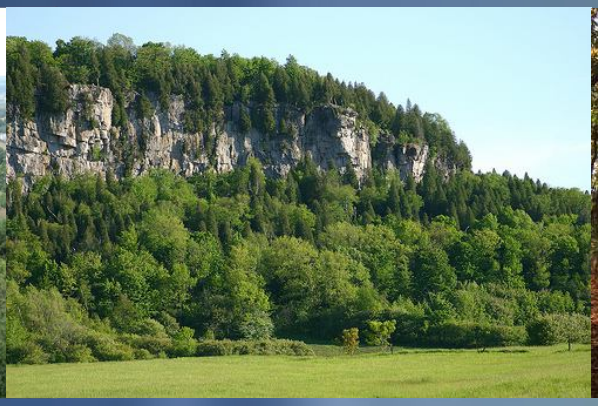
Conservation Halton

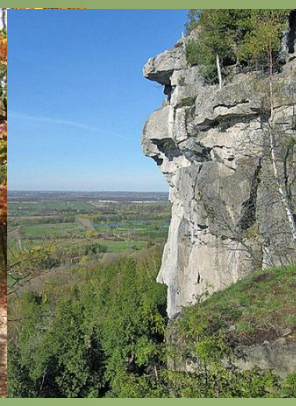
Parks Master Planning

# *Master Plan for Mount Nemo Conservation Area*

## *Stage Three Report*

JANUARY| 2014



Archaeological Services Inc.
TCI Management Consultants
DILLON CONSULTING
EDA Collaborative Inc.

## Approval Statement

We are pleased to approve the *Master Plan for Mount Nemo Conservation Area* as the official policy document for the management and development of this conservation area. The plan reflects Conservation Halton's intent to protect the natural environment of the Niagara Escarpment and the natural and cultural features of Mount Nemo Conservation Area and to maintain and develop high quality opportunities for outdoor education, recreation, discovery and enjoyment of the Niagara Escarpment by Ontario residents and visitors.

Ken Phillips
Chief Administrative Officer
Conservation Halton

MARCH 11, 2014
Date

John Vice
Chair, Board of Directors
Conservation Halton

MARCH 11, 2014
Date

I am pleased to deem this master plan in conformity with the general intent and purpose of the *Niagara Escarpment Plan (2005)* pursuant to S. 13-(1) of the *Niagara Escarpment Planning and Development Act.*

Ray Pichette
Director
Natural Heritage Lands and Protected Spaces Branch
Ontario Ministry of Natural Resources

March 5, 2014
Date

Deb Pella Keen,
Director
Niagara Escarpment Commission

January 16, 2014
Date

# Preface

The *Master Plan for Mount Nemo Conservation Area* is the principal guiding policy document for the planning, development and resource management of Mount Nemo Conservation Area, which is owned and administered by Conservation Halton. This master plan has been undertaken as recommended by the *Limestone Legacy* report prepared by Conservation Halton in 2007, which proposed a vision to create "a sustainable network of world class conservation parks for ecological health and to provide public green space for quality education and recreation." The vision, goals and objectives of that plan are attached to this report as Appendix III.

This plan was developed in a phased three stage planning process that was designed to address growing regional recreational demands while also ensuring the long-term protection and sustainability of this natural escarpment area. The planning process was structured to satisfy the legislative requirements of the *Niagara Escarpment Plan (2005)* and the *Conservation Authorities Act* and has included extensive consultation with the public, stakeholders and related agencies.

Final approval of this plan is under the jurisdiction of the Ontario Ministry of Natural Resources in accordance with the *Niagara Escarpment Plan (2005)*. Upon approval of this document by the Board of Conservation Halton, submission is made to the Ontario Ministry of Natural Resources and Niagara Escarpment Commission for review, circulation and final approval by the Minister or designate of the Ontario Ministry of Natural Resources. The Master Plan will be the prevailing policy document for the next ten years from the date of MNR approval.

The *Inventory and Analysis: Stage One Report* was released in March 2010. The *Concept Alternatives and Management Considerations: Stage Two Report* was released in August 2010 for circulation and response from the public and related agencies.

The *Master Plan for Mount Nemo Conservation Area* is the approved policy document for the management and development of Mount Nemo Conservation Area. This document sets out conservation area zoning and conservation area policies for resource management and park operations as well as development policies to guide proposed conservation area development.

# Executive Summary

## *Vision Statement*

*To become one of Conservation Halton's regionally significant Niagara Escarpment Parks while protecting and enhancing the natural heritage features of the escarpment – its prominent bluff, pristine cliff ecosystem, forests and fields, as well as providing excellence in high quality educational and recreational visitor experiences through enhanced educational facilities and amenities that include access to scenic views, heritage educational and interpretive opportunities, hiking trails and passive recreation.*

## *Significant Attributes of Mount Nemo Conservation Area*

Mount Nemo Conservation Area possesses an impressive array of natural and cultural heritage features including:

- One of the most pristine cliff ecosystems in the province and best caving in the Greater Toronto Area;
- A network of 6.8 kilometres of hiking trails including the 5.25 kilometres of the Bruce Trail;
- Part of the Niagara Escarpment UNESCO World Biosphere Reserve and identified as a Natural Environment park under the NEPOSS.
- Includes both the Mount Nemo Escarpment Provincially Significant Life Science and Earth Science Areas of Natural and Scientific Interest (ANSI) representing the escarpment plain, rim, cliff talus slope and shale slope forests; as well as the Mount Nemo Escarpment Woods Environmentally Sensitive Area (ESA)
- Over 300 plant species (7 rare, 11 uncommon), 46 bird species (4 rare, 5 uncommon), 13 mammal species (1 rare), 4 reptiles and 9 amphibians can be found within the conservation area or in the immediate surrounding area;
- Spectacular viewing points looking north to Milton, east to Oakville and south to Burlington and Lake Ontario;
- The former Lowville Quarry as a cultural heritage space;
- Protected habitat for six species at risk as well as three globally rare and four provincially rare habitat types, and 124 ancient Eastern White Cedars one of which is over 876 years of age;
- Individual and group attendance figures indicate approximately 16,000 visitors in 2010;
- Existing natural heritage features provide the equivalent of $582,623 in ecosystem services annually.

## *Existing Policy Framework*

The *Master Plan for Mount Nemo Conservation Area* builds on and supports existing Conservation Halton and provincial policy documents including the *Conservation Halton Strategic Plan* (2009)*, Halton Escarpment Parks – A Limestone Legacy* plan (2007) and the *Niagara Escarpment Plan* (2005).

The *Limestone Legacy* document outlines a draft strategy to protect and enhance Conservation Halton's system of Escarpment parks through a unique partnership between Halton Region and Conservation Halton.

Within the provincial *Niagara Escarpment Plan (2005)*, Mount Nemo Conservation Area is designated as a Natural Environment Park that accommodates activities including high quality, low to moderate intensity recreation such as hiking, rock climbing, nature viewing and picnicking.

## *Summary of Significant Issues and Challenges*

**Financial Constraints:** Over the past 20 years, with changes in government and priorities, Conservation Halton's funding for conservation area development and enhancement has almost disappeared. Therefore, Conservation Halton has been primarily using conservation area revenues to offset operating expenses with limited funds for basic capital maintenance work, new facilities and tools to monitor environmental impact. Currently there is no real base-level capital-funding source. This limited funding has resulted in the deterioration of natural heritage features, facilities and amenities as well as the quality of the visitor experience. Limited funding threatens Conservation Halton's ability to continue to protect and maintain, let alone improve or enhance, the conservation area.

Mount Nemo Conservation Area, along with the other Conservation Halton conservation areas, suffers from the impacts of severely limited tax-supported funding. Funding models in many other Conservation Authorities in Southern Ontario include regional, municipal and/or provincial tax levy support. Additionally, development charges, permit fees and other associated development fees are charged against Conservation Halton for conservation area capital development projects. Other park agencies in the region are normally exempt from these fees and charges.

**Growth in Visitation:** Over the last five years, Conservation Halton parks have experienced a 9.4 percent annual increase in visitation, while the regional population has grown at a rate of 4.5 percent over the same period. This growth trend is projected to continue, if not accelerate over the next ten years.

**Natural Heritage Protection:** Mount Nemo Conservation Area's unique and diverse natural heritage system is generally well protected and secure, but some deterioration was identified at certain heavily used locations. These impacts highlight the need for stronger monitoring and protection measures, especially in light of the population and visitation projections.

**Cultural Heritage Protection:** There is one registered archaeological site within Mount Nemo Conservation Area representing a pre-European settlement site, as well as the abandoned Lowville Quarry site area.

**Visitor Experience:** While the natural and cultural features of Mount Nemo Conservation Area are spectacular and unique, the present built amenities, facilities and infrastructure are inadequate to serve the projected growth in visitation. While visitors currently enjoy their experience at Mount Nemo Conservation Area, continued growth will put facilities beyond the capacity they were built for, which will detract from the quality of the visitor experience.

**Education and Programming:** The educational programming at Mount Nemo Conservation Area is not well developed. Given the existing natural heritage, visual quality and cultural spaces, there is potential for interpretive programming aimed at scenic viewing, the geological history of the escarpment and the aggregate industry in the region.

## *Recommended Policies*

The master plan has been developed to support Mount Nemo Conservation Area as a significant regional destination for local visitors and tourists:

- Ensures protection and enhancement of the natural heritage and cultural spaces of the site;
- Promotes environmental values, excellence in education, healthy lifestyles and outdoor recreation;
- Prescribes a workable visitor impact management strategy (VIM) that addresses the expected increase in visitation and any accompanying potential impacts;
- Specifies development requirements and standards that meet the appropriate level of design excellence in high quality educational, interpretive and recreational facilities, programs and amenities; and;
- Outlines a realistic financial management strategy that defines funding and revenue generation requirements, potential partnerships, management and operational costs and that aims at ensuring long-term viability.

## *Highlights of the Development Proposal*

The master plan identifies a range of new facilities to provide enhanced natural heritage protection, visitor experience, amenities, educational and interpretive opportunities and recreational conveniences. Financial and environmental sustainability are defining, and in some cases limiting, factors in the proposed list of master plan recommendations. Some of the proposed development may be exempted from requiring a Niagara Escarpment Development Permit in accordance with section 5.41 of Ontario Regulation 828/90. The main elements of the master plan are summarized as follows:

- A state-of-the-art, 150sq metres interpretive pavilion to accommodate Mount Nemo Conservation Area's expanded role in information, orientation, education and interpretation, which features storylines on escarpment geology, scenic viewing and the Lowville Quarry.
- Enhancements to the Brock Harris Lookout and associated trail access.
- A new interpretive lookout at the Lowville Quarry site.
- A system of entrance, directional, interpretive and other signage that is consistently branded across all Conservation Halton conservation areas and standardized to meet accessibility, readability, risk management and marketing objectives.
- An enhanced, sustainably-designed system of small-scale roads and parking areas that promotes safety and security for visitors and a positive sense of arrival, and which is tastefully designed to harmonize with the natural setting of the conservation area.
- Site technology upgrades, including telephone and video surveillance (future).
- Accessibility upgrades for all structures and pathways to meet Accessibility for Ontarians Disabilities Act (AODA) built environment standards (2013).
- Trail system improvements to ensure protection and enhancement of the natural heritage system including some re-routing, re-construction and closures especially along the escarpment rim and in other sensitive sites.
- New overflow parking and access road (3600sq meters) to accommodate current visitor capacity.
- A new relocated 50sq meter gatehouse
- An upgraded standardized palette of day-use passive recreation amenities such as picnic shelter (150 sq. m), comfort stations, site furniture, etc.

- Site service upgrades including electrical service and waste management that use sustainable technologies that demonstrate respect for the environmental values associated with the site.

## *Overall Capital Development Costs*

Overall capital development cost for the build out of the proposed *Master Plan for Mount Nemo Conservation Area* amounts to approximately $ 4 million over a ten-year period. A generalized breakdown of this amount is summarized below.

| | |
|---|---|
| Signage | $ 85,000 |
| Roads and parking | $ 1,175,500 |
| Picnic and site furnishings | $ 95,000 |
| Infrastructure / gatehouse | $ 269,000 |
| Trails / interpretive pavilion | $ 515,000 |
| Restoration of natural features | $ 877,500 |
| Visitors Impact Management Plan | $ 150,000 |
| ***Subtotal*** | **$ 3,083,000** |
| Soft costs, fees, contingency (30%) | $ 924,900 |
| **Total** | **$ 4,007,900** |

## *Overview of Financial Parameters*

The key financial and related parameters of the development plan for Mount Nemo Conservation Area are as follows:

- The cost of the development plan for Mount Nemo Conservation Area over the 10-year development timeframe is just over $ 4 million (measured in terms of 2010 dollars) and a stable base-level capital-funding source must be established to facilitate plan implementation.
- Attendance at Mount Nemo Conservation Area is expected to grow significantly to just over 26,000 by the year 2020.
- While more visitors will generate increased revenues, the financial analysis in this report demonstrates that by itself this will not be sufficient to offset the higher costs of operation; however, despite increased operating costs, Mount Nemo Conservation Area can operate on a break even basis or even generate a small surplus through a variety of strategies.
- To provide the enhanced level of customer services and environmental protection called for in this master plan and not incur an operating deficit, a pricing study must be undertaken to determine how to increase net revenues or identify means to subsidize operating costs.

## *Putting it in Context – Conservation Halton's Contributions to Society and the Environment*

Conservation Halton creates significant direct economic benefit in the community. The operations of Conservation Halton, plus the expenditures of visitors who come to the region to utilize the programs and services offered, create nearly $12 million of additional gross domestic product (GDP) in Halton

Region alone. This is associated with 274 jobs in the Region, $8.4 million in wages and salaries and $5.7 million in additional taxes paid. If this were a single business or industry, it would be recognized as a significant component of the economic base of the Region. Beyond Halton Region itself, there are further economic benefits accruing across the Province of Ontario.

In addition to the economic impacts, Conservation Halton provides a valuable service to the community in terms of 'ecosystem services' – the impact of the forest and wetlands maintained by Conservation Halton in terms of filtering and cleaning water and air. Ecosystem valuation quantifies the cost of providing these services commercially, as opposed to having conservation authority lands provide these benefits 'for free.' The estimated savings to society from these services provided by Conservation Halton's holdings are nearly $16 million annually.

Conservation Halton conservation areas provide a growing population with access to abundant, natural green space for leisure and recreation. More specifically, these spaces offer opportunities for recreation that promotes healthy living through physical activity and exercise. By keeping costs low, Conservation Halton conservation areas strive to offer accessibility to all residents while supporting culturally and socioeconomically diverse communities. In addition to serving local residents, as significant regional destinations, the conservation areas also attract tourists to Halton Region.

The availability of Conservation Halton spaces, programs and services adds considerably to the perceived quality of life in Halton Region. This in turn can be extremely valuable in attracting the highly mobile 'creative class,' those individuals most likely to create businesses, invest in the community and bring new ideas and energies into the region. Thus, indirectly, Conservation Halton operations add to the attractiveness of the region overall as a place to live and work.

## *Financial Sustainability Strategy*

The master planning process has made it abundantly clear that:

- While the prime focus of Conservation Halton's conservation areas has been, and will continue to be, protection and enhancement of the natural heritage resources, it is also imperative to consider the social and economic components of the sustainability model;
- As growth in visitation inevitably increases, so too must the investment in infrastructure, amenities, related facilities and the visitor impact management that is required to protect and enhance the natural heritage features and, thereby, achieve and maintain the necessary balance between protection and usage;
- Protection of natural heritage resources requires key investments in:
    - Enhancements to existing facilities, infrastructure and amenities;
    - New facilities: educational, recreational and interpretive;
    - Protection and enhancement initiatives: visitor impact management, restoration, etc.

An annual base level of financial support should be sourced through Halton Region (the Province of Ontario and / or Municipalities, etc.,) as the main recipient(s) of the benefits provided by this conservation areas. This should result from (and possibly be correlated with) the significant population growth occurring in the region, which will by itself place a heavier demand on Conservation Halton's areas and facilities. A new and different business model needs to be developed for Conservation Halton; one that acknowledges the significant economic benefits conferred upon Halton Region by

Conservation Halton and recognizes the pressures placed upon Conservation Halton by population growth.

Consequences of not providing adequate on-going capital funding may include the need to implement one or more of the following actions:

- Raise admission fees at specific conservation areas;
- Raise membership fees;
- Charge differentially at peak times;
- Limit visitation;
- Limit access to certain conservation areas;
- Cut back on some of the programs and services currently offered;
- Cutback the proposed capital development program or extend it beyond the projected 10-year timeframe with subsequent increases in cost.

Conservation Halton creates valuable environmental, social and economic benefits, and provides significant value-added services to Halton Region. To enable Conservation Halton to continue to provide these benefits, ongoing investment in Conservation Halton's conservation area facilities and programs is required.

# Acknowledgements

The *Master Plan for Mount Nemo Conservation Area* is the product of collective input from Conservation Halton staff, local residents and key stakeholders. These dedicated individuals addressed important concerns and issues surrounding the development of the master plan.

Those who made an effort to participate in the public meetings and design charrettes will have a greater sense of community ownership and pride, because they helped to shape the master plan concept and recommendations for Mount Nemo Conservation Area. The ideas of local citizens combined with the management experience of Conservation Halton and the analytical and design expertise of the consultants has produced a master plan concept to guide the future development of this unique and beautiful natural area.

**Consultants**

EDA Collaborative Inc. completed this study between November 2008 and March 2011. This document summarizes the factors including environmental, social, economic and management policy considerations that were taken into account in order to create an appropriate master plan for Mount Nemo Conservation Area.

Dillon Consulting Limited provided the environmental analysis and programming with particular attention to visitor impact management and resource management policies.

TCI Consulting Inc. provided the economic evaluation, market analysis, and preliminary capital and operating budgets for the master plan.

**Conservation Halton Master Plan Review Committee**

Neil Switzer – Manager of Projects and Services

Robert Edmondson – Director of Watershed Management Services (past)

Gene Matthews – Direction, Conservation Lands

Marta Proctor – Director, Conservation Lands (past)

Lorrie O'Brien – Director, Conservation Lands (past)

Hassaan Basit – Director, Communications Services

Linda Scott – Manager of Crawford Lake and Mountsberg Conservation Areas

Dolf DeJong – Manager of Crawford Lake and Mountsberg Conservation Areas (past)

Julia Madden – Manager of Crawford Lake and Mountsberg Conservation Areas (past)

Craig Machan- Manager of Hilton Falls, Rattlesnake Point, Mount Nemo Conservation Areas

Ron Kindt – Manager of Hilton Falls, Rattlesnake Point, Mount Nemo Conservation Areas (past)

Brenda Axon – Manager, Watershed Planning Services

John Bush – Manager, Watershed Lands and Resource Services (past)

Kim Barrett – Senior Terrestrial Ecologist

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**Technical Advisory Committee**

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Robin van de Lande – City of Burlington

Shelley Young – Region of Halton

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**Other Supportive Organizations, Agencies or Individuals**

Conservation Halton Board of Directors

Conservation Halton Foundation

FEREN

Halton Environmental Network

Halton Multi-Cultural Council

Halton Region

Halton Region Health Department

Ontario Parks

Our Kids Network (Vanessa Box-Jones)

Province of Ontario South Peel Naturalists

Sustainable Trails Limited

Funding for this project was provided by The Regional Municipality of Halton

Assistance for this project was provided by The Ontario Ministry of Natural Resources

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# Section One: Introduction

## *1.1 Background*

Master planning for Mount Nemo Conservation Area was undertaken to provide Conservation Halton with a sustainable management and development plan for the site to operate as a Natural Environment Park under the Niagara Escarpment Parks and Open Space System (NEPOSS). This planning process is important to the protection and management of the 168-hectare site, which is located in the City of Burlington, a part of Halton region, in Southwestern Ontario just to the west of the Greater Toronto Area (see Figure 1-1).

This report constitutes the third and final stage of the master planning process – the master plan. Previous stages produced the *Inventory and Analysis: Stage One Report* (EDA Collaborative Inc. 2010a) and the *Concept Alternatives and Management Considerations: Stage Two Report* (EDA Collaborative Inc. 2010b). Further details of the planning process can be found in Section 1.7 below.

### 1.1.1 Existing Conservation Area

The Mount Nemo Conservation Area's biophysical resources include the iconic cliffs of the Niagara Escarpment and vegetation communities that vary from old-field to deciduous hardwood forest that is dominated by Red Oak and Sugar Maple. Trail users also find aesthetic and ecological value in the poplar and birch groves, limestone caves and ancient cliff face cedars.

The Mount Nemo Conservation Area is divided into two parcels straddling Guelph Line south of Britannia Road at Colling Road, and is accessed from Guelph Line across from Colling Road. This entrance is serviced by a gated parking lot with fee station that is in effect year round. The gatehouse is staffed on weekends throughout most of the year.

The area to the west of Guelph Road is known as the Colling Tract 34.4 hectares this property will be managed as a natural area, without trails and infrastructure, focused on ecosystem conservation and restoration. Given the small size of the parcel, access difficulties and associated potential for visitor impacts, access to the area will continue to be restricted.

The Bluffs Tract, formerly known as the Bluffs Resource Management Area, which consists of several small parcels (totaling 21 hectares) to the south of the conservation area proper has recently come under the ownership of Conservation Halton and was assigned to the manager of Mount Nemo Conservation Area. As the master plan process was already underway when this occurred, planning for the tract was not included in this master plan exercise.

The Bruce Trail passes through Mount Nemo Conservation Area and provides a pedestrian link south towards Burlington as well as north towards Crawford Lake Conservation Area. Conservation Halton works with the Iroquois Bruce Trail Club and volunteers to maintain these trails.

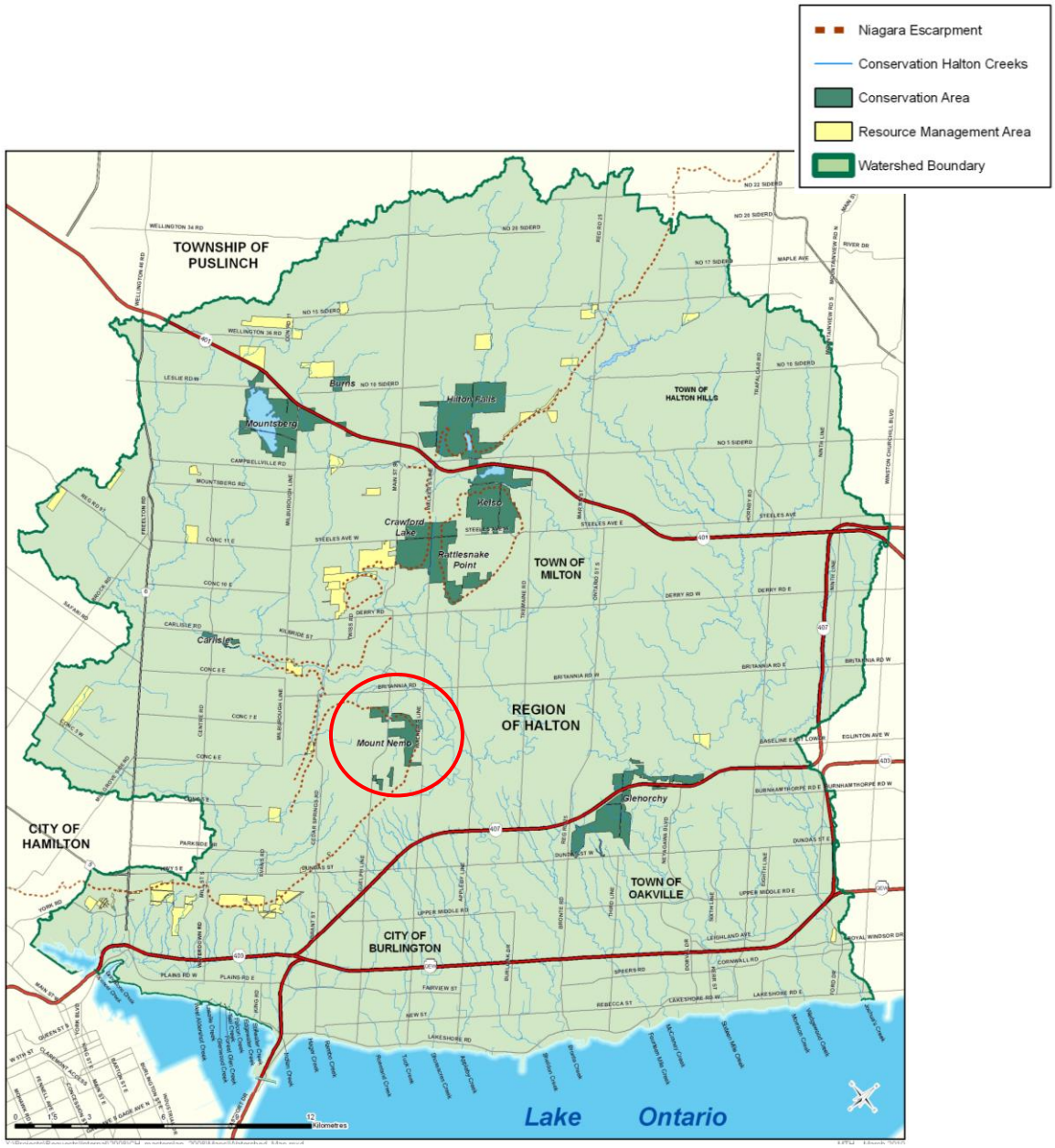



***Figure 1-1: Location Map***

### *1.1.1.1 Infrastructure*

A number of facilities and amenities exist within Mount Nemo Conservation Area including:

- A parking lot with capacity for 110 cars and an over-flow parking lot with capacity for 50 cars.
- A gatehouse (approximately 100 square feet), constructed in 2006 of steel siding with a flat steel roof. The gatehouse is located on the entrance road near the parking lot.
- There are two types of toilet facilities at Mount Nemo Conservation Area: the standard vault toilet and the culvert toilet.

- An open day-use area north of the existing parking area is used by visitors for overflow parking, picnicking, field games and related activities.
- Interpretive signage about Niagara Escarpment geology, viewscapes and natural heritage features is located at the Brock Harris lookout. Signage at the trailhead provides a broad background on Mount Nemo Conservation Area, significant natural features and provides guidelines on climbing and hiking.
- Numerous lookout opportunities produce some of the most dramatic vistas on the escarpment with spectacular views of Milton, Burlington and Oakville. Vantage points within the conservation area provide views of natural landforms and cultural land use patterns. The Brock Harris Lookout at Mount Nemo Conservation Area has been developed with a stone parapet wall, benches, and commemorative and interpretive signage.

#### *1.1.1.2 Recreation*

Mount Nemo Conservation Area currently offers hiking, recreational lead rock climbing with a top rope ban, nature study and photography. Geocaching is a recreational activity that Conservation Halton also allows within its conservation areas.

#### *1.1.1.3 Staffing*

Mount Nemo Conservation Area, in conjunction with Hilton Falls and Rattlesnake Point Conservation Areas, has a dedicated staff, totaling about seven full- and part-time staff that has been developed over a number of years.

#### *1.1.1.4 Visitation*

In 2010, over 16,000 people visited Mount Nemo Conservation Area. This number is probably misleadingly low, as the gatehouse is only operational on weekends from early April to late October / early November depending on the weather. For the remainder of the weekends and during the week, a fee station is in place but no staff person is onsite to check visitation numbers. Groups, both school and Guides / Scouts, although low in numbers, do visit to picnic, hike and engage in curriculum / program related activities. As discussed in Section 5.2.1 below, visitation is expected to continue to increase in coming years.

## *1.2 Site Characteristics*

Mount Nemo Conservation Area consists of a dense and attractive mixed hardwood forest area, conifer and hardwood plantations, natural regenerated old fields and a rare cliff ecosystem. Thus, the conservation area offers opportunities to interpret the natural environment including ecosystem succession, the unique character of the escarpment itself and the general patterns of animal and plant habitats of the Niagara Escarpment.

The open rural landscape character associated with the Niagara Escarpment Planning Area, as well as the greenbelt corridor, is evident at Mount Nemo Conservation Area. Contributing factors include anthropogenic rural features such as open agricultural fields replanted with deciduous and coniferous trees and hedgerows, and natural features such as forested slopes, and rock face and outcrops. Seasonal changes impact dramatically on the visual character of the site. This wide diversity of natural heritage features renders the lands very aesthetically valuable.

The main cultural heritage resource at Mount Nemo Conservation Area is the abandoned Lowville Quarry. The original purchase of the conservation area took place in 1959 to prevent the expansion of the Lowville Quarry and to protect this significant site.

## *1.3 Site Ecology and Policy Context*

Mount Nemo Conservation Area is largely within the following protected areas:

- Mount Nemo Escarpment Woods Environmentally Sensitive Area (ESA)
- Mount Nemo Escarpment Provincially Significant Life Science and Earth Science Area of Natural and Scientific Interest (ANSI)

Both extend beyond the southern boundary of the conservation area and to the east, down the talus slope onto adjacent private lands.

Many significant natural features are present in the conservation area: ancient Eastern White Cedars, forest interior, corridor linkage, provincially significant geologic formations, national and provincial species at risk, as well as nationally and provincially rare vegetation communities.

The Twelve Mile Creek Conservation Authority initially acquired Mount Nemo Conservation Area in 1959 to protect the area as a regionally significant landmark and to preserve the visual, wildlife and general natural resources of the escarpment (In 1963, the Twelve Mile Creek and Sixteen Mile Creek Conservation Authorities amalgamated to form the Halton Region Conservation Authority, now known as Conservation Halton). It is also a very significant local landmark - a distinct visual feature, dominating the landscape when viewed from the south slopes and vantage points along Walkers Line. It is also prominent from lookouts on the Milton Outlier.

The master plan must conform to numerous planning acts and policies, including but not limited to the *Planning Act, Provincial Policy Statement*, *Niagara Escarpment Plan(2005)*, *Greenbelt Plan*, *Places to Grow Act, Conservation Authorities Act,* Halton Region's *Regional Official Plan* and the *City of Burlington Official Plan*. The implications of these policy statements are laid out in Section Two of the *Stage One Report* (EDA 2010a).

Recently Halton Region has adopted an amendment to their official plan. Instead of the previous land use designations called Greenlands A and B, they have initiated a Regional Natural Heritage System.

> *The goal of the Regional Natural Heritage System is to increase the certainty that the biological diversity and ecological function within Halton will be preserved and enhanced for future generations. ROPA 38 (Adopted by Regional Council December 16, 2009, not yet approved)*

Mount Nemo Conservation Area falls under this natural heritage system classification.

## *1.4 Land Use Context*

### 1.4.1 Regional Context and Surrounding Land Use

The population base within Southern Ontario is significant and growing rapidly. The estimated current (2010) population within a half-hour drive radius is just over 2 million, while that within a one-hour radius is estimated to be nearly 7 million. At anticipated growth rates, the population within the one-hour radius will be approximately 8.5 million by the year 2021.

The provincial growth plan, the *Places to Grow Plan*, sets population and employment targets that Halton Region must plan to achieve. Specifically, it needs to plan for a *total* of 780,000 people and

390,000 jobs by 2031. Thus, Halton Region needs to plan for an *additional* 134,000 people and 54,000 jobs in the years 2021-2031. Clearly, Conservation Halton's facilities and programs can draw on and will have to accommodate a significant and growing local and regional market.

Although the area is experiencing phenomenal population growth and will continue to do so for the foreseeable future, most of the surrounding area has a rural character. The types of land uses surrounding Mount Nemo Conservation Area are predominantly natural heritage system elements and farmland, a mineral resource extraction operation and three hamlets.

### 1.4.2 Local Context

#### *1.4.2.1 Land Use*

The area directly abutting Mount Nemo Conservation Area lies entirely within the Niagara Escarpment Planning Area and, thus, all land uses must comply with the policies governing the assigned designations. The conservation area is comprised of Escarpment Natural Area and Escarpment Protection Area

To the north, west and south of Mount Nemo Conservation Area, agricultural uses and rural residential areas predominate. To the east, between Walkers Line and the conservation area, the land is composed of rural residential properties ranging in size from two to ten acres.

The Nelson Aggregate Company operates a 218-hectare aggregate extraction quarry on lands west of Guelph Line, south of Colling Road and north of No. 2 Sideroad. A major reforestation project was completed on lands to the south of the Nelson Quarry with assistance from Conservation Halton.

## *1.5 Study Purpose*

Master planning for Mount Nemo Conservation Area was undertaken to ensure that Conservation Halton meets its obligations under the *Niagara Escarpment Plan* (2005) and aligns with its own *Strategic Plan* (2009). It is also in fulfillment of the mission of the *Limestone Legacy* report (2007). The purpose of this new master plan is to update and renew the 1983 *Master Plan*. This process is important to the protection and management of the 168-hectare site, which is part of a UNESCO World Biosphere Reserve.

The overall purpose of the master planning process was to protect and enhance the significant natural features and ecological functions of the conservation area while providing opportunities for the public to enjoy this spectacular area, appreciate its outstanding scenic beauty and participate in recreational opportunities. This master plan develops a vision and role for the conservation area in relation to other facilities within the Conservation Halton watershed. The *Master Plan for Mount Nemo Conservation Area* will serve as the principal guiding document for the future planning, design, development and resource management of the conservation area in accordance with all relevant acts and regulations. It is applicable for 10 years from the date of formal approval by the Ontario Ministry of Natural Resources with opportunities for amendment as described in Section 7.4 below.

## *1.6 Study Goals and Objectives*

The primary goal of the *Master Plan for Mount Nemo Conservation Area* is to create an optimum balance between environmental protection, resource management and public use. This goal was accomplished through a phased and integrative planning and consultation process. Objectives of the master planning process included:

- Establish Priority Protection Areas for the protection of all significant natural and cultural features;
- Develop appropriate park zoning, development guidelines and management policies;
- Recommend enhanced basic facilities and amenities to bring the areas up to standards appropriate to a regionally significant resource;
- Recommend species at risk monitoring and habitat management programs;
- Conduct inventory and market analysis of surrounding natural and recreational facilities;
- Address physical and financial accessibility barriers to visitation;
- Define carrying capacities for the conservation area's various uses;
- Assess the feasibility of implementing a Visitor Impact Management (VIM) program and recommend a suitable VIM plan;
- Conduct financial assessment and develop budget estimates for capital and operating costs;
- Identify natural heritage features and conservation and restoration area components; and
- Establish details of the type and location of current and proposed uses.

## *1.7 Study Process*

A master plan provides a long-range vision to guide development over a period of many years. The master planning process for this study involved three stages.

Stage one of the study provided the context and foundation for the master plan that was being developed for Mount Nemo Conservation Area. It summarized the site's existing environmental, social and economic features and factors, and opportunities and constraints that influenced the development of the final master plan. This required an extensive inventory and analysis process, the findings of which are documented in the *Inventory and Analysis: Stage One Report* (EDA 2010a).

The *Stage Two Report* consists of three development options including suggestions for programming, facilities and finances. The three conceptual options included Concept A - Upgraded status quo: provide proposed basic level of Conservation Halton conservation area services or meet expectations; Concept B - Basic level plus additional, "value added" services that exceed expectations and Concept C - Become a regional destination: a "must see/must do" experience. All concepts were built upon a major natural heritage system protection and enhancement program. These options were presented to interested members of the public and key stakeholders for review and discussion and, based on these findings; a preliminary preferred concept was identified.

The Ontario Ministry of Natural Resources NEPOSS Planning Manual (MNR 2012) advocates for a park zoning system; such a system has been used for this master plan. These zones, and management guidelines for each, are presented in Section Three of this report.

Other park management policies, such as for trail development and cultural heritage protection, are also found in Section Three. These policies have been developed in accordance with governing policy documents such as the *Ontario Heritage Act*, the *Niagara Escarpment Plan(2005)* and the *Conservation Authorities Act*.

During this third and final stage of the master planning process the preferred concept as determined in stage two has been further refined and a phased implementation plan developed for Mount Nemo

Conservation Area. The completed plan will be submitted to the Board of Conservation Halton for approval and then to the Niagara Escarpment Commission and the Ontario Ministry of Natural Resources for final approval.

### 1.7.1 Public Consultation

In the Development Stage during February 2009, Conservation Halton held interviews with 26 people representing 17 organizations[1] to learn their ideas on the Master Plans for the parks. On February 25, 2009, there was an initial open house at the Conservation Halton Administration Office for the public and organizations[1] to discuss proposed ideas for Hilton Falls, Rattlesnake Point and Mount Nemo, 58 public citizens attended which included 19 organization[1] representatives. After Stage I: Inventory and Analysis was complete, the development of three proposed concepts for Mount Nemo Conservation were brought forward at an Open House on May 29, 2010, at Crawford Lake Conservation Area where 6 public citizens attended. Conservation Halton also put out an extensive survey regarding the four conservation areas, to which 170 people responded, the survey was distributed in person at conservation areas and on the internet from May to June of 2010. Results from this consultation process are available in Appendix IV.

The preferred concept for Mount Nemo Conservation Area, derived from this review process, which included survey results, detailed planning considerations, economical, environmental and social considerations, is based on Concept "A" presented in the *Stage Two Report* (Ibid.) Concept "A" mainly entailed bringing the conservation area up to the proposed enhanced base level of services. The proposed quarry restoration, interpretive pavilion, expanded parking lot and a picnic shelter from Concepts B and C were added. The Stage II document was posted on Conservation Halton's website and letters were distributed to neighbours within 120 meters of each park on September 1, 2010. Newspaper ads were placed in local papers and Halton Conservation posted a media blast in September 2010 announcing the time and place of the Master Plan Stage II Open House. On October 7, 2010 the preferred Concept "A" with elements from "B" and "C" was presented at two open houses held on the afternoon and evening. In the afternoon 28 people attended; in the evening 12 people attended. A variety of opinions and issues were presented by members of the public, some issues which arose from this meeting were; requests for an adjustment to the location of the development zone, and turning natural zones into meadows to allow for field restoration. These items were discussed and changes were made within the Stage III Master Plans; for example the development zone area has been redefined. The plan was further refined based on input from the Ontario Ministry of Natural Resources, Halton Region, the Niagara Escarpment Commission, the City of Burlington and members of the public.

## *1.8 Significant Issues*

The Master Plan for Mount Nemo Conservation Area has been developed in response to significant input from staff, current conservation area visitors and a technical advisory committee. During this process, a number of significant issues have come to the fore, which it has been necessary for this master plan to address. These issues are summarized below.

[1] Organizations – Represents; Groups, Interested parties and Cooperate bodies. Examples; Ontario Climbing Coalition, The Bruce Trail Conservancy, Tourism Burlington, and Dufferin Aggregates

### 1.8.1 Visitation and Community Issues

Conservation Halton expects to see visitation expand considerably at its conservation areas due to the expected population growth for Halton Region (anticipated to be 71% over the next 20 years) and recreation trends (see section 5.1 below and Section 6.6 in the *Stage One Report*, EDA 2010a). At the open houses, concerns were expressed regarding community impacts that may result from development and increased visitation. Conservation Halton customarily locates activity areas away from adjacent neighbours and additionally provides buffers, such as hedgerows, to screen views and buffer sound. Moreover, Conservation Halton strives to work in harmony with its neighbours and considers their concerns at all times and will ensure that the Visitor Impact Management Program remediates any effects on neighbouring properties. At the outset of the master planning process and several times since, invitations have been extended to neighbouring property owners, the general public and specific user groups to provide feedback to the proposed development options.

Concerns that the natural environment wasn't being given enough emphasis in these plans were raised; however, Conservation Halton's mandate includes providing appropriate levels of public access and recreational opportunities while being financially self-sustaining. Nevertheless, environmental protection has been of paramount importance throughout this master planning process. Many management policies are incorporated in this plan, most notably the Visitor Impact Management plan, and all development is confined to the Development Zone, with trails and other low-impact facilities being located in other zones.

Recent site inventory has revealed that public trails are located in Nature Reserve Zone. The master plan calls for major upgrading of existing trails to minimize the potential for erosion and ponding. During this process, Conservation Halton will review the need to close or reroute trails away from sensitive areas.

The Niagara Escarpment Commission and the Ontario Ministry of Natural Resources reviewed the *Stage Two Report* (Ibid.) and expressed concern that negative impacts on the rare cliff face ecosystem should be minimized. In response, this master plan proposes many management actions including potentially decommissioning climbing routes in conflict with natural heritage features, implementing a long-term cliff monitoring programs and increased public education about the value and fragility of the natural environment. Conservation Halton is developing a climbing management plan which will be available in fall 2014 as part of their effort to implement a comprehensive Visitor Impact Management plan. Conservation Halton will work with climbing community, tour operators and education suppliers to develop an appropriate strategy for use of climbing facilities. In addition, interpretive signage about the rarity and sensitivity of the ancient cedars will be developed and posted.

### 1.8.2 Financial Constraints

Conservation Halton has been underfunded for more than a decade and has fallen behind in important infrastructure upkeep. Ongoing financial constraints are partially due to a lack of any supplemental regional / municipal or provincial tax levy support. Many other Conservation Authorities are supported by tax levies. Additional capital cost burdens include municipal development charge requirements when typically other public parks in Halton Region are exempt.

### 1.8.3 Environmental Protection

This report suggests that Conservation Halton continue to develop and implement detailed management plans in areas such as invasive species control and monitoring species at risk, such that

the natural heritage features and system at Mount Nemo Conservation Area are protected and enhanced to the greatest extent possible, using the most up-to-date knowledge and practices. Conservation Halton should also develop a comprehensive cultural heritage resource management plan to better track, assess and protect areas of cultural, historical and archaeological significance within Mount Nemo Conservation Area and its other properties. Section Three elaborates on the need for, and some requirements of, these plans.

### 1.8.4 Provincial Policy

The *Niagara Escarpment Plan (2005)* limits development on escarpment lands. It states, in general, that all buildings, structures and facilities, including parking areas shall be designed and located to minimize the impact on the principal use, adjacent land use and the rural open landscape character. Development at Mount Nemo Conservation Area will be designed with the intention to:

- Preserve the natural scenery;
- Maintain the open landscape character;
- Maintain the cultural heritage landscapes;
- Maintain natural vegetation cover, slope, terrain and other natural features (e.g. escarpment brow and prominent slopes);
- Protect the view of the escarpment and the land in its vicinity;
- Protect the natural environment; and
- Minimize land use conflicts.

The Niagara Escarpment Parks and Open Space System Planning Manual (MNR,2012) advocates for a park zoning system; such a system has been used for this master plan. These zones, and the management guidelines for each, are presented in Section Three of this report along with other park management policies such as for trail development, Visitor Impact Management and cultural heritage protection.

# Section Two: Background Considerations

## *2.1 Environmental Importance of this Conservation Area*

The resources that are Mount Nemo Conservation Area are core lands in Halton Region's Natural Heritage System (NHS), a system which contributes greatly to the range of habitat conditions needed to maintain a high species biodiversity within the region. In this way, this conservation area helps to fulfill the objectives expressed in Halton Region's *Regional Official Plan Amendment 38* such as "to increase the certainty that the biological diversity and ecological function within Halton will be preserved and enhanced for future generations." The regional NHS components in Mount Nemo Conservation Area are coincident with a variety of natural features including the Niagara Escarpment UNESCO World Biosphere Reserve, Natural Heritage System Cores as well as Core Linkage Enhancement Areas and Buffers (North-South Environmental Inc. 2009).

Mount Nemo Conservation Area is also part of areas designated as Provincial Significant Areas of Natural and Scientific Interest (ANSI) and Environmentally Sensitive Areas (ESA). The conservation area includes many natural features, some of which include ancient Eastern White Cedar trees, forest interior, corridor linkage, provincially significant geologic formations, national and provincial species at risk, as well as nationally and provincially rare vegetation communities. The natural heritage features associated with the conservation area were provided in three main maps in the *Inventory and Analysis: Stage One Report* including Figure 3-5 Core Conservation Lands, Figure 3-7 Areas of Functional Ecological Importance and Figure 3-10 Significant Natural and Cultural Features (EDA 2010a). These maps combined, delineate the natural heritage system discussed in Section 3.2 of the *Stage One Report* (Ibid.). Figure 3-5 is being reproduced in this report as Figure 2-1.

## *2.2 Social Benefits of Natural Areas*

### 2.2.1 Benefits of Healthy Lifestyles and Outdoor Recreation

Conservation Halton's contribution to the health and wellbeing of residents of Halton Region cannot be overemphasized. Investment in parks and recreation brings societal and economic benefits to a community; it ensures the health of citizens both by helping to create a cleaner environment and by providing outlets for physical activity and psychological restoration, thereby also reducing health care costs. The province and Halton Region are both investing considerable resources in public health initiatives such as Active 2010, Active Halton and Walk this Way.

Recently, the Province of Ontario proposed a Children's Activity Tax Credit to encourage parents to involve their children in pursuits that help them grow as knowledgeable, involved, healthy and productive individuals. Considerable attention has also been given to youth diversion programs that help kids at risk to find healthy and fulfilling alternatives to the lure of gangs, drugs and crime. More money spent on programming for at-risk youth reduces spending on incarceration.

In addition to the benefits of outdoor recreation activities, Conservation Halton's conservation area programming helps to instill knowledge of, and respect for, environmental protection and sustainability, which helps to ensure a healthy and productive open space for future generations.

### 2.2.2 Public Use and Appreciation of Parks and Open Space

Parks and public open space contribute to a vibrant and healthy community. According to a 2009 Parks and Recreation Ontario (PRO) report based on an extensive survey of people from across Ontario, citizens consider parks and public open space to be highly valuable not only to themselves but to the community as a whole. The report concludes that:

> *Parks provide many values for users and to the community as a whole. Parks provide a sense of place in the community, allowing for escape, contemplation, discovery, access to nature, interpretive education and recreation. They also provide shelter, wildlife habitat, relief from urban form, reduce] the "heat island effect" and improve] air quality, and serve as buffers between residential and industrial areas. Parks enhance aesthetic quality, increase property values and improve the image and livability of communities. Recreation, through physical, social and artistic expression, provides opportunities for individuals to improve their health and wellness, socialize and interact with others, learn new skills, have fun and find balance in their lives. In particular, physical activity and stress reduction are two health issues that researchers identify as benefits of local parks and recreation to public health.*

Key findings of this report include:

- Recreation is important in achieving "work-life balance."
- Ontarians seek recreation opportunities in their communities and rely on municipal and non-profit recreation and parks services.
- Recreation needs to be accessible to everyone.
- All Ontarians benefit from parks and recreation: The use of parks and recreation services is spread almost equally across the age continuum.
- Most people are willing to pay for public recreation and parks.
- Ontarians understand the wider benefits of parks and recreation.
- Public space is vital to community health.
- Participating in recreation is a key determinant of health status and quality of life.
- Local parks and recreation services have a vital impact on community and social development.

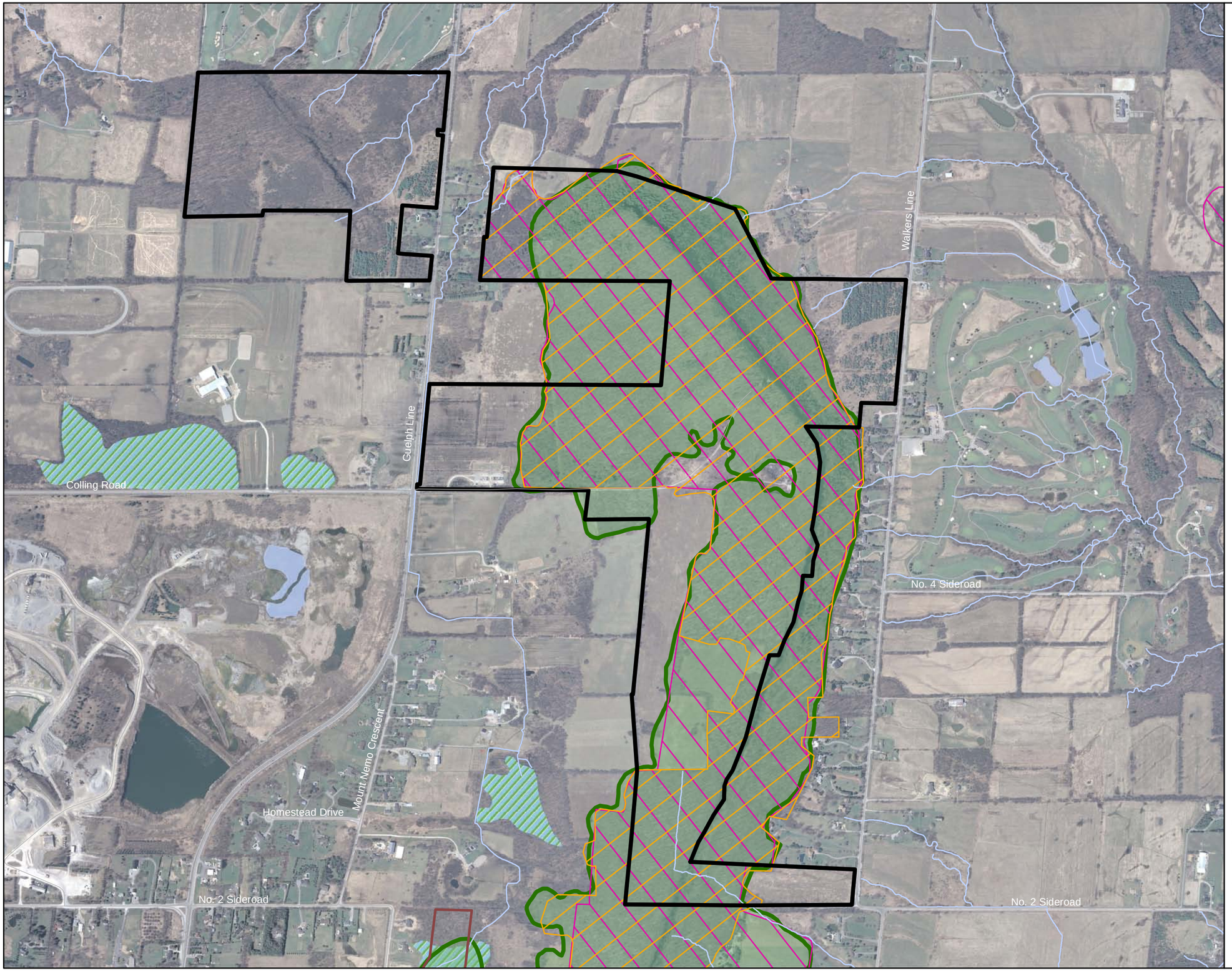
Conservation Halton's move to create a regional system of high-quality, publicly-accessible natural areas to satisfy these public needs and desires. As a public agency, Conservation Halton has struggled to keep entrance fees low in order to be financially accessible to all people. The importance of this public service will only increase in the coming years.

### 2.2.3 Benefits of Contact with Nature

The concept of biophilia was first introduced by Harvard biologist Edward O Wilson in 1984. The word biophilia literally means "love of life." Wilson chose it to label what he defined as humans' innate and evolutionarily based affinity for nature. In the last few years, studies have begun to show it has significant and measurable effects on people's state of mind.

Many such studies have been conducted to explore the benefits accrued from exposure to natural elements. Overwhelming evidence has been accumulated, which has been summarized in a literature review written by environmental sociologist Dr. Cicely Maller and her associates at the School of Health and Social Development, Deakin University, Melbourne (1998). Summarized below are the benefits related to parks.

***Figure 2-1: Core Conservation Areas***




# CONSERVATION HALTON

Mount Nemo Conservation Area
Core Conservation Lands
Figure 2-1

Legend

- Secondary Roads
- Stream
- Mount Nemo Conservation Area
- Bluffs Resource Management Area
- Waterbody
- Evaluated Wetlands (PSW)
- Mount Nemo Escarpment Provincially SignificantLife Science Area of Natural and Scientific Interest (ANSI)
- Mount Nemo Provincially Significant Earth Science Area of Natural and ScientificInterest (ANSI)
- Mount Nemo Escarpment Woods Environmentally Sensitive Area (ESA)

N W E S

1:11,000

0 200 400 600

Disclaimer: All boundaries on this mapping should be considered approximate. No responsibility or liability is assumed by Conservation Halton or The Regional Municipality of Halton its employees, officers and agents or the data providers listed below for any errors, omissions or inaccuracies, whether due to their negligence or otherwise. Some data on this map is used under license from the Ministry of Natural Resources.


Created By: SFG/KR
Checked By: ME
Date Created: 02/24/09
Date Modified: 03/26/10
File Path: I:\GIS\103003 - Conservation Halton\Dillon\Mount Nemo\Mapping\Core Conservation Lands.mxd

It has widely been found that views of, and contact with, nature have significant health benefits. It has been proven to:

- Positively influence immunity and cardiovascular function;
- Reduce stress;
- Promote healing;
- Improve cognitive function and self-esteem;
- Alleviate anxiety and depression.

In addition, it has been found that involvement in nature-based activities in one's own community can foster a sense of belonging or a sense of place and enhance social ties and relationships, thereby boosting satisfaction with one's neighbourhood. Parks and nature are an affordable, non-elitist, highly accessible means of improving community health that may help people reach their full potential; however, parks are a public resource yet to be fully utilized for individual and community health and wellbeing.

Conservation Halton's conservation areas will undoubtedly confer many benefits to Halton Region and its citizens.

### 2.2.4 Local Values

As mentioned is Section One, Halton Region recently drafted *Amendment 38* for their *Regional Official Plan*, which introduced the notion of a Regional Natural Heritage System (117(6)). One of the uses permitted in that system is "non-intensive recreation uses such as nature viewing and pedestrian trail activities." Moreover, the Region supports the provision of a diverse range of accessible cultural and recreational facilities and services as set out in the *Regional Official Plan* Section 161; and as part of their economic development policy, they express the intention to:

> *Promote Halton as a tourist and recreational destination for both its own residents and outside visitors based on the following themes:*
>
> *a) Scenic beauty,*
>
> *b) Extensive trails,*
>
> *c) A strong and diversified agricultural industry,*
>
> *d) Waterfront,*
>
> *e) Major outdoor and indoor recreational facilities,*
>
> *f) Halton's Heritage Features, museums and other cultural attractions, and*
>
> *g) Indigenous goods and products.*
>
> *Regional Official Plan (170 (16))*

As part of the development of these recreation and tourism opportunities, Halton Region provided funding for this master planning process. Conservation Halton's *Limestone Legacy* plan expressed the desire to create a superior system of regional parks, which would further Halton Region's cultural and recreational, economic development and stewardship goals. Local municipalities as well as Halton Region appreciate the natural beauty and recreation opportunities these lands afford them, as these natural areas enrich community life and guarantee unique experiences in a time of urban intensification.

## 2.3 Financial Benefits of Conservation Halton

### 2.3.1 Ways in Which Conservation Areas Create Value

The *Stage One Report* for Mount Nemo Conservation Area contained an overview of the economic benefits that Conservation Halton's activities confer on its local community and Halton Region (EDA 2010a). Several ways Conservation Halton benefits the regional economy materially are:

- **Purchases of goods and services from the local area:** Conservation Halton is a large purchaser of goods and services from the region (including labour in the form of its employees). See Section 2.3.2 for an estimate of the order of magnitude of these benefits.
- **Visitor attraction:** Conservation Halton conservation areas and facilities attract a large number of visitors from outside the community (as well as from outside the Greater Toronto Area) who spend money in the region, which in turn helps support local businesses.
- **Investment attraction:** Conservation Halton facilities and services increase the overall quality of life in Halton Region, and, thus, its attractiveness as a location for people to live and work, and as an area within which businesses can invest.
- **Contribution to a healthy community:** Somewhat more difficult to quantify, this aspect nonetheless has a very real value. By contributing green space to the community, and providing opportunities for individuals and families to have recreational and outdoor experiences, Conservation Halton helps the region overall to offer healthy-living choices and opportunities for residents and visitors alike.
- **Value of ecosystem services:** The wetlands and forest areas preserved by Conservation Halton add tangible value to the community because they in effect provide filtration and cleansing services for air and water. If commercial prices were paid for these cleansing services, the costs would run into the millions of dollars. Estimating the value of these services that otherwise might have to be provided commercially, provides another measure of value of Conservation Halton's services. See section 2.3.3 for an estimate of the order of magnitude of these benefits.
- **Watershed protection:** The floodplain management activities of Conservation Halton protect communities within the watershed from ongoing damage such as erosion and spring flooding, as well as potential destruction in the event of storms and severe weather events.
- **Increased land value:** The values of residential and estate properties located adjacent to or near conservation area properties can increase by virtue of this proximity.
- **Educational value:** Finally, the provision of educational programs and services to the local and regional community can have an economic impact. An educated populace will understand and respect the purpose, values and activities of conservation organizations, and may be more likely to support their activities in future through tax support, donations and attendance at various events and programs.

Thus, a considerable range in the nature and type of economic benefits generated in the Region and area result from the existence of Conservation Halton. Further details relating to this conservation area can be found in the *Stage One Report* for Mount Nemo Conservation Area (EDA 2010a).

### 2.3.2 Economic Impact of Conservation Halton Operations Overall

As mentioned, the *Stage One Report* for Mount Nemo Conservation Area contained an overview of the economic benefits of Conservation Halton's activities (Ibid.). Using the provincial economic impact model (TREIM), the expenditures both of Conservation Halton and of visitors from outside the region were modeled to determine the extent of these benefits. The *Stage One Report* contains all of the details in this regard. The chart below presents the summary of the impact of Conservation Halton's expenditures (based on Conservation Halton's 2010 budget). These estimates are of the economic impact of the entire authority's operations. At the level of analysis presented here, it is impossible to distill the results for any specific conservation area, because so many of the operations of Conservation Halton cannot be singled out and allocated to one conservation area as opposed to another.

***Table 2-1: Total Impact of Conservation Halton Expenditures***

| Impact Variable | Impact in Halton Region | Impact in the Rest of Ontario | Total Ontario |
|---|---|---|---|
| GDP($) | $11,977,770 | $10,666,436 | $22,644,206 |
| Employment (jobs – FTJE*) | 274 | 195 | 469 |
| Labour Income($) | $8,443,598 | $7,581,634 | $16,025,232 |
| Federal Taxes ($) | $3,309,502 | $2,637,956 | $5,947,458 |
| Provincial Taxes ($) | $2,350,365 | $1,891,929 | $4,242,294 |
| Municipal Taxes ($) | $38,008 | $105,356 | $143,364 |
| All Taxes ($) | $5,697,875 | $4,635,241 | $10,333,116 |

** Full-time job equivalents*

The operations of Conservation Halton represent a positive return-on-investment for the community. The $20.670 million dollar budget of Conservation Halton generates $22.644 million in associated economic impact, measured in terms of additional GDP in the province overall. In other words, every dollar of operating budget spent by Conservation Halton is associated with $1.10 of GDP in the province. The operations of Conservation Halton are associated with 469 jobs province-wide, which are associated with labour income of approximately $16 million. Finally, the operations of Conservation Halton are associated with over $10 million of tax revenue accruing to the three levels of government.

In addition, the tables above show much of this economic impact occurs in and to Halton Region: nearly $12 million annually in terms of GDP. An even greater benefit to Halton Region is not accrued, perhaps, because the region is part of the highly interdependent Greater Toronto Area (GTA) economy, so necessarily there is some degree of leakage to areas outside the region itself. For example, 48% of the employees of Conservation Halton live in the Region, implying that a majority – 52% - live outside the region.

In summary, the activities of Conservation Halton confer significant economic benefits to both the Halton Region and the Province of Ontario.

### 2.3.3 Value of Ecosystem Services

A recent report by the Suzuki Foundation (2008) presented a procedure to measure the value of 'ecosystem services' provided by large tracts of open space, forests and wetlands in Ontario's Greenbelt. (As mentioned above, this is a measurement of value based on what it would otherwise cost to provide filtering and cleansing services.)

The value of ecosystem services provided by Conservation Halton's holdings is just under $16 million per year, given Conservation Halton owns approximately 11,000 acres and the value of ecosystem services is $1,444 per acre on average (Ibid.).

An estimate of the total value of ecosystem services provide by Mount Nemo Conservation Area can be obtained by applying detailed information for the Suzuki report to specific types of land cover. The calculations are shown in Table 2-2.

***Table 2-2: Mount Nemo Conservation Area – Value of Ecosystem Services***

| Land Cover Type | Value Per Hectare* | No. of Hectares in Mount Nemo Conservation Area | Value of Corresponding Ecosystem Services |
|---|---|---|---|
| Wetland | $14,153 | 1 | $14,153 |
| Forest | $5,414 | 105 | $568,470 |
| Total Estimated Value of Ecosystem Services for Mount Nemo Conservation Area | | | $582,623 |

**Value per hectare sourced from Suzuki Foundation 2008*

To put this information into context, assume that the value of ecosystem services is equivalent to an income stream. If the value referenced above (i.e. $582,623) represented the income from an investment, generating a 5% return on capital, the investment would have a capital value of approximately $11.6 million. In other words, an investment of $11.6 million, at a 5% annual return, will generate income of $582,623. This is one way of understanding the value of investment in the conservation area, which might be warranted.

# Section Three: Goals, Objectives and Management Policies

## *3.1 Conservation Area Policies*

### 3.1.1 Park Classification

Mount Nemo Conservation Area is a "Natural Environment" park under the classification system developed by the *Niagara Escarpment Plan* (NEP). This designation is described as follows:

> *These lands are characterized by the variety and combination of outstanding natural features, historical resources and outstanding landscape.*
>
> *Natural Environment areas provide opportunities for the protection of important natural and cultural features. Activities may range from back-country hiking in the interior of these areas to car-camping and day use activities in the more developed or accessible areas.*
>
> *(NEP,2005).*

Rationale: The conservation area includes many natural features: forest interior, corridor linkage, significant geological formations, national and provincial species at risk, globally and provincially rare vegetation communities, as well as cultural heritage resources.

*Niagara Escarpment Plan* (2005) objectives for this conservation area: to protect and enhance important natural and cultural features; to provide access to the Niagara Escarpment; to provide high quality service and amenities; and to provide appropriate levels of recreational and educational programming.

### 3.1.2 Vision Statement

*To become one of Conservation Halton's regionally significant Niagara Escarpment Parks while protecting and enhancing the natural heritage features of the escarpment – its prominent bluff, pristine cliff ecosystem, forests and fields, as well as providing excellence in high quality educational and recreational visitor experiences through enhanced educational facilities and amenities that include access to scenic views, heritage educational and interpretive opportunities, hiking trails and passive recreation.*

### 3.1.3 Goals

Under this master plan, Mount Nemo Conservation Area shall provide an appropriate range of passive recreational facilities and resource management programs to best meet regional needs in a sustainable, environmentally appropriate and fiscally responsible manner.

Therefore, the goals of this master plan are:

- To protect and enhance the significant natural heritage features and ecological functions of the conservation area
- To provide recreational opportunities and opportunities for the public to enjoy this spectacular area, appreciate its scenic beauty and cultural resource.
- To implement program and development opportunities which capitalize on the unique features of the area.

For Mount Nemo Conservation Area, the unique features include the prominent escarpment cliff face, lookouts, ancient cedars and remnants of the aggregate quarry. In addition, an overall upgraded level

of service and amenities is proposed by this master plan. This enhanced base level will enable this conservation area to meet visitors' expectations for a first-rate regional conservation area in terms of arrival and accessibility, services, facilities and amenities, and quality of programming and environmental services.

### 3.1.4 Objectives

1) To protect and enhance all significant environmental features.
2) To comply with the established park zoning and management policies, in accordance with the *Niagara Escarpment Parks and Open Space Planning Manual* (MNR,2012), which will then guide all future development and management operations.
3) To continue the development and implementation of a Visitor Impact Management program for recreational use so that visitors do not exceed the carrying capacity of the natural resource base.
4) To provide year-round group and individual recreational opportunities and facilities within the constraints of the site's natural features and carrying capacity in accordance with Region's 'Healthy Living / Healthy Communities" model and Conservation Halton corporate goals.
5) To minimize any adverse affects of the area's use or development on surrounding properties through appropriate management techniques.
6) To operate the conservation area in a financially sustainable and self-sufficient manner with surplus revenues directed to other Conservation Halton programs.

## *3.2 Enhanced Base Level of Services*

The proposed base level of conservation area facilities and services is meant to help Conservation Halton develop a standard of excellence within their conservation area system. This enhanced base level of service includes a range of measures that was developed in consultation with Conservation Halton staff, stakeholders and the public.

The proposed base level of service would be instituted at all Conservation Halton conservation areas and would include:

- Clear corporate branding
    - Consistent visual standards for all signage, facilities and buildings that establish each conservation area as part of the Conservation Halton portfolio.
- Arrival and accessibility
    - Consistent directional and identification signage including directional and orientation;
    - A fee collection system including a gated structure;
    - Organized, sustainably-designed parking and visitor amenities in the arrival area;
    - A public day use area;
    - A minimum level of universal accessibility with specifically identified areas that meet Facility Accessibility Design Standards (FADS) and *Accessibility for Ontarians with Disabilities Act* (AODA) – *built environment* standards;
    - Controlled access to the natural heritage system.

- Services
    - Staff presence (augmented with volunteers) to collect fees, offer information, directions and some level of interpretation;
    - Visitor safety and security measures that include a modified entry control system.
- Facilities / amenities
    - Facilities that reinforce Conservation Halton's corporate identity program;
    - Clean, sanitary and accessible washrooms;
    - Consistently-designed interpretive signage;
    - A trail system that meets Conservation Halton standards and is constructed to protect the natural heritage system and provides amenities that may include benches, signage, mapping, identifier markers and trail etiquette rules;
    - Day-use facilities that may include benches, rest areas, picnic areas with potable water (if possible) and shelter;
    - Basic products for purchase (e.g. water, snacks, etc.).
- Quality assurance
    - A consistent and sustainable approach that demonstrates Conservation Halton's values and corporate mission;
    - High-quality management of the natural heritage system, species at risk and other features;
    - A Visitor Impact Management (VIM) program that includes positive reinforcement and education, monitoring of impacts and staff education and training;
    - High-quality sustainability standards in the design and construction of all buildings, features, facilities, site and landscape development such as Leadership through Energy and Environmental Design (LEED) and the American Society of Landscape Architects (ASLA) Sustainable Sites Initiative (SITES) – these are described in more detail in Section 2.3 of the *Stage Two Report* (EDA 2010b);
    - A consistently high level of maintenance and operations.
- Consistent interpretive themes
    - Conservation authority and watershed;
    - Niagara Escarpment;
    - Sustainable park use / Visitor Impact Management;
    - Cultural heritage.

## *3.3 Priority Protection Areas*

The boundaries of the priority protection areas have been determined through a comprehensive process of inventory and analysis based on the practices of integrated landscape planning and natural heritage system strategies. The Priority Protection Areas were developed by means of prioritizing and ranking all the features identified as natural heritage features together with the core conservation areas of ESA and ANSI's. The priority areas were then used as the basis for defining the boundaries of the

park zoning system. Under the *Niagara Escarpment Plan (2005)*, zoning is stipulated as essential to the orderly planning, development and effective management of protected natural areas.

See Table 4-1 in Appendix I for a summary of the criteria evaluated and the rationale for the priority protection provided for each criterion. In many cases, multiple criteria overlap and it is the most restrictive of these that determined the priority level for any particular area.

### 3.3.1 Priority Level 1

Priority Level 1 is to provide for the long-term protection of all Mount Nemo Conservation Area natural features deemed to be particularly sensitive. Elements which fall into this category are; Provincially Significant Wetlands; Sensitive deep forest interior (≥200 m); Rare vegetation communities (G1 – G3 & S1 – S3); Species at risk; Globally and provincially rare species; Seeps; Bat hibernacula; Ancient Eastern White Cedars; Forest Bird Monitoring Stations and their buffers (0-30 m); and Escarpment face slope (45-80%).

### 3.3.2 Priority Level 2

Priority Level 2's purpose is to protect natural areas with high-quality attributes that contribute essential habitat or add essential components to the natural heritage systems. Elements which fall into this category are; Provincially Significant Wetlands with a 30 m buffer; Potential coolwater and warmwater thermal stream classification and a 30 m buffer; Halton Region rare species; Non-Provincially Significant Wetlands >2 hectares and their 30 m buffer; Non-Provincially Significant Wetlands <2 hectares and their 15 m buffer; Floodplain hazard; EMAN plot, Forest Bird and Fish Monitoring Station buffer (31-100 m); and Talus and other slopes (8-25% & 25-45%).

### 3.3.3 Priority Level 3

Priority Level 3 has a similar purpose to the above Priority Level but with a focus on protecting features that are typically more resilient. Elements that fall under this category are; Seeps' 30 m buffer; Floodplain's 15 m buffer; Veteran trees; Environmentally Sensitive Areas; Area of Natural and Scientific Interest (Life Science); Escarpment Natural Area; Interior forest (≥100 – 200 m); Watercourses' 15 m buffer; and Cultural heritage features.

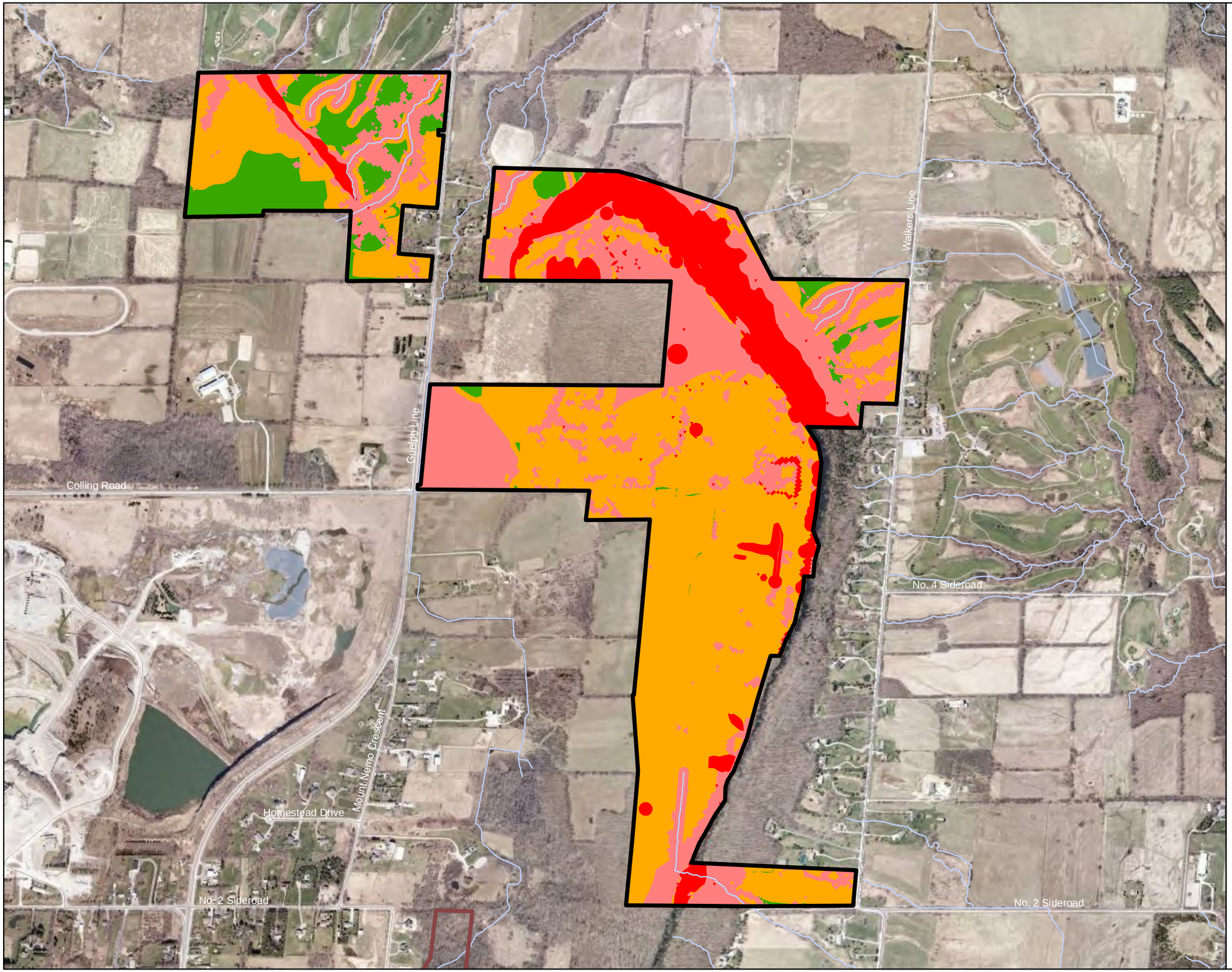
### 3.3.4. Priority Level 4

Priority Level 4 is to recognize and protect areas that already provide a level of protection to some of the more sensitive natural features and their functions in the conservation area. Elements which fall under this category are ; Areas of Natural and Scientific Interest (Earth Science); Provincially Significant Wetland buffers (31-120 m); Escarpment Protection Area; Fringe forest (<100 m); Plantations; Hedgerows; Regenerating habitat; Non-Provincially Significant Wetlands >2 hectares and their 31-120 m buffer; Non-Provincially Significant Wetlands <2 hectares and their 16-30 m buffer; and Lookouts.

### 3.3.5 Priority Level 5

Priority Level 5's Purpose is to provide protection for all remaining natural features that support the ecological function for a greater variety of species and connections within the larger landscape matrix. Elements that fall under this category are; Escarpment Rural Area; Agricultural fields and cultural meadows; Existing facilities; and Utility easements.

***Figure 3-1: Priority Protections Areas***




# CONSERVATION HALTON

Mount Nemo Conservation Area
Priority Protection Areas
Figure 3-1

**Legend**

- Secondary Roads
- Stream
- Mount Nemo Conservation Area
- Bluffs Resource Management Area
- Waterbody

**Priority Levels**

- 1
- 2
- 3
- 4
- 5 (N/A)

1:11,000

0 200 400 600



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## *3.4 Park Operations Policies*

Conservation area activities are subject to the *Conservation Authorities Act* (R.R.O. 1990, Regulation 116) and Ontario Regulation 365/88. In addition to these, the following general policies shall be adopted:

Trail use and any other recreational or educational activity permitted in the conservation area will be allowed to take place as long as:

- The capacity of proposed facilities is not exceeded;
- No significant environmental degradation of the natural resource base occurs; and
- The Visitor Impact Management (VIM) program is implemented to monitor impacts and provide management with a means to curtail recreational overuse and provide corrective measures.

Event activity areas will generally be restricted to the Development Zone of the conservation area with the exception of specialized activities that may require utilization of the trail system. Permitted events will only include those that are deemed compatible with the general nature and capacity of the conservation area without negatively affecting conservation area resources or users. Permits or bookings shall be negotiated and approved by customer service staff under the supervision of the conservation area manager.

Bookings for educational programs will be organized, delivered and invoiced by customer service staff. The staging or hosting of special, historic or tourism events shall typically be organized and operated by Conservation Halton staff as an integral component of natural and cultural education services. Additional special events will also be permitted by private groups or individuals at various locations subject to negotiation and issuance of a special-use permit by Conservation Halton. Additional special events permits shall be negotiated on a case-by-case basis.

### 3.4.1 Accessibility Policy

As a public agency, Conservation Halton has an obligation to make its resources and services available to all members of the public. Therefore, Conservation Halton shall, to the greatest extent possible, remove financial barriers to enjoyment of its conservation areas.

In addition, Conservation Halton will ensure that its infrastructure is consistent with *Accessibility for Ontarians with Disabilities Act* (AODA) built environment standards where possible.

### 3.4.2 Facility Sustainability Policy

As an agency entrusted with vast tracts of ecologically important lands, Conservation Halton shall, to the greatest extent possible, provide facilities and services that protect and enhance the natural heritage system. This entails building facilities, to the highest standard and siting them in non-sensitive areas. Moreover, all development should conform, to the greatest extent possible, to guidelines offered in the Leadership in Energy and Environmental Design (LEED) Green Building Rating System and the Sustainable Sites Initiative (SITES) Guidelines and Performance Benchmarks (2009). Such guidelines include best practices for managing onsite rainwater, the use of native vegetation in landscaping, high energy and water efficiency in building design, the use of alternative, 'green' sources of energy and reuse or recycling of existing materials. All development shall be kept to a minimum, conform to good site-planning standards and shall not conflict with the general landscape character. For trail sustainability guidelines see Trail Development, Use and Management in Section 3.4.4.

### 3.4.3 Niagara Escarpment Parks and Open Space System Management Zones

The *Master Plan for Mount Nemo Conservation Area* employs the zoning system of the Niagara Escarpment Parks and Open Space System Planning Manual (MNR,2012). This system consists of the following six standard park zones: Nature Reserve Zone, Natural Zone, Access Zone, Historical Zone, Development Zone and Resources Management Zone. Special Protection has been used to better recognize and protect high quality or fragile resource areas within the Nature Reserve Zone.

Figure 3-2 illustrates the park management zones assigned to different portions of the conservation area. This section of the report sets out the management policies and permitted uses for each of these zones.

Park zones are intended to fulfill the following functions:

- Identify and provide recognition of the natural and cultural features and attributes of the conservation area;
- Delineate areas on the basis of their differing requirements for management;
- Ensure park users get the most out of the conservation area within environmental protection constraints.

This conservation area has no land designated as an Access Zone or a Historical Zone.

#### *3.4.3.1. Nature Reserve Zone*

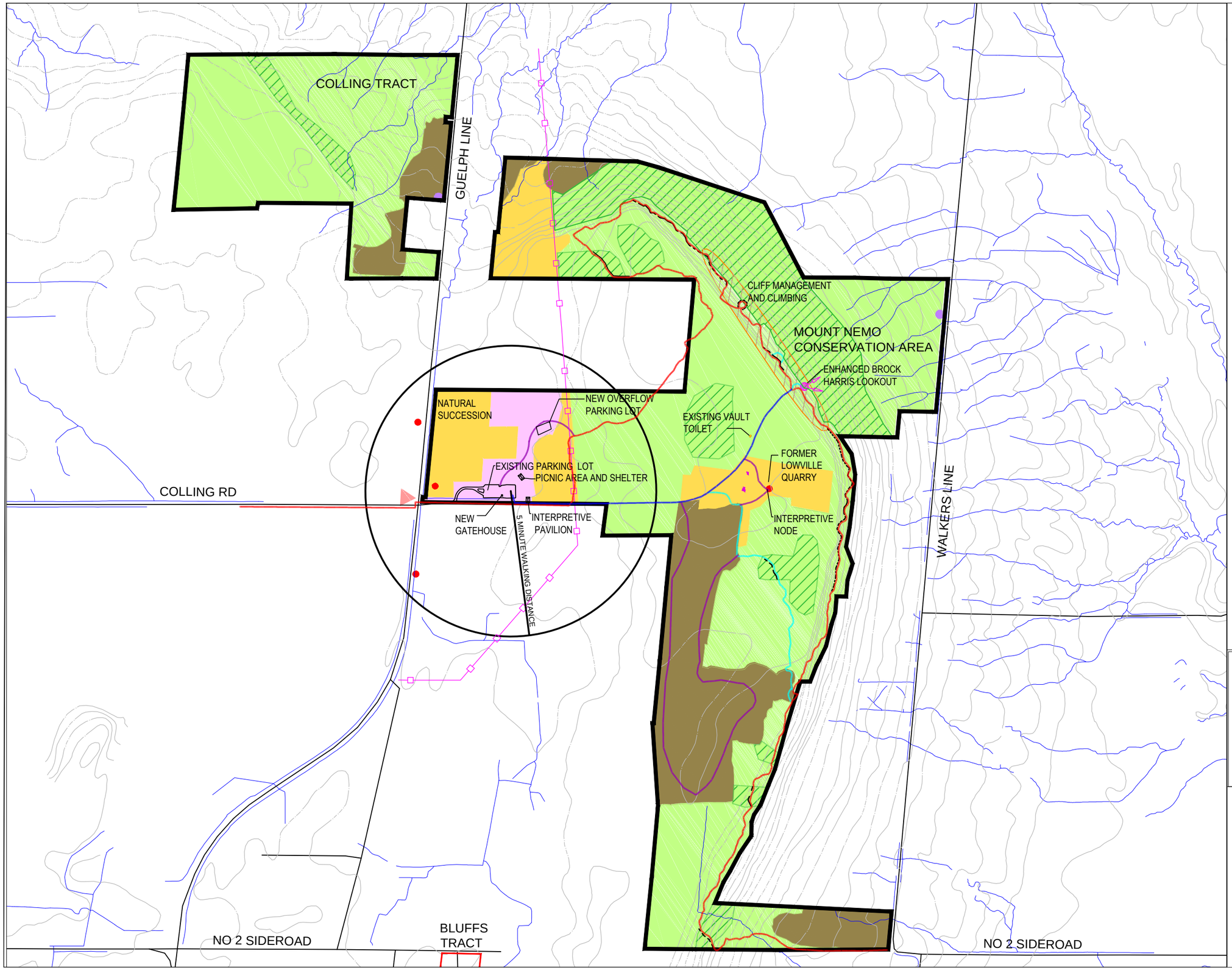
*Purpose*:
The Nature Reserve Zones include significant natural features or areas that require careful management to ensure the long-term protection of their natural values (NEP, Section 3.1.5, 2005). The aim is to protect natural features that are sensitive to passive recreation or related infrastructure. The Nature Reserve Zone shall preserve and protect lands that serve important ecological functions with emphasis on their long-term protection and management. Some examples of features in this zone are; Escarpment's features (brow, slope, toe, face,) ANSI's, interior forest and endangered or threatened habitats. This zone is comprised of approximately 121 hectares or 72% of the total area at Mount Nemo.

*Permitted Uses*:
Generally this zone should preclude activities except those deemed appropriate for environmental stewardship purposes. Limited visitor's usage may be considered where it has been established that there will be minimal negative impacts for the proposed uses. Activities will be restricted to passive and low intensity recreation including hiking, environmental scientific research, wildlife and forest management practices that contribute to the sustainability and/or enhancement of the natural system. Current uses within this area (i.e. rock climbing and hiking) will be maintained so long as environmental impacts on the natural features are minimal to none. Development is generally restricted to trails, signage, temporary research facilities and conservation practices. Public access to these areas should be managed carefully through the Visitors Impact Management Program.

***Figure 3-2: Master Plan with Park Zones***

# CONSERVATION HALTON

## Mount Nemo Conservation Area
## Figure 3-2
## Master Plan with Park Zones




**Legend**

- Conservation Area Boundary
- Other Conservation Area
- Road
- Contour 5m intervals
- Watercourse

Conservation Halton Trail
- High Capacity Trail
- Single Track

Bruce Trail Conservancy
- Main Bruce Trail - Single Track
- Side Bruce Trail

NEPOSS Zones
- Nature Reserve Zone
- Special Protection
- Natural Zone
- Resource Management Zone
- Development Zone

Symbols
- Utility line
- Proposed Trail
- Priority Trail Management
- New Signage
- Historical Structure
- Cliff & Climbing Management
- Public Access
- Service Access
- Formal Lookout



0 250 500 metres

SCALE 1:10,000

N W E S

*Special Protection Area*

The purpose of the Special Protection area is to provide a higher level of protection to unique or endangered natural features than normally provided within the policies of the Nature Reserve Zone. The Special Protection boundaries are located within the Nature Reserve Zone, and further identify core areas that warrant special management strategies. Areas assigned to this are mainly areas of steep slope, wetlands, sensitive vegetation communities, interior forest and areas where rare species and globally rare vegetation types are known to occur; this area is comprised of approximately 26 hectares of the Nature Reserve Zone.

Permitted uses will be restricted to environmentally appropriate scientific research, interpretation and limited forest management services such as hazard tree removal and invasive species management. General public access will be restricted, however, current environmentally appropriate uses (i.e. trails, boardwalks and climbing) within this area will be maintained if they are shown to cause no further encroachment or negative effects on the natural heritage feature. Certain activities and infrastructure may be decommissioned and/or rerouted on a case-by-case basis.

#### *3.4.3.2 Natural Zone*

Purpose:
To protect natural areas and high-quality attributes that contributes to essential habitat and essential components to the natural heritage system. This zone is to serve as a buffer between the Nature Reserve Zone and the Development Zones. The areas assigned to this designation at Mount Nemo are mainly former agricultural fields, an abandoned quarry, open green space and areas undergoing natural regeneration. This zone is comprised of approximately 16.8 hectares or 10% of the total area.

Permitted Uses:

Natural zones include aesthetic landscapes in which a minimum of development is permitted to support low- to moderate-intensity recreational activities (NEP,2005). Recreational uses should be restricted to defined areas and the public should be educated about the impacts of off-trail use. Some activities which will be permitted in this zone are; hiking, scenic lookout areas, nature viewing, interpretive facilities, and day use activities. Development should be restricted to the minimum necessary to support low to moderate recreational activities. The types of development permitted in this zone are trails, interpretive facilities, signage and restoration works.

#### *3.4.3.3 Resource Management Zone*

Purpose:
Resource Management zones defined as;

- To include certain public lands that are managed primarily to provide resource related benefits, such as; harvesting forests products, demonstration plots, and wildlife habitat.
- To re-established previously disturbed sites, such as old agricultural fields, to natural vegetation
- To encompass land which has traditionally been managed under long-term forms of tenure or agreements. (E.g. Forest Management Agreements or agricultural leases.)

At Mount Nemo the resource management zones are previously disturbed sites undergoing natural regeneration (old agricultural fields) and have long term resource agreements, (managed forest tax incentive program ). This zone is comprised of approximately 25.7 hectares or 15.2% of the total area. Resource Management Zones should not be established in Nature Reserve Parks or in life science ANSI's with the exceptions noted in Policy 3.1.5 of the NEP (2005).

Permitted Uses:
Intensive resource management activities such as; forestry, natural area restoration, agriculture and low to medium recreational activities,( trails, service roads and interpretive facilities,) will be allowed in this zone. Resource Management Zones permit the continuation or implementation of historical and traditional activities such as sustainable forestry and agriculture that may not be permitted in other parts of the system. Resource Management Zones shall be actively managed under a prescribed forestry management plan or restoration plan as prepared by Conservation Halton staff.

#### *3.4.3.4 Development Zones*

Purpose:
To provide protection for all remaining natural features that support the ecological function for a greater variety of species and connection within the larger landscape matrix. This zone provides the main access to the park, open space, facilities and services to support recreational activities (NEP,2005). This zone accommodates existing infrastructure which facilitates visitor use of the conservation area. At Mount Nemo, this designation has been assigned to the current day use area and includes the open spaces, former agriculture fields and parking areas. This zone is comprised of approximately 4.8 hectares or 2.9% of the total area.

Permitted Uses:

The Development zone is usually orientated to the provision of recreational opportunities that are suited to the natural character of the park. This zone accommodates the facilities, infrastructure and staging areas necessary to support recreation and the conservation associated activities. The development zone at this park consists of the roads, parking lots, gatehouse, picnic shelter, picnic area trailheads, interpretive pavilion and educational facilities. All development shall be kept to a minimum, conform to good site-planning standards and shall not conflict with the general landscape character. The development of the facilities must have a minimal negative effect on natural, cultural and heritage features and must be undertaken in a way to minimize the environmental impact.

### 3.4.4 Trail Development, Uses and Management

Trail construction and management policies:

- Trails will be located and designed to avoid, wherever possible, steep slopes, wetlands, erosion-prone soils and ecologically-sensitive areas such as species at risk habitat and rare vegetation communities.
- Recreational uses should not exceed the carrying capacity of a site or area.
- Where an existing trail is in a location that causes environmental deterioration, relocation to a less critical location is encouraged.
- Trail design, construction and management should ensure the safety of trail users.
- Permitted trail uses will be indicated on signage in the conservation area.

- Trails will be located and designed in consultation with appropriate Watershed Management Division staff.
- Trails design shall be appropriate to location, zoning and uses (i.e., trail width and surface treatment).
- Trails will be located and designed so as not to adversely affect adjoining private landowners.
- Where necessary, management plans should allow for temporary trail closure.
- Where needed, closure of trails shall be actively restored using native vegetation.

#### *3.4.4.1 Trail Classification Objectives and Carrying Capacity*

Conservation Halton has adopted a three-level trail-classification system that describes the type of visitor experience that is desired as well as some of the physical properties of each class of trail. This classification system will assist in determining trail development, use and management practices. Each of these trail categories has been assigned a social carrying capacity. Carrying capacity is a theoretical model for estimating the number of people who can travel on a trail at any one moment in time and experience a qualitative natural experience without feeling overcrowded. This is separate to the physical or biological carrying capacity of the trail which varies under weather and seasonal conditions and which will be managed under our Visitor Impact Management System as described in the following section. See Section 4.3.1 and Appendix I for further discussion of the conservation area's social carrying capacity.

***Table 3-2: Trail Classification System***

| Trail Type | Width | Social Carrying Capacity per 1500 m | Existing Length | Surface | Experience |
|---|---|---|---|---|---|
| **Single-Track** | No more than 1.2 m wide | 5 groups of 2 people | 2013 metres | soil, vegetation or bedrock | A sense of being immersed in a natural landscape |
| **Medium Service Nature Trail** | No more than 2 m wide | 10 groups of 2 people | 3359 metres | natural, though modified, surface featuring indigenous materials such as wood chips | Some resource modifications are evident, but they harmonize with the natural environment. Few recreation facilities are provided, and those that exist are minimal and rustic. |
| **High Capacity / Service Access Trail** | No more than 3 m wide | 20 groups of 2 people | 1434 metres | natural surface of packed limestone chips, may be designed for universal accessibility | These are intended to be high use trail corridors that access prime conservation area features and that provide emergency access as required. Resources are modified for essential visitor and conservation area operation needs, but they are changed in a way that harmonizes with the natural environment. |

*Single-track Trail Management Considerations:* Use of these trails may be discouraged by not advertising any interpretive or viewing opportunities on them. They may also be closed in wet seasons given the natural surface treatment. On very busy days, access may be controlled by trail stewards posted at trailheads.

*Medium Service Nature Trail Management Considerations:* Small service vehicles (gator, golf cart or quad) can be used on these trails. (No public vehicles on trails)

*High Capacity/ Service Access Trail Management Considerations:* Authorized service vehicles and emergency vehicle can be used along these trails. (No public vehicles on trails)

## *3.5 Visitor Impact Management*

Conservation Halton will develop and implement a thorough Visitor Impact Management Program as detailed in section 4.3. This will necessitate designating one additional staff person to coordinate Visitor Impact Management activities at Mount Nemo, Rattlesnake Point, Hilton Falls and Crawford Lake Conservation Areas. This program will be implemented by staff and may involve a public committee for oversight and the encouragement of park visitors to act as monitors. This is an adaptive management process, meaning that monitoring and applying management actions will be followed with a reassessment of impacts and management actions. Sub documents such as the Cliff Monitoring Program and Cliff Management Plan will be created to additional guide the Visitors Impact Management Plan for permitted activities in those areas.

## *3.6 Cultural Heritage Management*

One archaeological site has been registered within Mount Nemo Conservation Area (Figure 5-5 in *Stage One Report*, EDA 2010a). The Ross Colins site (**AiGx-22**) was reported on the west side of Guelph Line in the southeast portion of the conservation area lands and registered by Arthur Roberts, in 1975, as a precontact Aboriginal site of undetermined date and site type. Roberts registered a second site, the Guddat site (**AiGx-58**), on the east side of Guelph Line, just outside of conservation area lands. The site is reported to have yielded evidence of Late Archaic and Early Woodland period occupation. The locations of both sites, as mapped for the purposes of this project may be considered only approximate. Moreover, since many of Roberts' entries within the Ontario Archaeological Sites Database were made based only on interviews with landowners or local residents, any identification of site type or cultural or temporal affiliation must be regarded with caution.

### 3.6.1 Archaeological Potential Zones

The identification of zones of archaeological potential within the conservation area is based on the predictive model developed for the *Master Plan of Archaeological Resources of the Regional Municipality of Halton* (Archaeological Services Inc. 1998, 2008).

Based on this model, approximately 73 hectares within Mount Nemo Conservation Area, exhibit potential for the presence of archaeological resources (Figure 5-6 in *Stage One Report*, EDA 2010a). These lands comprise approximately 48% of the overall conservation area, which is a relatively low percentage when modeling based on general potential criteria. This low number may be explained by the extreme topography of much of the conservation area, incorporating as it does the bluffs of the Niagara Escarpment, and the limited extent of any major sources of water within the property.

### 3.6.2 Other Cultural Heritage Resources

History of the area notes early settlers between the years 1850 to 1861, when W.H. Powell and G.J. Harbottle first settled Mount Nemo area. By 1877, owners of lands adjacent to or now comprising the conservation area included S. Kennedy, J. Coulson, A. Brandt and J. Alderson. To date no programming has been developed to interpret this cultural history.

The significant cultural heritage resource at Mount Nemo Conservation Area is the old Lowville Quarry. The original purchase of the lands took place in 1959 to protect what is now known as the Mount Nemo Conservation Area and was prompted by the desire to prevent the expansion of the Lowville Quarry on this site. Quarry restoration was completed in 2011 and included cleaning up the abandoned equipment and rehabilitating the quarry to encourage re-naturalization. In addition, this feature provides opportunities for interpretation of the former quarry activities and geologic history of the escarpment due to the exposed layers evident in the quarry.

### 3.6.3 Cultural Heritage Management Guidelines

Conservation Halton shall avoid, wherever possible, the disruption or disturbance of known archaeological sites or areas of archaeological potential within any of its properties.

Table 3-3 outlines the general types of land uses that may be expected in the context of lands managed for recreational purposes that may have negative effects on cultural heritage resources, unless preceded by impact assessments completed to the standards identified in the Ontario Ministry of Culture, Sports and Tourism 2009 final draft of the *Standards and Guidelines for Consultant Archaeologists*.

***Table 3-3: Typical Land Use Activities that may Impact Archaeological Resources***

| General Activity | Specific Activities | Impacts |
|---|---|---|
| **Road Construction** | Cutting, filling, borrow pits, bridge and culvert construction, ditching, etc. | Loss or degradation of resource base in absence of prior assessment and mitigation |
| **Tourism** | Interpretive centre and ancillary facility (e.g., servicing, comfort stations, scenic lookouts, etc.) development/construction | Loss or degradation of resource base in absence of prior assessment and mitigation |
| **Outdoor Recreation** | Access point parking facility development, trail system development and maintenance, camp/picnic site development and maintenance | Loss or degradation of resource base in absence of prior assessment and mitigation |

### 3.6.4 Niagara Escarpment Commission Policies on Historical Artifacts

The Niagara Escarpment Plan (2005) policies suggest that:

> *Where new development involves a heritage feature, it should express the feature in some way. This may include one or more of the following:*
>
> *a) Preservation and display of fragments of the former buildings' features and landscaping;*
>
> *b) Marking the traces of former locations, shapes and circulation lines;*
>
> *c) Displaying graphic verbal descriptions of the former use; or*
>
> *d) Reflection of the former architecture and use in the new development.*

This policy would be applicable to some of the historical features such as the Old Lowville Quarry. It is intended that some interpretive programming will be developed around the quarry.

## *3.7 Natural Resource Management*

The purpose of the natural resource management section of the master plan is to identify key recommendations for management of the conservation area. This section and its recommendations should guide the protection of the natural heritage system for the long term, using an adaptive management approach that may involve both active and passive management. In some cases, resource management recommendations will require the collection of additional information or the development of guidance material prior to their full implementation.

### 3.7.1 Land and Water Management

The landform and landscape character of Mount Nemo Conservation Area together with the natural hydrological regime shall be protected to the highest level while still providing compatible opportunities for recreation. Conservation area operations and development shall comply with the following:

- Any works proposed in areas regulated by Conservation Halton under Ontario Regulation 162/06 will be reviewed by appropriate Watershed Management Division staff. An internal review process shall be followed that will result in the issuance of a clearance letter from the Watershed Management Division once it has been demonstrated that the proposed works meet all Conservation Halton regulatory requirements. No works shall take place until the clearance letter is received to ensure all works follow the appropriate protocols.
- Any works proposed within fish habitat shall be reviewed by appropriate Watershed Management Division staff in accordance with Conservation Halton's Level II Agreement with the Department of Fisheries and Oceans.

  Any grading shall be restricted to approved components of the master plan.
- No soil or fill material shall be imported onto this site unless in conjunction with an approved component of the master plan and accompanied with certificate of fill quality from a certified laboratory.
- Surface and groundwater shall be protected from any pollution or contaminants.
- Waste consisting of natural materials shall be reused or composted within the conservation area where feasible and appropriate. Otherwise, all solid waste shall be removed from the conservation area for recycling or disposal.

### 3.7.2 Vegetation Management

The proper protection and management of vegetation communities is essential to the health and well-being of Mount Nemo Conservation Area and the larger Conservation Halton watershed natural heritage system. Efforts shall be taken to conserve and, where possible, restore viable populations of indigenous plant species, with a focus on protecting species at risk and their habitats within the conservation area.

#### *3.7.2.1 Forest Management and Sustainability Policy*

Management of Conservation Halton forest resources requires a cohesive strategy that prioritizes forest health, regeneration and conservation of the ecology of forest communities over timber production. A cornerstone to achieving this is the establishment of a new forest management plan to implement sustainable forest management practices that are adaptive and rely on the most current forest information and silvicultural techniques. The forest ecosystem should be viewed as green

infrastructure in all management decisions. Forest sustainability should incorporate the following principles:

- Large, healthy, diverse and productive forests and their associated ecological processes and biological diversity should be protected and restored;
- Long-term health and vigour of forests should be provided for by using forest practices that, within the limits of silvicultural requirements, emulate natural disturbances and landscape patterns while minimizing adverse effects on plant life, animal life, water, soil, air and social and economic values, including recreational values and heritage values;
- Assess and prioritize forest unit protection needs, identify an appropriate management regime for areas with different sensitivities (e.g. provincially rare vegetation communities) and management requirements (e.g. passive management, active management, etc.);
- Incorporate global warming information into management plans including documenting the role Conservation Halton forests play as sinks for greenhouse gasses;
- Assess and manage invasive species, forest pests and disease;
- Promote species at risk recovery and conservation;
- Assess appropriate forest fire management;
- The White-tailed Deer (*Odocoileus virginianus*) carrying capacity of conservation areas should be evaluated to determine the optimal size of deer population that may be sustained. This evaluation should assess browse impact on forest habitats and possible influence on the regeneration of young trees. This study should include all forest habitats in the study area, especially areas considered sensitive; and
- Improve and monitor habitat and biodiversity within managed forest landscapes in a manner that is consistent with the long-term protection of the conservation area's forest community.

Every forest operations prescription shall include descriptions of the following:

- Current structure and condition of the forest in the area to which the prescription applies;
- Forest renewal and maintenance activities to promote forest health, regeneration and biodiversity;
- The expected results and future structure and condition of the forest; and
- Standards or guidelines used in developing the prescription.

All prescription activities must comply with good forestry practices as described in Halton Region Tree Conservation By-Law (Regional Municipality of Halton 2005), the Ontario Ministry of Natural Resources' *A Silvicultural Guide to Managing Southern Ontario Forests* (MNR 2000) and the *Niagara Escarpment Plan* (2005). The forest management plan should demonstrate leadership in forest management by applying international standards for sustainable forestry practices as embodied by one of the three independent forest certification systems in Canada (e.g. Canadian Standards Association's Sustainable Forest Management Standard, the Forest Stewardship Council Standard and the Sustainable Forestry Initiative). This management system should also complement the restoration plans for the conservation area and, where appropriate, refine the management of forest restoration areas in a manner that allows the development of mature forest communities found in the adjacent natural areas.

*3.7.2.2 Forest Succession and Plantations*

Several plantation areas occur in Mount Nemo Conservation Area, which have a variety of attributes and proposed management criteria. The management of these, as well as natural forest areas, should be guided by an updated forest management plan.

*3.7.2.3 Dead and Hazardous Trees*

Existing Conservation Halton protocols for the management of dead and hazardous trees will be implemented in Mount Nemo Conservation Area. Safety will be the largest factor in decisions for hazardous tree removal; however, the importance of dead tree material and downed woody debris to provide wildlife habitat must be considered. Dead tree falls and tip-ups may also be left in place to serve as important sites for mosses and fungi, germination areas for species requiring rotting wood as a rooting medium, and moist shelters for mammals and herptiles.

Mount Nemo Conservation Area has several records of Butternut trees that are considered *Endangered* under the provincial *Endangered Species Act*. If for safety reasons the removal of this species becomes necessary, the removal must conform to applicable laws, associated health assessments and permitting requirements (Ontario Regulation 242/08). Prior to removal, even dead butternuts require MNR's approval of a Butternut Health Assessment conducted by a certified evaluator. Conservation Halton has several such evaluators on staff.

*3.7.2.4 Plant and Seed Collection*

Where existing vegetation may be lost due to development of trails, access roads, etc., plants may be transplanted for naturalization and restoration purposes within the conservation area. Seed may be collected for use in propagation and planting for restoration and naturalization purposes within the conservation area. Harvesting efforts should be spread throughout the conservation area and not concentrated on any one area. The amount of seed collected will be based on the species, as determined in consultation with Conservation Halton forestry and ecology staff. Generally, propagation areas will be discouraged due to the natural state of the conservation area and the fact that other areas may be more appropriate for this use.

*3.7.2.5 Invasive Species*

Invasive species removal should be an integral part of maintaining high quality ecological assemblages within Mount Nemo Conservation Area. The complete eradication of invasive species is not always realistic and, therefore, prioritization of effort is necessary. Introduced species should be evaluated for invasive tendencies based on appropriate federal, provincial or municipal guidance material. For example, invasive plants and their invasive tendencies are summarized in Priority Invasive Plants in Southern Ontario (Appendix 3 in Havinga *et al.* 2000). Monitoring and research should be directed to prioritize the threat posed by invasive species and the feasibility of effective control. Based on this threat analysis, a species-specific management protocol should be established for those species that pose the greatest threat and/or have a high success rate in relation to effort expended. Biological control appears to have limited application because there are few pests or diseases found in North America that have any significant impact on controlling invasive species.

<u>Plant Species</u>

Priority invasive plant species identified within Mount Nemo Conservation Area include Black Locust (*Robinia pseudoacacia*) and Garlic Mustard (*Alliaria petiolata).* Additional invasive plant species occur

but have not been mapped. A full list of exotic plant species can be found in the Table 3-6, Appendix I of the *Stage One Report* (EDA 2010a).

Forest Pest Species

Forest pest species of concern that should be monitored as part of the overall management of Mount Nemo Conservation Area include:

- Gypsy Moth (*Lymantria dispar*);
- Asian Long-horned Beetle (*Anoplophora glabripennis*);
- Emerald Ash Borer (*Agrilus planipennis*);
- Two-lined Chestnut Borer (*Arrilus bilineatus*);
- Fall Cankerworm (*Alsophila pometaria*); and
- European Wood Wasp (*Sirex noctilia*).

### *3.7.2.6 Forest Diseases*

Forest diseases that should be recognized and monitored in the conservation area include Butternut Canker, the decline indices of Oak, Ash, Maple, Red Pine and Beech bark disease.

### *3.7.2.7 Herbicides, Pesticides and Suppressants*

Biological controls will be employed wherever possible. Manual and mechanical methods of invasive species control are the preferred management option, where possible.

Chemical herbicides, pesticides and suppressants will not be used for any vegetative management purposes except for the eradication of non-native species, establishment of native plantings where other methods with less residual impacts are not feasible, or for the control of noxious plants in publicly accessible areas. Areas left devoid of vegetation after invasive species removal should be planted with hardy native species in an effort to prevent re-establishment and to improve the floristic quality of the site.

### *3.7.2.8 Vegetation – Cutting, Injury, Destruction and Removal*

Under Ontario Regulation 365/88 it is a prohibited activity for the public to cut, remove, injure or destroy a plant, tree, shrub, flower or other growing thing in a conservation area of Conservation Halton.

### *3.7.2.9 Ancient Eastern White Cedars*

During the Niagara Escarpment Ancient Tree Atlas Project (NEATAP), the ancient Eastern White Cedars located in Mount Nemo Conservation Area were found to represent one of the most significant sites for ancient cedars. Twenty-eight ancient cedars have been identified in Mount Nemo Conservation Area, ranging in age from over 300 years to well over 800 years old (Kelly and Larson, 2008). The conservation area is home to four of the oldest trees in the region and two of them pre-date European colonization of North America by over 350 years.

An adaptive management plan, which protects them, monitors health and possibly contributes to research initiatives, should be developed. Educational programming (e.g. signage), which highlights the impressive age and life cycle of ancient cedars should be explored further. The ability to access each individual should be documented; those that have the potential to be accessed should be more closely monitored and, where necessary, methods developed that reduce accessibility.

#### *3.7.2.10 Bat Hibernacula*

Two bat hibernacula have been identified within Mount Nemo Conservation Area; they are associated with the Niagara Escarpment crevice cave features as seen in Figure 3-7 of the *Stage One Repor*t (EDA 2010a). There are also historical records of the provincially rare Eastern Pipistrelle, Small-footed Bat and Northern Long-eared Bat at Mount Nemo Conservation Area, all of which likely persist.

An adaptive management plan, which protects bats and their habitats, monitors health and possibly contributes to research initiatives, should be developed.

### 3.7.3 Fisheries Management

No fish habitat is present in Mount Nemo Conservation Area and no species of fish have been documented within the conservation area boundaries. Aquatic resources need to be protected, as they have the ability to influence water quality and fish habitat within the downstream environment associated with Bronte Creek. Therefore, any works or recreational activities along the lower escarpment slopes needs to be done in a manner that protects water quality.

### 3.7.4 Wildlife Management

Wildlife management practices at Mount Nemo Conservation Area will predominantly deal with habitat protection and to a lesser extent habitat improvements/restoration.

Under Ontario Regulation 365/88 it is a prohibited activity for the public to kill, trap, pursue or disturb a wild bird, reptile or animal in a conservation area.

### 3.7.5 Species at Risk Monitoring Strategy

Six species at risk were documented as occurring within Mount Nemo Conservation Area including Hart's-tongue Fern, American Chestnut, Butternut, Peregrine Falcon, Hooded Warbler and Monarch.

The habitats of *Threatened* and *Endangered* species receive varying degrees of protection under the *Endangered Species Act* as well as the *Species at Risk Act*. Where possible, recovery actions will be implemented in the conservation area in a manner that is consistent with recovery strategies or management plans that have been developed for the particular species. The appropriate management and monitoring of these species/vegetation communities should be encouraged through the development of specific management plans. In some cases, it may be beneficial to consider their management as an assemblage. Specific monitoring needs for these species are discussed below.

Recovery projects, as they arise, are not included in the 10-year monitoring budget. Provincially rare species are identified below and should be examined in more detail to establish appropriate protection/management protocols.

As part of management considerations, Conservation Halton should continue to educate visitors on species at risk and how people can contribute to their protection.

#### *3.7.5.1 Hart's-tongue Fern*

Monitoring of this species' occurrence and health within the conservation area should occur and disturbances, as a result of visitor use, be reported. Where necessary, active recreation uses should be directed away from areas where Hart's-tongue Fern occurs if disturbance is evident in the immediate area.

It is estimated that one day of work per year will be required to carry out this monitoring task (the costs are calculated based on $440 per person day; therefore, over the 10-year period this items will cost $4,400.

#### *3.7.5.2 American Chestnut*

Monitoring should continue to try to locate individuals, as the opportunity arises. Should an individual be located, it should be assessed for blight-resistance and a propagation program considered.

Monitoring for this species will be in conjunction with that for Hart's Tongue Fern above; therefore, no further costs will be accrued.

#### *3.7.5.3 Butternut*

Butternut is shade-intolerant and conservation area managers can promote natural regeneration by planting Butternut seed, sourced from local retainable trees, or small trees as part of the proposed forest restoration. Controlling competition can also increase survivorship of established seedlings. Monitoring of this species should be directed at identifying additional Butternut trees in the conservation area and monitoring the health, regeneration and survivorship of the species following the guidelines set forth by the Forest Gene Conservation Association in the *Butternut Health Assessment in Ontario* manual.

It is estimated that five days of work every third year will be required to carry out this monitoring task. The costs are calculated based on $440 per person day; therefore, over the 10-year period this item will cost $6,600.

#### *3.7.5.4 Peregrine Falcon*

Peregrine Falcons were last recorded in the conservation area in 1964, likely on the cliff communities. Monitoring for this species' presence during the breeding season can occur opportunistically when Conservation Halton ecology staff members are at Mount Nemo Conservation Area for other tasks. As part of the recovery strategy, suitability of a re-introduction program for this species should be explored. Captive breeding and reintroduction of the *anatum* subspecies of the Peregrine Falcon has been very successful.

#### *3.7.5.5 Hooded Warbler*

Monitoring of this species to confirm breeding presence and territory location should be pursued. If a territory is located, monitoring in an unobtrusive manner (e.g. observation from a distance) should occur to confirm nesting, the success of the nest (e.g. fledge young) and description of habitat.

It is estimated that one day of work per year will be required to carry out this monitoring task. The costs are calculated based on $440 per person day; therefore, over the 10-year period this item will cost $4,400.

#### *3.7.5.6 Monarch*

No specific monitoring for this species is recommended.

### 3.7.6 Globally and Provincially Rare Species

Globally and provincially rare species (G1-G3, S1–S3) observed in or immediately adjacent to Mount Nemo Conservation Area are identified in Table 3-4. These species should be investigated further to establish appropriate protection/management protocols.

***Table 3-4: Globally and Provincially Rare Species***

| Common Name | Scientific Name | Halton Region Status | GRANK | SRANK | Source |
|---|---|---|---|---|---|
| Birds | | | | | |
| Northern Shrike | *Lanius excubitior* | Uncommon winter resident | G5 | S2S3B,SZN | McIlveen 2004 |
| Mammals | | | | | |
| Small-footed Bat | *Myotis leibii* | Data Deficient - likely rare | G3 | S2S3 | NHIC 2004 |
| Northern Long-eared Bat | *Myotis septentrionalis* | Common | G4 | S3? | NHIC 2004 |
| Eastern Pipistrelle | *Pipistrellus subflavus* | Data Deficient - likely rare | G5 | S3? | NHIC 2004 |

**Additional species at risk may be located within the conservation area. Please contact Conservation Halton ecology staff for comprehensive information.*

### 3.7.7 Globally and Provincially Rare Vegetation Communities

Three Ecological Land Classification communities in the conservation area are considered *Very Rare* (G2) *to Uncommon* (G3) globally, as well as provincially rare (S3); these are identified in Table 3-5. An additional four vegetation communities documented in the conservation area are considered Critically Imperiled (S1), Imperiled (S2) or Rare (S3) provincially. A summary of these communities is provided below in Table 3-6.

***Table 3-5: Globally and Provincially Rare Vegetation Communities***

| ELC Unit | Name | GRank | SRank | Number / Area |
|---|---|---|---|---|
| CLT1-1 | White Cedar Treed Carbonate Cliff Type | G2Q | S3 | 1 polygons<br>0.4 hectares |
| FOD5-? | Sugar Maple on Bedrock Forest | G3G4 | SNR | 6 polygons<br>2.2 hectares |
| TAT1-4 | Fresh - Moist Sugar Maple Carbonate Treed Talus Type | G3G5 | S3 | 8 polygons<br>3.6 hectares |

***Table 3-6: Provincially Rare Vegetation Communities***

| ELC Unit | Name | GRank | SRank | Number / Area |
|---|---|---|---|---|
| CCA1 | Carbonate Cave Ecosite | G? | S1 | 7 locations |
| TAT1-5 | Fresh - Moist Basswood - White Ash Carbonate Treed Talus Type | GNR | SNR<br>likely S2? | 2 polygons<br>0.6 hectares |

| | | | | |
|---|---|---|---|---|
| TAT1-2 | Dry - Fresh White Cedar Carbonate Treed Talus Type | G? | S3 | 2 polygons<br>9 hectares |
| CLO1-2 | Bulblet Fern - Herb Robert Carbonate Open Cliff Type | G5 | S3 | 6 polygons<br>1.3 hectares |

These vegetation communities should be protected and maintained. If necessary, a vegetation management plan should be prepared to investigate appropriate protocols for each community. Specific management protocols should be developed for the White Cedar Treed Carbonate Cliff Type as well as Carbonate Cave Ecosite to minimize visitor impacts on those communities.

### 3.7.8 Research

Appropriate research activities will be encouraged and will conform to the conditions stipulated in any Permit to Conduct Research issued by the Watershed Management Division, Ecology Department. Prior written permission will be required and reports upon completion of the study will be shared with Conservation Halton.

# Section Four: Elements of the Master Plan

## 4.1 Introduction

In a regionally significant system of publicly-accessible natural areas, every area should meet a high standard of amenities and services. For Conservation Halton's conservation areas, this will become the proposed base level of service described in Section 3.2. While each of the conservation areas should add something unique to the overall system, many of the conservation areas will provide similar services and amenities such as hiking trails in order to meet the anticipated large increase in demand for passive recreational activities. In the framework proposed, the master plans build on the particular strength of each conservation area. Mount Nemo Conservation Area's focus will be on its scenic views and vistas.

The concept plans presented in the *Stage Two Report* offered distinctly different approaches for Mount Nemo Conservation Area, ranging from offering an upgraded base level of services to becoming a regional destination (EDA 2010b). All of the concept plans were based on an "environment first" approach where the natural heritage features are protected and / or restored to the maximum extent possible. The differences are in the degree of intervention and investment necessary to accommodate educational, interpretive and programmatic elements.

The first option, Concept A, placed an emphasis on conserving and protecting the natural environment while offering some opportunities for recreation and education; the second, Concept B, defined a balanced approach between environmental preservation and public enjoyment; the third, Concept C, sought to promote the site to regional destination status while still protecting the environment to the maximum extent possible and offering a strong educational and recreational component.

Through the consultation process with the community, Conservation Halton staff and the technical advisory committee chose Concept A, with some elements from Concepts B and C as the preferred approach to development of the area. Concept A proposed to:

- Maintain the basic role: good views, lookout points on escarpment;
- Maintain the tranquil environment;
- Explore interpretive storylines: escarpment and aggregate industry;
- Expand parking as required and strictly control trail routes (with delineation, boardwalks, etc.).
- Pull trails out of sensitive areas (potentially).

Some elements of Concepts B and C have been incorporated into this master plan. These include the picnic shelter, an overflow parking lot, quarry restoration and interpretation nodes. The *Master Plan for Mount Nemo Conservation Area* provides for protection of the environment, the enhanced base level of amenities and services, recreational day-use and interpretive facilities and a high-quality visitor experience. Figure 4-1 offers a close-up view of the development area.

## 4.2 Physical Components

As part of the corporate branding work being undertaken by Conservation Halton, furnishings and architectural features, including picnic shelters and pavilions should be custom designed such that all Conservation Halton conservation areas exhibit a 'signature design.' Design guidelines should specify the colour scheme and logos to be used for all features and the use of natural stone and timber. All

facilities and furnishings should be designed to be in harmony with the natural environment, but should also be vandal resistant.

The proposed range of facilities is intended to provide appropriate accessibility, development, programming and educational opportunities in the Mount Nemo Conservation Area, consistent with the site constraints and opportunities.

The master plan identifies the need for some basic facilities in public arrival areas that include directional signage, a picnic shelter, various site furnishings, a gatehouse an interpretive pavilion and main trailhead as well as two smaller trailheads. Figure 4-2 shows examples of such structures.

### 4.2.1 Facilities and Amenities

The facilities and features of the master plan include the following approximate specifications:

*4.2.1.1 Interpretive Pavilion*

- Trailhead and interpretive pavilion (150 square metres)
    - To have Interpretive signage,
    - Pavilion to be AODA compliant
    - Pavilion to have benches and trash receptacles

A 150-square-metre trailhead and interpretive pavilion shall be used as a gathering area, rest stop and as a staging area for school programs. This simple open air pavilion structure will assist Conservation Halton in providing more school tours to this conservation area. The pavilion will feature trail maps and interpretive material (escarpment geology, flora and fauna.) The interpretive information will also include UNESCO World Biosphere Reserve, NEPOSS and Park information. The pavilion will be fully accessible and be AOAD compliant. Benches and trash receptacles will be located in close proximity to the pavilion. No additional services are required for this pavilion.

*4.2.1.2 New Gatehouse*

- New 50 square metre gatehouse with associated landscaping and services (septic, electrical, water)

The current gatehouse does not have a washroom facilities, therefore, a new gatehouse shall be constructed with indoor plumbing. This element of the master plan also includes associated landscaping and servicing (septic, electrical and water), site technology updates and accessibility updates. Improvements to the entrance road will be made to better accommodate the crowds that come on peak days. Historically, on such days, traffic would back up all the way to Guelph Line. This master plan calls for a two-lane entrance road such that annual pass holders can use one lane and use their membership card to open an automated gate, while other visitors would use the other lane to approach the gatehouse to pay their fee. It is expected that the new gatehouse will be situated further east than the present gatehouse location. The current gatehouse and parking are in a restoration area; moving them further east would place them in the development zone. The current gatehouse would be removed once the new gatehouse is built.

*4.2.1.3 Accessibility Upgrades*

Rest rooms, parking lots, buildings, pathways and ramps should be carefully designed to ensure universal access, wherever possible. At least 900 mm of level, cleared space should be provided to the side of benches for wheelchairs. Plenty of space should be provided at scenic overlooks for a person to watch and listen. Safety rails must be carefully located to ensure that the sight line of persons using wheelchairs is not blocked.

***Figure 4-1: Master Plan Detail***

# CONSERVATION HALTON

## Mount Nemo Conservation Area
## Figure 4-1
## Draft Master Plan Detail

Natural Succession

New Overflow Parking

Picnic Shelter & Area

Existing Overflow Parking

New Trailhead & Interpretive Pavilion

Existing Vault Toilet

Enhanced Entrance Road

New Gatehouse

Improved and Expanded Parking

**Legend**

- Conservation Area Boundary
- Road
- Contour 5m intervals
- Watercourse

Conservation Halton Trail

- High Capacity Trail

Bruce Trail Conservancy

- Main Bruce Trail
- Side Bruce Trail
- Utility line
- Proposed Trail
- New Signage
- Public Access
- Buildings/Shelters



W N S E

0 50 metres

SCALE 1:1,500

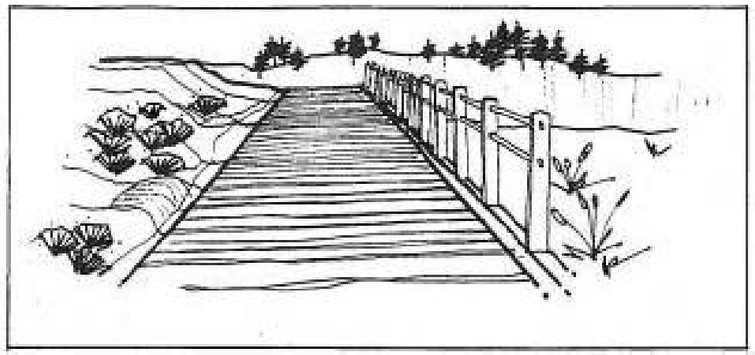
***Figure 4-2: Amenities***

# CONSERVATION HALTON

## Parks Master Planning

## Amenities

**FIGURE 4-2**



*Board walk Conceptual Sketch*

*Interpretive Node*

*Bench*

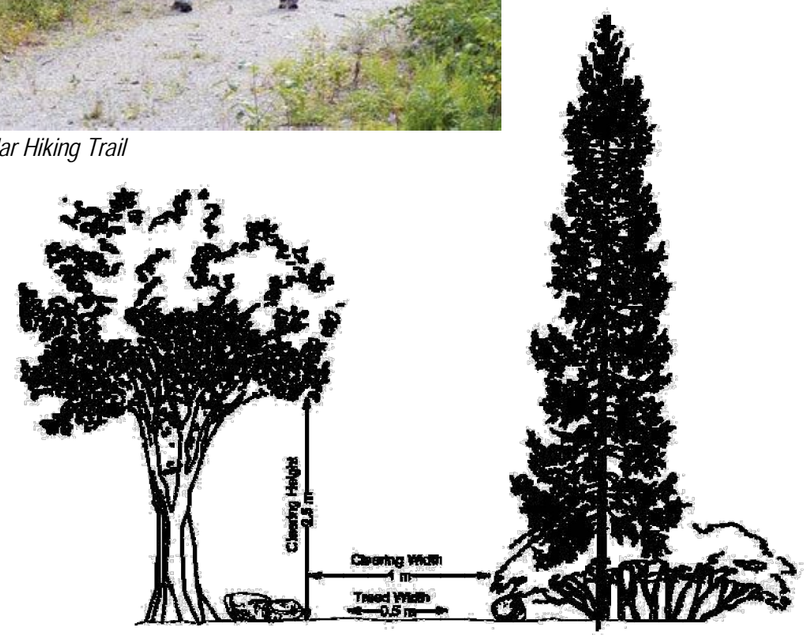
*Boardwalks through Sensitive Areas*

*Surface for Overflow Parking*

*Granular Hiking Trail*

*Bridge*

*Picnic Shelter*




*Trail Construction*

### *4.2.1.4 Signage*

Signage Program Hierarchy

Trail signage is an important element that enhances the trail experience and provides guidance to the user. Signs provide four major functions - information, direction, interpretation and regulations; these are described below.

**Informational**

Informational signage provides detailed information about the use and identity of the trail and adjacent features. This is usually conveyed using maps as components of the signboard. This type of signage also indicates trail conditions, such as steep slopes and trail amenities such as safety features, washrooms and look out areas.

**Directional**

Directional signage should be used to indicate the trail route, including changes in direction and / or straight portions of the trail, at determined intervals. This type of signage can also be used off trail, in open space indicating the route to nearby trail access points, at trail intersections or any point where a decision must be made by the user. At these points, information as to trail length, average duration and destinations or points of interest are important to note to allow users to make decisions as to the route to follow.

**Interpretive**

Interpretive signage provides information regarding natural, geological, cultural and historical features along the trails. These signs should be site specific and located at major interpretive nodes or at particularly exceptional viewpoints, with a surfaced viewing area between trail edge and sign. The information included on these signs should be concise, easy to understand for all age groups, and should ultimately improve user awareness and promote enjoyment of the trail and immediate area. Interpretive signs should be spaced out to enable the trail user to absorb the ideas and information provided. The educational / interpretive signage program at this conservation area is an important component of the VIM plan. Visitors will be educated about the importance and fragility of natural features; this type of education has proven effective in improving compliance with trail use guidelines.

The master plan has proposed an initial 14 interpretive signs (other than those located at trailheads); however, should it be decided in the future that more interpretive nodes or benches will be beneficial, the addition of such amenities is not proscribed by this plan. At the same time, it should be noted that Conservation Halton intends to increase the amount of digital interpretive material made available to its visitors. This would include downloadable audio tours available in several languages.

**Regulatory**

Regulatory signage provides trail users with the rules and regulations regarding trail use. This includes one-way and do not enter signs, among others.

Elements

All signage should be designed to suit the character of the natural surroundings and must relate to approved conservation area activities, interpretive and recreational programs or special events within the conservation area. Third party signs, commercial billboard or signs for businesses are not

permitted. NEPOSS and the World Biosphere Reserve logos and information will be represented on trailhead signage and other places deemed appropriate.

- Entrance signage: main entrance sign and conservation area directional and cross-marketing signage.
- Interpretive signage
    - Interpretive programs at conservation areas are meant to educate visitors about the unique natural heritage features. Programs are to show the respective natural areas and the importance of preserving them, including guidelines for low impact recreational activities.
    - Minimum of fourteen interpretive signs: lookouts, quarry geology and restoration, ancient cedars, general history and the natural heritage of the conservation area.
    - Language outreach upgrade.

*4.2.1.5 Roads and Parking*

- Automated gate with payment, and two entrance lanes as described above.
- Improved and expanded existing access road (re-grade, compact and resurface for smoothness and durability):
    - stone chip surface - 3600 square metres,
    - bioswales - 1200 linear metres.
- Improved exit road:
    - 900 square metres,
    - Bioswales - 300 linear metres.

Road and parking lot upgrades include testing the base to ensure it is able to hold up under traffic. Where it is found to be weak, it can be excavated and rebuilt with appropriate layers of compacted gravel. In all areas, grading will be carried out to ensure a smooth surface with appropriate slopes for drainage. Bioswales are vegetated ditches that surround parking lots and roadways such that any pollutants will be filtered out near the source before rainwater or snowmelt disperses in the natural environment.

- Improved and expanded, sustainable 130-car parking lot (current capacity is 110):
    - stone chip surface - 3500 square metres,
    - bioswales - 200 linear metres,
    - shade tree planting - 30 caliper trees (approximately one tree per 10 linear metres along parking rows).

Large native species trees (80 mm caliper) will be planted near the main parking lot to shade parked vehicles on hot, sunny days.

- Improved, sustainable 50-car overflow parking lot plus bus parking:
    - grass paver system - 1800 square metres (the stabilized surface consists of plastic grid reinforced lawn area),
    - bioswales - 200 linear metres,

- shade tree planting – minimum 15 small trees.

- New additional overflow parking and access road, 3600 square metres:
  - Grass paver system - 1800 square metres,
  - 50 car parking lot
  - 1800sq metre access road – 6 metres wide by 300 metres long
  - bioswales - 200 linear metres,
  - Shade tree planting - 15 small trees.

Smaller trees will be used in overflow parking areas and protected with fencing until they reach a size that is unlikely to be damaged by vehicles.

#### *4.2.1.6 Picnic Shelter*

A 150 square metre picnic shelter and improved picnic area will be made available to visitors at Mount Nemo Conservation Area. The picnic shelter will be available for group rentals. The picnic shelter/area will be located within the development zone, adjacent to the existing parking lot. There will be picnic tables, garbage reciprocals and benches located within and around the shelter. There will be no additional services required at this shelter.

- Open air picnic shelter (150sq metres), available for rent
- 5 picnic tables,
- Site furnishings such as bike racks, garbage receptacles and benches.

All site furnishings should be purchased at the same time in styles compatible with each other and with the natural scenery.

#### *4.2.1.7 Other Infrastructure Development*

- Upgraded vault toilets: new standard units (two),
- Gatehouse technology upgrades,
- Quarry restoration - Planned removal of waste. The concrete and other debris have recently been removed and some native vegetation has been planted to re-naturalize this area. The Quarry is proposed to be a location for an interpretation node of the geological features and history of the site.

#### *4.2.1.8 Trail System*

As the population base in the region ages, participation in pleasure walking in natural environmental settings (hiking) is expected to be one of the fastest growing segments of outdoor recreation over the next 20 years. Therefore, Conservation Halton can expect its trail systems to be in high demand.

***Proper trail construction is one of the most important factors in accommodating visitors without environmental degradation.***

Therefore, a key component of this master plan is to upgrade the trail systems so that damage to adjacent features will be minimized. The preferred use at Mount Nemo is hiking; therefore all of the trails will be built for hiking activities. Drainage issues will be addressed and trails delineated with logs or other natural materials. Select areas will be provided with elevated boardwalks. Such measures

have been proven to keep the majority of visitors from straying off the designated trail. Seasonal or temporary trail closures will also be implemented as needed for added protection during sensitive periods of a species' life cycle, for regeneration of vegetation or to prevent erosion.

Single-track trails (narrow, substrate trails) are generally in less accessible areas and used mainly by dedicated hikers such as Bruce Trail members; these people are well versed in the 'Leave No Trace' approach to experiencing nature. The majority of visitor traffic would be encouraged to travel along major (medium or high capacity) trails rather than the single-track trails through strategic use of interpretive programming, mapping, and establishing and advertising places of interest. Additionally, as part of the trail upgrading proposed under the master plans, Conservation Halton will be assessing the risk to natural resources posed by trails being in Natural Reserve Zone. Trail delineation, including the use of boardwalks, as well as rerouting some trails will be possible management responses. The action to be taken on the Bruce Trails in these areas will be discussed with representatives of the Bruce Trail Conservancy.

Currently, all Conservation Halton trail maps (pamphlets and signage) have trail regulations or trail etiquette guidelines printed on them. In addition, new interpretive signage will stress the value of the natural heritage features of the areas and encourage people to pursue recreational activities in low-impact ways. Increased trail use does not necessarily lead to increased degradation, insofar as the social stigma of being seen disobeying trail use guidelines will discourage people from misbehaving. Volunteer stewards may be marshaled to patrol the trails on very busy days.

Where trails cross intermittent swales, streams or wetland areas, boardwalks, bridges or culverts are proposed. Boardwalks, bridges, and other water control measures will be constructed in such a way as to minimize impact on the natural features. Boardwalks should have a minimum width of 1.5 metres and be constructed of non-pressure treated timber materials. The exact location and length of bridges and boardwalks will be determined during the implementation phase based on site conditions.

Trail Accessibility Upgrades

Hiking trails often can be made accessible to persons with physical disabilities. The types and needs of disabled persons should be recognized before designing such a trail. Conservation Halton staff will work closely with potential future users and local groups representing persons with disabilities when designing or upgrading trails.

For wheelchairs, crushed stone that has been rolled and compacted may be used. Visually handicapped persons can use natural trail treads with guide ropes or definite edges such as logs or other natural materials. Although accessible trails usually are located on level terrain with grades rarely exceeding 5 percent, acceptable grades will vary depending on the abilities and expectations of trail users. Regular rest stops should be provided on steep slopes.

Loop trails with cut-offs are desirable. Although trail lengths of less than 1.2 kilometers are often provided, a variety of trail lengths is needed to accommodate different abilities and expectations. Routes can be identified with a variety of different sights, sounds, odours and objects. Trails should follow a logical sequence to prevent the user's loss of direction.

Development Elements

- 2 trailheads
- New hiking trails – approximately 2200 linear meters as follows:

One new trail will be a High Capacity / Service Access trail approximately 300 meters long, leading from the parking area to the new overflow parking area in the Development Zone.

Another new trail, 70 meters long, will connect the new overflow parking to the Bruce Trail. This trail will alleviate the pressure on the trails at the front entrance and disperse visitors throughout the site. This trail will be built in conformance to the NEP, ANSI and Master Plan guidelines. This trail will utilize the existing hydro corridor, thereby minimizing tree removal and impact to the forest area.

Another short trail will be defined using an existing packed granular path (approximately 200 meters long), which will lead to an interpretive station at the Old Lowville Quarry. This Quarry has been cleaned up and returned to a relatively natural state, with minimal maintenance to keep the geological and history of the site visible.

A Medium Service Nature Trail will be constructed in the plantation area in the southern part of the conservation area. This trail is approximately 1700 meters long and is meant to divert traffic away from the more sensitive escarpment-rim trail.

The precise layout of these trails will be determined onsite based on natural features such as soil, vegetation and slope.

- Decommission unauthorized trails (i.e. block entrances); 10 are assumed for costing purposes,*
- Directional signage, as described above,
- Upgrade existing trail system to avoid ponding and braiding - 1000 linear metres,*
- Trail definition or boardwalks along sensitive trail areas - 1000 linear metres (x 2 sides.) *

> ** The figures provided throughout the plan descriptions are rough estimates. Actual lengths / numbers will need to be determined through detailed site analysis during the implementation phase.*

Bruce Trail Optimum Route

The Bruce Trail Conservancy has identified a route in the northwest corner of this conservation area and across the Colling Tract, through which they would like to build the Main Bruce Trail; however, they have not been able to obtain permission from adjacent private landowners to access their lands. Therefore, there is no plan at present to build this trail.

#### *4.2.1.9 Trailheads*

Trailheads will include a trail information sign at the entrance that should inform users about the length and difficulty of the trail and the locations of rest stops, cut-offs and potential hazards. To accommodate certain physical disabilities, the sign should be mounted within easy reach of the trail at a height of 750-1000 mm and use raised or routed letters.

Further policies on trails are presented in Section 3.4.4. Figure 4-2: Amenities shows examples of appropriate trail construction.

#### *4.2.1.10 Lookouts*

Many vistas are available from Mount Nemo Conservation Area; however, the popularity of these views has led to excessive off-trail activity. One element of the master plan is to formalize the Brock Harris lookout which is the safest, least ecologically sensitive and provides an excellent view. This area will not be increased in size and will be formalized with signage and benches. People will be discouraged

from using informal vista points by posting signs indicating how far it is to the lookout point and by blocking entrances to unauthorized trails with logs or native plantings.

## *4.3 Visitor Impact Management Program*

Visitor Impact Management (VIM) programs is a multiple step monitoring process developed for site managers to protect and enhance the natural resources and infrastructure components of a property. These processes usually involve substantial public participation, which may empower local residents, reduce conflicts between interest groups, expose multiple perspectives related to natural resources management and improve the quality of decisions. Public participation also increases visitor compliance with management strategies.

One element of the VIM plan will be to track visitation rates and monitor for impacts on the resources. Social carrying capacity levels have been determined for the various recreational activities allowed in Mount Nemo Conservation Area; these will need to be revised if they prove to be unsustainable in practice.

It should be noted, however, that the term social carrying capacity no longer refers to an absolute number or formula-based decision. Rather, it refers to the desired visitor experience and resource conditions that are to be sustained (limits of acceptable change). Therefore, by managing to stay within desired resource and social conditions, the area is being managed within the "carrying capacity." Emphasis is on protection and enhancement of the natural environment and the visitor experience as opposed to accommodation of unlimited numbers of visitors. This is not a finite or absolute science – there are social values and judgments that enter into the equation; management actions also influence the ability of the facilities to accommodate visitors. Furthermore, adopting a carrying capacity is not a one-off exercise, but requires a continuing commitment to monitoring and decision-making.

### 4.3.1 Provisional Social Carrying Capacity Levels

Until enough data has been gathered to reassess these numbers, the following provisional carrying capacity levels will be assumed for Mount Nemo Conservation Area. At this time, theoretical carrying capacity for environmental considerations and conditions is subject to further data collection and implementation of the VIM program. These carrying capacity levels have been calculated assuming the following conditions have or are being met:

- Trails have been rationalized – avoid sensitive areas;
- Visitor Impact Management program is in place (includes trail closure when necessitated by adverse weather conditions);
- Trails have all been upgraded during the first three years of the plan period– correctly constructed to avoid ponding, creation of social trails, etc.
- Impacts will be monitored and if unacceptable, remedial measures are taken.

Given the available lengths of the three types of trail described in Section 3.4.4, the total peak capacity for the trails at Mount Nemo Conservation Area is 193 people per day. See Appendix I for a more detailed discussion of the calculations summarized here.

Given a comfortable density of hikers, which varies by trail classification, it was determined that with the addition of approximately 2.2 kilometres of trail in Mount Nemo Conservation Area the area can

accommodate 260 hikers on a peak day. These numbers were determined by Conservation Halton staff and the consulting team, and through extensive background research and do not include environmental considerations.

With the addition of some picnic tables and a picnic shelter, it is expected that the area can accommodate 90 picnickers on a peak day based on social constraints.

There are two climbing areas in this conservation area, which are used mainly by experienced climbers because a top rope ban is in effect. Except on very rare occasions, usage is not to exceed 20 climbers at any one time. The Climbing will be monitored through the climbing management plan. At climbing locations, signage will be posted about rules and regulations of climbing; this information will include ecological awareness on the cliffs.

It must be emphasized that at this point the defined levels are theoretical and must be validated by on-site monitoring. Moreover, carrying capacity numbers are based on the carrying capacity under ideal conditions and these numbers will periodically fluctuate downwards as required under the VIM program and weather conditions to ensure that the natural resource base remains ecologically sustainable. Subsequently, carrying capacity cannot simply be extrapolated into sustainable attendance numbers without the application of a modifying or "utilization" factor, which considers weather, market demand and so on.

This approach to carrying capacity is based on identifying daily capacity of facilities rather than annual numbers. The Visitor Impact Management programs are required to ensure that impacts to the site are minimal.

### 4.3.2 Visitor Impact Management Model

The Visitor Impact Management program created for Mount Nemo Conservation Area is modeled on The *Master Plan for Kelso Conservation Area* Visitor Impact Management plan. The nine steps described in the Kelso model are a suitable starting point for all Conservation Halton holdings and should be expanded to include monitoring, reporting and implementation steps that actively involve volunteers, conservation area visitors and Conservation Halton staff (see Table 4-1).

***Table 4-1: Visitor Impact Management Model***

| VIM Step | VIM Action | Description of VIM Action | Examples |
|---|---|---|---|
| 1 | Baseline Review | Stage One - Inventory and Analysis, which details the existing conditions of Mount Nemo Conservation Area. To be continuously reviewed as indicated by Step 9 - Continuous Improvement Committee. | Species at risk, rare species, veteran trees, invasive species, hydrology, vegetation communities. |
| 2 | Goals and Objectives | List of area objectives. Statement of Conservation Halton mandate. | Preservation, restoration, limited recreation. |
| 3 | Impact Indicators | List of specific physical indicators of impact and measures to be used during step 5 Monitoring. | Unauthorized access, trail closure success, restoration success, off-trail use, erosion of trails, visitor garbage, sensitive species success / survival rate, rare vegetation success / survival rate, invasive species. |

| | | | |
|---|---|---|---|
| 4 | Limits of Acceptable Change | Establish limits of acceptable change in addition to visitor threshold number / individual amenity capacity number. | Restoration efforts: Effect on existing communities, inspection / maintenance visits, visitor occurrence, trail use, refuse. |
| 5 | Monitor | Field conditions monitored by volunteers and Conservation Halton staff, supervised and led by Conservation Halton staff. | Monthly inspection or annual review. |
| 6 | Analysis | Analysis of field reports and surveys. | Inspection / survey analysis. |
| 7 | Mitigation | Determine impact mitigation strategies using Conservation Halton matrix. | Trail closures, signage, surface trails, boardwalks. |
| 8 | Implementation | Implementation done by CH staff, assisted by volunteers. | Limited access for medium projects i.e. trail repair. |
| 9 | Continuous Improvement | Continuous review of goals and objectives by Working Committee. Recommendations to Step 1 to update process | Conservation Halton staff and community representation. |

### 4.3.3 Implementation

In the *Stage Two Report* (2010b), it was demonstrated how students and volunteerism have played an important and often key role in many parks in addressing specific issues related to the sustainable development and management of natural resources and visitor experience. By revisiting the nine-step VIM model and introducing volunteerism through project initiatives in the monitoring and implementation steps, the lack of money and staff that restrict the implementation of the VIM process are lessened. Visitor Impact Management programs are not without costs, however. It is estimated that one additional employee and associated transportation costs will be required to administer the program at Mount Nemo, Rattlesnake Point and Hilton Falls Conservation Areas (see Section 5.3.4).

The management plan must have an information technology (IT) component that informs the management team. Software models are available to provide more rapid analysis and evaluation, often in hours rather than days. Conservation Halton has recently upgraded to a new Point of Purchase (POP) software system providing information in real time and can now inform staff of capacity thresholds in all properties simultaneously. This will allow staff to direct visitors to properties that are receiving less traffic. Even social network sites and communication tools should be used to provide information and connect with volunteers.

Finally, the management plan will create a Continuous Improvement Working Committee of Conservation Halton staff (operations, information technology, public relations and science) and should consider the rotation of select leadership from active environmental advocacy and naturalist groups, the Bruce Trail Conservancy, assistance organizations such as Halton Multi-Cultural Council, and local outdoor, hiking or recreation clubs. The committee would be tasked with setting specific goals and objectives that are aligned with the Conservation Halton mandate and other planning objectives including this master plan.

A VIM matrix, Table 4-2 in Appendix II, outlines the indicators to be monitored for each activity permitted in Mount Nemo Conservation Area as well as identifies potential management actions to improve sustainability of the activity. A budget of $60,000 will be provided to cover the products and implementation of these actions recommended through the VIM monitoring program. The budget will

be divided between four parks; Mount Nemo, Hilton Falls, Rattlesnake Point and Crawford Lake in accordance to need.

## *4.4 Environmental Management and Restoration Plan*

### 4.4.1 Rationale

Mount Nemo Conservation Area covers approximately 168 hectares, of which three-quarters is forested with a good portion of interior forest. The primary focus of restoration at Mount Nemo Conservation Area is expanding forest cover, which has the greatest potential to improve the function of existing habitat in the immediate area and add to interior forest space in the southern portion of the Bronte Creek watershed. This conservation area includes areas of existing restoration, natural regeneration and areas where two proposed restoration plans need to be initiated. Graphic representation of the recommendations for restoring the habitats within the conservation area is provided in Figure 4-2 of the *Inventory and Analysis: Stage One Report* (EDA 2010a).

Existing restoration areas correspond to plantation areas, which will develop into a more diverse forest community. Natural regeneration areas have been left for vegetation communities to develop naturally through succession and several former agricultural areas are already showing signs of primary succession.

Proposed restoration areas are locations of interest for active restoration to aid the development of more mature or a specific type of vegetation community. These areas correspond to one area along the northern boundary and one associated with the abandoned quarry area. The quarry area project was actually completed in July of 2011

As resources are available, additional restoration activities may include improving habitat in key areas for targeted species, improving interior forest areas, advancing the natural succession of plantation forests and curtailing the spread of invasive species. In some cases, specific recommendations have been made regarding the need for additional planning in order to appropriately target resources and assign costs (e.g. invasive species, forest management plan, etc.).

### 4.4.2 Estimate of Management and Restoration Costs

A cost structure for undertaking restoration of proposed restoration areas is provided below. Costs provided are preliminary estimates. The total cost for the measures described below is estimated to be $897,300. An additional $15,400 over 10 years for the Species at Risk Monitoring Program set out in Section 3.7.5 is not included in this 10-year monitoring budget.

#### *4.4.2.1 Forest Nucleation Cell Planting*

There is one agriculture field within the north boundary of the Mount Nemo Conservation Area. This area is relatively small (1 hectare), isolated and found on the edge of a forested area. A forest nucleation cell planting plan is proposed to restore its connectivity.

It is intended that reforestation of this area would serve to increase the overall size of the forest and improve its shape (reduce the forest edge to interior ratio). The majority of this area would likely naturally regenerate towards a forest community over time if left undisturbed. Restoration efforts would speed up this process and help increase functionality, species and age diversity within the entire forest community.

The restoration plan will involve a limited amount of excavation and re-grading, where necessary, to improve soil composition and prepare a 10-square-metre cell planting zone for a diverse native species mix of trees and shrubs. Detailed design at the implementation stage will determine the specific native species mix, calculate planting densities and establish design criteria.

Important design considerations will include the use of no fewer than 4-6 native early pioneer species placed in random, natural layouts of hierarchal sizes. Natural plant associations that reflect the succession forest design intent will be established. The forest nucleation cell planting is estimated at $45,000. This assumes approximately 10% coverage of the restoration area.

#### *4.4.2.2 Plantation Patch Planting*

A few plantation areas exist in the Mount Nemo Conservation Area with a variety of attributes and proposed management criteria. The total area of plantation in the conservation area is approximately 37 hectares. The management of these, as well as natural forest areas, should be guided by a current forest management plan. A current forest management plan could significantly contribute to the health of the overall forested area and help promote increased biodiversity in the plantation areas while maintaining the health of the natural forest that experiences visitor traffic.

As resources are available, and prior to the preparation of a new forest management plan, it would be beneficial to plant mid-tolerant to shade-tolerant native tree species and appropriate ground layer plants within plantation areas to speed the transition to a mixed forest canopy that is capable of supporting greater diversity.

The restoration plan will involve cutting some canopy trees, to allow light penetration, preparation of planting areas, including ripping of soil structure, application of mycorrhiza and fertilizers. Plantings will consist of shade tolerant hardwood species with appropriate herbaceous plants typical of the more diverse forest environments surrounding the plantation. The plantation patch planting is estimated at $832,500. This assumes approximately 5% coverage of plantation areas.

#### *4.4.2.3 Invasive Species*

Costs for undertaking invasive species removal should be based on the threat analysis and specific management needs identified. To provide the master plan with a preliminary cost, the following work plan has been assumed: threat analysis, invasive species removals every year for the first five years, invasive species removal every second year for the next five years. Total estimated cost for invasive species management over 10 years is $19,800.

### 4.4.3 Trailhead Closures

There are areas where unauthorized access to the conservation area is occurring; the adjacent landscape in the immediate area needs to be rehabilitated to discourage entry. It will also be necessary to close existing unsanctioned trails in the conservation area. Trail closures form an important mitigation measure for protecting the natural features of the conservation area, which should reduce unauthorized access and access to pre-existing trails prior to the implementation of the master plan. Trail closures are to be completed during the first ten years of the plan; the cost for this work is included under the trails costing.

The restoration plan will consist of a limited amount of equipment use to source and install large fallen logs, boulders and gated structures. The trail closures will allow restoration of interior portions of the trail to progress naturally. Detailed design at the implementation stage will determine the specific

design details. Trailhead closures, gate installations, fencing and vegetation planting will be executed by qualified Conservation Halton operations staff.

### 4.4.4 Rationale for Restoration Costs

Table 4-3 in Appendix I reflects the cost per hectare for a contractor's supply and install pricing using certified nursery grown plant materials. The preliminary estimate provided reflects real costs associated with contractor installation and are for budgetary purposes only. This estimate represents an idealized budget for a restoration plan that maximizes the potential of each dominant habitat type in the conservation area. The installation costs noted here should be considered the upper end of pricing that would normally be submitted during the competitive bid process. Costs can be reduced through refinement of restoration methodology at the implementation stage, selecting additional areas for natural regeneration as the primary restoration technique or through Conservation Halton internal programming. Should Conservation Halton complete restoration using internal resources, one could expect that costs could be reduced by up to two thirds. This reduction in cost is estimated based on possible volunteer effort, and historical labour and equipment costs known to Conservation Halton. Alternative project cost examples are provided in Table 4-4 in Appendix I.

## *4.5 Potential Land Acquisition*

Conservation Halton has a land securement program which identifies land across its watershed which would be of interest to the Authority should they become available for acquisition. Lands identified within the Niagara Escarpment Plan *(2005)* are included as priorities, as are lands adjacent to Authority existing land holdings. Acquisition would also focus on lands that serve as natural corridors or provide linkage between core areas notably along the Niagara Escarpment, Limestone creek tributary and connection to adjacent conservation areas. Partnership purchase with the Bruce Trail Conservancy and the Optimum Trail Route are properties that would contribute to the objectives of NEPOSS by securing a permanent route for the Bruce Trail on public lands and are included as priorities. Other Partnership also raises the priority level for securement. Conservation Halton works closely with the Region of Halton (and others) in the Region's Greenland Securement policy and identifies priority lands in this program as well. When possible, in a willing seller – willing buyer scenario, Conservation Halton will seek funding in partnerships to secure additional lands based on these priorities. However, Conservation Halton does not have identified budgets for acquisition, nor does the Province provide support for this at this time. Currently, in the absence of funding, Conservation Halton is not actively pursuing property purchase, but can and does work with owners in securing lands such as through the Ecological Gifts Program where opportunity to do so presents itself. Land Acquisition was included within the Master Plan to help provide strategic context in line with the Securement program for future land acquisition, should funding or the opportunity to acquire new priority properties become available.

# Section Five: Financial Implications

This section presents the financial analysis of the *Master Plan for Mount Nemo Conservation Area*.

***All dollar figures quoted are in terms of 2010 dollars.*** There are two fundamental economic assumptions on which this master plan is based:

- **Modest economic growth provincially and nationally:** The first assumption underlying this overall analysis is that there will be slow to moderate economic growth over the 10-year development plan of the site. The recent financial uncertainty - since 2008 - will likely have stabilized, but expectations for overall economic growth are modest when compared to the 1990 – 2008 period. Therefore, companies and institutions will be very conscious of receiving value for money in any transaction. For this development plan, expectations are that partnerships will need to clearly demonstrate a 'win/win' aspect with clear benefits articulated.
- **Significant local population growth:** A second key assumption, fully documented in the *Stage One Report* for Mount Nemo Conservation Area (EDA 2010a), is that there will be quite high population growth in Halton Region relative to that anticipated for the province overall[2]. By itself, this would mean significant additional attendance at the conservation area. As well, though, Conservation Halton intends to adopt a more aggressive and pro-active marketing stance, and this too will lead to increased attendance numbers.

The attendance and revenue figures projected in this report take both these assumptions into account.

## *5.1 Capital Costs of Site Development*

### 5.1.1 Allocation of Costs Over the Development Period

The capital cost of the overall development plan for the *Master Plan for Mount Nemo Conservation Area* over a 10-year period is just over $4 million. Assumptions relating to the pace of this development in terms of the specific projects that are anticipated over this period are shown in Table 5-1 in Appendix II.

Conservation Halton will endeavour to complete the proposed works at Mount Nemo Conservation Area in a phased and orderly manner as funds permit. Certain variances may occur due to funding availability or changed circumstances. It is recommended that all the upgrades necessary to bring Mount Nemo Conservation Area up to the enhanced base level of services and amenities (see Section 3.2 above for further details) called for by this master plan be done in the first three years of the 10-year development program. In the mid-term phase of the project, the larger infrastructure items should be constructed or installed. The final phase will incorporate items that are not a high priority. Table 5-2 in Appendix II shows the specific amount of capital expenditure expected in each year.

It should be noted that in the *Stage One Report* for Mount Nemo Conservation Area (Ibid.), some $76,500 in deferred capital maintenance had been indicated (major projects noted that had been

[2] Note that over the 2001 – 2006 Census period, Halton Region grew at a rate almost 3 times that of the province overall (17.1% compared to 6.6%). This higher growth rate is projected to continue over the planning period.

deferred related to quarry restoration, a new gatehouse structure, and parking lot resurfacing) [3]. All of these deferred projects have been captured in the site development plan presented here.

### 5.1.2 Labour Component of Development Costs

This capital cost budget implies a significant labour component. The development cost outlined here assumes that all activity is contracted out. Assuming that half the development costs are for labour and that the average construction worker income plus benefits is approximately $50,000 per year, a development cost of $4 million for Mount Nemo Conservation Area would imply approximately 38 person-years of labour being involved in the construction and development activities outlined here.

## *5.2 Attendance and Revenue Forecast*

### 5.2.1 Attendance Forecast

Currently, the average annual attendance at Mount Nemo Conservation Area is estimated to be 16,000 (over the 2005 to 2009 period).

The attendance projections developed for this conservation area are based on recognition of four contributing factors. These are:

- Population growth;
- Marketing;
- Shorter vacations, closer to home; and
- Major development.

Each of these factors is further discussed below:

#### *5.2.1.1 Population Growth*

The population growth projections (as obtained from local planning departments) assume significant annual growth in most of the municipalities comprising the immediate market area that Conservation Halton serves, and from which most visitors come. Growth in these source markets will naturally result in an increase in attendance. Specific growth projections from these immediate source markets are shown in Table 5-3.

***Table 5-3: Anticipated Population Growth Rates in Key Source Markets***

| Municipality | Anticipated Annual Population Growth Rate (to 2021)[4] |
|---|---|
| Burlington | 4.53% |
| Oakville | 2.28% |
| Milton | 6.19% |
| Halton Hills | 1.48% |
| Mississauga | 3.89% |
| Hamilton | 0.71% |
| Other GTA | 1.17% |

[3] The Stage One Report had identified $126,500 in capital maintenance items that were required, $50,000 of which had already been spent, leaving $76,500 of deferred capital maintenance.
[4] Obtained from municipal official plans.

For this conservation area, a weighted population growth rate of 4.07% was calculated (based on the estimated proportion of total attendance from each individual municipal source market – see the *Stage One Report*, EDA 2010a).

#### *5.2.1.2 Marketing*

Conservation Halton intends to adopt a more aggressive and proactive approach to promoting its facilities to local, regional and potential tourism markets, through increased signage (e.g. Tourism-Oriented Directional Signage), social media marketing, more packaging, etc. This more proactive approach can be expected to result in greater levels of attendance than population growth alone would deliver. A conservative increment of 2%, over what would otherwise be the attendance, has been assumed to account for this factor.

#### *5.2.1.3 Closer to Home and Shorter Vacations (so-called 'Staycations')*

A major recent impact on tourism has been the recession of 2008 and stagnant to slow economic growth since then (which is foreseen to continue over the coming decade). This has caused Canadians to tend to spend leisure and vacation time on shorter trips that are closer to home, and that are thus less costly. This has been exacerbated by tightened United States border restrictions that make it more difficult for Americans to come to Canada and more difficult and problematic for Canadians to visit the United States. The result, somewhat paradoxically, has been an increase in the propensity of Greater Toronto Area residents to visit GTA-based attractions[5]. A conservative increment of 1% over what would otherwise be the attendance (i.e. from population growth alone) has been assumed to account for this factor.

#### *5.2.1.4 Major Development*

Within the development plans for certain conservation areas, there are major facilities being proposed that can be expected to have some influence upon overall attendance. For Mount Nemo Conservation Area, however, there is no single dramatic development that would have this type of impact on the marketplace.

#### *5.2.1.5 Caveat*

This forecast is based on an estimate of what the utilization of facilities and services at this conservation area **could be**; the market will deliver the level of attendance estimated here. The revenue and cost estimates presented in this section are based on this estimate of attendance. However, should Conservation Halton decide that allowing this level of use might damage the environmental integrity of the conservation area; it could limit attendance through a variety of strategies (higher pricing, closing the conservation area at certain periods, limiting attendance on peak days, etc.).

Table 5-4 in Appendix II shows the attendance growth projection for Mount Nemo Conservation Area.

[5] For example, the total number of visitors to Conservation Halton facilities increased from approximately 568,000 in 2007 (all conservation areas plus Glen Eden) to 748,000 in 2009. This represents an annual growth factor of about 9.6% per year over this period. The 'population growth factor' described above would account for only about half of this growth rate. The remainder would be a combination of increased marketing (of which there had been some) and the 'staycation' factor as described here. Clearly, this factor can be significant.

### 5.2.2 Revenue Projection

At present, the revenue per visitor realized at Mount Nemo Conservation Area is:

***Table 5-5: Mount Nemo Conservation Area Budgeted Revenue Projection***

| | |
|---|---|
| Total Budgeted Revenues, 2010 | $57,405 |
| Average Annual Visitation (based on 2005 – 2009) | 16,000 |
| Average Revenue per Visitor | $3.59 |

Most of this revenue (98%) comes from the entry fees, with only a small proportion coming from concession and other fees (about $1,000).

Going forward, the proposed revenue strategy for Mount Nemo Conservation Area is:

- To increase per person gate fees to $5 on average (reflecting the higher demand for the facility, as well as the higher value provided to users)
- To aggressively pursue community corporate sponsorships for various activities and events located in the conservation area: a target amount to be raised in this regard will be $2 per visitor

Thus, revenue generation estimates for Mount Nemo Conservation Area will be in the order of $7 per visitor for the initial period of development of the conservation area. In the latter part of the development period (years 7 through 10) this average revenue per visitor will increase slowly by 50 cents per year through a combination of increased admission prices, greater sponsorship, and a greater profit margin on goods sold[6].

Table 5-6 in Appendix II shows the attendance and revenue generation estimates for Mount Nemo Conservation Area under these assumptions.

## *5.3 Operating Costs of Site Development*

The operating and maintenance costs associated with the operation of the site are estimated as follows:

- The current operating budget for the conservation area is assumed to continue;
- Salary costs for added staff for maintenance, security, visitor impact management, and interpretation;
- Additional maintenance costs associated with the new capital development;
- The incremental costs of an enhanced standard of care for trails and forest management;
- An estimate of species management and monitoring costs for the conservation area over its 10-year planning period; and
- An increased marketing budget.

Each of these costs is discussed separately.

[6] This level of revenue generation per visitor is quite realistic: Black Creek Pioneer Village operated by the Toronto Region Conservation Authority generated revenue of over $20 per visitor in 2009.

### 5.3.1 Continuation of Operating Budget of Conservation Area

Table 5-7 (contained in Appendix II) presents the current (2010) operating budget for Mount Nemo Conservation Area (showing expenditures and revenues). As shown, current expenditures are approximately $92,500, most of which is wages, salaries and benefits. It is assumed that over the 10-year period these costs will continue.

### 5.3.2 Additional Staff

Use of the facilities will increase due to overall population growth in the Halton Region and in the neighbouring jurisdictions. This would be true even if no additional facilities or services were developed at the site. Additional services and facilities, though, will require additional staff. These additional staff will be employed directly at the conservation area, in primarily maintenance, visitor management and interpretive activities.

The current staff utilization at Mount Nemo Conservation Area is approximately 2.17 staff (measured in terms of full-time job equivalents - FTJE). Using the same methodology as employed in the *Stage Two Report* to estimate the various staffing implications of the various development scenarios (EDA 2010b), it is possible to estimate the additional staff complement under the new attendance forecast scenario as follows:

***Table 5-8: Staffing Projections***

| | |
|---|---|
| Current Estimated Staff Complement (FTJE) | 2.17 |
| Percentage Growth in Visitors to 2021[7] | 66% |
| Growth in number of FTJEs to 2021 | 1.43 |
| Total number of FTJEs at Mount Nemo Conservation Area, 2021 | 3.60 |

The current average salary and benefits per position at Conservation Halton is $76,000[8] Multiplying this by the estimated growth in the number of FTJEs to respond to increased demand (i.e. the 1.43 positions referred to above) yields an estimate of the total additional wages and salaries required.

Table 5-9 (in Appendix II) shows the staffing projections associated with the development plan for the site.

### 5.3.3 Additional Capital Maintenance Costs Associated with Development Scenario

An additional expenditure category for the conservation area is the maintenance costs associated with the new development on the site. On average, annual maintenance and replacement costs associated with the physical infrastructure developed are estimated to be approximately 2 to 5% of the original capital development costs. This percentage would cover a wide range of specific cost elements as well as global corporate service support costs such as security, minor construction and maintenance, general ecosystem monitoring, ecosystem maintenance, etc. Because these will all be relatively new facilities, maintenance costs as the lower end of this range are reasonable. Because these will all be

[7] From the 2005 – 2009 average of 16,000 visitors annually to the anticipated level of 26,600 visitors in Year 10.
[8] Communication from Marnie Piggot, Conservation Halton, February 8, 2011. The average salary shown here is high because currently all employees have been with Conservation Halton for more than 15 years and are in supervisory or management positions. There are no full-time general labour positions at this time, which could have been used as a basis for this calculation.

relatively new facilities, maintenance costs as the lower end of this range are reasonable. Accordingly, 2% of the cumulative development budget has been assumed as the additional maintenance and replacement cost[9].

Table 5-10 (in Appendix II) shows the calculation for the maintenance costs associated with the new development in Mount Nemo Conservation Area. As shown, this is expected to rise to just over $76,000 by the end of the development period.

### 5.3.4 Enhanced Standard of Care for Trails and Forests

In addition to the expected maintenance costs, an enhanced standard of care, relative to current levels of treatment, shall be implemented. Costs associated with this enhanced standard include monitoring and maintenance of the forest area for hazard tree removal and the cost for enhanced maintenance on trails. Hazard tree removal is estimated to cost approximately $39 per hectare and enhanced trail management is estimated at $1,000 per linear km[10]. As the area of the conservation area is set (168 hectares), this budget item will be fixed. However, because new trails are coming on-stream over the development of the plan, this element will increase over time. Table 5-11 in Appendix II outlines these anticipated operating costs.

### 5.3.5 Marketing Budget

The current estimated marketing budget for Mount Nemo Conservation Area is $5,000[11], (excluding the provincial directional signs to the site – see below). However, in future, Conservation Halton wishes to move to a more active marketing stance where out-of-pocket marketing costs are funded as a percentage of overall direct revenues generated at the conservation area. This is the approach currently in place at Glen Eden Ski and Snowboarding Centre, where the marketing budget is set at 2.5% of total direct revenues. However, taking this approach at Mount Nemo Conservation Area, now, would imply a diminution in the total marketing budget. Accordingly, in the forecast of costs, flat marketing cost of $5,000 has been assumed until the increase in direct revenues from all sources is sufficient to bring this marketing budget above this threshold (Year 5.) Added to these costs is the annual fee for participation in the provincial signage program.

#### *5.3.5.1 Provincial Signage Program (TODS)*

Another key element of the marketing budget is the cost of participation in the Tourism-Oriented Directional Signage (TODS) program, which permits qualifying tourism operators to place their business signs along Provincial roadways. Offered jointly by the Ministries of Tourism and Transportation, the TODS program provides directional information to travelers throughout the Province of Ontario. Signs on the freeway display the business name and icon or logo. There is an annual fee per sign to participate in the signage program.

Specific assumptions relating to the deployment of TODS for Mount Nemo Conservation Area are as follows:

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[9] Actually, the maintenance cost is estimated as 2% of the cumulative new development costs to the *previous* year (no maintenance costs are assumed for new development in its initial year). So, for example, in Year 7, maintenance costs would be assumed for new development only up until Year 6 – development in year 7 is not assumed to need any maintenance until Year 8.

[10] Based on figures provided by a provincial park employee.

[11] Based upon communication with Hassaan Basit, Director, Communications Services, Conservation Halton.

- No directional signage will be involved.
- Two freeway regular attraction destination signs will be placed on Queen Elizabeth Way;
    - The TODS charge for these signs (in an urban location) is $600 each.

Accordingly, $1,200 has been added to the marketing budget in each year for these costs.

### 5.3.6 Estimate of Species Management and Monitoring Costs

Table 5-12 in Appendix II shows the costs associated with species management and monitoring (as outlined in Sections 3.7.5 and 4.4). Over the ten-year period of this master plan, nearly $20,000 will be spent on control of invasive species, and just over $15,000 on monitoring activities.

### *5.3.7 Total Operating Costs*

Table 5-13 in Appendix II outlines the total operating costs for the 10-year development timeframe of Mount Nemo Conservation Area, summing each of the foregoing six components. At the outset of the development period, operating costs are estimated to be $127,000 annually; by year ten, they are estimated to have risen to just over $302,000 annually.

## *5.4 Net Operating Position*

Table 5-14 in Appendix II shows the net financial position of Mount Nemo Conservation Area at the end of the 10-year development period, under the assumptions outlined here. Mount Nemo Conservation Area will incur an operating deficit throughout the development period.

An alternative management approach would be to target a certain level of revenue generation per visitor each year in order to overcome the anticipated shortfall. Table 5-15 in Appendix II shows that an additional surcharge of between $2 and $4 per visitor (on average) would be required in order to eliminate the shortfall in the years showing the highest deficit. This could be undertaken through an increase in the admission fee, or the annual membership fee (which permits access to all conservation areas) or possibly through more aggressive pricing for specific services and programs. The price-sensitivity of the offerings at the conservation area would need to be examined; however, pricing could be one way to adjust attendance levels if it were thought that attendance levels were exceeding the capacity of the conservation area.

At the highest level of surcharge that might apply, the cost of the experience at Mount Nemo Conservation Area is approximately equivalent to that of a movie – an affordable experience for most people.

Another related consideration would be whether or not pricing levels (in particular, admission fees) consistent with fees charged at other conservation areas was a desirable policy position. If so, then an average surcharge target for a group of parks would need to be considered. These management considerations will need to be addressed and adjusted periodically over the development period.

### 5.4.1 Portfolio Approach to Management for Rattlesnake Point, Mount Nemo and Hilton Falls

Conservation Halton treats the Rattlesnake Point, Mount Nemo and Hilton Falls Conservation Areas as a single management unit. This approach could make sense in terms of a pricing / revenue generation and business model for the three conservation areas.

The analysis for each of the three parks on its own has shown that each will incur a deficit at some point over their 10-year development timeframe. The specific situation for the three combined parks is shown below:

***Table 5-16: Cumulative Deficit***

| Year | Total Revenues *(all three parks combined)* | Total Costs *(all three parks combined)* | Surplus / Deficit *(all three parks combined)* |
|---|---|---|---|
| Year 1 | $793,095 | $739,704 | $53,391 |
| Year 2 | $829,917 | $866,464 | ($36,547) |
| Year 3 | $868,454 | $1,003,000 | ($134,546) |
| Year 4 | $908,787 | $1,112,128 | ($203,341) |
| Year 5 | $951,001 | $1,172,563 | ($221,562) |
| Year 6 | $1,039,939 | $1,241,040 | ($201,101) |
| Year 7 | $1,136,753 | $1,331,729 | ($194,976) |
| Year 8 | $1,308,318 | $1,394,235 | ($85,917) |
| Year 9 | $1,494,928 | $1,478,154 | $16,775 |
| Year 10 | $1,695,438 | $1,529,566 | $165,872 |

This deficit per visitor is shown in Table 5-17 below.

***Table 5-17: Cumulative Deficit Offset***

| Year | Total Deficit *(all three parks combined)* | Total Visitors *(all three parks combined)* | Deficit per Visitor |
|---|---|---|---|
| Year 1 | $0 | 151,189 | $0.00 |
| Year 2 | $36,547 | 158,251 | $0.23 |
| Year 3 | $134,546 | 165,643 | $0.81 |
| Year 4 | $203,341 | 173,382 | $1.17 |
| Year 5 | $221,562 | 181,484 | $1.22 |
| Year 6 | $201,101 | 194,382 | $1.03 |
| Year 7 | $194,976 | 203,471 | $0.96 |
| Year 8 | $85,917 | 212,987 | $0.40 |
| Year 9 | $0 | 227,481 | $0.00 |
| Year 10 | $0 | 237,910 | $0.00 |

In years two through eight when the combined operations show a deficit, the deficit per visitor ranges up to a high of $1.22 (Year 5). In other words, in Year 5, if each visitor were to generate an additional $1.22 in that year, the combined conservation areas would not incur a deficit and would instead break even. If each visitor were to generate additional revenue over the entire planning period, then the three

conservation areas together would not only 'pay their way' but also generate a surplus for Conservation Halton.

This study recommends that a pricing study review be undertaken within the next year to determine how Conservation Halton can raise net revenues by $1.00 to avoid projected operating deficits or, alternatively, proceed with an admission rate increase of $1.00. If such a pricing structure were put in place at the outset of the development period, a significant surplus could be generated in each year.

### 5.4.2 Rationale for Additional Investment in Conservation Halton

Conservation Halton creates significant direct economic benefit in the community. The operations of Conservation Halton, plus the expenditures of visitors who come to the region to utilize the programs and services offered, create nearly $12 million of additional gross domestic product (GDP) in Halton Region alone. This is associated with 274 jobs in the Region, $8.4 million in wages and salaries and $5.7 million in additional taxes paid. If this were a single business or industry, it would be recognized as a significant component of the economic base of the Region. Beyond Halton Region itself, there are further economic benefits accruing across the Province of Ontario.

In addition to the economic impacts, Conservation Halton provides a valuable service to the community in terms of 'ecosystem services' – the impact of the forest and wetlands maintained by Conservation Halton in terms of filtering and cleaning water and air. Ecosystem valuation quantifies the cost of providing these services commercially, as opposed to having conservation authority lands provide these benefits 'for free.' The estimated savings to society from these services provided by Conservation Halton's holdings are nearly $16 million annually.

Conservation Halton conservation areas provide a growing population with access to abundant, natural green space for leisure and recreation. More specifically, these spaces offer opportunities for recreation that promotes healthy living through physical activity and exercise. By keeping costs low, Conservation Halton conservation areas strive to offer accessibility to all residents while supporting culturally and socioeconomically diverse communities. In addition to serving local residents, as significant regional destinations, the conservation areas also attract tourists to Halton Region.

The availability of Conservation Halton spaces, programs and services adds considerably to the perceived quality of life in Halton Region. This in turn can be extremely valuable in attracting the highly mobile 'creative class,' those individuals most likely to create businesses, invest in the community and bring new ideas and energies into the region. Thus, indirectly, Conservation Halton operations add to the attractiveness of the region overall as a place to live and work.

### 5.4.3 Financial Sustainability Strategy

The master planning process has made it abundantly clear that:

- While the prime focus of Conservation Halton's conservation areas has been, and will continue to be, protection and enhancement of the natural heritage resources, it is also imperative to consider the social and economic components of the sustainability model;
- As growth in visitation inevitably increases, so too must the investment in infrastructure, amenities, related facilities and the visitor impact management that is required to protect and enhance the natural heritage features and, thereby, achieve and maintain the necessary balance between protection and usage;
- Protection of natural heritage resources requires key investments in:

- Enhancements to existing facilities, infrastructure and amenities;
- New facilities: educational, recreational and interpretive;
- Protection and enhancement initiatives: visitor impact management, restoration, etc.

An annual base level of financial support should be sourced through Halton Region (the Province of Ontario and / or Municipalities, etc.,) as the main recipient(s) of the benefits provided by this conservation areas. This should result from (and possibly be correlated with) the significant population growth occurring in the region, which will by itself place a heavier demand on Conservation Halton's areas and facilities. A new and different business model needs to be developed for Conservation Halton; one that acknowledges the significant economic benefits conferred upon Halton Region by Conservation Halton and recognizes the pressures placed upon Conservation Halton by population growth.

Consequences of not providing adequate on-going capital funding may include the need to implement one or more of the following actions:

- Raise admission fees at specific conservation areas;
- Raise membership fees;
- Charge differentially at peak times;
- Limit visitation;
- Limit access to certain conservation areas;
- Cut back on some of the programs and services currently offered;
- Cutback the proposed capital development program or extend it beyond the projected 10-year timeframe with subsequent increases in cost.

Conservation Halton creates valuable environmental, social and economic benefits, and provides significant value-added services to Halton Region. To enable Conservation Halton to continue to provide these benefits, ongoing investment in Conservation Halton's conservation area facilities and programs is required.

## *5.5 Fundraising Considerations*

### 5.5.1 General Orientation to Fundraising at Mount Nemo Conservation Area

The development plan outlined here for Mount Nemo Conservation Area offers the potential to solicit two types of support: the first for capital projects such as the quarry restoration or the interpretive pavilion , neither of which are 'big ticket' items, and the second for operational support. Strategically, capital fundraising efforts of Conservation Halton should be reserved for other major projects such as the visitor centre at Crawford Lake Conservation Area; fundraising for Mount Nemo Conservation Area might be better focused on developing support for ongoing operations. Possibilities in this regard are discussed below.

### 5.5.2 Potential Sources of Support

#### *5.5.2.1 Organizations and Foundations*

Conservation Halton has a history of working closely with a number of partners: municipalities and municipal agencies; provincial government departments and agencies; and various environmental and related foundations and agencies. These partnerships are expected to continue.

In addition to approaching these traditional sources in terms of development projects and support for programming activities, there are additional foundations and funding sources that could be considered. A small sample of possibilities includes GLOBE Foundation, TD Friends of the Environment Foundation, David Suzuki Foundation, The Evergreen Foundation, Harmony Foundation and Unilever Canada Foundation.

Deciding which of these foundations might be the appropriate ones to approach for sources of support will be dependent on the specific development plans prepared for each of the conservation areas.

#### *5.5.2.2 Corporate Sponsorship Potential*

Given Conservation Halton's situation in a growing region with increasing demand, the fact that it has several sites with high visibility and profile, and its conservation mandate places it directly 'on trend' with the increasing interest in the environment, it has significant potential to develop partnerships with the corporate sector. Even though this may be difficult in the short term, given the current economic situation, over the long-term timeframe of the plan developed here, corporate sector sponsorship should be a real possibility.

A number of potential corporate sector partners for Conservation Halton should be considered. Generically, these will include:

- Major employers in Halton Region (e.g., any company with over 100 employees);
- Companies with a track record of supporting local activities and events ;
- Companies who have previously supported or been associated with Conservation Halton (for example, those who have advertised in *Focus on Conservation*);
- Major consumer-oriented companies whose target markets are young families, active individuals, etc. (e.g., running-shoe makers, sporting goods manufacturers); and
- Companies throughout the GTA producing 'environmental' products or services (or companies that wish to position themselves as having an environmental or 'green' focus).

The importance of this last point cannot be over-emphasized. Given the growing awareness of, interest in, and concern about environmental issues, companies increasingly will wish to be perceived as environmentally friendly and 'green.' Association with Conservation Halton, a well-recognized leader in environmental and conservation issues, will be a logical route to developing immediate credibility and legitimacy in this regard. Other organizations with conservation mandates – for example the World Wildlife Fund – have been very successful in exploiting this route.

The kinds of sponsorship possibilities that could be considered include:

- Sponsorship of admission for some period (e.g., this free weekend admission at Hilton Falls Conservation Area brought to you courtesy of…);

- Sponsorship of specific programs or activities (which may be oriented towards conservation projects such as species protection or public programs such as specific lecture series, interpretive tours, etc.);
- Sponsorship of outreach programs for schools, community groups, etc.;
- Sponsorship of festivals and events;
- Major donations for capital facilities such as visitor centres (which could involve naming rights); and
- For major innovative projects, public-private partnerships (PPP) could be considered.

There is a wide range of potential benefits to potential corporate sponsors that should be stressed in any approaches made. These include:

- Positive exposure to the hundreds of thousands of annual visitors to Conservation Halton's facilities;
- Positive exposure in the various print and web-based promotional and informational publications of Conservation Halton;
- Depending upon nature and location of projects supported, significant exposure along major transportation corridors;
- Potential benefits for employees of corporate sponsors (e.g., discount admissions, reduced-fee memberships, access for company picnics, etc.); and
- Positive publicity and public relations.

A strategic implication for Conservation Halton is that they may need to develop or refine their policy regarding the solicitation and identification of potential partners and sponsors to ensure that only those partners who are strategic, serious and long-term about their commitment to the environment and will reflect well on Conservation Halton's own image and identity, are eligible.

The following evaluation considerations must apply to the selection of partners and sponsors for any given initiative:

- Ability to contribute materially to a needed program or service (either in-kind or financially);
- Their commitment to the overall operation according to the same standards adopted by Conservation Halton;
- Overall image and reputation as a good employer;
- Overall positive image as good corporate citizen;
- Operation in the watershed;
- Willingness to participate with Conservation Halton on a longer-term basis; and
- Willingness to become involved in other projects.

Just as Conservation Halton will scrutinize potential partners and sponsors using these criteria, so, too, will the potential sponsor evaluate Conservation Halton. Accordingly, it is imperative to maintain a positive brand and identity throughout the watershed and beyond.

### 5.5.3 Next Steps

The implementation of the development plan for Mount Nemo Conservation Area will not be undertaken in isolation from other Conservation Halton projects. On the contrary, Conservation Halton will have several major development projects underway simultaneously over the next decade. Each of these has capital elements (although, as noted, in Mount Nemo Conservation Area these are relatively small compared to costs in other conservation areas) and operating support possibilities. In approaching potential sources of support, it will be important to adopt a consistent and coordinated approach to the market.

Accordingly, after the development plans for all of the conservation areas subject to this master planning process have been approved, a specific fundraising plan should be designed to assess the amount of funding that could be raised (capital and operating) and the most appropriate approach to be taken to potential sponsors (matching the nature of the projects requiring support to the needs of potential sponsors). As well, once this plan has been developed, Conservation Halton will likely need to retain assistance to manage the many activities that will be involved such as event organizing and sponsor contacts. This would be done in conjunction with the Conservation Halton Foundation.

The fund raising program must consider three key areas:

- Creation of an authority-wide **fundraising plan**, to coordinate all of the various fundraising initiatives, both capital and operating, that will need to occur. This effort must be coordinated – each conservation area cannot go out fundraising on its own – the overall effort needs to be managed properly because, in total, it will be a big 'ask.'
- A **pricing review**, again authority-wide, to look at the potential to increase prices and to raise additional revenues through more intelligent pricing, packaging, timing and membership, combinations. Similar reviews at other public offerings have shown that gross revenues can often be increased by 10% or more simply through differential pricing strategies.
- Creation of a **new business model** for Conservation Halton that examines different, and fairer, ways and means of generating revenues from municipal participants and other users.

Ongoing monitoring of the progress of the master plan implementation should be addressed through adoption of an annual reporting procedure that identifies key projects and tasks including existing initiatives, new initiatives and assessment of overall progress relative to established targets.

# Section Six: Sustainability Evaluation

Table 6-1 presents the evaluation structure used to assess the master plan (more information on this matrix can be found in the *Stage Two Report* (EDA 2010b)). Within each of the three domains of environment, social and economic, the evaluation methodology lists several specific criteria to consider.

***Table 6-1: Evaluation Criteria***

| Environmental |
|---|
| Avoidance of impacts and encroachment on very high and high priority protection areas (PPAs) |
| Avoidance of impacts on natural heritage functions such as spread of invasive species, trampling, loss of natural cover, habitat fragmentation, noise and increased imperviousness |
| Potential to restore or improve natural features and natural heritage systems, diversity and connectivity, |
| Achieve long-term ecological function and native biodiversity |
| Conformity to national, provincial, regional or local plans with respect to natural heritage objectives |
| **Social** |
| Accessibility – physical, visual, transportation, affordability |
| Provision of educational opportunities / facilities |
| Provision of outdoor recreational opportunities |
| Access to views, quiet spaces, contemplative areas |
| Conformity to provincial, regional & local recreational plans |
| **Economic** |
| Capital costs (cumulative over 10 year period) |
| Operating costs |
| Direct revenue generation potential |
| Sponsorship or partnership potential |
| Potential for positive economic impact upon the community |

## *6.1 Environmental Sustainability Evaluation*

This section provides an evaluation of the master plan and its ability to protect the natural heritage system for the long term. The evaluation of potential impacts integrates relevant policies of the *Species at Risk Act* (Government of Canada 2002), *Endangered Species Act* (Province of Ontario 2007), *Provincial Policy Statement* (Ministry of Municipal Affairs and Housing 2005), *Niagara Escarpment Plan* (Niagara Escarpment Commission 2005), *Regional Official Plan* (Regional Municipality of Halton 2006) and *City of Burlington Official Plan* (City of Burlington 2008). In line with the above documents, some of the items considered during the evaluation include the master plan's intention to:

- Protect natural features and areas for the long term;
- Maintain natural features and natural heritage systems (e.g. diversity and connectivity) and their long-term ecological function;
- Restore the natural heritage systems, where necessary;
- Not propose any development or site alteration in significant habitats (e.g. PSW, etc.);
- Maximize the overall benefit to the natural features or their ecological functions (e.g. woodlands, significant wildlife habitat; ANSIs and ESAs);
- Ensure that proposed development and site alteration on adjacent lands does not impact significant natural heritage features;

The summary of the impact evaluation is provided in Table 4-1 in the *Inventory and Analysis: Stage One Report* (EDA 2010a).

### 6.1.1 Avoidance of Impacts and Encroachment in Natural Reserve Zone

The existing infrastructure of Mount Nemo Conservation Area occurs within areas designated as Development Zone. The front gate and parking lot are within the Access Zone due to the existing floodplain that overlaps this part of the conservation area. Other infrastructure, including trails, scenic lookouts and signage occur within Natural Reserve Zone, Natural Zone and the Resource Management Zone and are at times immediately adjacent to or within the Special Protection in the Natural Reserve Zone which are associated with the Escarpment slope. The expansion of the parking lot in proximity to the current parking lot will occur within the Development Zone but will be designed in a way to not remove the floodplain function of this area. Other development being considered is minimal and will serve to improve trail conditions, reduce unauthorized trail use and establish signage in areas of more sensitive natural features. Climbing impacts to the rare escarpment vegetation communities, ancient Eastern White Cedars, which are all considered within the Natural Reserve Zone, is a concern in the conservation area. Conservation Halton is developing a climbing management plan and will take other measures to improve sustainability of the activity in the area. The expansion of the parking lot for buses, addition of day-use facilities, picnic shelter, new toilets and upgrading of the main trail will have a minimal impact on Natural Reserve Zone.

### 6.1.2 Avoidance of Impacts on Natural Heritage Functions

The plan to decommission unauthorized trails, delineate trails, remove trails in areas of higher sensitivity and upgrade existing trails to prevent ponding and braiding will assist in protecting the natural features of the conservation area. In addition, the higher standard for amenities and services (e.g. trail maintenance) will help reduce localized impacts from visitor use. These proactive steps should help curtail the spread of invasive species, trampling and loss of natural cover. Strategic trail closure will reduce the impact of visitors in the more sensitive areas. Hard surfaces (e.g. parking) will be of pervious material and, therefore, will not affect infiltration.

Additional day use facilities, an expanded parking lot and picnic area are likely to minimally increase the number and duration of visitors using the conservation area. This, in combination with improved trail maintenance and positioning of trails away from sensitive features will reduce the impact of additional visitors. The restoration of the quarry will provide some improvement of habitat in the conservation area.

### 6.1.3 Potential to Restore or Improve Natural Features

The primary focus of restoration at Mount Nemo Conservation Area in current and proposed restoration areas is expanding forest cover, as this would have the greatest potential for improving the function of existing habitat in the immediate area and help add to interior forest space in the southern portion of the Bronte Creek watershed.

The limited habitat restoration that is proposed will be directed towards improving habitat in key areas for targeted species, improving interior forest conditions, advancing the natural succession of plantation forests and curtailing the spread of invasive species. The implementation of these restoration plans will improve natural features for the long-term. Restoration being planned will help to expand cover but will not increase the conservation area's connectivity with other natural features.

Subject to the acquisition of additional lands, some improvement to the extent of natural features is likely. Most features in the immediate area are to some degree connected. Therefore, the additional land acquisition is likely to have only a minimal improvement on the natural heritage system and its connectivity with other features.

Existing ecological linkages and linkage enhancement opportunities lie to the east of the conservation area, north of No. 4 Sideroad. Mount Nemo Conservation Area, including Mount Nemo Escarpment Woods ESA, is closely linked to the Nelson Escarpment Woods ESA to the south and is linked, via Mount Nemo Creek and agricultural fields, to Bronte Creek Valley ESA to the east.

### 6.1.4 Achieve Long-term Ecological Function and Native Biodiversity

The Mount Nemo Conservation Area and its immediately adjacent contiguous communities are made up of 48 vegetation types (EDA 2010a). The most common types are various dry to moist, deciduous forest communities associated with the lands to the west of the escarpment. Cultural meadows, cultural woodlands and treed talus slope communities are also relatively common in Mount Nemo Conservation Area. However, the majority of talus habitat is privately owned. Less common vegetation communities include wetland, crevice and cave communities.

Three ELC communities in the conservation area are considered *Very Rare* (G2) *to Uncommon* (G3) globally, as well as provincially rare (S3) (Table 3-3 and Figure 3-7 in EDA 2010a). An additional four vegetation communities documented in the conservation area are considered provincially *Critically Imperiled* (S1), *Imperiled* (S2) or *Rare* (S3) (Table 3-4 and Figure 3-7 in EDA Collaborative 2010a).

The protection and restoration of sensitive communities and species, and maintaining corridor connections are paramount concerns in this master plan. As a result, the long-term ecological function and native biodiversity is protected. To prevent impacts to adjacent areas, some specific management criteria, monitoring and mitigation will be required.

### 6.1.5 Conformity to National, Provincial, Regional and Local Plans

An adaptive management plan for climbing routes, which will protect natural features identified in the Natural Reserve Zone, is to be developed to ensure this master plan conforms to provincial plans, (i.e. *Provincial Policy Statement* – protection of ecological function and biodiversity for the long term). Regional plans, and the of the Niagara Escarpment Plan (2005)

## 6.2 Social Sustainability Evaluation

### 6.2.1 Accessibility

The master plan offers improved physical access insofar as the trails, roads and parking areas are improved and many features made accessible to people with disabilities. It also improves physical access by enlarging the parking lots and picnic area. It will also make interpretation more available to people whose first language is not English.

### 6.2.2 Education Opportunities

The master plan offers opportunities for natural and cultural heritage education and interpretation, whether informal (potentially web-based), through schools or universities or through programs offered by Conservation Halton. The interpretive pavilion will expand Conservation Halton's ability to offer organized tours for school and other groups at this conservation area.

### 6.2.3 Recreation Opportunities

Recreation opportunities will be almost the same as what currently exists at the conservation area; however, enhanced Visitor Impact Management will allow the area to accommodate an increase in visitors. There will also be an added 2.2 kilometres of trail.

### 6.2.4 Open Space Functions

The master plan fulfills open space functions and provides visual relief from the urban landscape. It also offers access to quiet spaces and views.

### 6.2.5 Conformance with Policy

Conservation Halton Strategic Plan 2009-2013

The master plan conforms to the *Conservation Halton Strategic Plan 2009-2013* to a greater degree than the area is able to currently. A summary of the relevant themes and objectives from the *Strategic Plan* is provided below.

> ***Parks***
>
> *Build awareness of Conservation Halton parks as regional destinations*
>
> *Promote healthy lifestyles by providing access to green spaces for quality year round recreation experiences;*
>
> *Significantly enhance the amenities at Conservation Halton's parks to ensure an enjoyable experience for visitors;*
>
> *Demonstrate leadership in environmental management of Conservation Halton properties.*
>
> ***Education***
>
> *Deliver innovative and curriculum linked experiential education programs;*
>
> *Offer outdoor education and interpretive programs that promote lifelong learning experiences;*
>
> *Deliver strong community stewardship programs to promote watershed health;*
>
> *Create awareness of climate change and water conservation within the watershed community and encourage social change among watershed residents.*

***Community***

*Offer a variety of volunteer and community engagement opportunities to enhance the natural environment in the watershed.*

***Governance***

*Provide quality full-time, seasonal and part-time employment to enhance economic activity in the watershed.*

Over and above ample recreational opportunities, the *Master Plan for Mount Nemo Conservation Area* includes interpretive, educational and volunteer opportunities that will help Conservation Halton reach and achieve the above objectives. Moreover, the LEED and SITES standards as well as the Visitor Impact Management program demonstrate leadership in environmental management.

Niagara Escarpment Parks and Open Space System (NEPOSS)

The objectives of the Niagara Escarpment Parks and Open Space System are:

*To protect unique ecological and historical areas;*

*To provide adequate opportunities for outdoor education and recreation;*

*To provide for adequate public access to the Niagara Escarpment;*

*To complete a public system of major parks and open space through additional land acquisition and park and open space planning;*

*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 *Master Plan for Mount Nemo Conservation Area* fulfills the objectives of the NEPOSS in preserving valuable ecological resources and providing adequate public access to them and the unique recreational opportunities they afford. The aim of the Visitor Impact Management plan and other management, restoration and monitoring programs recommended in this master plan is to protect and enhance the natural environment. All of Conservation Halton's six conservation areas contribute greatly to the public system of major parks and open space and to other NEPOSS objectives, especially with the commitment to bringing an enhanced level of services to visitors to all parks and by having consistent signage promoting the Niagara Escarpment as a precious natural heritage resource.

Halton Region Official Plan

In the regional context, the *Regional Official Plan* (2006) Part 4 - Healthy Communities: Cultural and Recreational Services includes the following:

*161. The objective of the Region is to support the provision of a diverse range of accessible cultural and recreational facilities and services.*

*162. It is the policy of the Region to:*

> *162(2) Encourage the coordination of recreational services in Halton between the Conservation Authorities and Local Municipalities to avoid duplication and to increase diversity in programming.*

The master plan meets the criteria, as unique recreational opportunities, in a pristine natural environment, are made available as well as more picnic facilities. While Mount Nemo Conservation Area is appreciated for its climbing opportunities, Conservation Halton is committed to providing climbing opportunities in a sustainable manner.

City of Burlington Official Plan

This master plan contributes to the *City of Burlington Official Plan* objectives as cited below:

> *a) To recognize parks and open space lands as valuable resources to the community that play an important role in defining the character and lifestyle of the City's residents.*
>
> *b) To ensure an adequate and equitable supply of parks and open space, and the full range of leisure opportunities are available throughout the City.*
>
> *c) To encourage the joint use of parks and other recreation and leisure facilities with other agencies such as the school boards, Conservation Halton and Halton Region*
>
> *Section 6.3 Major Parks and Open Space Designations (1994)*

Conservation Halton is uniquely positioned to offer recreation experiences in a natural environment.

In summary, the plan offers many social and cultural benefits to the community as well as being strongly geared towards environmental protection.

## *6.3 Economic Sustainability Evaluation*

### 6.3.1 Capital Costs

Over the 10-year development period for Mount Nemo Conservation Area, total development costs are estimated to be approximately $4 million - a fairly small amount compared to other projects Conservation Halton will have in the development stages. Given the small but iconic status of Mount Nemo Conservation Area within the overall portfolio of conservation areas within Conservation Halton's purview, the investment would appear to be worthwhile from the perspective of Conservation Halton overall. Moreover, as has been pointed out, relative to the capitalized value of the conservation area as a generator of economic and ecosystem benefits, this proportionately represents quite a small investment with significant payback potential.

### 6.3.2 Operating Costs

At present, Mount Nemo Conservation Area is a net cost to the overall Conservation Halton operation; the analysis presented here shows that the 2010 budget estimate was for the operation of the conservation area to cost approximately $35,000. Under the normal budget circumstances envisaged in this report, this deficit will continue.

### 6.3.3 Direct Revenue Generation Potential

There is significant potential for Mount Nemo Conservation Area to generate direct revenues. Attendance will increase significantly as a result of three factors: natural population growth within the area; increased amenities and services within the conservation area to attract users; and a significantly enhanced and focused marketing orientation. This significantly increased visitation, with a higher

admission fee reflecting the enhanced amenities and services, has the potential to generate greatly enhanced revenues.

### 6.3.4 Sponsorship or Partnership Potential

Mount Nemo Conservation Area is one of the more visible and known assets in the Conservation Halton portfolio. This iconic status should be a key asset in developing corporate, foundation and individual sponsorship and support for both the capital and operating costs of this project. On the capital side, unfortunately most development projects are not large enough or visible enough to draw large amounts of support. It is possible that some of the smaller discrete projects – such as the quarry restoration – could have the potential to attract support on a smaller scale. On the operating side, it should be different, and there may be reasonable levels of support for some of the programs and special activities that will be now possible at the site. (See Section 5.5 for a more in-depth discussion of fundraising considerations.)

### 6.3.5 Potential for Positive Economic Impact upon the Community

There can be no doubt that insofar as Mount Nemo Conservation Area will attract and serve even more visitors than it has in the past, and that these additional visitors will all spend time and money in the area; it will help Conservation Halton overall become an even more powerful economic engine in the community and region.

# Section Seven: Recommendations and Implementation

## *7.1 Infrastructure Development*

Conservation Halton will endeavour to complete the following works at Mount Nemo Conservation Area in the following phased and orderly manner as funds permit. Certain variances may occur due to funding availability or changed circumstances.

It is recommended that all the upgrades necessary to bring Mount Nemo Conservation Area up to the enhanced base level of services and amenities called for by this master plan (see Section 3.2 above for further details) be done in the first three years of the 10-year development program. These upgrades, meant to help Conservation Halton develop a standard of excellence within their conservation area system, include entrance and directional signage, trail upgrades and delineation and site furnishings.

It is especially necessary for Conservation Halton to complete the trail management improvements in preparation for welcoming larger numbers of visitors. In the mid-term phase of the project, the larger infrastructure items should be constructed or installed. The final phase will incorporate items that are not a high priority.

***Table 7-1: Short, Mid and Long Term Capital Costs***

| Short Term<br>Years 1 through 3 | Mid Term<br>Years 4 through 6 | Long Term<br>Years 7 through 10 | Total |
|---|---|---|---|
| Main entrance and directional signage<br>Trails directional signage<br>Trailheads<br>Road and parking upgrades with bioswales and trees<br>Upgraded toilets<br>Automated gate<br>Decommissioned, fenced or delineated, and upgraded trails<br>Quarry restoration<br>Interpretive Pavilion<br>Visitor Impact Management Program* | Overflow parking<br>Access trail to overflow parking (priced as road)<br>Open picnic shelter<br>Site furnishings<br>New gatehouse<br>Accessibility upgrades<br>Site services<br>Interpretive signage with language outreach upgrades<br>Brock Harris Lookout Improvements<br>Visitor Impact Management Program* | New trail in plantation<br>Visitor Impact Management Program* | |
| $3,594,164 | $606,125 | $1,735,500 | $5,938,789 |

* The Visitors Impact Management Plan has allotted $60,000 per year to be divided between the four parks based on need. For budgeting purposes $15,000 has been allotted for each park per year.

For detailed costing over the 10-year development program, see Table 5-2 in Appendix II.

## 7.2 Critical Path

In order to implement this master plan, Conservation Halton will need to undertake the following:

- Review and revise the Visitor Impact Management plan including appropriate recreation management plans for activities including, hiking and climbing; involve the public in this process. The climbing management plan is too completed and made available in Fall 2014.
- Set standards for VIM indicators, form an action committee, recruit volunteers and hire a VIM coordinator;
- Begin monitoring visitor impacts, carry out necessary management actions and periodically review carrying capacity guidelines;
- Finish writing all resource management plans such as for forestry and invasive species and then ensure operations are brought into conformance with them;
- Develop design guidelines for facilities and site furnishings;
- Develop an interpretive program, identifying specific topics and places to install signage;
- Develop a marketing and tourism promotion plan;
- Develop a fundraising plan and hire a fundraising advisor; and
- Define strategies and priorities for use of such funds as can be obtained.

## 7.3 Plan Approvals and Review

Following approval of this master plan, certain additional approvals will need to be obtained from the appropriate agencies as shown in Table 7-2, (**X** indicating approval and or review and an x indicating approval if within a Conservation Halton regulated area) including NEC Development Permit, Burlington Building Permit, Burlington Site Plan Approval or Site Alteration Permit and Conservation Halton Internal Review.

Certain works are automatically exempt from the requirement of obtaining a Development Permit under Ontario Regulation 828/90 including maintenance of lands, buildings structures, maintenance, renewals, or repair of septic systems connected to public utilities, tree plantings and trail development on Conservation Halton lands  The master plan components that are exempted from the development permit process are set out in the "Master Plan Approval Only" column of Table 7-2.

Typical development components such as buildings, roads and picnic shelters *may be exempt from requiring a NEC Development Permit* if the requirement under section 41 of Ontario 829/90 is met.

> Section 41 of Ontario Regulation 828/90 states that development permits in Parks and Open Space Systems are exempted if:
>
> > *"The construction of buildings, structures, facilities and related undertakings identified in a Parks and Open Space Plan as defined in the Niagara Escarpment Plan for a park or open space area listed in Appendix 1 of the Niagara Escarpment Plan if: (i) The plan has been approved by the Niagara Escarpment Commission and Ministry of Natural Resources under Part 3 of the Niagara Escarpment Plan after coming into force of Regulation 423/13 (Note: Regulation came into force on January 1, 2013); (ii) The plan has specifically identified and detailed*

*the buildings, structures, facilities and related undertakings that are to be exempted under this section. (iii) The construction and installation of buildings, structures and facilities and related undertakings occurs within 5 years of the approval of the master plan under subparagraph i."*

Proposed water distribution works and sewage disposal or treatment works will also require approval under the *Ontario Water Resources Act* as administered under the Ministry of the Environment (MOE) and through which additional public input will be available.

Depending on the location and component of the master plan, a permit for activities with conditions to achieve overall benefit to species at risk may be needed from the MNR. Under Ontario Regulation 230/08 of the *Endangered Species Act*, 2007 (ESA), habitat protection is granted under subsection 10(1)(a) for Threatened and Endangered species.

Any works proposed in areas regulated by Conservation Halton under Ontario Regulation 162/06 will be reviewed by appropriate Watershed Management Division staff through the internal review process.

***Table 7-2: Plan Approvals and Review***

### 7.3.1 Phase One

| Master Plan Component | Master Plan Approval Only | NEC Dev. Permit | Burlington Bldg. Permit | Burlington Site Plan Approval or Site Alteration Permit | CH Watershed Internal Review Process |
|---|---|---|---|---|---|
| Main entrance and directional signage | X | | | | |
| Trails directional signage | X | | | | |
| Interpretive pavilion | X | | X | X | X |
| Road and parking upgrades with bioswales and trees | | X | | X | X |
| Upgraded toilets | X | | | | X |
| Automated gate | X | | | | |
| Decommissioned, fenced or delineated, and upgraded trails | X | | | | X |
| Quarry restoration & interpretive node | X | X | | | X |
| Other restoration | X | | | | X |

### 7.3.2 Phase Two

| Master Plan Component | Master Plan Approval Only | NEC Dev. Permit | Burlington Bldg. Permit | Burlington Site Plan Approval or Site Alteration Permit | CH Watershed Internal Review Process |
|---|---|---|---|---|---|
| Overflow parking | X | X | | X | x |

| | | | | | |
|---|---|---|---|---|---|
| Open picnic shelter | | | X | X | x |
| Site furnishings | X | | | | |
| New gatehouse | | X | X | X | x |
| Accessibility upgrades | X | | | | x |
| Site services | | X | X | X | x |
| Interpretive signage with language outreach upgrades | X | | | | |
| Brock Harris Lookout Improvements | X | X | | | X |

### 7.3.3 Phase Three

| Master Plan Component | Master Plan Approval Only | NEC Dev. Permit | Burlington Bldg. Permit | Burlington Site Plan Approval or Site Alteration Permit | CH Watershed Internal Review Process |
|---|---|---|---|---|---|
| New trails | X | | | | X |

## *7.4 Plan Review and Amendment*

This master plan shall be the prevailing policy document for the planning and development of Mount Nemo Conservation area for the next ten years from signed approval. Periodic review may be undertaken as required with amendments processed under the following means:

- A major amendment would involve any change that would represent a marked departure from the plan's original intent and direction. Such changes could have significant impacts on the conservation area's environment, affect users of adjacent lands or result in significant public reaction. Major amendments will require an application to the Ontario Ministry of Natural Resources with full public consultation
- A minor amendment would involve administrative or housekeeping changes that would not alter the plan's intent, affect the conservation area's objectives or its ability to meet those objectives, or have any significant impacts on the conservation area's environment. Any minor amendments will be processed simply as a Development Permit under the *Niagara Escarpment Plan (2005)*.

## *7.5 Niagara Escarpment Development Control*

Subject to prior consultation with the Niagara Escarpment Commission, the following development may be exempted from requiring a Niagara Escarpment Commission Development Permit upon approval of this Master Plan provided that the Niagara Escarpment Commission is satisfied that the developments are in accordance with Section 5.41 of Ontario Regulation 828/90:

- **Interpretive Pavilion** – 150sq meters; To be an open air pavilion and used as a gathering space, rest area and information hub. The pavilion will be AODA compliant.

- **Picnic Shelter** – 150sq meters; an open picnic shelter to be available for group rentals
- **Gatehouse;** New 50sq meters gatehouse with associated landscaping and services. The gatehouse is to be relocated to better facilitate movement of traffic and allow for a two lane entrance into the park. This new gatehouse will require the removal of existing gatehouse. Gatehouse to have septic, hydro and water, an accessible washroom will be located in the gatehouse.
- **Automatic gate**; This gate will be located adjacent to the new gatehouse, which will allow pass holders to swipe and enter the park.
- **Access Road;** Improve and expand 1200square meters existing access road. The road will be re-graded, compacted and resurfaced.
- **Exit Road;** Improve 900 square meters exit road. The road will be re-graded, compacted and resurfaced
- **Existing Parking Lot**; Improve and expand 3500 sq. meters (130 car) existing car parking lot. Re-grade, compact and resurface parking lot, expand the lot by adding 20 additional spots.
- **Existing Overflow Parking;** Improve existing 1800sq meters (50 car) overflow parking area. Update parking area by adding grass paver system
- **New Overflow Parking and Access Road;** Add 1800sq meters overflow parking lot for 50 cars. The new overflow parking lot will be constructed with a grass paver system. Add 1800sq meter granular access road from the existing parking lot to new overflow parking lot.
- **Toilet:** Upgrade one standard vault toilet

ACRONYMS

| | |
|---|---|
| ESA | Environmentally Sensitive Area |
| MNR | Ontario Ministry of Natural Resources |
| NEC | Niagara Escarpment Commission |
| NEP | Niagara Escarpment Plan |
| NEPOSS | Niagara Escarpment Parks and Open Space System |

## Glossary of Terms

**Adjacent Lands:** Those lands bordering Mount Nemo Conservation Area.

**Area of Natural and Scientific Interest (ANSI):** Areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.

**Bruce Trail Corridor:** The Bruce Trail Conservancy is committed to establish a public footpath along the Niagara Escarpment in order to protect its natural ecosystems and to promote environmentally responsible public access to this UNESCO World Biosphere Reserve. The corridor includes Main and Side Bruce Trails as well as the optimum route.

**Conservation Halton:** In 1956, the Sixteen Mile Creek Conservation Authority was formed followed by the formation of the Twelve Mile Creek Conservation Authority in 1957. In 1963, these conservation authorities amalgamated to form the Halton Region Conservation Authority [now, Conservation Halton]. The concept of conservation authorities was developed at a conference in Guelph, Ontario in the early 1940's. At that time, it was noted that extensive quarrying was taking place in escarpment areas and there was a risk of losing many significant natural sites. In fact, it was a quarry operation at Mount Nemo in 1958 that contributed to the formation of the Twelve Mile Creek Conservation Authority, which acquired 88 acres at Mount Nemo as their first action.

**Development:** As it pertains to the *Planning Act*, *Provincial Policy Statement*, *Greenbelt Plan* and *Conservation Halton Land Use Planning Policies* (Section 4) is defined as the creation of a new lot; a change in land use; or the construction of buildings and structures, requiring approval under the *Planning Act,* but does not include: (a) activities that create or maintain infrastructure authorized under an environmental assessment process; (b) works subject to the Drainage Act.

**Development:** As it pertains to the *Conservation Authorities Act,* is defined as:

- the construction, reconstruction, erection or placing of a building or structure of any kind,
- any change to a building or structure that would have the effect of altering the use or potential use of the building or structure, increasing the size of the building or structure or increasing the number of dwelling units in the building or structure,
- site grading, or
- the temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere.
- the temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere.

**Ecological Function:** The natural processes, products or services that living and non-living environments provide or perform within or between species, ecosystems and landscapes. These may include hydrological, biological, physical, chemical and socio-economic interactions.

**Ecological Land Classification (ELC):** The Ontario Ministry of Natural Resources defines ecological units based on bedrock, climate (temperature, precipitation), physiography (soils, slope, aspect) and corresponding vegetation, creating an Ecological Land Classification (ELC) system. This classification of the landscape enables planners and ecologists to organize ecological information into logical integrated units to enable landscape planning and monitoring.

**Endangered Species Act:** A provincial Act with three distinct purposes including: to identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge; protect species that are at risk and their habitats, and to promote the recovery of species that are at risk; and to promote stewardship activities to assist in the protection and recovery of species that are at risk in Ontario.

**Endangered Species:** Species listed or categorized as an "Endangered Species" on the Ontario Ministry of Natural Resources' official species at risk list or on the COSEWIC list of endangered species, as updated and amended periodically.

**Hydrologic Function:** The functions of the hydrological cycle that include the occurrence, circulation, distribution and chemical and physical properties of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere, and water's interaction with the environment including its relation to living things.

**Natural Heritage Features and Areas:** These features and areas, including significant wetlands, significant coastal wetlands, fish habitat, significant woodlands, significant valleylands, significant habitat of endangered species and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscape of the area.

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

**Negative impacts:** In regard to natural heritage features and areas, degradation that threatens the health and integrity of the natural features or ecological functions for which and areas is identified due to single, multiple or successive development or site alteration activities.

**NEPOSS:** The Niagara Escarpment Parks and Open Space System is a linear system of over 130 parks and open spaces owned / managed by public agencies or conservation authorities. The System is based on public lands acquired to protect significant areas and features along the Niagara Escarpment, the majority of which are linked by the Bruce Trail. Park managers are required to develop management / master plans that are not in conflict with the objectives and policies of the NEP.

**Niagara Escarpment Commission (NEC):** An agency of Ontario's Ministry of Natural Resources, the NEC works to preserve the Niagara Escarpment as a continuous natural landscape and a vital corridor of green space through south-central Ontario.

**Ontario Ministry of Natural Resources (MNR)**: This Ministry manages and protects Ontario's natural resources for wise use across the province, contributing to the environmental, social and economic well-being of Ontario.

**Provincially Significant Wetlands (PSW):** Provincially Significant Wetlands are wetlands that, in the opinion of the Ontario Ministry of Natural Resources contain habitats of critical importance to fish or wildlife, have a significant hydrologic role in the watershed in which they exist, provide significant social or economic benefits and have unique or provincially significant features. Development is not permitted in Provincially Significant Wetlands.

**Species at Risk (SAR):** A federal Act for the purposes of preventing wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened.

**Threatened Species:** As defined by the Ontario Ministry of Natural Resources, a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

**Visitor Impact Management (VIM):** This tool covers a range of processes and techniques for managing visitors, their activities and their impacts, in a specific area. It is a key aspect of tourism management by both private and public organizations, especially in natural areas with special values that need protection.

**Watershed:** An area that is drained by a watercourse and its tributaries.

**Wetland:** As defined in the Provincial Policy Statement (2005) are lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs and fens.

**Wildlife:** All wild mammals, birds, reptiles, amphibians, fish, invertebrates, plants, fungi, algae, bacteria and other wild organisms.

**Wildlife Habitat:** Areas where plants, animals and other organisms live, and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas important to migratory or non-migratory

**Woodlands:** Treed areas that provide environmental and economic benefits to both private landowners and the public, such as erosion protection, hydrological and nutrient cycling, provision of clean air, provision of wildlife habitat, outdoor recreational opportunities and the sustainable harvest of a wide range of woodland products. These include treed areas, woodlots or forested areas and can vary in their level of significance at the local, regional and provincial levels.

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# *Master Plan for Mount Nemo Conservation Area*

## *Stage Three Report*
## *Appendix I:*
## *Natural Resource Management*

TCI Management Consultants
DILLON CONSULTING
EDA Collaborative Inc.

# Appendix I: Resource Management

## *Carrying Capacity Calculations*

- Understanding of **carrying capacity**
  - The term carrying capacity no longer refers to an absolute number or formula-based decision.
  - Rather, it refers to the desired experience and resource conditions that are to be sustained (limits of acceptable change).
  - By managing to stay within desired resource & social conditions, the area is being managed within the "carrying capacity."

- Emphasis is on protection and enhancement of the **natural environment** and the **visitor experience** as opposed to accommodation of unlimited numbers of visitors.
  - This is not a finite or absolute science – there are social values and judgments that enter into the equation;
  - Management actions and weather conditions also influence the ability of the facilities to accommodate visitors.

- **Method of Computation**
  - "People-at-one-time" carrying capacity (PAOT) for each activity such as:
    - Trails,
    - Picnicking,
    - Climbing areas;
  - Extrapolation to annual sustainable use based on traditional patterns of percentage of use in a particular period (peak season, shoulder season and off-season, for example).
  - Comparison with market projections:
  - The results:
    - Too many people / can't accommodate the numbers, whether due to environmental or social considerations – adjust downward;
    - Within acceptable limits or room to grow - no adjustment required.

- **On-going management and budgeting commitment**
  - Confirm and adopt Visitor Impact Management program;
  - Provide adequate operational budgeting to support VIM programs and ongoing monitoring and mitigation programs;
  - Continue to refine established indicators (see Visitor Impact Management Matrix)

***Adopting a recreational carrying capacity approach is not a one-off exercise, but requires a continuing commitment to monitoring and decision-making.***

## *Desired Conditions / Objectives*

**Trails**

*Management Considerations: Recent site inventory has revealed that some trails are currently in the level 1 priority protection areas. Conservation Halton will review these sections of trail during the trail upgrade process (years 1-3 of the plan) and will decide on a case-by-case basis whether to close or re-route these trails, or if delineation and signage are adequate measures. If any of these trails are designated Bruce Main or Side Trails, management options will be discussed with the Bruce Trail Conservancy.*

*Trail Upgrades*

This will include regrading, resurfacing, drainage control and potential re-routing of trails.

*Trail Delineation*

This will consist of natural materials such as rocks or logs lining the trail. In some cases, boardwalks or fences may be required.

*Interpretive Signage*

The intention is for signs to alert visitors to the presence of a natural heritage feature and explain why it is necessary to stay on the designated trail.

*These measures have shown to be very effective in garnering cooperation from park users (Marion and Reid 2007).*

## *People At One Time (PAOT) – Assumptions*

The following assumptions are applicable to the PAOT calculations that are summarized below:

**Trails: Number of people at one time per 1500 m of trail**

- All groups are assumed to be 2 people;
- If more people per group, time between encounters will be greater;
- Frequency of encounters depends on whether traffic is going two directions and from how many trailheads;
- Turnover is 2 times per day;
- A day is considered to be 6 hours, given 80 – 85% of usage is traditionally within this period.

*Single-track Trail*

- 5 groups per 1500 m of trail = 300 metres, or 3.6 minutes, between groups (if all are going one direction)

*Medium Service Nature Trail*

- 10 groups; assume they are going TWO directions and evenly spaced over the trail – there is still 300m or 3.6 minutes between groups

*High Capacity / Service Access Trail*

- 20 groups, 75 metres between groups
    - If going two directions as above – 150 m between encounters = 2 minutes.
    - If viewshed is assumed to be 100 m – at some moments, you won't see anybody.
    - Within earshot, 10 m
    - Again, larger groups would be more infrequent, if daily capacity remains the same.

**Picnicking**

Calculated for 54 peak days per year (weekends + one long weekend over 6-month peak season)

- *Tables or Grass* – (turnover 2 times a day)
    - Mount Nemo Conservation Area – current capacity, 10 people
- *Shelters* – assume capacity is 50 people (no turnover)

**Climbing**

- Average of 20 people per day;
- Absolute maximum capacity is 2 or 3 climbers per route.

## *Extrapolating to Get Peak-Day and Annual Sustainable Visitation Figures*

The site's "total at-one-time recreational capacity" figure will be the sum of the figures for each of the activities. Knowledge of visitors' length of stay at the site or the area (= turnover) will allow a calculation of the "peak day number." It is important to realise that this number is not scientifically reached and is only a starting point for the exercise.

From these "at-one-time capacity" and "peak day numbers," it is possible to derive a sustainable annual visitation rate by applying a percentage of the peak day capacity figure to different days of the year, depending on the known temporal distribution of tourism and recreational activity (see table below). Peak season was assumed to be 6 months for walking trails. Peak days are assumed to be 9 days per peak month (weekends, including one long weekend per month).

**Peak day rates are better than yearly figures to use for management decisions and may vary according to weather conditions.**

*Management Consideration: It is understood that there are a few days per year, up to five, when visitation is beyond the peak acceptable levels given here. Past practice has been to limit the number of people at one time based on parking capacity. These 'above-peak' days have not proved to cause a noticeable increase in damage to the facilities.*

The following table shows the method of calculation of annual sustainable use, distributed according to current attendance patterns. It is shown to illustrate how yearly sustainable levels were derived in the spreadsheet (*sample only*). It assumes that the peak day capacity for the trails is 100 people.

| **Months** | **Days** | **Estimate** | |
|---|---|---|---|
| (assume 12 months at 30 days each) | | **Percentage of calculated capacity** | **Total** |
| Peak Season<br>6 months | 54 weekend days in peak months (9 per month x 6 months = 54) | 100% = Peak Day (total of all trails)<br>**Sample figure 100** | 54 x 100 PAOT = 5400 |
| | 126 weekdays in peak months<br>(21 per month) | 60% | 126 x 60 = 7560 |
| Shoulder Season<br>3 months | 27 weekend days in shoulder season | 60% | 27 x 60 = 1620 |
| | 63 weekdays in shoulder season | 40% | 63 x 40 = 2520 |
| Off Season<br>3 months | 27 weekend days in off-season | 30% | 27 x 30 = 810 |
| | 63 weekdays in off-season | 10% | 63 x 10 = 630 |
| **Yearly Total** | | | **18,540** |

Summaries of calculations for this conservation area based on current and proposed facilities are provided below; spreadsheet follows.

PAOT = People at One Time

## 1. Current Facilities

**Trails: results of computations based on trail classifications - Peak Day 194; Annual Sustainable Use 35,968 (calculated using the percentage table shown above)**

Turnover for trail usage is assumed to be 2 times per day.

*Single-track Trails – Peak Acceptable Loading*

| # of groups | Total people per 1500 m | length of trail 2013 m | PAOT | Total peak day rounded |
|---|---|---|---|---|
| 5 | 10 | multiplier 1.34 | 13.4 | 27 |

*Explanation: If the comfortable carrying capacity for single-track trails is 5 groups of 2 people at one time per 1500 metres of trail (as in assumptions listed above) and Mount Nemo Conservation Area has 2013 metres of single-track trail, these trails can accommodate 13.4 people at one time. With an assumed turnover rate of twice a day, the Total Peak Day carrying capacity for these trails is 26.8 people.*

*Medium Service Nature Trails – Peak Acceptable Loading*

| # of groups | Total people per 1500 m | length of trail 3359 m | PAOT | Total peak day rounded |
|---|---|---|---|---|
| 10 | 20 | multiplier 2.24 | 44.8 | 90 |

*High Capacity / Service Access Trails – Peak Acceptable Loading*

| # of groups | Total people per 1500 m | length of trail 1434 m | PAOT | Total peak day rounded |
|---|---|---|---|---|
| 20 | 40 | multiplier 0.96 | 38.24 | 77 |

**Picnicking – Peak Day 20, Annual Sustainable Use 1080**

10 people at one time, turnover of 2 = 20 x 54 peak days = 1080

**Climbing – Peak Day 20, Annual Sustainable Use 3,708 (using percentage table shown as example in assumptions section above)**

20 people per day x 54 peak days

**Total of trails, picnicking and climbing = 40,756**

## *2. Proposed Facilities*

**Trails – Peak Day 260, Annual Sustainable Use 59,924**

*Add 50 and 16(from tables below) to the total shown for existing facilities (above).*

*Additional Medium Service Nature Trails*

| # of groups | Total people per 1500 m | length of trail 1900 m | PAOT | Total peak day rounded |
|---|---|---|---|---|
| 10 | 20 | multiplier 1.26 | 25.2 | 50 |

*Additional High Capacity Nature Trails*

| # of groups | Total people per 1500 m | length of trail 300 m | PAOT | Total peak day rounded |
|---|---|---|---|---|
| 20 | 40 | Multiplier .5 | 8 | 16 |

**Picnicking – Peak Day 90, Annual Sustainable Use 4,860**

Assume double current usage due to addition of picnic tables = 2,160

Add one picnic shelter; capacity 50 x 54 = 2,700

*Location of Picnic Shelter: ELC Mineral Cultural Woodland Ecosite, Development Zone, Priority Protection Level 3*

**Climbing – no change**

**Total of trails, picnicking and climbing = 56,772**

## Mount Nemo Conservation Area: Annual Carrying Capacity Extrapolation

| | Picnic Area | | | | Shelters | | |
|---|---|---|---|---|---|---|---|
| | PAOT | Turnover | Days | Total | PAOT | Days | Total |
| Current | 10.00 | 2.00 | 54.00 | **1,080.00** | | | **0.00** |
| Proposed | | | | **2,160.00** | 50.00 | 54.00 | **2,700.00** |

| Current Trails | | | Climbing | | |
|---|---|---|---|---|---|
| Days | PAOT | Total | Days | PAOT | Total |
| 54.00 | 194.00 | 10,476.00 | 54.00 | 20.00 | 1,080.00 |
| 126.00 | 116.40 | 14,666.40 | 126.00 | 12.00 | 1,512.00 |
| 27.00 | 116.40 | 3,142.80 | 27.00 | 12.00 | 324.00 |
| 63.00 | 77.60 | 4,888.80 | 63.00 | 8.00 | 504.00 |
| 27.00 | 58.20 | 1,571.40 | 27.00 | 6.00 | 162.00 |
| 63.00 | 19.40 | 1,222.20 | 63.00 | 2.00 | 126.00 |
| | | **35,967.60** | | | **3,708.00** |

| Proposed Trails | | |
|---|---|---|
| Days | PAOT | Total |
| 54.00 | 260.00 | 14,040.00 |
| 126.00 | 156.00 | 19,656.00 |
| 27.00 | 156.00 | 4,212.00 |
| 63.00 | 104.00 | 6,552.00 |
| 27.00 | 78.00 | 2,106.00 |
| 63.00 | 26.00 | 1,638.00 |
| | | **48,204.00** |

PAOT = People at One Time.
Please see the sample table, in the text,
to see other assumptions built into this table.

| Total | |
|---|---|
| **Current** | **40,756** |
| **Proposed** | **56,772** |

Table 3-1 Natural Heritage System Evaluation Matrix

| Category | Primary Evaluation Criteria | Secondary Evaluation Criteria | Rationale | Priority Level |
|---|---|---|---|---|
| Core Conservation Lands | Environmental Sensitive Areas | | Regional designation based on an area meeting several primary and secondary criteria which generally include relatively high native species richness, connections to natural system, diverse/rare plant and animal communities, relatively undisturbed, species at risk, earth science features, contribution to groundwater recharge/discharge/quality, surface water quality, scientific research and/or education. | **3** |
| | Area of Natural and Scientific Interest | Life Science | MNR designation for areas of land and water containing natural landscapes or features which have been identified as having values related to natural heritage protection, scientific study, or education. Development and site alteration shall not be permitted in significant areas of natural and scientific interest unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions (PPS 2005). | **3** |
| | | Earth Science | | **4** |
| | Provincially Significant Wetlands | | Historically, wetland coverage within the Great Lakes Basin exceeded 10% (Detenbeck et al. 1999). The number of wetlands remaining in the Southern Ontario Landscape has been reduced to allow for urban settlements, shoreline development and agriculture. Wetlands have been shown to reduce the amount of water flowing out of a watershed, reduce flooding, create higher base flows, and reduced occurrence of high flows (Hey and Wickencamp 1996). Development and site alteration shall not be permitted in significant wetlands (PPS 2005). | **1** |
| | | 30 m Buffer | | **2** |
| | | 31 – 120 m Buffer | | **4** |
| | Niagara Escarpment Planning Areas | Escarpment Natural Area | "Escarpment features which are in a relatively natural state and associated stream valleys, wetlands and forests which are relatively undisturbed are included within this designation. These contain important plant and animal habitats and geological features and cultural heritage features and are the most significant natural and scenic areas of the Escarpment. The policy aims to maintain these natural areas." (NEC 2009) | **3** |
| | | Escarpment Protection Area | "Escarpment Protection Areas are important because of their visual prominence and their environmental significance. They are often more visually prominent than Escarpment Natural Areas. Included in this designation are Escarpment features that have been significantly modified by land use activities such as agriculture or residential development, land needed to buffer prominent Escarpment Natural Areas, and natural areas of regional significance. The policy aims to maintain the remaining natural features and the open, rural landscape character of the Escarpment and lands in its vicinity." (NEC 2009) | **4** |
| | | Escarpment Rural Area | "Escarpment Rural Areas are an essential component of the Escarpment corridor, including portions of the Escarpment and lands in its vicinity. They provide a buffer to the more ecologically sensitive areas of the Escarpment." (NEC 2009) | **5** |
| Areas of Functional Ecological Importance | Forest Cover | Sensitive Deep Forest Interior (≥ 200 m) | Recognition of the Hilton Falls Conservation Area interior forest northwest of Sixteen Mile Creek. "The Halton Forest South includes a major portion of the largest continuous tract of forest and wetland along the Niagara Escarpment south of Grey County, one of the largest natural areas within 100 km of Toronto, and the largest natural area in Halton Region. This woodland corridor covers approximately 35 square km, providing refuge for a high diversity of species requiring large tracts of forest to maintain viable populations" (Riley, et at. 1996). | **1** |
| | | Deep Forest Interior (≥ 200 m) | Factors such as overall forest cover, patch size and shape (i.e. interior forest) all have a positive effect on the viability of habitat for flora and fauna. Overall forest cover appears to be the single most important factor in protecting bird species diversity but at the very large scale (160,000 ha), forest interior the amount of 200m forest in a patch was correlated with species richness. Forest cover is based on Ecological Land Classification. | **2** |
| | | Forest Interior (≥ 100 m) | | **3** |
| | | Fringe Forest (<100 m) | | **4** |
| | | Plantation | | **4** |
| | Hedgerows | | Hedgerows can provide corridor function for a variety of wildlife species and can help maintain overall biodiversity in the landscape. Species within hedgerows tend to be less sensitive to disturbance as more sensitive species have likely been extirpated due to previous disturbances (e.g. agriculture). | **4** |
| | Regenerating Habitat (Habitat Restoration) | | Similar to forest ecosystems, non-forest habitat cover (e.g. meadow), patch size and shape all have a positive affect on the viability of flora and fauna. Patch size and interior space has been maximized, where possible. | **4** |
| | Watercourse | | Maintenance or rehabilitation of natural watercourse abiotic and biotic conditions including thermal regime and cover are important factor which influences a variety of attributes including dissolved oxygen concentrations, photosynthesis, metabolic rates of aquatic organisms, timing of life-history stages, and the decomposition rates of organic material. These influences in turn, affect ecosystem components such as algal, invertebrate, and fish communities. | **2** |
| | | 15 m Buffer | | **3** |
| | Fish Community Class | Coldwater and potential ~~coolwater~~ / Redside Dace (30 m from | Fish habitat is comprised of those physical, chemical and biological attributes of the environment, which are required by fish to carry out their life processes (e.g.,spawning, nursery, rearing, feeding, overwintering, migration). It consists of those environments that directly or indirectly support fish communities. These guidelines can be applied to habitat, which may not directly support fish, but may provide | **1** |

| Category | Primary Evaluation Criteria | Secondary Evaluation Criteria | Rationale | Priority Level |
|---|---|---|---|---|
| Areas of Functional Ecological Importance | | meanderbelt, if not mapped 30 m from watercourse) | nutrients and/or food supply to adjacent or downstream habitats and may contribute to increased water quality for fish. Changes to riparian vegetation can alter watercourse temperatures, reduce stability of stream banks and decrease overhead cover and refugia for fish. A vegetate buffer adjacent to a watercourse can also assist in the removal of sediment, pesticides and other deleterious substances which degrade water quality and fish habitat. Fish require appropriate fish habitat to carry out their life processes and the provision of adequate vegetated buffers is essential to the maintenance and enhancement of fish habitat. With the exception of the Redside Dace setbacks (*draft* Redside Dace Recovery Strategy 2009) the remaining setbacks are from Ontario Regulation 162/06. | |
| | | Potential coolwater and warmwater sportfish (30 m from watercourse) | | **2** |
| | | Warmwater forage fish (15 m from watercourse) | | **4** |
| | Drinking Water Source Protection – Municipal Wellhead Protection Area | 100 m radius | A wellhead is simply the physical structure of the well above the ground. A wellhead protection area is a surface projection of the zone surrounding the wellhead through which groundwater is reasonably likely to travel to the well. The various capture zones that make up a wellhead protection area are based on how long it takes water to reach the well. The amount of land involved in a wellhead protection area is determined by a variety of factors such as the amount of water being pumped and the type of soil/rock through which the water moves. Well capture zones differentiate the potential risks to water quality from contaminants that could move with groundwater to the well.<br>-100-metre radius: The area where the risk to the well is highest and the greatest care should be taken in handling any potential contaminant.<br>-100 m to 2-year time of travel: Bacteria and viruses from human and animal waste are a concern, as are hazardous chemicals.<br>-2 to 5-year time of travel: Chemical pollutants are the primary concern, however, microbiological risks may still be a concern.<br>-5 to 25-year time of travel: The most persistent and hazardous contaminants remain a concern. | **1** |
| | | 100 m to 2-year time of travel | | **2** |
| | | 2 to 5-year time of travel | | **3** |
| | | 25-year time of travel | | **4** |
| | Rare Vegetation Community | G1 - G3 and S1 - S3 | Globally and provincially rare vegetation communities may arise as a result of rare growing conditions including, soil attributes (nutrients), water availability, and sun exposure. Or, more commonly in urbanized environments, rare vegetation communities arise as a result of being one of the few remaining examples of a once more common community. | **1** |
| | Species at Risk | | Species at risk and habitat for endangered and threatened species are protected by the Federal Species at Risk Act (birds and fish) and Provincial Endangered Species Act (2007). | **1** (See Table 4-1) |
| | | Critical Function and Protection Zone | Legislation mandates that species at risk habitat be protected. To protect it for the long-term, critical areas based on life process must be identified and protected from degradation. See species specific Table 5-1. | |
| | Globally and Provincially Rare Species | G1 - G3 and S1 - S3 | Similar to species at risk, species considered globally rare should be protected to maintain current biodiversity. | **1** (See Table 4-1) |
| | | Critical Function and Protection Zone | | |
| | Halton Region Rare Species | | Similar to species at risk, species considered rare at the regional level should be protected to maintain current biodiversity. | **2** (See Table 4-1) |
| | | Critical Function and Protection Zone | See species specific Table 5-1. | |
| | Non-Provincially Significant Wetlands | | The preservation of all wetlands help preserve native plant and animal species, wildlife habitat, ecological process, maintenance of biological diversity and erosion and flood control. | **2** |
| | | Wetlands > 2ha 30 m Buffer | Wetlands that are greater than or equal to two hectares in size and not Provincially Significant are regulated 120 metres from the limit of the wetland. (Policy 3.38, Ontario Regulation 162/06). Wetlands less than two hectares in size and not Provincially Significant are regulated 30 metres from the limit of the wetland (Policy 3.39, Ontario Regulation 162/06). | **2** |
| | | Wetlands > 2 ha 31 – 120 m Buffer | | **4** |
| | | Wetlands < 2ha 15 m Buffer | | **2** |
| | | Wetlands < 2 ha 16 – 30 m Buffer | | **4** |
| | Vernal Pools | | Vernal pools provide critical habitat for a variety of species, most notably amphibians during the breeding season. Many amphibian species have evolved to be obligate, or near obligate, vernal pool species and are therefore necessary to maintain existing populations. | **1** |
| | | Critical Function Zone 30 m Buffer | Adjacent uplands (0-30m) provide important foraging habitat for amphibian species as well as providing important water quality functions. Natural habitat that is located further from vernal pools can be particularly important to the maintenance of functions and species populations that are more terrestrial during their adult stage. | **2** |
| | Seeps | | Seeps provide base flows to streams and help in the regulation of coldwater / coolwater thermal designations. Development and site | **1** |

| Category | Primary Evaluation Criteria | Secondary Evaluation Criteria | Rationale | Priority Level |
|---|---|---|---|---|
| Areas of Functional Ecological Importance | | 30 m Buffer | alteration shall be restricted in or near sensitive surface water features such that these features and their related hydrologic functions will be protected, improved or restored (PPS 2005). | **3** |
| | Bat Hibernacula | | Banding studies have confirmed that bats normally show high fidelity to specific hibernation sites over the years. Bats are particularly sensitive to disturbance during hibernation, and their ability to survive through winter is often jeopardized if disturbed (Stebbings 1969, OMNR 1984). Arousal is energy expensive, equivalent to about 65 days of hibernation (Brack 2004). The availability of suitable winter hibernacula is limited. Consequently, those caves that are presently used by hibernating bats are considered significant habitat and are critical to the survival of existing populations (OMNR 2006). | **1** |
| | Floodplain | Hazard Component | Floodplains occur adjacent to watercourse features and experience occasional and periodic flooding. These areas tend have higher biodiversity as they represent the transition zone between ecosystem types. As well, these areas tend to have greater natural vegetation due to their flood prone nature and have regulations limiting their development. Policy 3.25.2.4 (Ont. Reg. 162/06) states that, "Except as provided for in Policies 3.25.2.1–3.25.2.3, no new development is permitted within 15 metres of the flood plain" of major valley systems. | **2** |
| | | 15 m Buffer | | **3** |
| | Meander Belt | Hazard Component | Policy 3.26.2.4 (Ontario Regulation 162/06) states that, "Except as provided for in Policies 3.26.2.1 – 3.26.2.3, no new development is permitted within 15 metres of the meander belt allowance" for major valley systems. | **2** |
| | | 15 m Buffer | | **3** |
| | Stable Top of Bank | Hazard Component | Policy 3.35.3 (Ontario Regulation 162/06) states that, "Except as provided for in policies 3.35.1 and 3.35.2, no new development or redevelopment is permitted within 15 metres of the stable top of bank of major valley features". | **2** |
| | | 15 m Buffer | | **3** |
| Significant Natural and Cultural Features | Look Outs | | The vista or open area often focuses on a specific feature in the landscape. Views add an additional dimension to landscape quality and enhance opportunities for appreciation of the landscape for park visitors. | **4** |
| | Veteran Tree | | Veteran trees are rare in many southern Ontario forest due to selective cutting of wood for timber. These older trees (>60dbh) play and important role in diversify the age structure of forest and can signify areas with fewer disturbances in the past. Older trees often produce large masts which ensure regeneration of a new forest canopy. | **3** |
| | Ancient Cedars | | The Niagara Escarpment is the most significant site for ancient Eastern White Cedars in Ontario. The Niagara Escarpment Ancient Tree Atlas Project (NEATAP) was started in 1998 to search for the oldest living trees at numerous cliff sites along the Escarpment. Germination dates for these trees date back to as early as 1134 A.D. In total 111 trees have been identified in Halton, the majority of which are found at Mount Nemo, Rattlesnake Point, Crawford Lake and Kelso Conservation Areas. | **1** |
| | EMAN Plot / MOE Plot / Forest Bird Monitoring Program Station / Fish Sampling Station | | The Ecological Monitoring and Assessment Network is a Canada wide monitoring program overseen by Environment Canada designed to better detect, describe, and report on ecosystem changes. The program and requires protection to ensure the accuracy of long-term datasets. The Forest Bird Monitoring Program is designed to monitor habitat specific population changes of Ontario birds breeding in mature forests. Fish Sampling Stations are part of Conservation Halton's Long-term Environment Monitoring Program for fish diversity. | **1** |
| | | EMAN Plot / MOE Plot 30 m Buffer | | **1** |
| | | EMAN Plot / MOE Plot 31 - 100 m Buffer | | **2** |
| | Steep Slopes | Scarp Face Slope (45-80%) | The near vertical escarpment face and steep talus slope are part of the larger Niagara Escarpment. The scarp face is a distinctive regional landmark, boasts magnificent views and vistas and contains significant ecological features. While providing dramatic visual presence and some limited recreational opportunities, the steep slopes require careful management to ensure the protection of their physical and ecological attributes. | **1** |
| | | Talus & Other Slope (8-25% & 25-45%) | | **2** |
| Other | Agricultural Fields | | Low diversity and ecological function | **5** |
| | Existing Facilities | e.g. parking lot, building, and access / maintenance road | | **5** |
| | Cultural Heritage | e.g. historic foundations, ruins, archeological sites | | **3** |
| | Utility Easements | See Table X.X | | **5** |
| | Cultural Meadows | CUM 1-1 | Provides an ecological function and supports surrounding environments. Not present in enough area to maintain fully functioning meadow ecology. Deemed appropriate for restoration or to accommodate facilities in limited areas. | **5** |

***TABLE 4-2*** **: VISITOR IMPACT MANAGEMENT MATRIX FOR MOUNT NEMO CONSERVATION AREA (BASED ON KELSO CONSERVATION AREA MASTER PLAN)**

| Activity | Permitted Uses Areas | Ecological and Physical Impact Indicators | Service Level | Development and Operational Guidelines | Probable Impact Cause | Potential Management Strategies |
|---|---|---|---|---|---|---|
| **Trail Uses (Hiking)** | Trails selectively permitted in any Park Management Zones except 'Special' Nature Reserve Zone | ▪ Evidence of loss of vegetation and / or soil-litter in excess of designated trail width (i.e., trampling damage or compaction)<br>▪ Trail rutting, ponding or expanding wet areas<br>▪ Surface soil erosion, gullying or compaction<br>▪ Tree root exposure or damage<br>▪ Unauthorized new trail development – braiding, widening<br>▪ Waste litter<br>▪ Breeding disturbance, nest abandonment | Primitive (i.e., Single Track Bruce Trail) | ▪ Avoid poor soil conditions<br>▪ Maximize sheet water drainage and utilize water bars and gutters<br>▪ maximum 120 cm trail width<br>▪ Packed earth or natural bedrock path<br>▪ Route away from rare or endangered plant or animal species<br>▪ Maximum slope 20% on erodible soils<br>▪ Avoid wet areas unless protection measure provided<br>▪ Avoid habitat fragmentation and minimize intrusion into interior forest habitat or wildlife corridors | ▪ Lack of trail etiquette knowledge<br>▪ Excessive group size and / or supervisions<br>▪ Improper behaviour<br>▪ Curiosity seekers exploring off trails<br>▪ Seasonal weather or unsuitability<br>▪ Unauthorized use<br>▪ Improper trail route | ▪ Informational signage<br>▪ Temporary trail closure<br>▪ Better trail definition with wood chip or stone surfacing and bordered with an edging of rocks, logs or simple barriers<br>▪ Native material trail surfacing with bark chips or limestone screenings on high capacity trails or problem sections<br>▪ Remedial drainage works: water bars, ditches, culverts, footbridges, etc.<br>▪ Boardwalks for wet areas<br>▪ Limit group sizes<br>▪ Increased trail supervision or trails monitoring – trail stewards, bike patrols<br>▪ Reroute users to less / under used areas<br>▪ User trail maps come with responsibility code<br>▪ Educational programs<br>▪ Barriers to prevent non-pedestrian usage<br>▪ Wet-weather trail closure<br>▪ Adopt-a-Trail maintenance program<br>▪ Convenient waste receptacles<br>▪ Remediation of impacted areas |
| | | | Medium Service Nature Trail | ▪ Maximum 200cm trail width<br>▪ Avoid highly sensitive habitats<br>▪ Maximum 18% slope for short distances<br>▪ Additional as above | | |
| | | | High Capacity Nature Trail | ▪ Maximum 300 cm trail width<br>▪ Handicapped accessible<br>▪ Packed granular surfacing<br>▪ Maximum slope 12%<br>▪ Additional as above | | |
| **Group Picnicking** | Designated picnic areas in Development or Resource Management Zones | ▪ Turf trampling and destruction<br>▪ Noise pollution<br>▪ Litter / garbage<br>▪ Sewage odours or overflow | General | ▪ Provide healthy turf cover<br>▪ Provide accessible sanitary facilities within 100 metres<br>▪ Provide scattered shade tree plantings throughout area<br>▪ Provide surface walking trails on major area linkages | ▪ High use area in variable weather conditions<br>▪ Shortcut route to designation<br>▪ Excessive peak day loading | ▪ Provide additional picnic facilities (i.e., washroom facilities, trails, waste receptacles)<br>▪ Develop additional picnic facilities throughout park to disperse crowds<br>▪ Limit peak day attendance |

# Table 4-3: Schedule of Restoration Costs

| GENERAL EARTHWORK ITEMS | Size | Qty. | Unit | Unit Price | Price/m2 | Total |
|---|---|---|---|---|---|---|
| Mobilization / Demobilization | - | 0 | L.S. | $5,000.00 | $ - | $ - |
| Trail Signage | - | 0 | ea | $200.00 | $ - | $ - |
| Access paving protection and restitution | - | 0 | L.S. | $1,000.00 | $ - | $ - |
| Heavy Equipment Clearing and Grading | - | 0 | m² | $1.50 | $ 1.50 | $ - |
| mudtracking/road clean-up | | 0 | L.S. | $1,000.00 | $ - | $ - |
| Trail Markers | | 0 | ea | $10.00 | $ - | $ - |
| Wood Box Culvert | | 0 | ea | $220.00 | $ - | $ - |
| CMP culvert | | 0 | ea | $ 300.00 | $ - | $ - |
| Light Equipment Clearing and Grading | | 0 | m² | $6.50 | $ 6.50 | $ - |
| Topsoil Stripping and stockpile for reuse | | 0 | cu.m. | $28.00 | $ 9.30 | $ - |
| Midden / Refuse / Fence Removal | | 0 | hec | $5,000.00 | $ 0.50 | $ - |
| Site sourced woody debris | | 0 | L.S. | $500.00 | $ - | $ - |
| Bridge Crossing single wood | | 0 | m² | $86.00 | $ 86.00 | $ - |
| Trailhead Closures | | 0 | ea | $1,500.00 | $ 100.00 | $ - |
| Dewatering (pump-and-pipe) | - | 0 | L.S. | $5,500.00 | $ - | $ - |
| Pedestrian and tree protection fencing | - | 0 | l.m. | $10.00 | $ - | $ - |
| Silt fence-install, maintain and remove | - | 0 | l.m. | $15.00 | $ - | $ - |
| Excavation and Grading (removal offsite) | - | 0 | m² | $16.66 | $ 16.66 | $ - |
| Trail Double granular | | 0 | m² | $46.00 | $ 9.20 | $ - |
| Trail Double Mulch | | 0 | m² | $7.50 | $ 7.50 | $ - |
| invasive species removal | | 0 | m² | $0.50 | $ 0.50 | $ - |
| Eagle bridge single wide 7.5m x 1.8m | | 0 | ea | $20,000.00 | $ 1,500.00 | $ - |
| ecoblanket terraseed | | 0 | m² | $ 3.50 | $ 3.50 | $ - |
| Imported topsoil | - | 0 | cu.m. | $35.00 | $ 11.66 | $ - |
| 400-500mm Rip Rap | - | 0 | cu.m. | $76.50 | $ 38.25 | $ - |
| 700g/sq.m. Coir Cloth (ECB - 4m wide) | - | 0 | m² | $8.00 | $ 8.00 | $ - |
| Straw much / photodegradable netting ECB | - | 0 | m² | $1.95 | $ 1.95 | $ - |
| **REVEGETATION ITEMS** | | | | | | |
| Caliper Trees | | | | | | |
| *Acer saccharinum,* Silver Maple | 40mm cal. | 0 | ea | $ 300.00 | | $ - |
| *Quercus macrocarpa,* Bur Oak | 40mm cal. | 0 | ea | $ 300.00 | | $ - |
| Whip Size Trees | | | | | | |
| *Juniperus viginiana,* Red Cedar | 150cm hgt | 0 | ea | $ 85.00 | | $ - |
| *Acer saccharum,* Sugar Maple | 150cm hgt | 0 | ea | $ 85.00 | | $ - |
| *Quercus macrocarpa,* Bur Oak | 150cm hgt | 0 | ea | $ 85.00 | | $ - |
| *Tilia americana,* Basswood | 150cm hgt | 0 | ea | $ 85.00 | | $ - |
| *Populus tremuloides,* Trembling Aspen | 150cm hgt | 0 | ea | $ 85.00 | | $ - |
| Native Shrub Mix | | | | | | |
| *Rosa palustris* , Wetland Rose | 50cm hgt #2 | 0 | ea | $ 40.00 | | $ - |
| *Spirea latifolia* , Meadowsweet | 50cm hgt #2 | 0 | ea | $ 40.00 | | $ - |
| *Rhus typhina,* Staghorn Sumac | 50cm hgt #2 | 0 | ea | $ 40.00 | | $ - |
| *Amelanchier canadensis,* Serviceberry | 100cm hgt. #5 | 0 | ea | $ 85.00 | | $ - |
| *Lindera benzoin,* Spicebush | 50cm hgt #2 | 0 | ea | $ 40.00 | | $ - |
| *Cornus alternifolia,* Alternate leaved Dogwood | 50cm hgt #2 | 0 | ea | $ 40.00 | | $ - |
| *Cornus sericea,* Red Osier Dogwood | 50cm hgt #2 | 0 | ea | $ 40.00 | | $ - |
| *Salix exigua,* Sandbar Willow | 75cm hgt #2 | 0 | ea | $ 35.00 | | $ - |
| *Symphoricarpos albus,* Snowberry | 75cm hgt #2 | 0 | ea | $ 35.00 | | $ - |
| *Rubus idaeus,* Wild Raspberry | 50cm hgt #2 | 0 | ea | $ 35.00 | | $ - |
| *Sambucus canadensis,* Elderberry | 50cm hgt #2 | 0 | ea | $ 35.00 | | $ - |
| *Viburnum lentago,* Nannyberry | 50cm hgt #2 | 0 | ea | $ 35.00 | | $ - |
| Plugs and other forms | | | | | | |
| Upland basic grass mix | drill seed | 0 | m² | $ 0.25 | $ 0.25 | $ - |
| Aquatic Plugs | 50mm plug | 0 | ea | $ 3.50 | | $ - |
| Forbs | 100cm pot | 0 | ea | $ 5.00 | | $ - |
| VPL Shrubs | 20-60cm | 0 | ea | $ 35.00 | | $ - |
| I year Transplant | 125cm hgt #1 | 0 | ea | $ 25.00 | | $ - |
| 2 year Transplants | 200cm hgt #2 | 0 | ea | $ 45.00 | | $ - |
| conifer seedlings | 15cm hgt | 0 | ea | $ 5.00 | | $ - |
| Live willow stakes | - | 0 | ea | $ 5.00 | $ 10.00 | $ - |
| Shoreline Herbaceous Native Regeneration Seed Mix | - | 0 | m² | $ 4.50 | $ 4.50 | $ - |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | Revegetation subtotal | **$ -** |

The Conceptual Cost Estimates provided herein is for budgetary purposes only and may vary considerably from a Contractor's quotation. All plant material is restoration quality. One year warranty at 70% take.

| COST SUMMARY | |
|---|---|
| General Earthworks Items | $ - |
| Revegetation Items | $ - |
| Subtotal | $ - |
| 15% contingency | $ - |
| **TOTAL COST** | **$0.00** |

## Table 4-4: Supplementary Restoration Costs

| Reference Project | Size | Project Description |
|---|---|---|
| Solar Farm - Under Construction<br>Estimated Cost: $575,000 | 4.12ha | Combination of tall grass prairie, nucleation plant cells and pit and mound micro-topography. |
| Industrial Restoration Site - Completed 2007<br>Total Cost: $92,000 | <5ha | Enhancement of existing woodlot and repair of industrial disturbances using successional forest buffers and open meadow restoration treatments. |
| Restoration of Rouge River Riparian Areas - Under Construction.<br>Estimated Cost: $500,000 | >1km of river | Extensive repair and restoration to several Rouge River Tributary sites protecting municipal infrastructure and enhancing the ecological system. Work included riparian habitat improvements and channel realignment to provide flood relief. |
| West Side Marsh -<br>Completed 2004<br>Total Cost: ~$2,300,000 | <25ha | Enhancement to existing wetlands as well as construction of new wetland areas, providing multiple habitat types including: pike nursery, littoral shelves, raptor poles, nesting islands, bass basin shelters and hibernacula. |
| Edge Management Plan -<br>Under Construction<br>Estimated Cost: $250,000 | >10ha | Woodlot management in new community development. Works included trail design, successional planting and trailhead closures. |
| Industrial Restoration Site - Under Construction<br>Estimated Cost: $85,000 | <5ha | Restoration to woodlot edge and lakeside slope disturbed by industrial activity using nucleation plant cells. |

# *Master Plan for Mount Nemo Conservation Area*

## *Stage Three Report Appendix II: Financials*

TCI Management Consultants
DILLON CONSULTING
EDA Collaborative Inc.

## APPENDIX II: FINANCIAL CALCULATIONS

**Table 5-1: Mount Nemo Conservation Area Development Timeframe Assumptions**

| Capital Cost Element | Total Cost ($2010) | Development Timeframe Assumptions |
|---|---|---|
| **Signage** | | |
| Main Entrance | $30,000 | year 1 |
| CH Parks Wayfinding/cross marketing | $25,000 | year 1 |
| Interpretive Signage | $14,000 | years 4, 5,& 6 |
| Language Outreach Upgrades | $20,000 | years 4, 5,& 6 |
| **Road** | | |
| Stone chip surface road | $450,000 | years 1 and 2 |
| Bioswales | $75,000 | years 1 and 2 |
| Entranceway land acquisition | $50,000 | year 1 |
| Entranceway road upgrade, second laneway | $35,000 | year 1 |
| New access road | $120,000 | year 6 |
| Bioswales for new access road | $7,500 | year 6 |
| **Base Parking** | | |
| Stone chip surface | $175,000 | years 1 and 2 |
| Bioswales | $10,000 | years 1 and 2 |
| Shade tree planting (caliper) | $15,000 | years 1 and 2 |
| **Overflow Parking** | | |
| Plastic grid | $126,000 | year 5 |
| Bioswales | $20,000 | year 5 |
| Shade tree planting (small) | $3,000 | year 5 |
| **Picnic and Site Furnishings** | | |
| Open Picnic Shelter/Pavilion | $80,000 | year 5 |
| Site Furnishing | $15,000 | years 1 & 2 |
| **Other Infrastructure and Upgrades** | | |
| New Gatehouse | $,000 | year 4 |
| Automated Gate | $40,000 | year 1 |
| Gatehouse Site Development | $25,000 | year 5 |
| Site Service Upgrades | $65,000 | year 4 |
| Site Technology Upgrades | $15,000 | years 1, 2, 3 |
| Quarry Restoration | $12,500 | year 9 |
| Accessibility Upgrades | $20,000 | years 4, 5, 6 |
| Upgraded Toilets | $10,000 | year 1 |
| **Trails** | | |
| Decommissioned trails | $25,000 | year 1 |
| New hiking trails | $170,000 | years 7,8,& 9 |
| Bioswales for new service access trail | $7,500 | years 7,8,& 9 |
| New service access trail | $60,000 | year 5 |
| Trail allowance | $2,000 | year 1 |
| Upgrading walking trails | $40,000 | years 2, 3, 4 |
| Fencing/Trail Delineation | $100,000 | years 1, 2, 3, 4 |
| Trailhead(s) | $11,000 | year 1 |
| **Interpretive Pavilion** | $100,000 | year 3 |
| **Restoration Costs** | $877,500 | years 1, 2, 3 |
| **Visitors Impact Management Plan*** | $150,000 | Years 1,2,3,4,5,6,7,8,9,10 |
| **Sub-Total** | **$3,083,000** | |
| Professional Fees /Soft Costs (15%) | $462,450 | calculated for each year |
| Contingency (15%) | $462,450 | calculated for each year |
| **Grand Total** | **$4,007,900** | |

*The Visitors Impact Management Plan has allotted $60,000 per year to be divided between the four parks based on need. For budgeting purposes we have averaged the amount to $15,000 per park, per year.

**Table 5-2: Mount Nemo Conservation Area Site Development Costs Over 10-Year Period**

| Facility | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total Cost Over Period |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Signage** | | | | | | | | | | | |
| Main Entrance | $30,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $30,000 |
| CH Parks Wayfinding/cross marketing | $25,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $25,000 |
| Interpretive Signage | $0 | $0 | $0 | $4,667 | $4,667 | $4,667 | $0 | $0 | $0 | $0 | $14,000 |
| Language Outreach Upgrades | $0 | $0 | $0 | $6,667 | $6,667 | $6,667 | $0 | $0 | $0 | $0 | $20,000 |
| **Road** | | | | | | | | | | | |
| Stone chip surface road | $225,000 | $225,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $450,000 |
| Bioswales | $37,500 | $37,500 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $75,000 |
| Entranceway land acquisition | $50,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $50,000 |
| Entranceway road upgrade, second laneway | $35,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $35,000 |
| New access road | $0 | $0 | $0 | $0 | $0 | $120,000 | $0 | $0 | $0 | $0 | $120,000 |
| Bioswales for new access road | $0 | $0 | $0 | $0 | $0 | $7,500 | $0 | $0 | $0 | $0 | $7,500 |
| **Base Parking** | | | | | | | | | | | |
| Stone chip surface | $87,500 | $87,500 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $175,000 |
| Bioswales | $5,000 | $5,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $10,000 |
| Shade tree planting (caliper) | $7,500 | $7,500 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $15,000 |
| **Overflow Parking** | | | | | | | | | | | |
| Plastic grid | $0 | $0 | $0 | $0 | $126,000 | $0 | $0 | $0 | $0 | $0 | $126,000 |
| Bioswales | $0 | $0 | $0 | $0 | $20,000 | $0 | $0 | $0 | $0 | $0 | $20,000 |
| Shade tree planting (small) | $0 | $0 | $0 | $0 | $3,000 | $0 | $0 | $0 | $0 | $0 | $3,000 |
| **Picnic and Site Furnishings** | | | | | | | | | | | |
| Open Picnic Shelter/Pavilion | $0 | $0 | $0 | $0 | $80,000 | $0 | $0 | $0 | $0 | $0 | $80,000 |
| Site Furnishing | $7,500 | $7,500 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $15,000 |
| **Other Infrastructure and Upgrades** | | | | | | | | | | | |
| New Gatehouse | $0 | $0 | $0 | $82,000 | $0 | $0 | $0 | $0 | $0 | $0 | $70,000 |
| Automated Gate | $40,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $40,000 |
| Gatehouse Site Development | $0 | $0 | $0 | $0 | $25,000 | $0 | $0 | $0 | $0 | $0 | $25,000 |
| Site Service Upgrades | $0 | $0 | $0 | $65,000 | $0 | $0 | $0 | $0 | $0 | $0 | $65,000 |
| Site Technology Upgrades | $5,000 | $5,000 | $5,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $15,000 |
| Quarry Restoration | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $12,500 | $0 | $12,500 |
| Accessibility Upgrades | $0 | $0 | $0 | $6,667 | $6,667 | $6,667 | $0 | $0 | $0 | $0 | $20,000 |
| Upgraded Toilets | $10,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $10,000 |

**Table 5-2: Mount Nemo Conservation Area Site Development Costs Over 10-Year Period, continued**

| Facility | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total Cost Over Period |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Trails** | | | | | | | | | | | |
| Decommissioned trails | $25,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $25,000 |
| New hiking trails | $0 | $0 | $0 | $0 | $0 | $0 | $56,667 | $56,667 | $56,667 | $0 | $170,000 |
| Bioswales for new service access trail | $0 | $0 | $0 | $0 | $0 | $0 | $2,500 | $2,500 | $2,500 | $0 | $7,500 |
| New service access trail | $0 | $0 | $0 | $0 | $60,000 | $0 | $0 | $0 | $0 | $0 | $60,000 |
| Trail allowance | $2,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $2,000 |
| Upgrading walking trails | $0 | $13,333 | $13,333 | $13,333 | $0 | $0 | $0 | $0 | $0 | $0 | $40,000 |
| Fencing/Trail Delineation | $25,000 | $25,000 | $25,000 | $25,000 | $0 | $0 | $0 | $0 | $0 | $0 | $100,000 |
| Trailhead(s) | $11,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $11,000 |
| **Interpretive Pavilion** | $0 | $0 | $100,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $100,000 |
| **Restoration Costs** | $292,500 | $292,500 | $292,500 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $877,500 |
| **Visitors Impact Management Plan*** | $15,000 | $15,000 | $15,000 | $15,000 | $15,000 | $15,000 | $15,000 | $15,000 | $15,000 | $15,000 | $150,000 |
| **Sub-Total** | **$935,500** | **$720,833** | **$450,833** | **$218,333** | **$347,000** | **$160,500** | **$74,167** | **$74,167** | **$86,667** | **$15,000** | **$3,083,000** |
| Professional Fees /Soft Costs | $140,325 | $108,124 | $67,624 | $32,750 | $52,050 | $24,075 | $11,125 | $11,125 | $13,000 | $2,250 | $462,450 |
| Contingency | $140,325 | $108,124 | $67,624 | $32,750 | $52,050 | $24,075 | $11,125 | $11,125 | $13,000 | $2,250 | $462,450 |
| **Grand Total** | **$1,216,150** | **$937,082** | **$586,082** | **$283,233** | **$451,100** | **$208,650** | **$96,417** | **$96,417** | **$112,667** | **$19,500** | **$4,0072,900** |

** The Visitors Impact Management Plan has allotted $60,000 per year to be divided between the four parks based on need. For budgeting purposes we have averaged the amount to $15,000 per park

**Table 5-4: Mount Nemo Conservation Area Attendance Projection**

| | | | | | | |
|---|---|---|---|---|---|---|
| Average Annual Attendance (2005 - 2009) | **16,000** | | | | | |
| Weighted Annual Population Growth Factor | 4.07% (based upon population projections of municipalities in the catchment areas of the Conservation Area) | | | | | |
| **Year** | **(A) Attendance Increase Due to Regional Population Growth Factor** | **(B) Increment Due to Marketing Factor (2%)** | **(C) Increment Due to 'Staycation' Factor (1%)** | **Resulting Attendance Projection** | **(D) Increment from Major New Facilities Coming On-Stream** | **Final Attendance Estimate** |
| 2010 | 16,651 | 333 | 167 | 17,151 | 0 | 17,151 |
| 2011 | 17,329 | 347 | 173 | 17,849 | 0 | 17,849 |
| 2012 | 18,035 | 361 | 180 | 18,576 | 0 | 18,576 |
| 2013 | 18,769 | 375 | 188 | 19,332 | 0 | 19,332 |
| 2014 | 19,533 | 391 | 195 | 20,119 | 0 | 20,119 |
| 2015 | 20,328 | 407 | 203 | 20,938 | 0 | 20,938 |
| 2016 | 21,155 | 423 | 212 | 21,790 | 0 | 21,790 |
| 2017 | 22,016 | 440 | 220 | 22,677 | 0 | 22,677 |
| 2018 | 22,913 | 458 | 229 | 23,600 | 0 | 23,600 |
| 2019 | 23,845 | 477 | 238 | 24,561 | 0 | 24,561 |
| 2020 | 24,816 | 496 | 248 | 25,560 | 0 | 25,560 |
| 2021 | 25,826 | 517 | 258 | 26,601 | 0 | **26,601** |

**Table 5-6: Mount Nemo Conservation Area Attendance and Revenue Forecast**

| | Attendance | Revenue per User | Total Revenue from Attendance |
|---|---|---|---|
| Base Year (2005 - 2009 Average) | 16,000 | $3.59 | $57,400 |
| Year 1 | 18,576 | $7 | $130,032 |
| Year 2 | 19,332 | $7 | $135,324 |
| Year 3 | 20,119 | $7 | $140,833 |
| Year 4 | 20,938 | $7 | $146,566 |
| Year 5 | 21,790 | $7 | $152,530 |
| Year 6 | 22,677 | $8 | $181,416 |
| Year 7 | 23,600 | $8 | $188,800 |
| Year 8 | 24,561 | $9 | $221,049 |
| Year 9 | 25,560 | $9 | $230,040 |
| Year 10 | 26,601 | $10 | $266,010 |

**Table 5-7: Mount Nemo Conservation Area Current Operating Budget**

| Budget Line Item Category | 2010 Preliminary Budget | 2009 Budget |
|---|---|---|
| **EXPENDITURES** | | |
| Administration (Full-Time Salaries and Related Costs)* | $70,880* | $51,093* |
| Salaries & Wages (Part Time/Seasonal) | $9,651 | $10,809 |
| Benefits (Part Time/Seasonal) | $1,134 | $1,270 |
| Equipment Rental | $182 | $178 |
| Telephone | $2,026 | $1,827 |
| Utilities - Hydro And Fuel | $600 | $1,208 |
| Insurance | $100 | $500 |
| Food Supplies | $200 | $200 |
| Program Material | $600 | $600 |
| Advert & Promo - Brochure | $780 | $1,539 |
| Infrastructure Maintenance | $4,000 | $5,900 |
| Facilities | $750 | $950 |
| Gatehouse | $1,550 | $2,750 |
| **Total Expenditures** | **$92,453** | **$78,824** |
| **REVENUES** | | |
| Entry Fees | $56,380 | $40,028 |
| Miscellaneous | $500 | $500 |
| Concessions | $525 | $525 |
| **Total Direct Revenues** | **$57,405** | **$41,053** |
| **Excess Of Expenditures Over Revenues** | **($35,048)** | **($37,771)** |

** The budget contains grouped administrative expenses (consisting of full-time wages, salaries and benefits, staff travel, vehicle rentals, and bank services) for Mt. Nemo, Rattlesnake Point, and Hilton Falls. CH's usual practice is to allocate 40% of these costs to each of Hilton Falls, and Rattlesnake Point, and 20% to Mount Nemo. Accordingly, 20% of this amount ($354,400 in the 2010 budget) has been allocated to Mount Nemo.*

**Table 5-9: Mount Nemo Conservation Area Staffing Projections**

| | Incremental Staffing Increase (FTJEs) | Total Staffing Complement (FTJEs) | Incremental Direct Staffing Costs |
|---|---|---|---|
| **Base Year (2011)** | **0** | **2.17** | **$0** |
| Year 1 | 0.14 | 2.31 | $10,868 |
| Year 2 | 0.29 | 2.46 | $21,736 |
| Year 3 | 0.43 | 2.60 | $32,604 |
| Year 4 | 0.57 | 2.74 | $43,472 |
| Year 5 | 0.72 | 2.89 | $54,340 |
| Year 6 | 0.86 | 3.03 | $65,208 |
| Year 7 | 1.00 | 3.17 | $76,076 |
| Year 8 | 1.14 | 3.31 | $86,944 |
| Year 9 | 1.29 | 3.46 | $97,812 |
| Year 10 | 1.43 | 3.60 | $108,680 |

**Table 5-10: Mount Nemo Conservation Area Maintenance Costs Associated with New Development**

| Year | Capital Development in Year | Cumulative Development | Maintenance Costs (at 2% of cumulative costs to previous year) |
|---|---|---|---|
| Year 1 | $1,196,650 | $1,196,650 | $0 |
| Year 2 | $917,583 | $2,114,233 | $23,933 |
| Year 3 | $566,583 | $2,680,817 | $42,285 |
| Year 4 | $248,733 | $2,929,550 | $53,616 |
| Year 5 | $447,200 | $3,376,750 | $58,591 |
| Year 6 | $189,150 | $3,565,900 | $67,535 |
| Year 7 | $76,917 | $3,642,817 | $71,318 |
| Year 8 | $76,917 | $3,719,733 | $72,856 |
| Year 9 | $93,167 | $3,812,900 | $74,395 |
| Year 10 | $0 | $3,812,900 | $76,258 |

**Table 5-11: Mount Nemo Conservation Area Enhanced Standard of Care Budget**

| Year | New Trails Coming On-Stream | Cost of Trails Maintenance Allowance | Hectares of Park Area | Cost of Hazard Tree Allowance | Total Additional Maintenance Costs |
|---|---|---|---|---|---|
| Year 1 | 6.8 | $6,800 | 147 | $5,733 | $12,533 |
| Year 2 | 6.8 | $6,800 | 147 | $5,733 | $12,533 |
| Year 3 | 6.8 | $6,800 | 147 | $5,733 | $12,533 |
| Year 4 | 6.8 | $6,800 | 147 | $5,733 | $12,533 |
| Year 5 | 6.8 | $6,800 | 147 | $5,733 | $12,533 |
| Year 6 | 6.8 | $6,800 | 147 | $5,733 | $12,533 |
| Year 7 | 7.7 | $7,700 | 147 | $5,733 | $13,433 |
| Year 8 | 8.7 | $8,700 | 147 | $5,733 | $14,433 |
| Year 9 | 9.6 | $9,600 | 147 | $5,733 | $15,333 |
| Year 10 | 9.6 | $9,600 | 147 | $5,733 | $15,333 |

**Table 5-12: Mount Nemo Conservation Area Invasive Species Management and Monitoring Costs**

| Year | Invasive Species Control Costs | Species Monitoring Costs | Total Species Management / Monitoring Costs |
|---|---|---|---|
| Year 1 | $4,400 | $880 | $5,280 |
| Year 2 | $2,200 | $880 | $3,080 |
| Year 3 | $2,200 | $3,080 | $5,280 |
| Year 4 | $2,200 | $880 | $3,080 |
| Year 5 | $2,200 | $880 | $3,080 |
| Year 6 | $2,200 | $3,080 | $5,280 |
| Year 7 | $0 | $880 | $880 |
| Year 8 | $2,200 | $880 | $3,080 |
| Year 9 | $0 | $3,080 | $3,080 |
| Year 10 | $2,200 | $880 | $3,080 |
| **Total Costs** | **$19,800** | **$15,400** | **$35,200** |

**Table 5-13: Mount Nemo Conservation Area Operating Cost Projection**

| | Continuation of Existing Budget | Additional Capital Maintenance Costs | 'Enhanced Standard of Care' Costs | Species Management & Monitoring Costs | Incremental Direct Staffing Costs | Additional Marketing Costs (including TODS) | Total Estimated Operating Budget |
|---|---|---|---|---|---|---|---|
| Year 1 | $92,500 | $0 | $12,533 | $5,280 | $10,868 | $6,200 | $127,381 |
| Year 2 | $92,500 | $23,933 | $12,533 | $3,080 | $21,736 | $6,200 | $159,982 |
| Year 3 | $92,500 | $42,285 | $12,533 | $5,280 | $32,604 | $6,200 | $191,402 |
| Year 4 | $92,500 | $53,616 | $12,533 | $3,080 | $43,472 | $6,200 | $211,401 |
| Year 5 | $92,500 | $58,591 | $12,533 | $3,080 | $54,340 | $4,864 | $225,908 |
| Year 6 | $92,500 | $67,535 | $12,533 | $5,280 | $65,208 | $5,013 | $248,069 |
| Year 7 | $92,500 | $71,318 | $12,533 | $880 | $76,076 | $5,735 | $259,042 |
| Year 8 | $92,500 | $72,856 | $13,433 | $3,080 | $86,944 | $5,920 | $274,733 |
| Year 9 | $92,500 | $74,395 | $14,433 | $3,080 | $97,812 | $6,726 | $288,945 |
| Year 10 | $92,500 | $76,258 | $15,333 | $3,080 | $108,680 | $6,951 | $302,802 |

**Table 5-14: Mount Nemo Conservation Area Net Financial Operating Position**

| | Estimated Operating Revenues | Estimated Operating Costs | Net Financial Operating Position |
|---|---|---|---|
| Year 1 | $130,032 | $127,381 | $2,651 |
| Year 2 | $135,324 | $159,982 | ($24,658) |
| Year 3 | $140,833 | $191,402 | ($50,569) |
| Year 4 | $146,566 | $211,401 | ($64,835) |
| Year 5 | $152,530 | $225,908 | ($73,378) |
| Year 6 | $181,416 | $248,069 | ($66,653) |
| Year 7 | $188,800 | $259,042 | ($70,242) |
| Year 8 | $221,049 | $274,733 | ($53,684) |
| Year 9 | $230,040 | $288,946 | ($58,906) |
| Year 10 | $266,010 | $302,802 | ($36,792) |

**Table 5-15: Mount Nemo Conservation Area Revenues per Visitor to Break Even**

| Year | Anticipated Operating Deficit | Attendance in that Year | Additional Surcharge per Visitor Required to Break Even | Assumed per Visitor Revenue for that Year | Total Target Revenue per Visitor |
|---|---|---|---|---|---|
| 2012 | $0 | 18,576 | $0 | $7.00 | $7.00 |
| 2013 | $24,658 | 19,332 | $1.28 | $7.00 | $8.28 |
| 2014 | $50,569 | 20,119 | $2.51 | $7.00 | $9.51 |
| 2015 | $64,835 | 20,938 | $3.10 | $7.00 | $10.10 |
| 2016 | $73,378 | 21,790 | $3.37 | $7.00 | $10.37 |
| 2017 | $66,653 | 22,677 | $2.94 | $8.00 | $10.94 |
| 2018 | $70,242 | 23,600 | $2.98 | $8.00 | $10.98 |
| 2019 | $53,684 | 24,561 | $2.19 | $9.00 | $11.19 |
| 2020 | $58,906 | 25,560 | $2.30 | $9.00 | $11.30 |
| 2021 | $36,792 | 26,601 | $1.38 | $10.00 | $11.38 |

# *Master Plan for Mount Nemo Conservation Area*

## *Stage Three Report Appendix III: Limestone Legacy Vision, Goals and Objectives*

TCI Management Consultants
DILLON CONSULTING
EDA Collaborative Inc.

## Appendix III - Halton Escarpment Parks, A Limestone Legacy

October 1, 2007

**LL Vision:** A sustainable network of world class conservation parks for ecological health and to provide public green space for quality education and recreation experiences.

**LL Goal:** To build and maintain a network of spectacular natural parks in Halton that demonstrate and explain the rich natural history, cultural heritage and global significance of Ontario's Greenbelt and the Niagara Escarpment and to provide high quality recreational and educational experiences for watershed residents and beyond.

**LL Objectives:**

- A Halton gateway to the Niagara Escarpment with access to the Bruce Trail and future municipal trail connections, thereby linking our natural parks with other natural elements both in and beyond Halton Region.
- An outstanding premier ranked tourism attraction with multiple themed parks and features.
- A network of parks with consistent quality signage encompassing entrance signs, interpretive stations, information kiosks and internal directional signs.
- A wide range of educational and recreational opportunities for park visitors including one of the few downhill skiing and snowboarding facilities in southern Ontario.
- A planning and funding model that will enhance the Escarpment Parks and enable infrastructure improvements, capital expansion and quality maintenance standards.
- The development of guidelines for standards to ensure quality facilities, services and programs.
- The development of a sustainability plan for the Escarpment Parks that is complementary to the Sustainable Halton Plan and Halton's natural heritage system of greenlands. This would involve using Conservation Halton's parks as core lands, that would contribute to the range of habitat conditions (wetlands, forests, etc.) needed to maintain a high species biodiversity in the Region.
- The development of a management protocol for master planning the Escarpment Parks including the aspect of the Region's extensive forest tracts which are part of Halton's significant greenlands.
- The development of a partnership agreement for the development and funding of the Escarpment Parks.