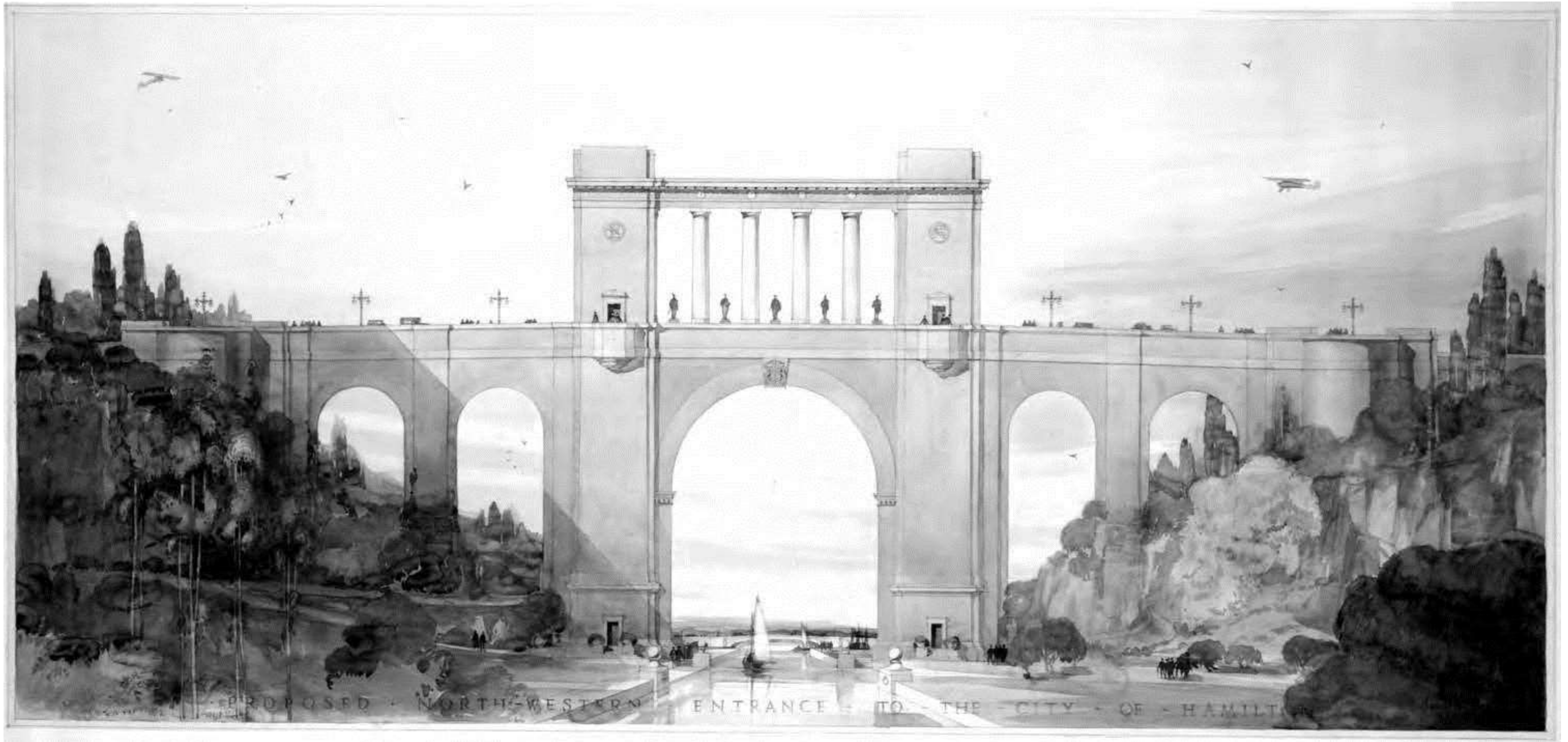
APPENDIX A: HISTORICAL MAPPING AND PLANS

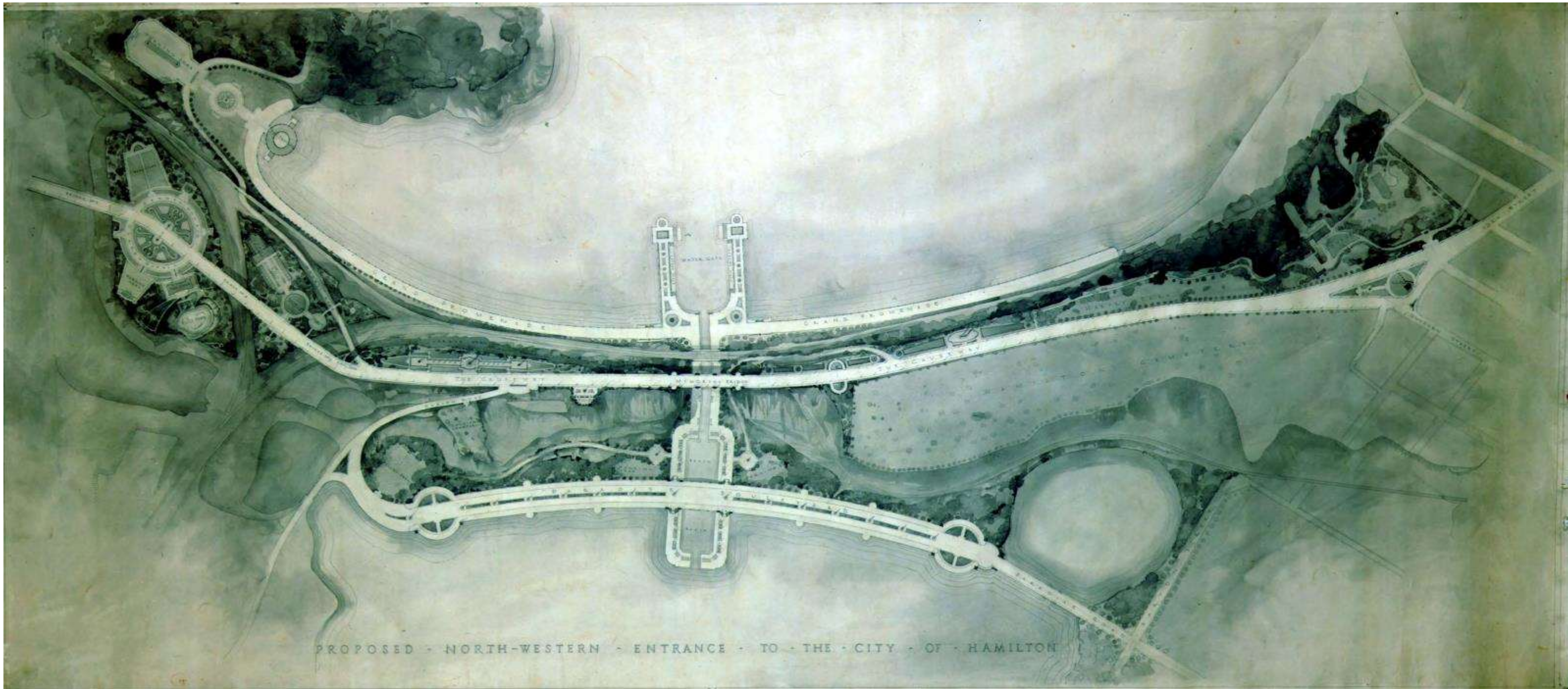
1. Sketch of Burlington Heights, 1813 (Provided by the Hamilton Conservation Authority)
2. Plan of Burlington Heights, 1834 (Provided by the Hamilton Conservation Authority)
3. Hamilton and Toronto Railway Co. map of Burlington Heights, 1853 (Provided by the Hamilton Conservation Authority)
4. City of Hamilton, Plan for Northwestern Highway Entrance, c. 1920s (Provided by the Royal Botanical Gardens Archives)
5. Plan for the Northwestern Entrance Competition by Borgstrom (Provided by the Royal Botanical Gardens Archives)
6. Plan for the Northwestern Entrance Competition by Borgstrom (Provided by the Royal Botanical Gardens Archives)
7. Plan for the Northwestern Entrance Competition by Dunnington-Grubb (Provided by the Royal Botanical Gardens Archives)
8. Plan for the Northwestern Entrance Competition by Dunnington-Grubb (Provided by the Royal Botanical Gardens Archives)
9. Plan for the Northwestern Entrance Competition by Lyle (Provided by the Royal Botanical Gardens Archives)
10. Plan for the Northwestern Entrance Competition by Lyle (Provided by the Royal Botanical Gardens Archives)

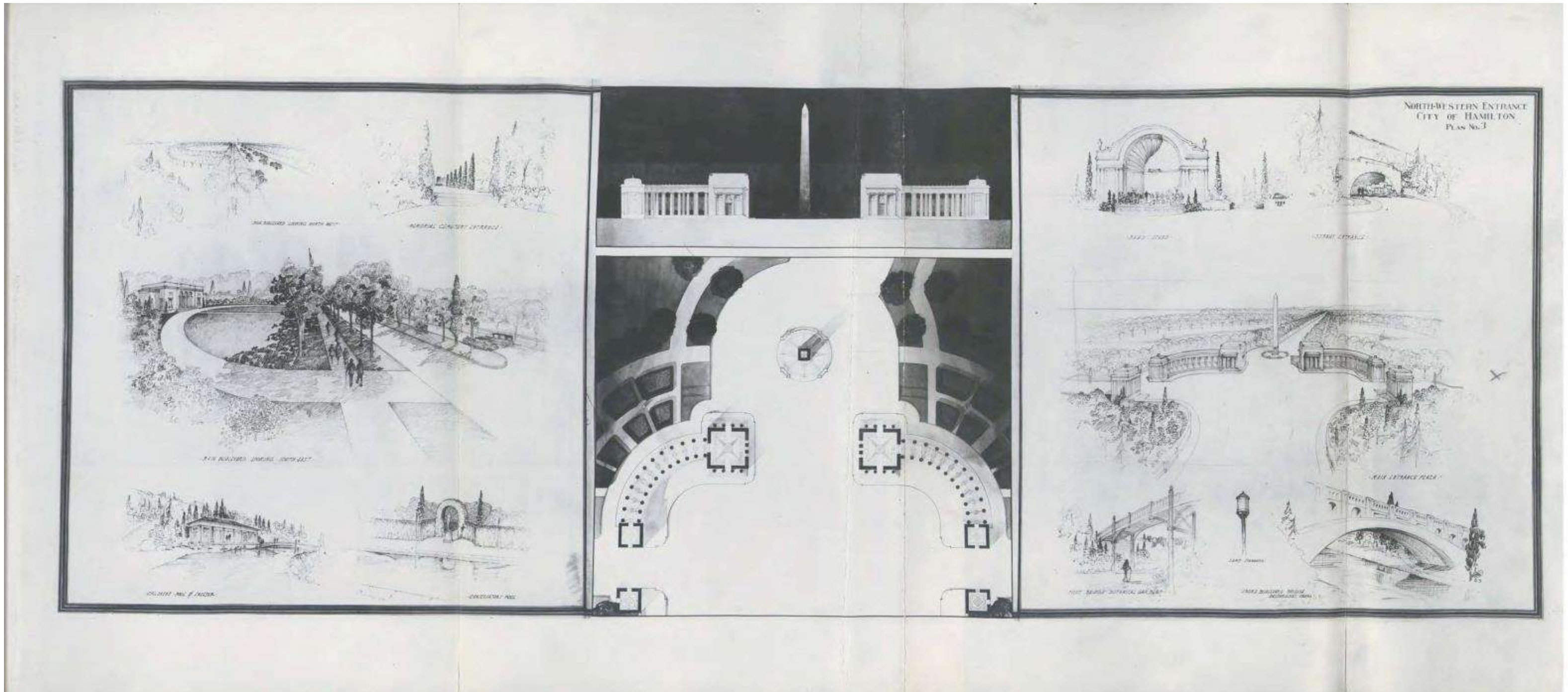






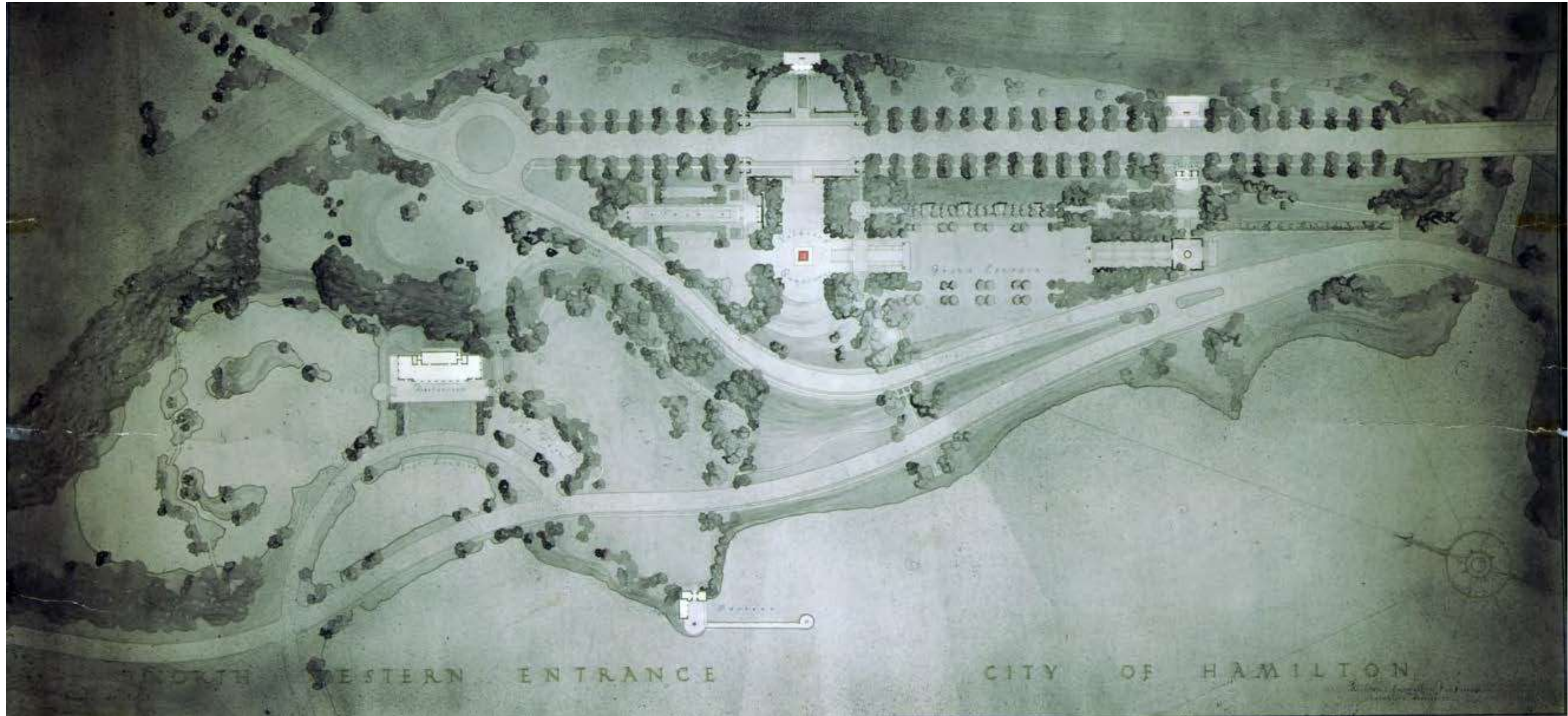












APPENDIX B: EXPLANATION OF S-RANK, G-RANK, FEDERAL AND PROVINCIAL STATUS

Federal Status (COSEWIC 2007)

Extinct (X) - A wildlife species that no longer exists.

Extirpated (XT) - A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.

Endangered (E) - A wildlife species facing imminent extirpation or extinction.

Threatened (T) - A wildlife species likely to become endangered if limiting factors are not reversed.

Special Concern (SC) - A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Data Deficient (DD) - A wildlife species for which there is inadequate information to make a direct, or indirect, assessment of its risk of extinction.

Not At Risk (NAR) - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Provincial Status (OMNR 2006)

EXT Extinct. Any species formerly native to Ontario that no longer exists.

EXP Extirpated. Any native species no longer existing in the wild in Ontario, but existing elsewhere in the wild.

END Endangered. Any native species that, on the basis of the best available scientific evidence, is at risk of extinction or extirpation throughout all or a significant portion of its Ontario range if the limiting factors are not reversed. Endangered species are protected under the province's Endangered Species Act.

THR Threatened. Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a significant portion of its Ontario range if the limiting factors are not reversed.

SC Special Concern [formerly Vulnerable] A species with characteristics that make it sensitive to human activities or natural events

NAR Not at Risk [formerly Not In Any Category] A species that has been evaluated and found to be not at risk

DD Data Deficient [formerly Indeterminate] A species for which there is insufficient information for a provincial status recommendation

Global Rank (GRANK): (NHIC 2008)

Global ranks are assigned by a consensus of the network of CDCs, scientific experts, and The Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies or variety.

The most important factors considered in assigning global (and provincial) ranks are the total number of known, extant sites world-wide, and the degree to which they are potentially or actively threatened with destruction. Other criteria include the number of known populations considered to be securely protected, the size of the various populations, and the ability of the taxon to persist at its known sites. The taxonomic distinctness of each taxon has also been considered. Hybrids, introduced species, and taxonomically dubious species, subspecies and varieties have not been included.

G1 **Extremely rare**; usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.

G2 **Very rare**; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.

G3 **Rare to uncommon**; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.

G4 **Common**; usually more than 100 occurrences; usually not susceptible to immediate threats.

G5 **Very common**; demonstrably secure under present conditions.

GH **Historic**, no records in the past 20 years.

GU **Status uncertain**, often because of low search effort or cryptic nature of the species; more data needed.

GX **Globally extinct**. No recent records despite specific searches.

? Denotes inexact numeric rank (i.e. G4?).

G A "G" (or "T") followed by a blank space means that the NHIC has not yet obtained the Global Rank from The Nature Conservancy.

G? **Unranked**, or, if following a ranking, rank tentatively assigned (e.g. G3?).

Q Denotes that the taxonomic status of the species, subspecies, or variety is questionable.

T Denotes that the rank applies to a subspecies or variety.

Subnational Rank (SRANK): (NHIC 2008)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated lists at least annually. The NHIC welcomes information which will assist in assigning accurate provincial ranks.

- S1** **Extremely rare** in Ontario; usually 5 or fewer occurrences in the province or very few remaining individuals; often especially vulnerable to extirpation.
- S2** **Very rare in Ontario**; usually between 5 and 20 occurrences in the province or with many individuals in fewer occurrences; often susceptible to extirpation.
- S3** **Rare to uncommon in Ontario**; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances. Most species with an S3 rank are assigned to the watch list, unless they have a relatively high global rank.
- S4** **Common** and apparently secure in Ontario; usually with more than 100 occurrences in the province.
- S5** **Very common** and demonstrably secure in Ontario.
- SH** **Historically known from Ontario**, but not verified recently (typically not recorded in the province in the last 20 years); however suitable habitat is thought to be still present in the province and there is reasonable expectation that the species may be rediscovered.
- SR** **Reported for Ontario**, but without persuasive documentation which would provide a basis for either accepting or rejecting the report.
- SRF** Reported falsely from Ontario.
- SX** Apparently **extirpated** from Ontario, with little likelihood of rediscovery. Typically not seen in the province for many decades, despite searches at known historic sites.
- SE** **Exotic**; not believed to be a native component of Ontario's flora.
- C** **Captive/Cultivated**; existing in the province only in a cultivated state; introduced population not yet fully established and self-sustaining.
- S?** **Not Ranked Yet**, or if following a ranking, **Rank Uncertain** (e.g. S3?). S? species have not had a rank assigned.
- SU** **Unrankable**, often because of low search effort or cryptic nature of the species, there is insufficient information available to assign a more accurate rank; more data is needed.

APPENDIX C: SUMMARY OF PLANT SPECIES RECORDS IN THE NHIC DATABASE (NHIC 2013)

Species	S-rank	G-rank	National	Provincial	Observation
Arrowhead Spiketail	S ₂	G ₄	--	--	1931
Puttyroot	S ₂	G ₅	--	--	1889
White Milkweed	SX	G ₅	--	--	1870
Fern-leaved Yellow False Foxglove	S ₂ ?	G ₅	--	--	1888
Downy Yellow False Foxglove	S ₁	G ₅	--	--	1957
White-tinged Sedge	S ₃	G ₅ T ₄ T ₅	--	--	1980
Pignut Hickory	S ₃	G ₅	--	--	1957
American Chestnut	S ₂	G ₄	END	END	1976,1993
Spotted Wintergreen	S ₁	G ₅	END	END	1886
Eastern Flowering Dogwood	S ₂ ?	G ₅	END	END	1977,1993
Brainerd's Hawthorn	S ₂	G ₅	--	--	1981
Northern Hawthorn	S ₃	G ₄ G ₅	--	--	1974,1981
Waxy-fruit Hawthorn	S ₂	G ₂ G ₃ Q	--	--	1978
Margarett's Hawthorn	S ₁	G ₅ ?	--	--	1971
Forked Panic Grass	S ₂	G ₅	--	--	1954
White-haired Panic Grass	S ₃	G ₅ T ₅ ?	--	--	1956
Burning Bush	S ₃	G ₅	--	--	1894,1955, 1973
White Wood Aster	S ₂	G ₅	THR	THR	1955
Panicled Hawkweed	S ₂	G ₅	--	--	1956
Yellow Stargrass	S ₃	G ₅	--	--	1898
Scarlet Beebalm	S ₃	G ₅	--	--	1950
Large Yellow Pond-lily	S ₃	G ₅ G ₅ T ₅	--	--	1952
Soft-hairy False Gromwell	S ₂	G ₄ G ₅ T ₄	--	--	--
Broad Beech Fern	S ₃	G ₅	SC	SC	1956
Erect Knotweed	SH	G ₅	--	--	1897
Bowman's Root	SX	G ₄ G ₅	--	--	--
Woodland Pinedrops	S ₂	G ₅	--	--	1902
Hoary Mountain-mint	S ₁	G ₅	END	END	2000,2005
Square-stemmed Rose Pink	SX	G ₅	--	--	--
Shiny Wedge Grass	S ₁	G ₅	--	--	1957,1988
Clinton's Clubrush	S ₂ S ₃	G ₄	--	--	1954
Perfoliate Bellwort	S ₁	G ₅	--	--	1962,1989,2001

APPENDIX D: SUMMARY OF BIRD RECORDS, IMPORTANT BIRD AREA, BIRD STUDIES CANADA

Species	Season	Number	Date	Significance
Common Goldeneye	Winter	5000	1992-1993	--
Greater Scaup	Spring Migrations, Winter	10,000	1995	Global
Greater Scaup	Fall Migration	10,000	1995	Global
Greater Scaup	Winter	10,000	1995	Global
King Eider	Winter	91	1997	--
Long-tailed Duck	Fall migration	30,000	1994	Global
Long-tailed Duck	Winter	25,000	1994	Global
Surf Scoter	Winter	230	1995	--
Waterfowl	Winter	30,000	1995	Global
White-winged Scoter	Fall Migration	11,100	1995	Global
White-winged Scoter	Spring Migration	11,100	1995	Global

APPENDIX E: SUMMARY OF BIRD RECORDS IN THE NHIC DATABASE (NHIC 2013) AND ECOLOGICAL SURVEY OF THE NIAGARA ESCARPMENT BIOSPHERE RESERVE (1996)

Species	S-rank (NHIC)	G-rank (NHIC)	National Status	Provincial Status	Observation dates
Black crowned Night-heron	S ₃ B, S ₃ N	G ₅	--	--	1936, 1985
Northern Bobwhite	S ₁	G ₅	END	END	1904
Least Bittern	S ₄ B	G ₅	T	THR	1984-July, 1990-April
Peregrine Falcon	S ₃ B	G ₄	SC	SC	2000-May 6
Cerulean Warbler	S ₃ B	G ₄	END	END	1989-June 18
Bald Eagle	--	--	NAR	SC	2010
Loggerhead Shrike	SNA	G ₅	END	END	1985
Prothonotary Warbler	S ₁ B	G ₅	END	END	1990
Yellow-breasted Chat	S ₂ B	G ₅	END	END	1992
Caspian Tern	S ₃ B	G ₅	NAR	NAR	1985
Black Tern	S ₃ B	G ₄	NAR	NAR	1980
American White Pelican	S ₂ B	G ₄	NAR	NAR	1995
Great Egret	S ₂ B	G ₅	--	--	1985
Tufted Titmouse	S ₄	G ₅	--	--	1984, 1991
American Coot	S ₄ B	G ₅	NAR	NAR	1980
Orchard Oriole	S ₄ B	G ₅	--	--	1982
Northern Shoveler	S ₄	G ₅	--	--	1970
Double-crested Cormorant	S ₅ B	G ₅	NAR	NAR	1995
Carolina Wren	S ₄	G ₅	--	--	1990
Summer Tanager	SNA	G ₅	--	--	1992
Western Meadowlark	S ₃ B	G ₅	--	--	1992
Common Tern	S ₄ B	G ₅	NAR	NAR	1985

APPENDIX F: SUMMARY OF MIGRATORY BIRD RECORDS IN CARROLL'S BAY (CLAYTON, 2010)

Species	2008	2009
Green winged Teal	10	--
Bufflehead	3	--
Canada Goose	34	--
Great Blue Heron	4	3
Greater Yellowlegs	1	--
Herring Gull	17	1
Hooded Merganser	9	--
Killdeer	1	--
Lesser Yellowlegs	2	--
Mallard	128	110
Mute Swan	22	62
Ring Billed Gull	298	48
Trumpeter Swan	1	--
Turkey Vulture	1	--
Wood Duck	4	--
Common Merganser	--	1
Double Crested Cormorant	--	4
Grand Total of individuals	535	229
Species Richness (total species)	15	7

APPENDIX G: SUMMARY OF BREEDING BIRDS IN THE BURLINGTON HEIGHTS HERITAGE LANDS AND ADJACENT AREAS (ATLAS OF THE BREEDING BIRDS OF ONTARIO, 2013)

Species	Breeding Behaviour Observed	Status of Breeding Evidence
Alder Flycatcher	S	POSS
American Black Duck	FY	CONF
American Coot	P	PROB
American Crow	FY	CONF
American Goldfinch	NB, AE	CONF
American Kestrel	FY	CONF
American Redstart	FY	CONF
American Robin	FY, CF	CONF
American Woodcock	FY	CONF
Baltimore Oriole	FY, CF	CONF
Bank Swallow	T	PROB
Barn Swallow	NY, FY	CONF
Belted Kingfisher	AE	CONF
Black/Yellow-billed Cuckoo	S	POSS
Black-billed Cuckoo	S, H	POSS
Black-capped Chickadee	AE, CF	CONF
Black-crowned Night-Heron	NY	CONF
Blue Jay	FY	CONF
Blue or Golden-winged Warbler	S	POSS
Blue-gray Gnatcatcher	FY	CONF
Blue-winged Teal	P	PROB
Blue-winged Warbler	T, S	PROB

Species	Breeding Behaviour Observed	Status of Breeding Evidence
Bobolink	P, S	PROB
Brewster's Warbler	H, S	POSS
Brown Creeper	NY	CONF
Brown Thrasher	P, T	PROB
Brown-headed Cowbird	NE, FY	CONF
Canada Goose	FY, AE	CONF
Carolina Wren	FY	CONF
Caspian Tern	NY	CONF
Cedar Waxwing	NY, FY	CONF
Chestnut-sided Warbler	A	PROB
Chimney Swift	AE	CONF
Chipping Sparrow	FY, CF	CONF
Clay-colored Sparrow	S	POSS
Cliff Swallow	AE	CONF
Common Gallinule	S, H	POSS
Common Grackle	FY	CONF
Common Snipe	S	POSS
Common Tern	NE	CONF
Common Yellowthroat	DD	CONF
Cooper's Hawk	FY	CONF
Double-crested Cormorant	NY	CONF
Downy Woodpecker	NY	CONF
Eastern Kingbird	CF, NY	CONF
Eastern Meadowlark	AE, FY	CONF
Eastern Phoebe	NE	CONF
Eastern Screech-Owl	FY	CONF

Species	Breeding Behaviour Observed	Status of Breeding Evidence
Eastern Towhee	T	PROB
Eastern Wood-Pewee	CF	CONF
European Starling	FY, NY	CONF
Field Sparrow	FY, NE	CONF
Gadwall	FY	CONF
Golden-winged Warbler	S	POSS
Grasshopper Sparrow	CF	CONF
Gray Catbird	FS, CF	CONF
Great Blue Heron	V	PROB
Great Crested Flycatcher	CF, NY	CONF
Great Horned Owl	AE	CONF
Green Heron	A	PROB
Green-winged Teal	FY	CONF
Hairy Woodpecker	NY	CONF
Herring Gull	NE, NY	CONF
Hooded Warbler	FY	CONF
Horned Lark	CF	CONF
House Finch	FY	CONF
House Sparrow	CF, FY	CONF
House Wren	NY, FY	CONF
Indigo Bunting	FS	CONF
Killdeer	FY	CONF
Lawrence's Warbler	H	POSS
Least Bittern	T	PROB
Least Flycatcher	P	PROB
Louisiana Waterthrush	S	POSS

Species	Breeding Behaviour Observed	Status of Breeding Evidence
Mallard	FY, NE	CONF
Marsh Wren	AE	CONF
Mourning Dove	AE, FY	CONF
Mourning Warbler	S	POSS
Mute Swan	FY	CONF
Northern Cardinal	AE, FY	CONF
Northern Flicker	AE, NY	CONF
Northern Mockingbird	NY	CONF
Northern Pintail	FY	CONF
Northern Rough-winged Swallow	FY	CONF
Northern Waterthrush	T	PROB
Orchard Oriole	FS, CF	CONF
Osprey	H	POSS
Ovenbird	T	PROB
Peregrine Falcon	NY	CONF
Pied-billed Grebe	FY	CONF
Pileated Woodpecker	FY	CONF
Pine Warbler	FY	CONF
Prothonotary Warbler	FY	CONF
Purple Finch	H	POSS
Purple Martin	H, S	POSS
Red-bellied Woodpecker	T	PROB
Red-breasted Nuthatch	S	POSS
Red-eyed Vireo	NE	CONF
Redhead	FY	CONF
Red-headed Woodpecker	AE	CONF

Species	Breeding Behaviour Observed	Status of Breeding Evidence
Red-necked Grebe	NE	CONF
Red-tailed Hawk	FY	CONF
Red-winged Blackbird	CF, NE	CONF
Ring-billed Gull	NE, NY	CONF
Ring-necked Pheasant	T	PROB
Rock Pigeon	NE	CONF
Rose-breasted Grosbeak	FY, CF	CONF
Ruby-throated Hummingbird	P, T	PROB
Savannah Sparrow	NY	CONF
Scarlet Tanager	A, T	PROB
Sedge Wren	N	PROB
Song Sparrow	NY	CONF
Sora	FY	CONF
Spotted Sandpiper	NE, FY	CONF
Swamp Sparrow	T, A	PROB
Tree Swallow	AE, FY	CONF
Trumpeter Swan	AE, NE	CONF
Tufted Titmouse	FY	CONF
Turkey Vulture	P	PROB
Upland Sandpiper	T	PROB
Veery	T	PROB
Vesper Sparrow	S	POSS
Virginia Rail	T	PROB
Warbling Vireo	CF, FY	CONF
Western Meadowlark	T	PROB
White-breasted Nuthatch	CF	CONF

Species	Breeding Behaviour Observed	Status of Breeding Evidence
Wild Turkey	H	POSS
Willow Flycatcher	T	PROB
Winter Wren	S	POSS
Wood Duck	AE, FY	CONF
Wood Thrush	CF	CONF
Yellow Warbler	CF, NE	CONF
Yellow-billed Cuckoo	NB	CONF
Yellow-throated Vireo	S, T	PROB

POSSIBLE		CONFIRMED	
H	Species observed in its breeding season in suitable nesting habitat	NB	Nest-building or excavation of nest hole by a species other than a wren or a woodpecker
S	Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season	DD	Distraction display or injury feigning
PROBABLE		NU	Used nest or egg shells found (occupied or laid within the period of the survey)
M	At least 7 individuals singing or producing other sounds associated with breeding (e.g., calls or drumming), heard during the same visit to a single square and in suitable nesting habitat during the species' breeding season.	FY	Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight
P	Pair observed in suitable nesting habitat in nesting season	AE	Adult leaving or entering nest sites in circumstances indicating occupied nest
T	Permanent territory presumed through registration of territorial song, or the occurrence of an adult bird, at the same place, in breeding habitat, on at least two days a week or more apart, during its breeding season. Use discretion when using this code.	FS	Adult carrying fecal sac
D	Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation	CF	Adult carrying food for young
V	Visiting probable nest site	NE	Nest containing eggs
A	Agitated behaviour or anxiety calls of an adult	NY	Nest with young seen or heard
B	Brood Patch on adult female or cloacal protuberance on adult male		
N	Nest-building or excavation of nest hole, except by a wren or a woodpecker		

APPENDIX H: SUMMARY OF ON-SITE BREEDING BIRD SURVEY RESULTS

Burlington Heights – Breeding Birds

1. Methodology

One breeding bird survey was conducted on June 30, 2013, following the protocols outlined by the Ontario Breeding Bird Atlas (OBBA 2001). This protocol stipulates that the surveys be conducted between sunrise and 10:00 a.m., between May 24 and July 12. A total of seven point counts were surveyed, as predetermined by Tys Theysmeyer, Head of Natural Lands, Royal Botanical Gardens.

An additional survey to search specifically for Common Nighthawk and Chimney Swift was conducted on June 29. This survey was done at dusk when the likelihood of detecting these two crepuscular species is greatest, and consisted of walking the entire Hamilton Cemetery site, looking and listening for the two target species.

Table 1 – summary of breeding bird survey visits to the study area.

Date	Observer	Time	Duration (hrs.)	Weather Conditions
June 29, 2013	Ian Richards	20:15 – 21:15	1.0	Partly cloudy, calm, 22 °C
June 30, 2013	Ian Richards	06:00 – 09:00	3.0	Cloudy, light winds, 17 - 19 °C

2. Results

Twenty-five (25) species of birds were detected during the surveys, with 16 species tallied on June 29 and 20 species on June 30. Of these species, 20 were likely breeding in the local area, with the other five (5) species detected flying over the site only. Two of the 20 species are introduced (non-native): Rock Pigeon and House Sparrow. Of the remaining 18 species, two of them are considered Species at Risk (SAR): Chimney Swift (*Chaetura pelagic*) and Barn Swallow (*Hirundo rustica*), which are both designated as “Threatened”, both federally (COSEWIC 2012) and provincially (OMNR 2013). At a provincial level, all of the 18 native breeding species have been assigned an Srank of either S4 or S5 by the Natural Heritage Information Centre (NHIC 2013b), which indicates that their provincial populations are “apparently secure” or “secure”, respectively (NHIC 2013a).

At a regional level, two (2) species – Chimney Swift and Baltimore Oriole – have been designated by Partners in Flight as priority species in BCR 13 (Lower Great Lakes/St. Lawrence plain) (OPIF 2008); BCR 13, the Lower Great Lakes – St. Lawrence Plain, corresponds roughly with the area south of the Canadian Shield. The Ontario Landbird Conservation Plan, from which the list of priority landbird species was obtained, is a coalition of government agencies and organizations led by Environment Canada Ontario Region (EC) and the Ontario Ministry of Natural Resources (OMNR), in partnership with Bird Studies Canada (BSC).

At a local level, all 18 species are considered either “common” or “abundant” summer residents, except for Chimney Swift, which is classified as “uncommon - widespread” in the City of Hamilton (Dwyer 2003) and “uncommon” in adjacent Halton Region (McIlveen 2006). Finally, the Ontario Ministry of Natural Resources (OMNR) does not consider any of the species

recorded as Area Sensitive (meaning the species requires large areas of suitable habitat for their long-term survival).

The highest level of breeding evidence obtained during the surveys was “confirmed” breeding (OBBA 2001). This was evidenced by the observation of fledged young (code FY). This evidence was collected for Chipping Sparrow at the Cemetery South PCS. The next highest level of breeding evidence was of “probable” breeding (OBBA 2001), as evidenced by pairs of birds (code P). This evidence was the highest level obtained for one species: Chimney Swift. The next highest level of breeding evidence was “possible” breeding (OBBA 2001), as seen with singing males (code S) or birds being present in appropriate breeding habitat during the breeding season (code H). This evidence was the highest breeding level for 18 species, with 11 of these detected singing (S), and the other seven (7) present in suitable habitat (H), but not singing or displaying territoriality.

For application of the Endangered Species Act (ESA) and the Species At Risk Act (SARA), there were two Species-at-Risk detected on the site: Chimney Swift and Barn Swallow, which are both considered Threatened species, both provincially (OMNR 2013) and federally (COSEWIC 2012). These species are discussed as follows:

A) Chimney Swift

On June 29, a number of Chimney Swifts were observed over the south end of Hamilton Cemetery. These birds were foraging overhead, and were originating from the south, where they are likely nesting in areas with appropriate nesting habitat. Two individual birds were observed at 20:50 and 21:10, and two pairs were observed together at 20:57. Finally, a third pair, which may have been one of the previous pairs, was noted five minutes later, at 21:02. Given that they were observed departing well to the west and south of Hamilton Cemetery, it is highly unlikely they are nesting in the immediate area, but simply foraging in the skies overhead.

B) Barn Swallow

On June 29, three different birds were observed foraging in the Hamilton Cemetery near dusk. All three birds were sighted individually, and were observed departing the area. No nests were found, although there are few structures in the cemetery for them to build their nests on. They are likely breeding in adjacent areas and only using the cemetery for foraging.

It should be noted that no Common Nighthawk were detected during the dedicated surveys on June 29.

The total of 20 breeding bird species is fairly low considering the amount of habitat covered, and the fact that there were seven Point Count Stations. However, much of the habitat is anthropogenic, plus there was considerable disturbance noise from Highway 403 and Plains Road/York Road. This was despite the surveys being done late on Saturday and early Sunday morning. Also, the survey dates were towards the end of the breeding bird window, where breeding activity has slowed down somewhat compared to three or four weeks earlier.

For the Point Count Stations, the number of species varied from three (Cemetery South) to nine (RBG #1 and RBG # 3), with an average of about six species per station.

For full details on the breeding bird surveys for this site, please see Appendix A: Summary of Point Count Survey and Common Nighthawk/Chimney Swift survey.

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Appendix A: Summary of Point Count Survey and Common Nighthawk/Chimney Swift survey

Common Name	Scientific Name	Conservation Status						Area Sensitivity (OMNR, 2000)	Common Nighthawk & Chimney Swift survey: June 29, 2013	Point Count Survey: June 30, 2013						
		National	Provincial		Regional	Local				RBG #1	RBG #2	RBG #3	RBG #4	Dundurn	Cemetery South	Cemetery North
		COSEWIC (2012)	MNR (2013)	Stranks (NHIC 2013a,b)	BCR 13 Priority Sp. (OPIF 2008)	Halton Region Status (McIlveen 2006)	City of Hamilton NAI (Dwyer 2003)									
Great Blue Heron	<i>Ardea herodias</i>	---	---	S5	---	common	uncommon - scattered	---		1X						
Osprey	<i>Pandion haliaetus</i>	---	---	S4	---	rare	rare - local	---			1X					
Rock Pigeon	<i>Patagioena livia</i>	---	---	SE	---	abundant	abundant - introduced and very widespread	---	X							
Mourning Dove	<i>Zenaidura macroura</i>	---	---	S5	---	abundant	abundant - ubiquitous	---		2X	1S	1X				
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S5	PLS	uncommon	uncommon - widespread	---	3P, 2H							
Downy Woodpecker	<i>Picoides pubescens</i>	---	---	S5	---	common	common - ubiquitous	---	1H				1H			
Warbling Vireo	<i>Vireo gilvus</i>	---	---	S5	---	common	common - very widespread	---				1S				
Red-eyed Vireo	<i>Vireo olivaceus</i>	---	---	S5	---	abundant	common - ubiquitous	---					1S			
Blue Jay	<i>Cyanocitta cristata</i>	---	---	S5	---	abundant	abundant - ubiquitous	---					1S	1S		
American Crow	<i>Corvus brachyrhynchos</i>	---	---	S5	---	abundant	common - ubiquitous	---	3H	2S		1S	4H			2X
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S5	---	common	abundant - ubiquitous	---	3H							
Black-capped Chickadee	<i>Poecile atricapillus</i>	---	---	S5	---	abundant	abundant - ubiquitous	---	2H							1H
American Robin	<i>Turdus migratorius</i>	---	---	S5	---	abundant	abundant - ubiquitous	---	2S, 3H	1S, 1H			2H	1S		2H
Gray Catbird	<i>Dumetella carolinensis</i>	---	---	S5	---	common	abundant - ubiquitous	---		1S	1S	1S				
European Starling	<i>Sturnus vulgaris</i>	---	---	SE	---	abundant	abundant - introduced and ubiquitous	---	X				2X			
Yellow Warbler	<i>Setophaga petechia</i>	---	---	S5	---	common	abundant - ubiquitous	---	2S	1S	1S	2S	1S			1S
Chipping Sparrow	<i>Spizella passerina</i>	---	---	S5	---	common	abundant - ubiquitous	---	2S						2S, 2FY	1S
Song Sparrow	<i>Melospiza melodia</i>	---	---	S5	---	abundant	abundant - ubiquitous	---		1S		2S	1S			
Northern Cardinal	<i>Cardinalis cardinalis</i>	---	---	S5	---	common	abundant - ubiquitous	---	1S	1S	1S	1S	1S			1S
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	---	---	S5	---	abundant	abundant - ubiquitous	---	3X	1S		1S				1S
Common Grackle	<i>Quiscalus quiscula</i>	---	---	S5	---	abundant	abundant - ubiquitous	---	5H							1X
Brown-headed Cowbird	<i>Molothrus ater</i>	---	---	S5	---	abundant	abundant - ubiquitous	---				1X				
Baltimore Oriole	<i>Icterus galbula</i>	---	---	S5	PLS	common	common - ubiquitous	---	2H							
American Goldfinch	<i>Spinus tristis</i>	---	---	S5	---	abundant	abundant - ubiquitous	---	2H			2X				
House Sparrow	<i>Passer domesticus</i>	---	---	SE	---	abundant	abundant - introduced and ubiquitous	---	2H							
Total species:									16	9	5	9	7	4	3	7

WEATHER AND SURVEY TIMES:

Common Nighthawk & Chimney Swift survey - June 29, 2013; 2015 - 2115; partially cloudy, light northwest winds, 22 °C

Point Count Survey - June 30, 2013; 06:00 - 09:00; cloudy, calm to light west-northwest winds, 17 - 19 °C

LEGEND:

CODES:

H - species observed in its breeding season in suitable nesting habitat.

S - singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat.

P - pair observed in their breeding season in suitable nesting habitat.

FY - fledged young observed

X - species observed but not in appropriate breeding habitat or flying over

STATUS:

COSEWIC: THR - Threatened; --- - not assessed as population secure

OMNR: THR - Threatened; --- - not assessed as population secure

Provincial Stranks: S4 - apparently secure; S5 - secure; SE - non-native exotic

Regional Priority Species: PLS = Priority Landbird Species

Area sensitivity: --- - not area sensitive

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APPENDIX I: SUMMARY OF MAMMAL RECORDS IN THE NHIC DATABASE (NHIC 2013) AND CARROLL'S BAY RECOVERY AND MANAGEMENT STRATEGY (CLAYTON 2010)

Species	S-rank (NHIC)	G-rank (NHIC)	National Status	Provincial Status	Observation dates
Beaver	S ₅	G ₅	NAR	NAR	--
Muskrat	S ₅	G ₅	NAR	NAR	--
Mink	S ₄	G ₅	NAR	NAR	--
Woodland Vole	S ₃	G ₅	SC	SC	1950, 1951

APPENDIX J: SUMMARY OF REPTILE RECORDS IN THE NHIC DATABASE (NHIC 2013) AND CARROLL'S BAY RECOVERY AND MANAGEMENT STRATEGY (CLAYTON 2010)

Species	S-rank (NHIC)	G-rank (NHIC)	National Status	Provincial Status	Observation dates
Northern Map Turtle	S ₃	G ₅	SC	SC	1984
Eastern Spiny Soft Shell	S ₃	G ₅	T	THR	1908, 2003-June 10
Snapping Turtle	S ₃	G ₅	SC	SC	
Blandings' Turtle	S ₃	G ₄	T	THR	1948-July, 1991-June 12
Midland Painted Turtle	S ₅	G ₅ T ₅	NAR	NAR	
Eastern Musk Turtle	S ₃	G ₅	T	THR	1932-June, 2001-June 21
Milk Snake	S ₃	G ₅	SC	SC	

APPENDIX K: SUMMARY OF OTHER SPECIES RECORDS IN THE NHIC DATABASE (NHIC 2013), ECOLOGICAL SURVEY OF THE NIAGARA ESCARPMENT BIOSPHERE RESERVE (1996) AND CARROLL'S BAY RECOVERY AND MANAGEMENT STRATEGY (CLAYTON 2010)

Species	S-rank (NHIC)	G-rank (NHIC)	National Status	Provincial Status	Observation dates
Mudpuppy	S ₄	G ₅	NAR	NAR	1989
Two Spotted Skipper	S ₄	G ₄	--	--	1969
Northern Cloudywing	S ₅	G ₅	--	--	1988

APPENDIX L: SUMMARY OF AQUATIC SPECIES RECORDS IN THE NHIC DATABASE (NHIC 2013), AND CARROLL'S BAY RECOVERY AND MANAGEMENT STRATEGY (CLAYTON 2010)

Species	S-rank (NHIC)	G-rank (NHIC)	National Status	Provincial Status
Northern Brook Lamprey	S ₃	G ₄	SC	SC
Grass Pickerel	S ₃	G ₅ T ₅	SC	SC
Silver Lamprey	S ₃	G ₅	--	--
Longear Sunfish	S ₃	G ₅	NAR	NAR
Greater Redhorse	S ₃	G ₄	--	--
Bridle Shiner	S ₂	G ₃	SC	SC
Bigmouth Buffalo	S ₄	G ₅	NAR	NAR
Chestnut Lamprey	S ₁	G ₄	DD	--
American Brook Lamprey	S ₃	G ₄	--	--
Lake Chubsucker – EXTIRPATED FROM REGION (Theysmeyer, 3013)	S ₂	G ₅	END	THR
Spotted Gar	S ₁	G ₅	THR	THR
Redside Dace – EXTIRPATED FROM REGION (Theysmeyer, 3013)	S ₂	G ₃ G ₄	END	END
Blue Walleye	S ₅	G ₅ T ₅	--	--
Lake Sturgeon	S ₂	G ₃ G ₄ TNR	THR	THR
Yellow Perch	S ₅	G ₅	--	--
White Bass	S ₄	G ₅	--	--
Northern Pike	S ₅	G ₅	--	--
Largemouth Bass	S ₅	G ₅	--	--
Eastern Floater	S ₂	G ₅	--	--
Paper Pondshell	S ₂	G ₅	--	--
Lilliput	S ₁	G ₅	--	--

APPENDIX M: SUMMARY OF ANNUAL ELECTROFISH SURVEYS OF SUNFISH POND AND CARROLLS BAY 1995-2012

Common Name	Scientific Name	Total
Bowfin	<i>Amia calva</i>	1
Creek Chub	<i>Semotilus atromaculatus</i>	1
Smallmouth Bass	<i>Micropterus dolomieu</i>	1
Black Bullhead	<i>Ameiurus melas</i>	2
Central Mudminnow	<i>Umbra limi</i>	3
Common Shiner	<i>Luxilus cornutus</i>	3
White Sucker	<i>Catostomus commersoni</i>	3
White Crappie	<i>Pomoxis annularis</i>	7
Alewife	<i>Alosa pseudoharengus</i>	8
Golden Shiner	<i>Notemigonus chrysoleucas</i>	8
Northern Pike	<i>Esox lucius</i>	8
Rock Bass	<i>Ambloplites rupestris</i>	8
Tadpole Madtom	<i>Noturus gyrinus</i>	16
Threespine Stickleback	<i>Gasterosteus aculeatus</i>	16
Goldfish	<i>Carassius auratus</i>	17
Green Sunfish	<i>Lepomis cyanellus</i>	25
Brook Silverside	<i>Labidesthes sicculus</i>	35
Fathead Minnow	<i>Pimephales promelas</i>	48
Johnny Darter	<i>Etheostoma nigrum</i>	51
Black Crappie	<i>Pomoxis nigromaculatus</i>	64
Spottail Shiner	<i>Notropis hudsonius</i>	80
Yellow Perch	<i>Perca flavescens</i>	93
Emerald Shiner	<i>Notropis atherinoides</i>	114
Logperch	<i>Percina caprodes</i>	126
Brown Bullhead	<i>Ameiurus nebulosus</i>	171
Common Carp	<i>Cyprinus carpio</i>	179
Gizzard Shad	<i>Dorosoma cepedianum</i>	190
White Perch	<i>Morone americana</i>	195
Round Goby	<i>Neogobius melanostomus</i>	249
Bluntnose Minnow	<i>Pimephales notatus</i>	327
Largemouth Bass	<i>Micropterus salmoides</i>	351
Bluegill	<i>Lepomis macrochirus</i>	697
Pumpkinseed	<i>Lepomis gibbosus</i>	1105
Grand Total		4216

APPENDIX N: SUMMARY OF PLANT SPECIES RECORDS* IN THE ROYAL BOTANICAL GARDENS DATABASE (THEYSMEYER, 2013)

*Note: Wild species (Not a full list; lacks many herbaceous species)

Common Name	Scientific Name
Amur Maple	<i>Acer ginnala</i>
Manitoba Maple	<i>Acer negundo</i>
Black Maple	<i>Acer nigrum</i>
Mono Maple	<i>Acer pictum subsp. mono</i>
Norway Maple	<i>Acer platanoides</i>
Red Maple	<i>Acer rubrum</i>
Sugar Maple	<i>Acer saccharum</i>
Yarrow	<i>Achillea millefolium</i>
Sweetflag	<i>Acorus americanus</i>
Horse Chestnut	<i>Aesculus hippocastanum</i>
Red-top	<i>Agrostis gigantea</i>
Tree of Heaven	<i>Ailanthus altissima</i>
Garlic Mustard	<i>Alliaria petiolata</i>
European Black Alder	<i>Alnus glutinosa</i>
Yellow Alyssum	<i>Alyssum alyssoides</i>
Common Ragweed	<i>Ambrosia artemisiifolia</i>
Big Blue-stem	<i>Andropogon gerardii</i>
Thimbleweed	<i>Anemone virginiana</i>
Common Milkweed	<i>Asclepia syriaca</i>
Butterfly weed	<i>Asclepias tuberosa</i>
Asperagus	<i>Asperagus officinalis</i>
Mosquito Fern	<i>Azolla caroliniana</i>
Common Barberry	<i>Berberis vulgaris</i>
Hoary Alyssum	<i>Berteroa incana</i>
Hoary Alyssum	<i>Berteroa incana</i>
Smooth Brome	<i>Bromus inermis</i>
Plumeless Thistle	<i>Caddus acanthoides</i>
Bebbs Sedge	<i>Carex bebbi</i>
Lakebank Sedge	<i>Carex lacustris</i>
Blue Beech	<i>Carpinus caroliniana</i>
Shagbark Hickory	<i>Carya ovata</i>
Catalpa	<i>Catalpa speciosa</i>
Oriental Bittersweet	<i>Celastrus orbiculata</i>
Hackberry	<i>Celtis occidentalis</i>
Coontail	<i>Ceratophyllum demersum</i>
Ox-eyed Daisy	<i>Chrysanthemum leucanthemum</i>
Alternate Leaf Dogwood	<i>Cornus alternifolia</i>
Gray Dogwood	<i>Cornus racemosa</i>
Red Osier Dogwood	<i>Cornus sericea</i>
Hawthorn sp.	<i>Cretaeagus</i>
Dog-Strangling Vine	<i>Cynanchum rossicum</i>
Queen Ann's Lace	<i>Daucus carota</i>

***Note: Wild species (Not a full list; lacks many herbaceous species)**

Common Name	Scientific Name
Showy-tick trefoil	<i>Desmodium canadense</i>
Panicle-leaf tick trefoil	<i>Desmodium paniculatum</i>
Teasel	<i>Dipsacus sylvestris</i>
Viper's Bugloss	<i>Echium vulgare</i>
Water Hyacinth	<i>Eichhornia crassipes</i>
Autumn Olive	<i>Elaeagnus umbellata</i>
Canada Waterweed	<i>Elodea canadensis</i>
Canada Wild Rye	<i>Elymus canadensis</i>
Quack Grass	<i>Elymus repens</i>
American Beech	<i>Fagus grandifolia</i>
Tall Fescue	<i>Festuca arundinacea</i>
White Ash	<i>Fraxinus americana</i>
Red Ash	<i>Fraxinus pennsylvanica</i>
Ginkgo	<i>Ginkgo biloba</i>
Honey Locust	<i>Gleditsia triacanthos</i>
European Manna Grass	<i>Glyceria maxima</i>
Witch Hazel	<i>Hamamelis virginiana</i>
Woodland sunflower	<i>Helianthus divaricatus</i>
Tall Sunflower	<i>Helianthus giganteus</i>
Pale leaved sunflower	<i>Helianthus strumosus</i>
Dames Rocket	<i>Hesperis matronalis</i>
Common St. John's Wort	<i>Hypericum perforatum</i>
Touch-me-not	<i>Impatiens capensis</i>
Himalayan Balsam	<i>Impatiens glandulifera</i>
Yellow Iris	<i>Iris pseudacorus</i>
Blueflag Iris	<i>Iris versicolor</i>
Butternut	<i>Juglans cinerea</i>
Black Walnut	<i>Juglans nigra</i>
Red Cedar	<i>Juniperus virginiana</i>
Duckweed	<i>Lemna minor</i>
Round-headed bush clover	<i>Lespedeza capitata</i>
Honeysuckle	<i>Lonicera sp.</i>
Tartarian Honey Suckle	<i>Lonicera tatarica</i>
Purple Loosestrife	<i>Lythrum salicaria</i>
Crabapple	<i>Malus coronaria</i>
Apple	<i>Malus sp.</i>
Black Medick	<i>Medicago lupulina</i>
Alfalfa	<i>Melilotus sativa</i>
Wild Bergamot	<i>Monarda fistulosa</i>
White Mulberry	<i>Morus alba</i>
Eurasian Milfoil	<i>Myriophyllum spicatum</i>
Water Niad	<i>Najas flexilis</i>
Brittle Waternymph	<i>Najas minor</i>
Catnip	<i>Nepeta cataria</i>
Yellow Pond Lily	<i>Nuphar lutea</i>
White Water Lily	<i>Nymphaea odorata</i>

***Note: Wild species (Not a full list; lacks many herbaceous species)**

Common Name	Scientific Name
Ironwood	<i>Ostrya virginiana</i>
Beard-tongue	<i>Penstemon digitalis</i>
Hairy Beardtongue	<i>Penstemon hirsutus</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Giant Reed Grass	<i>Phragmites australis</i>
Ninebark	<i>Physocarpus opulifolius</i>
Austrian Pine	<i>pinus nigra</i>
White Pine	<i>Pinus strobus</i>
Scots Pine	<i>Pinus sylvestris</i>
Canada Blue Grass	<i>Poa compressa</i>
Water Smartweed	<i>Polygonum amphibium</i>
Japanese Knotweed	<i>Polygonum cuspidatum</i>
Smartweed	<i>Polygonum pennsylvanicum</i>
White Poplar	<i>Populus alba</i>
Large-tooth Aspen	<i>Populus grandidentata</i>
Lombardy Poplar	<i>Populus nigra</i>
Mapleleaf Viburnum	<i>Populus nigra</i>
Floating leafpondweed	<i>Potamogeton amplifolius</i>
Curly leaf Pondweed	<i>Potamogeton foliosus</i>
Narrow leaf pondweed	<i>Potamogeton natans</i>
Floating leafpondweed	<i>Potamogeton nodosus</i>
Sago Pondweed	<i>Potamogeton pectinatus</i>
Pondweed	<i>Potamogeton pusilli</i>
Pondweed	<i>Potamogeton richardsonii</i>
Silver Cinquafoil	<i>Potentilla argentea</i>
Rough-Fruited Cinquafoil	<i>Potentilla recta</i>
American Plum	<i>Prunus americana</i>
Sweet Cherry	<i>Prunus avium</i>
Black Cherry	<i>Prunus serotina</i>
Choke Cherry	<i>Prunus virginiana</i>
Virginia Mountain Mint	<i>Pycnanthemum virginianum</i>
Pear	<i>Pyrus communis</i>
White Oak	<i>Quercus alba</i>
Hills Oak	<i>Quercus ellipsoidalis</i>
Chinquapin Oak	<i>Quercus muehlenbergii</i>
Red Oak	<i>Quercus rubra</i>
Black Oak	<i>Quercus velutina</i>
Common Buckthorn	<i>Rhamnus cathartica</i>
Poison Ivy	<i>Rhus radicans</i>
Staghorn Sumac	<i>Rhus typhina</i>
Staghorn Sumac	<i>Rhus typhina</i>
Black Locust	<i>Robinia pseudoacacia</i>
Multiflora Rose	<i>Rosa multiflora</i>
Brown-eyed Susan	<i>Rudbeckia hirta</i>
Tall coneflower	<i>Rudbeckia laciniata</i>
Water Dock	<i>Rumex orbiculatus</i>

***Note: Wild species (Not a full list; lacks many herbaceous species)**

Common Name	Scientific Name
Arrowhead	<i>Sagittaria latifolia</i>
Weeping Willow	<i>Salix babylonica</i>
Sandbar Willow	<i>Salix exigua</i>
Crack Willow	<i>Salix fragilis</i>
Black Willow	<i>Salix nigra</i>
Russian Thistle	<i>Salsola kali</i>
Bouncing Bets	<i>Saponaria officinalis</i>
Green Foxtail	<i>Sataria viridis</i>
Little Blue-stem	<i>Schizachyrium scoparium</i>
Hardstem Bulrush	<i>Schoenoplectus acutus var. acutus</i>
American Bulrush	<i>Schoenoplectus pungens</i>
Softstem Bulrush	<i>Schoenoplectus tabernaemontani</i>
Mossy Stonecrop	<i>Sedum acre</i>
Compass Plant	<i>Silphium laciniatum</i>
Prairie Dock	<i>Silphium terebinthiaceum</i>
Black Nightshade	<i>Solanum nigrum</i>
Silverrod	<i>Solidago bicolor</i>
Early Goldenrod	<i>Solidago juncea</i>
Grey Goldenrod	<i>Solidago nemoralis</i>
Upland White Aster	<i>Solidago ptarmicoides</i>
Stiff-leaved Goldenrod	<i>Solidago rigida</i>
Indian grass	<i>Sorghastrum nutans</i>
Duckweed	<i>Spirodela polyrhiza</i>
Sand dropseed	<i>Sporobolus cryptandrus</i>
Smooth aster	<i>Symphiotrichum laeve</i>
Heath Aster	<i>Symphiotrichum ericoides</i>
Sky Blue Aster	<i>Symphiotrichum oolentangiensis</i>
Arrow leaved aster	<i>Symphiotrichum urophyllum</i>
White Cedar	<i>Thuja occidentalis</i>
American Basswood	<i>Tilia americana</i>
Narrow Leaf Cattail	<i>Typha angustifolia</i>
Broad leaf cattail	<i>Typha latifolia</i>
Siberian Elm	<i>Ulmus pumila</i>
Eelgrass	<i>Vallisneria sp.</i>
Common Mullein	<i>Verbascum thaspus</i>
Hoary Vervain	<i>Verbena stricta</i>
Nannyberry	<i>Viburnum lentago</i>
Highbush Cranberry	<i>Viburnum opulus var. americanum</i>
Riverbank Grape	<i>Vitis riparia</i>



A Plan for the Burlington Heights Heritage Lands

Appendix C – Niagara Escarpment Parks and Open Space System Planning Manual – NEPOSS Zones

Table 5.2 NEPOSS Zones

Zone	Description	Management Direction	Permitted Uses (subject to management planning)
Nature Reserve	<p>Nature Reserve Zones include significant natural heritage features or areas that require careful management to ensure the long-term protection of their natural features.</p> <p>This type of zone should ensure ecological diversity and provide long-term protection for significant natural heritage features such as the following:</p> <ul style="list-style-type: none"> • Habitat of endangered, threatened and rare species or species of special concern • Wildlife and fish habitat • Hydrological systems (e.g., streams, wetlands, ponds) • Woodlands • ANSIs <p>Escarpment features (e.g., brow, slope, face, toe, and related landforms)</p>	<p>Nature Reserve Zones are predominately natural and should contain naturally functioning ecosystems.</p> <p>Such zones should protect natural heritage features in the long term.</p>	<p>To protect, preserve and rehabilitate identified natural heritage features, visitor uses are limited or restricted.</p> <p>Development is generally restricted to trails, necessary signs, interpretative facilities (where warranted), temporary research facilities and conservation practices.</p>
Natural	<p>Natural Zones include aesthetic landscapes in which a minimum of development is permitted to support low- to moderate-intensity recreational activities.</p> <p>This type of zone includes natural landscapes and high-quality natural settings.</p>	<p>The Natural Zone can function as a buffer between Development Zones and Historical or Nature Reserve zones.</p> <p>Natural Zones are not permitted in Nature Reserve class parks.</p>	<p>Low- to moderate-intensity recreational activities are permitted.</p> <p>A minimal level of development (e.g., trails, backcountry campsites, necessary signs and minimal interpretive facilities) is permitted to support low-intensity recreational activities.</p>
Access	<p>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 and Historical zones.</p>	<p>Access Zones are intended to support the use of and access to adjacent zones.</p>	<p>Development may include minimal facilities to support Nature Reserve, Natural and Historical Zones. Examples include roads, signs, trailheads and parking lots.</p>

Zone	Description	Management Direction	Permitted Uses (subject to management planning)
Historical	<p>Historical Zones include significant archaeological or cultural heritage features or areas that require management that will ensure the long-term protection of the significant features.</p>	<p>Management planning for archaeological or cultural heritage features may range from maintaining their present condition to restoring and/or reconstructing the site.</p>	<p>Development will include protection and interpretation of archaeological or cultural heritage features. Examples include interpretive, educational, research and management facilities, trails, signs, and historical restorations or reconstructions.</p>
Development	<p>Development Zones provide the main access to the park or open space, and facilities and services to support the recreational activities available.</p> <p>This type of zone may allow for the development of visitor and park facilities.</p>	<p>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.</p> <p>This zone should have minimal negative impact on natural heritage features and cultural heritage features, the natural landscape or watersheds.</p> <p>Development Zones are not permitted in Nature Reserve class parks.</p>	<p>Development may include roads, parking lots and gates, beaches, picnic areas, campgrounds and commercial service facilities, and orientation, interpretive, educational, research and maintenance facilities.</p> <p>Development of facilities must be designed and undertaken in a way that will minimize their environmental and visual impact.</p>
Resource Management	<p>Resource Management Zones include certain public lands that are managed primarily to provide resource-related benefits such as forest products, fish and wildlife, or flood control.</p> <p>Previously disturbed sites (e.g., abandoned quarries, old fields) where active measures are being taken to re-establish natural vegetation should also be considered for this type of zoning.</p> <p>This type of zone may include land that has traditionally been managed under long-term resource agreements (e.g., forest management agreements or agricultural leases).</p>	<p>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.</p> <p>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 of the NEP.</p>	<p>Resource Management Zones may be used to demonstrate ecologically sustainable resource management practices.</p> <p>Establishing permanent research plots for monitoring purposes (e.g., permanent sample plots for growth and yield studies) is encouraged in these zones.</p> <p>Water may be controlled for purposes related to flood protection, watershed management or municipal water supply.</p> <p>The recreation uses of Resource Management Zones are subject to park management planning.</p>



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Appendix D – Implementation Table

A Plan for the Burlington Heights Heritage Lands

Appendix D: Implementation Table

Action	Lead Agencies	Short (0-5 years)	Medium (5-10 years)	Long (10 + years)
Nature Reserve Zone				
Restore habitat and control invasive species	All Partners	✓		
Undertake an inventory of all plant and animal species	All Partners	✓		
Discourage access and creation of informal trails	Royal Botanical Gardens	✓		
Reduce impact of recreational activities	Royal Botanical Gardens		✓	
Limit physical access but increase access to information	City of Hamilton & RBG	✓		
Restore marsh vegetation through invasive species control and water quality improvements	Royal Botanical Gardens			✓
Re-establish prairie habitat	Royal Botanical Gardens			✓
Create restoration plan for historic refuse dumping areas	City of Hamilton & RBG			✓
Nature Zone				
Encourage landowner stewardship to maintain as natural landscape	All Partners	✓		
Maintain and extend tall grass prairie ecosystem	City of Hamilton & RBG		✓	
Permit trails constructed in an economical and sensitive manner	All Partners		✓	
Relocate maintenance yard	Royal Botanical Gardens			✓
Discourage high-powered motorized watercraft	Royal Botanical Gardens	✓		
Access Zone				
Enhance parkway nature of York Boulevard through detailed design	City of Hamilton			✓
Clearly demarcate parking and allow during daytime hours	City of Hamilton	✓		
Relocate parking lot entrance to align with Hamilton Cemetery entrance	City of Hamilton		✓	
Construct additional landscaping and pedestrian connections for parking pull off areas along York Boulevard	City of Hamilton			✓
Add transit stop on the York Boulevard northbound lane	City of Hamilton	✓		
Create interpretative and way finding signage	All Partners	✓		
Implement low impact development techniques	City of Hamilton & RBG		✓	
Ensure appropriate levels of security through visibility, safe access, and CPTED principles	City of Hamilton & RBG	✓		
Extend sidewalk or multi-user trail along East side of York Boulevard	City of Hamilton		✓	

A Plan for the Burlington Heights Heritage Lands

Appendix D: Implementation Table

Action	Lead Agencies	Short (0-5 years)	Medium (5-10 years)	Long (10 + years)
Historic Zone				
Conserve cultural resources consistent with Provincial and Federal standards	All Partners	✓		
Undertake an inventory of all cultural heritage resources	All Partners	✓		
Maintain lands primarily as a designed landscape	City of Hamilton & RBG	✓		
Restore tallgrass prairie habitat	City of Hamilton & RBG	✓		
Maintain significant views	City of Hamilton & RBG	✓		
Consider pedestrian crossing points on York Boulevard to allow for access to sites	City of Hamilton			✓
Ensure new facilities are visitor amenities, small in scale and have heritage character	City of Hamilton & RBG			✓
Create initiatives to communicate heritage resources	All Partners	✓		
Development Zone				
Develop interpretive and wayfinding signage in the new Rock Garden visitor centre	Royal Botanical Gardens	✓		
Connect new Rock Garden visitor centre to pedestrian and cycling network	Royal Botanical Gardens	✓		
Infrastructure and Services				
Consider impact of new or planned infrastructure on resources within Burlington Heights Heritage Lands	All Partners	✓	✓	✓
Ensure partner agency participation in the review process	All Partners	✓	✓	✓
Address stormwater management	All Partners	✓	✓	✓
Adjacent Lands				
Provide copies of Plan to all adjacent landowners	All Partners	✓		
Develop working relationship with owners of major transportation corridors	All Partners	✓		
Participate in processes initiated by adjacent landowners to monitor impact on Burlington Heights Heritage Lands	All Partners	✓	✓	✓
Transportation and Accessibility				
Redesign York Boulevard to be a grand boulevard or parkway linking Hamilton and Burlington through Royal Botanical Gardens	City of Hamilton		✓	
Enhance landscape design of new and existing parking areas and connect to pedestrian network	City of Hamilton			✓
Design all cycling and multi-use trails to City of Hamilton and City of Burlington Trail Standards	City of Hamilton & City of Burlington		✓	
Maintain or improve cycling facilities on the east side of York Boulevard	City of Hamilton		✓	
Extended the pedestrian network for the entire length of York Boulevard with crossing points	City of Hamilton		✓	

A Plan for the Burlington Heights Heritage Lands

Appendix D: Implementation Table

Action	Lead Agencies	Short (0-5 years)	Medium (5-10 years)	Long (10 + years)
Transportation and Accessibility, continued				
Ensure all new pedestrian facilities are consistent with A.O.D.A. standards for accessibility	All Partners	✓		
Prioritize physical accessibility for trails and interpretive facilities	All Partners	✓		
Develop a plan for the parking area at Valley Inn Road	City of Hamilton & RBG	✓		
Develop a parking strategy	All Partners		✓	
When bridges are upgraded or replaced, consider railing styles that permit views from bridges	All Partners			✓
Communications and Interpretation				
Develop a comprehensive interpretive program including information and interpretive signage	All Partners	✓		
Install entrance signs for the Cootes to Escarpment EcoPark System at each end of the York Boulevard transportation corridor	All Partners	✓		
Install interpretive nodes at Dundurn parking lot, the planned new Rock Garden visitor centre, and along the Harbourfront Trail at the Desjardins Canal	All Partners		✓	
Use the Plan as an input to infrastructure development plans	All Partners	✓		