Toronto and Region Conservation
for The Living City®

Bolton Resource Management Tract
Management Plan

DRAFT

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Executive Summary

The Bolton Resource Management Tract (BRMT) Management Plan was generated to protect, conserve and restore the valuable ecological features and functions of the site, while guiding the current and potential future public uses of the area.

The BRMT is a 973 hectare conservation property located along the Humber River valley in the Town of Caledon, Regional Municipality of Peel.

A large portion of the BRMT is located along the main branch of the Humber River, north–west of downtown Bolton. These lands are largely found south of Old Church Road, north of King Street and Old King Road, west of Regional Road 50 and east of The Gore Road. Two additional parcels of land have been added to the BRMT since 2009: the former Campbell Property and the Bolton Camp lands. These parcels are located along the Caledon-King Townline, north of King Street and lie within the Cold Creek subwatershed of the Humber River.
The BRMT's varied and diverse landscapes include 6.8 hectares of bluff and barren lands, 372 hectares of forested lands and 98 hectares of wetlands.

In 2007, Toronto and Region Conservation (TRCA) initiated the preparation of a management plan for the BRMT.

At Meeting #2/07 of the TRCA Board held on March 30, 2007, Resolution #A47/07 was adopted as follows:

> "THAT WHEREAS staff are developing a Bolton Resource Management Tract Management Plan;
>
> THEREFORE LET IT BE RESOLVED THAT staff be directed to establish an advisory committee, which would include members of the Humber River Watershed Alliance, interested community groups, business representatives, community residents, agency staff, municipal elected officials and staff and to assist with the development of the management plan and to facilitate the opportunity for public input;
>
> AND FURTHER THAT the management plan when complete be submitted to the board for approval."

As part of the process for developing the *Bolton Resource Management Tract Management Plan*, TRCA prepared the *Bolton Resource Management Tract Background Report* that details the current knowledge of the property. This report was developed by TRCA in partnership with the BRMT management plan Advisory Committee.

The *Bolton Resource Management Tract Management Plan* contains six chapters, each of which is briefly described below.

The introductory chapter provides a description of the development of the management plan for BRMT, including the study process and a brief description of the property. The management plan was developed by TRCA and the BRMT management plan advisory

committee. Public input was gathered throughout the process at public meetings and through surveys.

Chapter Two contains the plan vision, guiding principles as well a series of goals and objectives. These were developed by the BRMT advisory committee. The following vision statement, together with the accompanying goals, objectives and management principles (see Chapter Two) should guide all current and future actions.

> *The Bolton Resource Management Tract acts as a natural connection in the greenspace system of The Living City's Humber River Watershed. Nature-based recreation and education complement the natural and cultural heritage resources that have been protected, restored and enhanced with the support and stewardship of the community.*

Chapter Three provides a summary of the management zones and how the zones are delineated. The zones and definitions are based on the planning and management policies of Ontario Provincial Parks. The recommended conservation land management zoning and policies have then been modified to more closely address the requirements of BRMT and TRCA. The eight management zones defined for BRMT include nature reserve, natural environment, primary restoration, heritage preserve, special management, agricultural reserve, public use, and residential-lease. Approximately 870 hectares or 88 per cent of the property is classified as nature reserve, natural environment, or primary restoration, 60ha (6 per cent) as agricultural reserve and 39 ha (3.9 per cent) as public use.

Chapter Four contains a series of management recommendations regarding terrestrial resources, aquatic resources, cultural heritage resources, nature-based public use, conservation education, stewardship and outreach, conservation land use and management, and implementation, monitoring and review of the management plan. The key recommendations include:

- *Institute monitoring and on-going inventory programs to collect data and to ensure that this diverse ecosystem is continually protected and enhanced*
- *Expand the forested natural system at BRMT wherever current land-use permits in order to increase the quantity and quality of natural cover, striving towards meeting the refined target system presented for the Humber watershed.*
- *Prepare a comprehensive interpretive plan for the Cedar Mains site*
- *Continue to develop a preferred business model for a re-established education/camp use at the Bolton Camp property in consultation with public and private partners.*
- *Mitigate the impacts of all roads, especially the Bolton Arterial Road, on the ecological integrity of the BRMT*
- *Rehabilitate aquatic habitat, including altered streams. Degraded reaches should be identified, then aquatic plantings can be used to create and restore in-water habitat.*

Chapter Five presents a detailed Trail Plan for BRMT. The BRMT is a popular trail destination for both local and regional visitors. As communities in the region continue to grow, the demand for access to high-quality recreational trail like those found in the BRMT will continue to grow as well. As a result, any and all public use on the site must be carefully planned, implemented and monitored to ensure the long-term sustainability of these and other natural features and functions.

Key recommendations of the Trail Plan include:

- ***Maintain and enhance the existing trail agreement with the Humber Valley Heritage Trail Association to encompass any new pedestrian-only trails,***

- ***Construct the 7.6km multi-use trail with the assistance of the BRMT Stewardship Committee and any other interested trail partners.***

- ***Take steps to reduce conflicts between trail user groups including signage, public/user education and enforcement.***

- ***Extend the trail system in the BRMT to connect to trails in Vaughan, Palgrave and King Township, especially the extension of the Humber Valley Heritage Trail into King and Vaughan and a trail to Cold Creek Conservation Area.***

Chapter Six provides a summary of guidelines for implementing *Bolton Resource Management Tract Management Plan.* Included are an implementation schedule and key directions for the stewardship committee to support TRCA in implementing the management plan. Opportunities for agency, municipal and private land stewardship are also discussed. The total cost to implement the major trail plan recommendations of the management plan is $683,250. This chapter includes a recommended phased implementation schedule.

It is envisioned that the *Bolton Resource Management Tract Management Plan* will help guide the BRMT for the next 10 years. Through diligent implementation of this plan, BRMT will be further enhanced as a valuable environmental, recreational and educational resource for residents of the Greater Toronto Area.

Chapter 1: Introduction

1.1 Overview

The Bolton Resource Management Tract (BRMT) Management Plan was generated to protect, conserve and restore the valuable ecological features and functions of the site, while guiding the current and potential future public uses of the area.

The management planning process occurred in several phases that consisted, among other actions, compiling background materials and research; holding public information and consultation sessions; holding advisory committee meetings; developing a vision, goal and objectives; developing management recommendations; and developing trail and public use plans. The management plan itself includes a description and evaluation of the property based on relevant plans and policies, existing resource inventories and environmental conditions, site limitations and opportunities. Additionally, the plan identifies specific management zones for the site that delineate and guide the types and levels of appropriate activities. The plan also makes recommendations for future initiatives, including the protection of natural features and habitat regeneration based on an ecosystem approach to planning and management. Finally, detailed plans for trails and public use are presented.

1.2 Towards a Living City Region

Toronto and Region Conservation (TRCA) is committed to community partnerships with all sectors of society to encourage environmental stewardship and to build on innovative thinking about environmental health, social responsibility and sustainable economies.

TRCA's vision of a Living City Region has four objectives:

Healthy Rivers and Shorelines – To restore the integrity and health of the region's rivers and waters from the headwaters in the Oak Ridges Moraine, throughout each of the nine watersheds in TRCA's jurisdiction, to the Toronto waterfront on Lake Ontario.

Regional Biodiversity – To protect and restore a regional system of natural areas that provide habitat for plant and animal species, improve air quality and provide opportunities for the enjoyment of nature.

Sustainable Communities – To facilitate broad community understanding, dialogue and action toward integrated approaches to sustainable living and city building that improves the quality of life for residents, businesses and nature.

Business Excellence – To produce continuous improvement in the development and delivery of all programs through creative partnerships, diverse funding sources and careful auditing of outcomes and effectiveness.

Two key TRCA Living City strategies that have been integrated into this Management Plan to ensure a consistent watershed management approach include:

- Terrestrial Natural Heritage System Strategy
- Humber River Watershed Plan: Pathways to a Healthy Humber

1.3 TRCA's Terrestrial Natural Heritage System Strategy

The Terrestrial Natural Heritage System Strategy (TNHSS) provides extensive data, scientific models, mapping and guidance for TRCA staff, TRCA's partner municipalities and community groups for achieving natural heritage protection objectives.

The need for a TNHSS originated from observations by TRCA and others that showed an alarming reduction in vegetation communities and species populations, and their distribution within TRCA's area of jurisdiction. This change was occurring simultaneously with urban expansion despite best efforts at protection. The reduction in forests, wetlands, meadows and their species was also accompanied by an increase in flooding and erosion, and in conflicting recreational uses in protected areas. Changes in land use were being approved site by site without understanding how, cumulatively, they were impacting the region's natural system and environmental health.

TRCA has redefined its approach towards biodiversity conservation to better reflect the role of ecosystems in the landscape. One important premise is that the distribution and quantity of natural cover and species is intricately linked to water, air quality and climate regulation, quality of life, and sustainability for citizens of our *Living City* region. Conservation efforts should, therefore, not focus solely on the conventional protection of rare species or special natural areas.

The TNHSS guides the natural heritage approach used in the development of this management plan. The approach considers the site within the context of the region and regional pressures. It provides clear and detailed direction for gathering and analyzing information about natural habitats, vegetation communities and species. This approach evaluates a site's contribution to the landscape at three levels:

- The entire TRCA jurisdiction
- Defined areas of planning units such as the watershed and subwatershed
- Municipal areas

A key component of the terrestrial natural heritage approach is the ranking and scoring of vegetation communities and fauna species. The ranking information is used to determine if there are any species or vegetation communities of concern on the site. A second key component of the approach is the terrestrial natural heritage indicators and measures that are used to establish quantitative targets for the terrestrial ecosystem. The indicators are:

- Quantity of natural cover
- Quality of Distribution including:
    - Matrix influence
    - Patch size and shape
    - Biodiversity

The terrestrial natural heritage information that was gathered was analyzed and used to determine the appropriate management zones and trail alignments. The ranking and scoring of vegetation communities and fauna species reflects their sensitivity to urbanization and human encroachment. Species are ranked based on local distribution or local (L) ranks. These L ranks are in some ways analogous to the provincial (S) and global (G) rank that are assigned to vegetation communities, flora and fauna. The TRCA ranks range from L1 to L5. Generally, L1 to L3 species or vegetation communities are of regional conservation concern (i.e. within TRCA jurisdiction) and their locations have

attempted to be protected through the plan. A complete copy of the biological inventory report for BRMT, including listing of species and vegetation communities, can be found in the *Bolton Resource Management Tract Management Plan Background Report* (TRCA, 2012).

The Target Terrestrial Natural Heritage System

The goal of the target terrestrial natural heritage system is to protect and restore a system that is robust enough to sustain the existing distribution and populations of regional species of conservation concern.

The target system quality still ranges from "very poor" to "excellent" but is improved overall, from being dominated by "fair" patches in the existing system to "good" patches in the target system. This results from improving individual patch size, shape, and, to some degree, matrix, throughout the system. The distribution of natural cover in the target system is still very much skewed to the north, generally within the Greenbelt area, largely because of the limited opportunity to increase natural cover in existing urban areas. From a quantity perspective, the target system covers approximately 74,000 hectares, or approximately 30 per cent of the total land surface area of the TRCA jurisdiction. This is the quantity necessary to achieve a target system that is dominated by "good" quality patches and to achieve the best distribution possible given existing constraints.

The existing 25 per cent of natural cover in the jurisdiction is made up of 16.5 per cent forest and wetland and 8per cent meadow. With the quantity target increase to 30per cent, the intent is for the natural system to be 80 per cent treed habitat (60 per cent upland and 20per cent swamp), 10 per cent meadow and 10 per cent open wetland.

In summary, the target system will see an increase regionally in terrestrial natural cover quality, from "fair" to "good", and in quantity, from 25 to 30 per cent, and will include a shift in the habitat type distribution. Additionally, the Greenbelt area (which includes portions of BRMT) will see increases in quantity and quality of terrestrial natural cover from 44 per cent to 63 per cent.

1.4 Humber River Watershed Plan: Pathways to a Healthy Humber (2008)

Since the publication of the first Humber Watershed Plan (Legacy: A Strategy for a Healthy Humber) in 1997, much has been learned about the Humber watershed from monitoring, research and the experiences of watershed partners. The updated watershed plan revises the watershed management strategies in Legacy in light of new information, a stronger scientific foundation, and better understanding of the effects of human actions on the ecosystem.

The guiding framework for the watershed plan is a set of principles and 30 objectives with specific targets for watershed conditions. They address:

- **Environment**: stream form, groundwater, surface water, air, aquatic system, terrestrial system
- **Society**: cultural heritage, nature-based recreation
- **Economy**: land use, resource use

The path to a healthier, more resilient watershed that emerged from this analysis is based on a comprehensive and inter-dependent set of strategies that will protect and enhance valued resources, regenerate damaged systems, and build more sustainable communities. This will help to increase the resilience of natural systems to human activities and climate change. It will also create healthier places for people and wildlife and stronger support for economic activities.

1.5 Conservation Lands

TRCA owns over 16,600 hectares of land within the Greater Toronto Area. The purpose of this ownership is to protect and manage valley and stream corridors, flood plains, the Lake Ontario shore lands, wildlife, vegetation and environmentally significant areas. Where compatible, access and facilities for public use are permitted and encouraged (MTRCA, 1995).

The goal of TRCA in managing its conservation lands is to "ensure the environmental stewardship of Authority lands and to continue to bring into ownership additional conservation and hazard lands essential for achieving a healthy regional environment and sustainable communities" (TRCA, 2001). For the purpose of land care, TRCA greenlands are divided into the following management categories:

- Management agreements
- Special agreements and rentals
- Conservation parks
- Education field centres
- Limited interest acquisitions
- Other lands (TRCA, 2005).

1.6 Plan Process

Past experience has shown that residents and community groups have grown more concerned with the impact of land use change on the remaining natural landscapes within the Greater Toronto Area. At the same time, user groups, businesses and municipalities have expressed a growing interest in a variety of uses for public lands, including nature-based recreation, ecological restoration and community stewardship. The provision of public uses on TRCA-owned land must consider economic factors and the recreational needs of the community, while ensuring the natural landscape is protected and properly stewarded.

At Authority Meeting #2/07, held on March 30, 2007, the initiation of the BRMT Management Plan was endorsed. Resolution #A47/07 was adopted as follows:

"THAT WHEREAS staff are developing a Bolton Resource Management Tract Management Plan;

THEREFORE LET IT BE RESOLVED THAT staff be directed to establish an advisory committee, which would include members of the Humber River Watershed Alliance, interested community groups, business representatives, community residents, agency

staff, municipal elected officials and staff and to assist with the development of the management plan and to facilitate the opportunity for public input;

AND FURTHER THAT the management plan when complete be submitted to the board for approval."

The BRMT Management Plan was undertaken in three phases, which included the following steps:

Phase One

1. Establish and circulate a study newsletter.
2. Establish the Advisory Committee and host at least one meeting.
3. Host at least one public information session.
4. Host a site vision workshop with Advisory Committee.

Phase Two

1. Develop site vision.
2. Determine draft management zones.
3. Integrate watershed management recommendations.
4. Host at least one advisory committee meeting.
5. Circulate a study newsletter update.
6. Host one public meeting to review draft material.

Phase Three

1. Develop draft trail plan and draft management recommendations for the property
2. Host one advisory committee meeting to review draft trail plan and management recommendations.
3. Complete draft background report and management plan
4. Host one advisory committee meeting to review draft management plan
5. Finalize management plan
6. Host one public meeting to review final draft plan.
7. Obtain partners and TRCA Board endorsement of plan.
8. Circulate a study newsletter update.

1.7 The Advisory Committee

An public advisory committee was established for the duration of the project to provide an integrated approach to the development of the plan. Participating advisory committee representatives included:

- TRCA - Board members and staff;
- Region of Peel councilors and staff;
- Town of Caledon councilors and staff;
- Humber Watershed Alliance member;
- Caledon Environmental Advisory Committee member;
- Humber Valley Heritage Trail Association;

- Caledon Cycling Club;
- community residents; and,
- public interest group representatives.

The Advisory Committee helped TRCA staff to finalize the project terms of reference, establish vision, goals and objectives, determine management zones and management recommendations, and develop the trail and public use plans. The committee also provided technical input and assisted with the public consultation program for the management plan.

In summary, the Advisory Committee was responsible for the following major functions:

- Providing technical expertise, monitoring information and advice to TRCA throughout the development of the master plan
- Ensuring that appropriate staff and members at their respective municipalities/ agencies/associations were adequately informed throughout the process
- Providing commentary and input on suggestions brought to the Advisory Committee
- Assisting in the identification of current outstanding issues and making suggestions regarding appropriate ways to resolve them
- Assisting TRCA in presentations and public forums, where appropriate.

This study is the result of over four years work and commitment by this dedicated committee and by TRCA staff. The Advisory Committee provided direction for the management zones, trail plan, public use and recreation plan and recommendations contained in this master plan. Copies of the minutes for the Advisory Committee meetings have been compiled and can be obtained from TRCA upon request.

1.8 Public Consultation

At the outset of the master plan, it was agreed that public use, enjoyment and stewardship of BRMT would be important to the community. Consequently, the public had to have meaningful input in the planning process. To facilitate a wide range of opportunities for input, many techniques were used to generate a high level of awareness and public comment.

The public consultation program included:

- Meetings with interested organizations and groups in the community
- Information sessions, newsletters, questionnaires and mailings to the community to identify a broad range of potential needs and opportunities for the site
- Public meetings to present the background information, plan vision, proposed management zones, concept plans, trail plan, public use plan and management recommendations.

1.9 Endorsement of the Management Plan

As a partnership between the Regional Municipality of Peel, the Town of Caledon, TRCA, and the technical and advisory committees, this management plan required endorsement from a variety of groups. The public, local community and users were

informed and consulted throughout the process through newsletters, questionnaires, open houses and public meetings held for each phase of the management planning process. Their concerns, comments and suggestions were heard and integrated in the plan wherever possible.

The advisory committee brought the many interests, issues and insights of the broader community to the forefront of the planning process, and the comments and suggestions were vital to the formation of the management plan.

At Meeting #6/13 of the TRCA Board, held on July 26, 2013, RES. #XY/13 was adopted as follows:

THAT the draft Bolton Resource Management Tract Management Plan dated July 2013 be approved in principle;

THAT the draft Plan be circulated to the Town of Caledon and the Regional Municipality of Peel requesting endorsement of the Plan;

THAT following circulation and approval at the municipal level, staff report back to the Authority to confirm approval of the final Plan;

AND FURTHER THAT staff proceed to plan and implement the Management Plan's priority projects in partnership with project stakeholders.

1.10 Site Description

The Bolton Resource Management Tract (BRMT) is a 973 hectare conservation property located along the Humber River valley in the Town of Caledon, Regional Municipality of Peel

A large portion of the BRMT is located along the main branch of the Humber River, north–west of downtown Bolton in the Town of Caledon. These lands are largely found south of Old Church Road, north of King Street and Old King Road, west of Regional Road 50 and east of The Gore Road. Two additional parcels of land have been added to the BRMT since 2009: the former Campbell Property and the Bolton Camp lands. These parcels are located along the Caledon-King Townline, north of King Street and lie within the Cold Creek subwatershed of the Humber River. The majority of land comprising BRMT was acquired in over one hundred property purchases from 1961 to 1982. This was a result of TRCA's 1961 Flood Control and Water Conservation scheme which sought to address the need for flood prevention and control following the extensive damage caused by Hurricane Hazel in October of 1954.

Currently, the BRMT can only be accessed via the Humber Valley Heritage Trail, with trail entry points off of Regional Road 50, Duffy's Lane, Castlederg Sideroad, Glasgow Road, Humber Station Road and other points throughout downtown Bolton.

The BRMT Management Plan area lies entirely within the Great Lakes-St. Lawrence floristic region, composed of mixed coniferous-deciduous forest. The northwest half of the tract lies on the Oak Ridges Moraine, with the remainder extending down onto the South Slope physiographic region. The moraine boundary is south of Castlederg

Sideroad and extends southwest, lying a short distance west of Duffy's Lane. Gentle slopes lead into a major valley created by the Humber River. The topography ranges from flat tableland east of the Humber River; to steep valley slopes along the river, and low, wet flood plains to the west. Elevation peaks at 259 metres above sea level at the top of the Humber River valley.

The topography and hydrogeology is divided distinctly by the Oak Ridges Moraine boundary. On the moraine, the terrain is rolling with a fairly loosely-defined river valley. At the upstream end of BRMT, the moraine's sandy loam soils are evident, while as one approaches the boundary of the moraine, there is more of a till overlay. Wetlands are abundant, with numerous kettles in the till portion and seepage headwater swamps along the valleys.

The South Slope climate region is characterized by a milder climate than those to the north and without the moderating influence of Lake Ontario of those to the south, with respect to other areas within the humid continental types. The humid continental climates have moderate winters and adequate rainfall for most agriculture crops. The South Slope portion of BRMT, as one moves downstream toward Bolton, has clay loam soils on till with a deeply incised river valley and fewer wetlands. As the Humber River exits the Oak Ridges Moraine, the valley includes some remarkably large and well-developed incised meanders, notably around Duffy's Lane.

The property's diverse ecosystem includes:

- numerous kettle lakes;
- surficial geology composed of glacial till and river deposits.
- 774 hectares of vegetated natural cover, including;
    - 372 hectare of forest including 221 hectares of successional forest;
    - 93 hectares of wetland;
    - 0.2 hectares of vegetative aquatic habitat;
    - 6.8 hectares of bluff and barren lands; and
    - 80.8 hectares of meadow.

This combination of unique habitats has qualified sections of BRMT to be identified as significant by the Ontario Ministry of Natural Resources (MNR). The tract includes two Environmentally Significant Areas (ESAs), one Provincially Significant Wetland (PSW) and a candidate for a Life Science Area of Natural and Scientific Interest (PSW) (see Map 2.3 in the BRMT Background Report). The Duffy's Lane ESA constitutes most of BRMT, while the Vance-Donaldson Area ESA and the Hockley Valley Wetland Complex PSW occupy small portions of the tract. The Innis-Gibson Lakes Kettles area is a candidate for a Life Science ANSI. The wetland areas within BRMT connect to other wetlands outside of the property boundaries. Thus, BRMT has a strong natural connection to many of its neighbouring properties.

This resource management tract is a significant publicly accessible natural greenspace area in the Town of Caledon. It provides the community with attractions such as wildlife viewing, fishing and hiking trails. In addition, portions of the management plan area are subject to a management agreement with the Town of Caledon, which provides soccer, tennis and other recreation amenities and facilities.

Chapter 2: Plan Vision, Principles, Goals and Objectives

A strategic vision, and related goals and objectives define the purpose of a property and focus the management actions toward the achievement of that vision. The BRMT Management Plan supports TRCA's vision for The Living City® – a place where human settlement can flourish in nature's beauty and diversity.

2.1 A Vision for the Bolton Resource Management Tract

A visioning process, facilitated by TRCA staff, was undertaken early in the management planning process by the BRMT Advisory Committee, including members of the Humber Watershed Alliance, interested community groups, business representatives, community residents, agency staff, and municipal elected officials and staff from the Town of Caledon, Region of Peel and Township of Adjala-Tosorontio. Subsequent communications refined a vision statement for the BRMT. This vision was then presented to the public at an information session held on June 10, 2010, where additional feedback was received by TRCA.

The following statement reflects the ultimate vision for the Bolton Resource Management Tract, once the Bolton Resource Management Tract Management Plan has been fully implemented.

> ***The Bolton Resource Management Tract acts as a natural connection in the greenspace system of The Living City's Humber River Watershed. Nature-based recreation and education complement the natural and cultural heritage resources that have been protected, restored and enhanced with the support and stewardship of the community.***

2.2 Management Principles

The following principles have been derived from various TRCA management strategies, policies and plans, and from the ideas put forth by the BRMT Management Plan Advisory Committee during their visioning workshop. While not 'achievable' themselves, management principles represent what is desirable for the BRMT and have helped determine appropriate directions for the management of the property. These principles have guided the development of management goals and objectives (See Section 3.1.3).

1. Use the principles of ecological integrity (having regard for all of a systems components, functions and linkages) to conserve, protect, regenerate and celebrate the natural, historical, agricultural and cultural heritage of the BRMT.
2. Effectively manage public use safety and liability issues.
3. Promote nature-based recreation and education opportunities that respect natural and cultural heritage resources.

4. Develop awareness and promote cooperation between all stakeholders and form partnerships that will enhance stewardship and provide protection of the conservation lands.
5. Utilize flexible management approaches that allow for adaptation as the management plan is implemented.
6. Ensure net gains to the local economy, social cohesion and ecological integrity.
7. Mitigate and adapt to the effects of climate change.

2.3 Management Plan Goals and Objectives

The following management goals and objectives have been derived from various TRCA management strategies, policies and plans, and from the ideas put forth by the BRMT Management Plan Advisory Committee during their visioning workshop.

Management Goals and Objectives have been organized in the following categories: terrestrial resources, aquatic resources, cultural heritage resources, nature-based public use, conservation education, stewardship and outreach, conservation land use and management, and implementation, monitoring and review of the management plan. Management Recommendations (Section 3.1.5) have been developed to support these goals and objectives and are organized into the same categories.

2.3.1 Terrestrial Resources

- Goal: To protect, restore and enhance the terrestrial natural heritage system to improve quality, biodiversity and ecological function.
    - Objective: To restore and naturalize disturbed areas in the BRMT.
    - Objective: To maximize linkages and connectivity of the natural heritage features to one another and adjacent lands.
    - Objective: To establish and manage forests within the BRMT.
    - Objective: To protect the health of native species.

2.3.2 Aquatic Resources

- Goal: To protect and enhance the form and function of the Humber River aquatic system.
    - Objective: To protect, restore and enhance the health and diversity of native aquatic habitats, communities and species.
    - Objective: To protect and restore surface water quality, with respect to toxic contaminants and other pollutants (such as sediment, nutrients, bacteria and road salt).
    - Objective: To provide for sustainable fishing opportunities and the safe consumption of fish.
    - Objective: To protect groundwater recharge and discharge.
    - Objective: To prevent groundwater contamination.
    - Objective: To eliminate or minimize risks to human life and property due to flooding.

- Objective: To maintain and improve BRMT's contribution to the water balance of the Humber River.

2.3.3 Cultural Heritage Resources

- Goal: To identify, document, protect and conserve cultural and heritage resources for their inherent value and depiction of the long-term human use and occupancy of the area.
  - Objective: To protect and conserve all known and unknown archaeological sites and cultural landscapes.
  - Objective: To promote the cultural heritage features of the BRMT.

2.3.4 Nature-based Public Use

- Goal: To provide opportunities for appropriate, accessible nature-based recreation activities that are environmentally, physically and economically sustainable.
  - Objective: To focus public use on passive, outdoor recreation with development limited to appropriate areas.
  - Objective: To develop an appropriate active public use for the Bolton Camp property.
  - Objective: To provide access to diverse landscapes, places, wildlife habitats, uses, programs and experiences.
  - Objective: Plan and manage outdoor recreation facilities in a manner that integrates ecological health with social benefits
  - Objective: To use principles of ecological integrity (having regard for all of a systems components, functions and linkages), in planning trails throughout BRMT.
  - Objective: To develop and enhance the trail system within the BRMT to provide connections to inter-regional trail systems that link the Oak Ridges Moraine to Lake Ontario.

2.3.5 Conservation Education

- Goal: To promote knowledge and understanding of the natural and cultural values of the land and water, their protection and management requirements, as well as their significance, sensitivities and interrelationships within the BRMT and with surrounding areas.
  - Objective: To offer passive learning opportunities about the natural environment, cultural and heritage resources and sound conservation land management practices.
  - Objective: To foster outdoor educational learning.

2.3.6 Stewardship and Outreach

- Goal: To promote and facilitate the ongoing public involvement towards a partnership that will foster sustainable living and will accomplish watershed

management objectives, as well as implement Management Plan recommendations.

- Objective: Encourage community participation in property management and land use planning.
- Objective: Promote partnerships among environmental, cultural heritage, agriculture, recreation and education organizations, private industry and public agencies in property management and programming.
- Objective: Encourage action-oriented initiatives to protect, conserve and regenerate BRMT.
- Objective: Improve community connections to the watershed through recognition, preservation and celebration of heritage features and resources.
- Objective: Raise funds for environmental regeneration, protection, education and awareness initiatives in the BRMT.
- Objective: Encourage people to choose lifestyles that are sustainable and ecologically-sound through demonstrations and passive education opportunities at the BRMT.

2.3.7 Conservation Land Use and Management

- Goal: To implement a comprehensive conservation land management program that holistically addresses environmental protection, safe and equitable public access and community stewardship.

  - Objective: To protect and enhance the integrity, economic viability of, and provide for appropriate public access to agricultural areas within BRMT
  - Objective: To promote the benefits public ownership, public stewardship and the responsible use of surrounding lands which connect to and influence the natural system of the BRMT.
  - Objective: To reduce and eliminate inappropriate land uses, such as dumping, unapproved trail creation and encroachments.
  - Objective: To offset downstream ecological damage.
  - Objective: To maintain property standards on BRMT property.

2.3.8 Implementation, Monitoring and Review of the Management Plan

- Goal: To implement a progressive land management model at the BRMT that will foster a strong sense of community involvement and provide a diverse and well-connected natural system.

  - Objective: To track the success of land management strategies and actions, and adapt management strategies in response.
  - Objective: To provide for ongoing public involvement in the management process.

Chapter 3: Management Zones

A key component of TRCA's management planning process is the delineation of land management zones for a subject property. The zones are distinguished by a graduated level of ecological protection, management and operational criteria and acceptable levels of public use. Table 3.1 provides a general description of the land management zones at BRMT which include Nature Reserve, Natural Environment, Primary Restoration, Heritage Preserve, Agricultural Reserve, Public Use, Residential Lease and Special Management. Table 3.2 describes the type and intensity of permitted activities that may be appropriate within each land management zone.

These zones and definitions are based on the *Ontario Provincial Parks – Planning and Management Policies* but have been modified to more closely address the requirements of the BRMT and TRCA. Given the current pressures of urbanization on the quality and quantity of natural cover throughout TRCA's jurisdiction, it is paramount to adopt a nature first philosophy for the management of any natural area and to address each site in the larger regional context. By implementing the recommended system of land management zones, TRCA and the BRMT will improve the condition and resilience of natural habitats in the GTA, Region of Peel and Town of Caledon.

Table 3.1
Bolton RMT Land Management Zone Definitions, 2012

Land Management Zone	Definition
Nature Reserve	Areas that have significant or unique natural features, landforms, species or habitats that require careful management to ensure long-term protection.
Natural Environment	Large core habitat areas and corridors that are "natural" in character, but do not meet the criteria of the Nature Reserve zone.
Primary Restoration	Priority lands within BRMT where ecological health and diversity could be enhanced to become Natural Environment zones through active environmental restoration.
Public Use	Areas that have existing or potential for recreational and educational uses, facilities or services. This designation may include areas where low, moderate or high intensity public uses are suitable. These areas may include areas of the property containing buildings or lands rented or leased from TRCA that have restricted public access, and areas subject to other lease agreements that permit public access,
Residential Lease	Houses, other buildings and immediate lands that are subject to residential lease agreements.
Heritage Preserve	Areas that have important cultural heritage features, including structures, vistas or landscapes, which require careful management to ensure long-term protection.

Agricultural Reserve	Areas that have existing or potential for horticultural or agricultural uses, including crops or nursery operations.
Special Management	Areas that require special management practices to address invasive vegetation, remediation of the natural environment or for some other reason.

Table 3.2: Land Management Zones at BRMT and Examples of Standard TRCA Permitted Uses[1]

Land Management Zone	Intensity of Permitted Public Uses	Example Permitted Uses[2]
Nature Reserve	None to Low	Local and inter-regional trails, nature viewing/interpretation, research, education, photography, canoeing and cross-country skiing.
Natural Environment	Low	Local and inter-regional trails, nature viewing/interpretation, research, education, photography, canoeing and cross-country skiing.
Primary Restoration	Low	Local and inter-regional trails, nature viewing/interpretation, research, education, photography, canoeing and cross-country skiing.
Public Use	Low to High *Low to moderate uses will be permitted in the majority of BRMT. High intensity uses will only be considered on the Bolton Camp property*	Low to Moderate Intensity: Local and inter-regional trails, nature viewing/interpretation, research, education, photography and cross-country skiing, sports fields, group picnic areas, High Intensity: Camping ground, Conservation School, Fishing Club, Nursery/Horticulture, Park.[3]
Residential Lease	None	Considered a private area subject to specific residential lease agreements.
Special Management	None to Low	Management of invasive exotic species, monitoring or management of infrastructure.
Heritage Preserve	Low to Moderate	Local and inter-regional trails, nature viewing/interpretation, research, education, photography, cross-country skiing, archaeological excavations, interpretation and education opportunities, and market garden and supporting retail sales.
Agricultural Reserve	Low to Moderate	Agriculture/crop fields, horticultural nursery operations, meadows and hay fields, associated buildings, and market garden and supporting retail sales.

1. The uses listed in this table are examples of public uses that may be permitted within a management zone on TRCA property. The actual uses permitted at a specific site, such as the BRMT, are subject to the direction of the property's management plan and proposals for uses will be evaluated on a site-by-site basis. Refer to the detailed management recommendations in Section 3.3 of this updated management plan for more direction on the uses permitted at the BRMT.

2. The permitted uses listed above are neither exclusive nor exhaustive. Uses may not be appropriate at all TRCA properties. Appropriate permitted uses will be determined on a site-by-site basis.
3. Acceptable High-intensity Public Uses at Bolton Camp are dictated by Town of Caledon special Open Space zoning by-law OS 469. See Map 5.2 in the BRMT Management Plan Background Report for the area of this by-laws application.

3.1 Determining the Land Management Zones

In order to apply the appropriate land management zones in the BRMT, TRCA staff reviewed, inventoried, analyzed and ranked the features and functions for the area using the geographic information system (GIS). The final land management zone delineation is shown in Map 3.1.

The critical information that was considered in determining the land management zones is as follows:

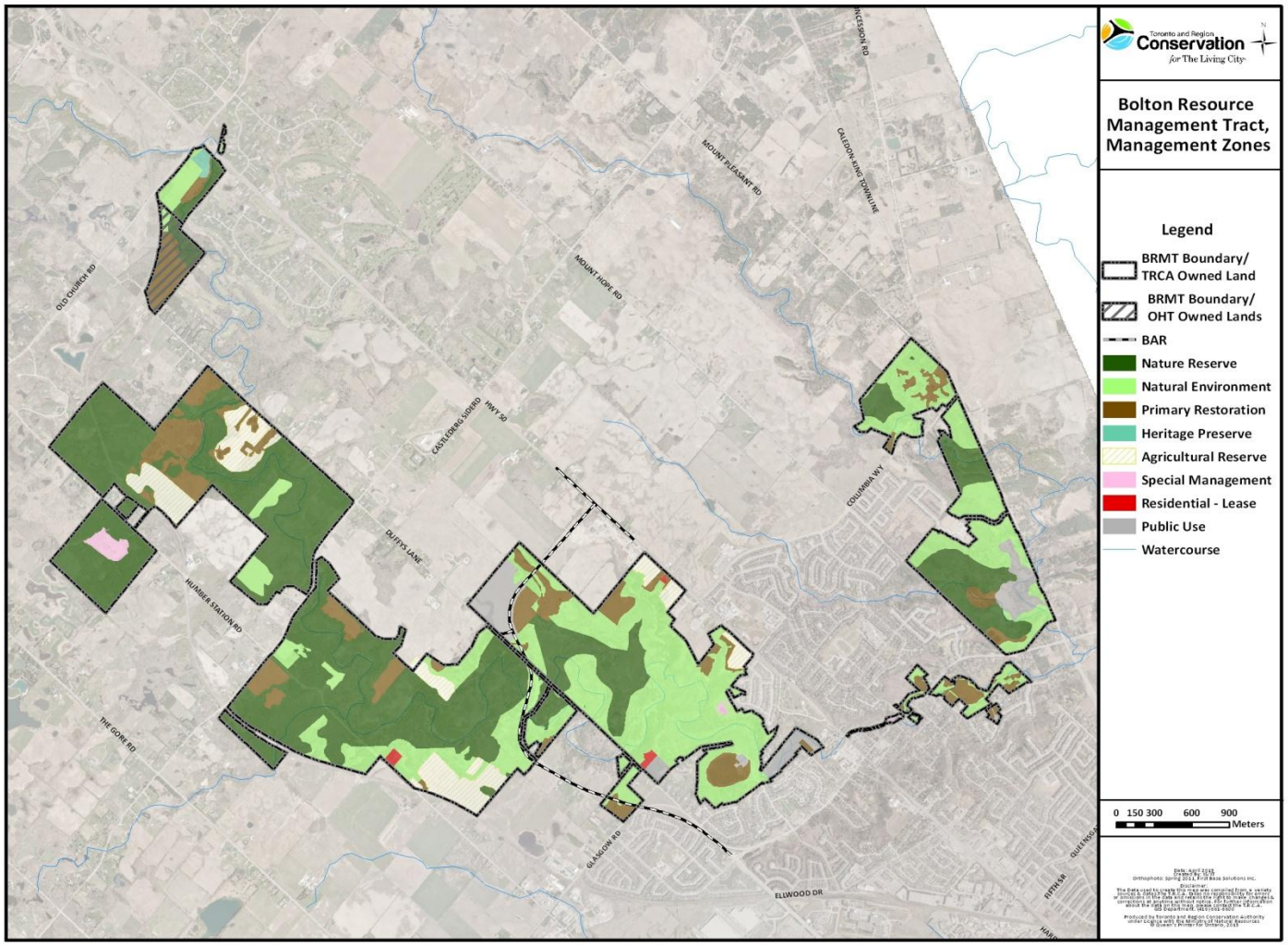
- Interior forest habitat
- Vegetation communities
- Species of concern
- Environmentally Significant Areas (ESAs)
- Areas of Natural and Scientific Interest (ANSIs)
- Evaluated, identified and unclassified wetlands, including Provincially Significant Wetlands (PSWs)
- Natural corridors and linkages
- Existing public use areas
- Lease areas
- Existing and approved infrastructure
- Easements
- Identified and potentially hazardous areas
- Contaminated sites
- Sites containing non-native invasive vegetation
- Archaeological resources
- Heritage and cultural resources.

While priority is given to maintaining natural habitat and cultural features through the BRMT, permitted uses described for land management zones are not exclusive, such that habitat restoration may take place in Nature Reserves and passive public use may occur in Heritage Preserves. The degree and purpose of these secondary uses will determine whether they may be permitted within the particular land management zone. Detailed restoration, public use and agriculture plans must be prepared in accordance with the land management zones criteria and definitions.

The Primary Restoration land management zones were established through a landscape-level analysis to determine opportunities to increase the size and shape of natural communities and habitat. Primary Restoration land management zones were considered adjacent to sensitive natural areas, especially those that are located close to higher-intensity public uses. Other Primary Restoration land management zones include

areas currently in agricultural use. Agricultural uses are still desirable within BRMT and provided for in this plan, however certain fields extend into sensitive natural areas and will be restored to protect the ecological integrity of these sites.

Map 3.1: Land Management Zones, Bolton Resource Management Tract, 2012



Mapping of the land management zones was undertaken in layers based on recognizing TRCA's mandate and legal obligations for Public Use, Heritage Preserve and Residential Lease land management zones; sensitive natural areas including Nature Reserve, Natural Environment, Primary Restoration; and operational needs, including Agricultural Reserve and Special Management land management zones. As previously noted, permitted uses have been identified for each land management zone; however, the delineation of a land management zone does not necessarily preclude other uses and management actions within the zone. The development of detailed site plans is critical to maintain the integrity of the land management zones.

Land management zones that focus on maintaining or improving the natural environment (i.e., Nature Reserve, Natural Environment and Primary Restoration) account for over 88 per cent of the property allocation. This highlights the fact that a large majority of BRMT is, or has the potential to be, high-quality habitat which will positively contribute to the natural heritage system of the Humber River watershed.

Nearly 60 hectares of land has been zoned as Agricultural Reserve including number of agricultural leases associated with the Albion Hills Community Farm and related individual farm tenants.

Lands identified for Public Use total 38.6 hectares and will accommodate the space for public facilities and programming associated with a desired public use at the Bolton Camp property and continued management agreements with the Town of Caledon for municipal recreation facilities at the BRMT. These lands are generally located at the future north intersection of Duffy's Lane and the Bolton Arterial Road (BAR), Dicks Dam Park, and the Bolton Camp property.

Roughly seven hectares of land within BRMT is defined as Special Management. This includes a former municipal landfill on Humber Station Road, a flood control berm near Mill Street in downtown Bolton, and a storm water management pond adjacent to the North Hill community area. This pond is managed and maintained under management agreement with the Town of Caledon.

Three residential leases will be retained at BRMT totalling 2.57 hectares, and 2.19 hectares is protected with a Heritage Preserve. This area is associated with the 'Cedar Mains' property and surrounds the former Shiloh Wesleyan Church and Cemetery (designated under the Ontario Heritage Act).

Table 3.3: Land Management Zones, Bolton Resource Management Tract, 2012

Land Management Zone	Area (hectares)	Portion of Property (%)
Nature Reserve	444.22	44.7
Natural Environment	314.25	32.4
Primary Restoration	115.54	11.8
Agricultural Reserve	59.67	6.0
Public Use	37.96	3.9
Special Management	7.01	0.71
Residential Lease	2.57	0.26
Heritage Preserve	2.19	0.22
Total:	983.42	

Chapter 4: Management Recommendations

The management recommendations are intended to guide the actions of TRCA, its partners and stakeholders to ensure that the BRMT will remain a healthy and vital part of the Humber River watershed. The recommendations are consistent with the provisions outlined in TRCA's *Valley and Stream Corridor Management Program* (1994), the *Strategy for Public Use of Conservation Authority Lands* (1995) and the watershed management objectives outlined in *Legacy* (1997) and *Pathways to a Healthy Humber* (2008).

The land management zone recommendations build on the guiding management principles, goals and objectives (Sections 3.1.2 and 3.1.3) to provide more detailed input into management actions. Combined, they provide a foundation for managing the BRMT in a manner that protects and regenerates the ecological form and function of the area while providing opportunities for public enjoyment and stewardship.

4.1 Land Management Zones

Within the eight land management zones in the BRMT, specific land management activities are permitted, and recommendations are made to improve the overall conditions of the ecological and public use features. Limited low to moderate intensity public uses will still be permitted outside of Public-Use zones in the rest of the BRMT including local and inter-regional trails (See Table 3.2).

Recommendations

- ***Review and update management zones for the Bolton Camp property as required pending the completion of a natural heritage inventory update***

- ***Monitor all land management zones regularly for terrestrial natural heritage and public use indicators. Monitoring may include frog call surveys, species of regional conservation concern lists, public opinion surveys, trail user counts and other specifics as developed as part of a monitoring program.***

- ***Restore, enhance and connect environmental features and functions within the land management zones to support TRCA's Terrestrial Natural Heritage System Strategy.***

- ***Install limited interpretive signage in land management zones to educate the public about the environmental features of the zone and appropriate public uses. For example, a sign at a Primary Restoration land management zone would include information about the reasons for undertaking restoration, what is being restored and appropriate use of the area. However, signs should be limited in scope, number and location so they do not detract from the natural protection and restoration objectives or the aesthetics enjoyed by visitors.***

4.2 Nature Reserve (444 hectares)

Over 439 hectares of the BRMT is zoned as Nature Reserve. Resource management projects encouraged in this zone include those designed to protect, enhance, restore and connect natural features, landforms, species or habitats. This includes forest management, fish habitat improvement, naturalization and invasive species management activities. All trails should be monitored to ensure that invasive species are not spread throughout the area. See recommended access points and permitted uses for Nature Reserve land management zones in Section 3.2 of this plan.

Recommendations:

- ***Install limited interpretive signage to promote awareness about the function of the Nature Reserve land management zones. Signs should be limited in number to preserve the natural heritage attributes and aesthetics of the area.***

- ***Decommission informal and inappropriate trails through environmentally sensitive areas.***

4.3 Natural Environment (314 hectares)

Over 400 hectares of the BRMT is zoned as Natural Environment to allow for environmental management projects designed to protect, enhance, restore and connect natural features, landforms, species or habitats. This includes forest management, fish habitat improvement, naturalization and invasive species management activities. All trails should be monitored to ensure that invasive species are not spread throughout the area.

Recommendations:

- ***Install interpretive signage to promote awareness about the function of the Natural Environment land management zone. Signs should be limited in number to preserve the natural heritage attributes and aesthetics of the area.***

- ***Decommission informal and inappropriate trails through environmentally sensitive areas.***

4.4 Primary Restoration (115 hectares)

Over 120 hectares of the BRMT is zoned for active restoration projects by being classified Primary Restoration. Resource management activities encouraged in this zone include environmental management projects designed to protect, enhance, restore and connect natural features, landforms, species or habitats. By undertaking successful restoration activities these areas would naturally mature and evolve into either Natural Environment or Nature Reserve Zones.

There are opportunities to partner with municipal partners and other agencies to facilitate the enhancement of the terrestrial system.

Recommendations:

- ***Implement habitat restoration projects as recommended in current and future habitat enhancement plans.***

- ***After implementation, actively manage primary restoration areas to ensure the success of the plant materials and the achievement of restoration goals.***

- ***Pursue opportunities to partner with local municipalities and other agencies to enhance the terrestrial and aquatic habitats of the BRMT.***

4.5 Public Use (38.6 hectares)

More formal public uses will be concentrated in the 38.6 hectares of land zoned as Public Use. Resource management activities encouraged in this zone include environmental management projects designed to protect, enhance, restore and connect natural features, landforms, species or habitats wherever possible, while still allowing for appropriate public access. Any potential high intensity public uses at the BRMT will be concentrated within the Public-Use zone at the former Bolton Camp property so as to allow for an updated camp use while reducing the impact on the high quality terrestrial habitat in the rest of the property.

The Town of Caledon, with the support of TRCA, has long-term plans to relocate active recreation uses out of Edelweiss and Dicks Dam parks onto other facilities that are out of the floodplain. One of these areas is a TRCA owned parcel of former agricultural land that will bisected by the construction of the Bolton Arterial Road (BAR). The remaining 10-12ha parcel on the eventual north-east corner of Duffy Land and the BAR will eventually house some form of recreational infrastructure which will be built, operated and maintained by the Town of Caledon. Re-establishing an agricultural lease on this parcel following construction of the BAR may also be appropriate.

Recommendations:

- ***Continue to provide existing public use programs and facilities within Public Use land management zones including management agreements with the Town of Caledon to provide other recreational facilities (i.e. Jack Garrett Soccer Park).***

- ***Locate new public use activities in the areas zoned as Public Use in keeping with the vision, goals and objectives of the BRMT Management Plan.***

- ***Focus high intensity public uses within the Public-Use zone at the Bolton Camp. Limited low to moderate impact public uses may be permitted elsewhere on the property.***

- ***Continue lease agreements to provide public use opportunities in Public Use land management zones, and enter into additional agreements, subject to suitability with regard to land management zone criteria and permitted uses.***

- ***Subject to further investigation and evaluation, consolidate and relocate active recreational facilities at Edelweiss Park and Dicks Dam Park outside the floodplain at the BRMT.***

- ***Begin long-term planning discussions with the Town of Caledon regarding future use of the Public-Use lands at the future Duffy's Lane/ Bolton Arterial Road***

intersection. Subject to preliminary discussions, an interim use for the lands such as an agricultural lease may be appropriate.

- ***Prepare a detailed site plan for the Public-Use zone at the Bolton Camp property that addresses specific natural and cultural heritage and recreation aspects of the site. This plan should be prepared with input from the public, BRMT Stewardship Committee, Town of Caledon and Region of Peel.***

4.6 Residential Lease (2.57 hectares)

Buildings and lands subject to residential lease agreements are part of the Residential Lease land management zone. Access to these areas is restricted to TRCA staff, building tenants and their guests.

Recommendations:

- ***Restrict access to Residential Lease land management zones to TRCA staff, tenants and their guests.***

- ***Conduct regular/annual/biennial audits of residential leases to ensure property standards associated with the Lease Agreements are upheld. Provide advance written notice to tenants prior to such audits.***

4.7 Heritage Preserve (2.19 hectares)

This land management zone encompasses the 'Cedar Mains' site, including the former church house, house and barn foundations of the other former structures, and related driveways, stone walls and staging areas. The main house, barns and other buildings were demolished in 2008 due to persistent vandalism, fire and public safety concerns. Future efforts should focus on the development of an interpretive plan to showcase the importance of the site in the early settlement and agricultural development of Albion Township.

TRCA requires that an archaeological investigation be undertaken prior to any development or undertaking that will significantly disturb or alter the soil and resulting in negative impact to cultural heritage resources. Any significant archaeological finds that cannot be mitigated (foundations, wells etc) may be left in-situ and a new Heritage Preserve zone should be established to ensure proper documentation, conservation and interpretation.

Recommendations:

- ***Prepare a comprehensive interpretive plan for the Cedar Mains site. This plan could include:***
    - ***Developing an interpretive trail around the site, highlighting various points of interest, including a trailhead and benches***
    - ***Posting of appropriate interpretive signage detailing the cultural heritage significance of the Cedar Mains site and its features.***
    - ***Enhancing and preserving the gardens of the site***
    - ***Developing an adaptive re-use for the church house.***
    - ***Incorporating items salvaged from the demolition into interpretive areas***

- ***Preserve the cemetery and church chapel at Cedar Mains for their inherent cultural heritage value.***

- ***Ensure that TRCA's Archaeological Resource Management Unit conducts archaeological assessments of any locations where ground-level disturbances are planned such as trail development, parking lot construction etc.***

- ***Establish new Heritage Preserve zone, as appropriate, around any significant cultural heritage resources.***

4.8 Agricultural Reserve (59.67 hectares)

Agricultural reserves have been designated throughout the BRMT in association with the Albion Hills Community Farm (AHCF) and associated individual farm tenants. With the assistance of TRCA, Environmental Farm Plans (EFP's) have been developed for agricultural lands within BRMT. These EFP's ensure environmental best management practices are used for any farming operations within BRMT.
The AHCF has expressed interest in developing a community garden within the Village of Bolton in the BRMT. This could be located within existing Agricultural Reserves on other suitable sites.

Recommendations:

- ***Monitor agricultural operations to ensure the implementation of best management practices.***

- ***Work with community agricultural organizations to develop community gardens such as Albion Hills Community Farm's North Hill Community Garden proposal.***

- ***Post interpretive signs and/or prepare a brochure regarding near-urban agriculture within BRMT and the Humber River watershed.***

- ***Restore natural cover and habitat on fields that have been taken out of agricultural production.***

4.9 Special Management (7.01 hectares)

Special Management zones within BRMT include the former Albion Landfill site on Humber Station Road, a storm water management pond (SWMP) to the west of the North Hill Community, and a flood control berm along the southern bank of the Humber River through downtown Bolton.
TRCA is currently working in partnership with Town of Caledon Public Works Staff to address erosion issues at the outflow of the SWMP.

Recommendations:

- ***Continue to support the Region of Peel's ongoing environmental monitoring of wells surrounding the Albion Landfill site.***

- ***Continue to work with the Town of Caledon to repair erosion damage at the outflow of the SWMP. Ensure the impacted trail bridge is replaced to the satisfaction of TRCA and the HVHTA.***

- ***Manage/remove woody vegetation from the flood control berm as required.***

Additional Guidelines and Recommendations

In addition to management recommendations relating to land management zone designations, there are further recommendations that have been developed for: terrestrial resources, aquatic resources, cultural heritage resources, nature-based public use, conservation education, stewardship and outreach, operations and conservation area management, conservation land use and management, and implementation, monitoring and review of the management plan.

4.10 Terrestrial Resources

Protection and restoration of terrestrial habitat should be a primary focus for action at the BRMT. This focus will enhance the natural system functions and processes within the entire Humber River watershed.

Guided by TRCA's *Terrestrial Natural Heritage System Strategy*, the current health of the BRMT was inventoried and assessed as described in the Bolton Resource Management Tract Study Area Terrestrial Biological Inventory and Assessment (2008). By implementing the recommendations of this assessment, the health of the BRMT can be enhanced and the natural system biodiversity maintained and restored. For instance, by improving the quality, quantity, distribution and connectivity of natural cover, terrestrial biodiversity will better withstand the impacts of the highly urbanized area which will soon surround it; biodiversity will also be more resilient to factors such as climate change, increased public uses in the BRMT and non-native invasive species. The enhancement of the terrestrial system within the BRMT will benefit other watershed components, such as the aquatic system, water quality/quantity and air quality, along with providing more opportunity for nature appreciation and recreation in the area.

Recommendations

- ***Implement the recommendations Bolton Resource Management Tract Study Area Terrestrial Biological Inventory and Assessment (2008). See Appendix A.***

- ***Develop reforestation and naturalization plans that enhance and restore existing ecosystem function.***

- ***Continue to actively manage forests to promote a healthy forest ecosystem until such time that active management is not required.***

- ***Develop a non-native invasive species management plan for BRMT. This may include an inventory/tracking system, monitoring of any actively-managed invasive sites as well as the identification of priority areas for future management actions.***

- ***Enhance the natural heritage interface along Bolton Arterial Road corridor.***

- ***Mitigate the impacts of all roads, especially the Bolton Arterial Road, on the ecological integrity of the BRMT, e.g. innovative stormwater controls, wildlife crossings etc.***

- ***Create ecosystem linkages along the Upper Humber River valley as well as between subwatersheds such as the Cold Creek tributary.***

- ***Complete remaining biological surveys for the Bolton Camp property, so that management and restoration priorities can be set, and the information may be used to inform future decision-making processes.***

- ***Mitigate public use impacts on the terrestrial system.***

- ***Conduct regular inventories of flora and fauna in the BRMT that can be used to provide input to management directions and implementation decisions.***

4.11 Aquatic Resources

The Upper Main Humber River, and Cold Creek subwatershed are central features of the BRMT Consequently, fisheries management is an important component of the management of the BRMT. Of particular relevance are management recommendations from the *Humber River Fisheries Management Plan* (2005). The Upper Main Humber River and Cold Creek subwatershed provide habitat for redside dace and, therefore, the *Species At Risk Act* will influence and potentially restrict some activities at the BRMT.

Recommendations:

- ***Implement the recommendations of the Humber River Fisheries Management Plan (2008) See Appendix B***

- ***Assess populations of priority species and implement appropriate species recovery strategies, in particular that of the redside dace.***

- ***Protect existing wetlands and rehabilitate or restore wetlands where degraded or eliminated.***

- ***Maintain or enhance existing stream baseflow. In order to determine the target baseflow, in-stream flow requirements for target fish species should be determined.***

- ***Identify in-stream barriers and assess stream crossing for fish passage. Implement appropriate barrier mitigation measures as necessary.***

- ***Rehabilitate aquatic habitat, including altered streams. Degraded reaches should be identified, then aquatic plantings can be used to create and restore in-water habitat. Tree stumps, logs and brush bundles for in-stream cover can be added.***

4.12 Cultural Heritage Resources

Cultural heritage resources beyond those addressed in the Heritage Preserve land management zone require management directions. This includes the built heritage resources at the Bolton Camp property.

Recommendations

- ***Undertake archaeological assessments to fully understand and protect the history of the BRMT and adjacent areas, especially where ground-level disturbances are planned.***

- ***Inventory and document known archaeological sites and heritage landscapes including built structures.***

- ***Develop a cultural heritage features map with highlighted areas that can be incorporated into public use programming and signage. A focus area may be the Bolton Camp property. The trail system in the BRMT should provide access to this heritage area in a manner that will celebrate but not degrade their heritage value.***

- ***Incorporate cultural heritage information into interpretive signs at various locations throughout the BRMT.***

4.13 Nature-based Public Use

Given its proximity to the urban centre of Bolton, the BRMT is well placed to provide high-quality nature-based public use opportunities to local and regional visitors.

Experience shows that engaging area residents early on and working with them to create a stewardship ethic in their communities is essential to the future health of any natural area. This can be done through the creation of a trail system that provides a safe and enjoyable recreation experience for users, allowing them to experience and appreciate the natural environment. Users may also choose to become involved in stewardship committees, trail captain programs, or public events.

Given the proximity of the BRMT lands to heavily populated areas, high levels of public use can be anticipated. While this represents an opportunity to engage users in stewardship of the site, it also presents potential impacts that are often associated with high volumes of users. It is important that such impacts be mitigated through sustainable trail design, construction and maintenance, appropriate site securement and regular property and trail audits.

A key goal of the Humber River Watershed Plan is to provide opportunities for public enjoyment that are compatible with, and raise awareness of, the watershed's natural and cultural heritage. The plan aims to provide a variety of appropriate public uses and experiences, to incorporate greenspace into all developments, and to create an accessible and connected greenspace

system. The targets that support these objectives, and detail on how the BRMT will contribute to these targets, are listed in Appendix C. Some sample targets for the Humber River watershed include:

- Manage 100 per cent of public greenspace through application of standards of best practice
- Greenspace located within two kilometres of all homes
- Build an additional 60 kilometres of inter-regional trails in the watershed
- Provide opportunities for nature-based recreation experiences related to the following concept areas or themes:
    - Hills of the headwaters
    - Humber Valley wilderness
    - Urban Escape

The intent and direction of these watershed-wide targets are reflected in the recommendations below.

Recommendations

- ***Improve recreational fishing opportunities with enhanced access to shorelines that may include fishing nodes at appropriate locations.***
- ***Manage human activities to reduce the effects of over-use.***
- ***Limit recreational uses in sensitive areas. Locate active public uses on tablelands when and where possible.***
- ***Design trail heads, access points, etc. to avoid/reduce vandalism and garbage.***
- ***Pursue additional partnership opportunities for public use at Bolton Camp.***
- ***Use natural heritage and cultural heritage features maps to develop a trail guide. Incorporate these feature maps into programming and interpretive signage as well.***
- ***Enforce TRCA's Policy and Operational Procedures for Managing Domestic Animals (No dogs off-leash etc.)***
- ***Liaise with municipal tourism organizations to further promote the BRMT.***

4.14 Trails

A key goal of the management plan is to create a trail system that will provide nature-based recreation opportunities for local and regional visitors. The trail system will be designed to ensure a safe and enjoyable recreational experience, while minimizing impact on the natural heritage system. Below are a few general recommendations for trail development and management within the BRMT. See *Chapter 5: Trail Plan* for more detailed trail recommendations.

Recommendations:

- ***Fully support and sustain the partnership between TRCA and HVHTA including direct or indirect financial support, information sharing, collaborative trail planning and maintenance.***

- ***Expand the trail system at the BRMT to permit cycling.***

- ***Take steps to reduce conflicts between trail user groups using methods such as signage, public/user education and enforcement.***

- ***Maintain trails in good state of repair for safety and public appreciation.***

- ***Maintain multiple trail access points.***

- ***Develop a system of trails that can be used by a variety of trail users. This may include single or multi-use trails, as appropriate.***

- ***Extend the trail system in the BRMT to connect to trails in Vaughan, Palgrave and King Township.***

- ***Apply an adaptive management approach to trail management where positive and negative outcomes of trail implementation and use are utilized to inform improvement to trail management practices.***

4.15 Conservation Education

While visiting the BRMT, there is an opportunity to enhance the visitor experience by providing nature-based education that furthers the message of The Living City® and the vision for the BRMT; this may be accomplished through passive interpretive opportunities and formal educational programming. If visitors are inspired to value the BRMT and The Living City® through investigating and experiencing its many systems first hand, then they will be much more likely to shift their behaviours to sustainable ones. Implementing the conservation education recommendations will provide these opportunities at the BRMT. Education opportunities will continue to be passive in nature (hiking, nature appreciation etc). In the meantime, TRCA will continue to explore opportunities to reestablish some form of education/camp centre at the Bolton Camp property.

Recommendations:

- ***Provide interpretive signs at the trail heads and at other points of interest along the trails to enhance the visitor experience. Interpretation themes may include natural and cultural heritage features, habitat restoration and conservation land management. All themes should support the BRMT's strategic vision and The Living City® vision.***

- ***Continue to develop a preferred business model for a reestablished education/camp use at the Bolton Camp property in consultation with public and private partners.***

4.16 Stewardship and Outreach

Achieving the vision for the BRMT and The Living City® requires everyone's involvement. Planting trees, shrubs and wildflowers, participating in community planning workshops, donating money to conservation initiatives and changing daily habits are just some of the ways that the community can contribute towards a healthy environment. TRCA is a leader in community-based environmental stewardship.

There is a strong sense of stewardship at the BRMT with the Humber Valley Heritage Trail Association, Albion Hills Community Farm and Humber Watershed Alliance.

Given the urban development which continues to the BRMT, there is a real urgency for the stewardship message to be relayed to the local community. Users and neighbours need to understand the value of this large greenspace in their community and within the Greater Toronto bioregion and how their actions can impact the natural heritage system and the BRMT's environmental resources. The concept of community stewardship can go a long way toward reinforcing the protection, restoration and enhancement of the BRMT.

Recommendations:

- ***Create a BRMT Stewardship Committee that consists of representatives of local governments, residents, community groups, business owners and other stakeholders. Meet and communicate regularly with this group.***

- ***Promote a sense of ownership in the local community by encouraging people to participate in the management of the BRMT. Opportunities may include plantings, flora and fauna monitoring, litter clean-up, and trail maintenance. In addition, the community can participate in nature walks and educational workshops.***

- ***Install "Humber River" signs at places where the river intersects roads within the BRMT.***

- ***Promote the BRMT to watershed residents through the Humber Watershed Alliance newsletter the Humber Advocate.***

- ***Encourage stewardship from neighbouring landowners. Important initiatives may include planting native gardens, organic gardening and appropriate waste disposal.***

4.17 Conservation Land Use and Management

In addition to the BRMT's land management zoning, some strategic recommendations also address the use and management of the property.

Recommendations:

- ***Work with TRCA Conservation Lands and Enforcement staff, as well as appropriate local authorities, to reduce and eliminate unauthorized uses within BRMT.***

- ***Implement the Site Securement and Protection Plan for the BRMT (see Section 4.3: Recommendations for details). Components of the site securement plan include the assessment and/or upgrade of fencing, removal of hazardous trees, property signage and illegal dumping mitigation measures. Implementation should be undertaken in conjunction with the Town of Caledon***

- ***Undertake regular patrols to curb illegal poaching and garbage dumping on the property. Representatives from the Ministry of Natural Resources should be involved when required.***

- ***Expand public land holdings through acquisition, conservation easements, donations and planning incentives.***

- ***Continue to investigate the purchase of lands in the area that can expand the BRMT to include areas of environmental significance. The Greenlands Acquisition Project for 2011-2015 provides guidance on TRCA land acquisition***

- ***Review requests for land purchases and leases submitted to TRCA (i.e., requests to lease or sell land currently in TRCA ownership) as they are submitted. Follow the established processes for these reviews.***

- ***Ensure all signage is limited in scale, scope, number and location so as not to impact natural heritage objectives, aesthetics or the visitor's enjoyment of the natural area.***

- ***Conduct municipal, stakeholder and public consultation when contemplating any proposals or changes in land use and/or site alterations that are not supported by the vision, management principles, goals, objectives and management recommendations of this updated management plan. The input, results and recommendations of the consultation should be included in any TRCA staff report that is provided to senior TRCA staff, the TRCA Board and/or Humber Watershed Alliance.***

- ***Incorporate Leadership in Energy and Environmental Design (LEED) principles and requirements for new and renovated facilities at the BRMT to ensure minimal ecological impact on the surrounding area. These requirements should also be incorporated within lease agreements, as appropriate.***

- ***Adequately secure and/or decommission structures at the Bolton Camp Property. This limits TRCA's liability due to decrepit structures and provides increased area for public use or for terrestrial habitat regeneration. If the structures may be of cultural heritage value, take steps to investigate retention and restoration.***

4.18 Implementation, Monitoring and Review of the Management Plan

The information and recommendations in this management plan represent the best and current information available to the BRMT Advisory Committee and TRCA. The BRMT Management Plan has an anticipated implementation timeline of five years and a management timeline of ten years, after which time the plan should be updated.

Recommendations:

- ***Institute monitoring and on-going inventory programs to collect data and to ensure that this diverse ecosystem is continually protected and enhanced. Use data from monitoring and inventory programs to modify management of the BRMT as necessary.***

- ***Review and update the plan every five years or as necessary. Reviews may be prompted by new or amended provincial, municipal and TRCA legislation, policies and plans, as well as new programs.***

- ***Ensure that the land management zones and recommendations of the updated management plan for the BRMT are reflected in local and regional municipal plans and policies. It is suggested that TRCA staff meet with staff from the Town of Caledon and the Regional Municipality of Peel to confirm appropriate land use designations and zoning of the BRMT in their respective Official Plans and associated documents. The land use designations and zones should best reflect the BRMT's recommended land management zones and uses. As well, the BRMT trail plan alignments should be incorporated into corresponding municipal and regional trail and recreation plans.***

4.19 Bolton Camp Site Improvement Project

The Bolton Camp Site Improvement Project is intended to implement land management best-practices and infrastructure improvements on the Bolton Camp property with the goal to:

-protect and enhance natural and cultural heritage resources
-re-establish a positive presence on-site to prevent vandalism and inappropriate uses
-address public safety and site securement issues
-restore a sustainable camp/recreation operation on the property

Many of the land management recommendations for the Bolton Camp property are described in this management plan but large-scale redevelopment of the site is still subject to ongoing consultation and planning.

Priorities for implementation to be covered by this project include:

- Detailed Heritage Assessments of those buildings and structures identified by the Architectural Conservancy of Ontario and Town of Caledon; plus implementation of recommendations as appropriate
- Assessment, securement, improvement or demolition of remaining buildings and structures as appropriate
- Access road and parking lot improvements
- Hazard tree mitigation
- Trail Plan implementation including: Access point creation and formalization, Delineating and formalizing the public trail network, Decommissioning remaining redundant or unsustainable trails, Way-finding signage and trail guides
- Updating and restoring recreation infrastructure including the former sports field, swimming pool and ropes course

Chapter 5: Trail Plan and Recommendations

5.1 Introduction

The BRMT is a popular trail destination for both local and regional visitors. As communities in the region continue to grow, the demand for access to high-quality recreational trails like those found in the BRMT will continue to grow as well.

As a result, any and all public use on the site must be carefully planned, implemented and monitored to ensure the long-term sustainability of these and other natural features and functions.

While these lands are predominantly healthy from an ecological perspective, they face pressures from extensive informal trails and will be subject to potential future impacts from increased numbers of users as surrounding development occurs.

Most of the BRMT lands are designated as nature reserve, with the intent of minimizing public access to those areas and protecting the sensitive natural environments (see chapter four). Portions of the property have been designated as natural environment, with a goal of highlighting corridors where trail development can take place. By providing controlled public access to natural areas, trails can provide both valuable educational and aesthetic experiences for users. This must be done through a balanced approach to ensure that ecological function is not disrupted.

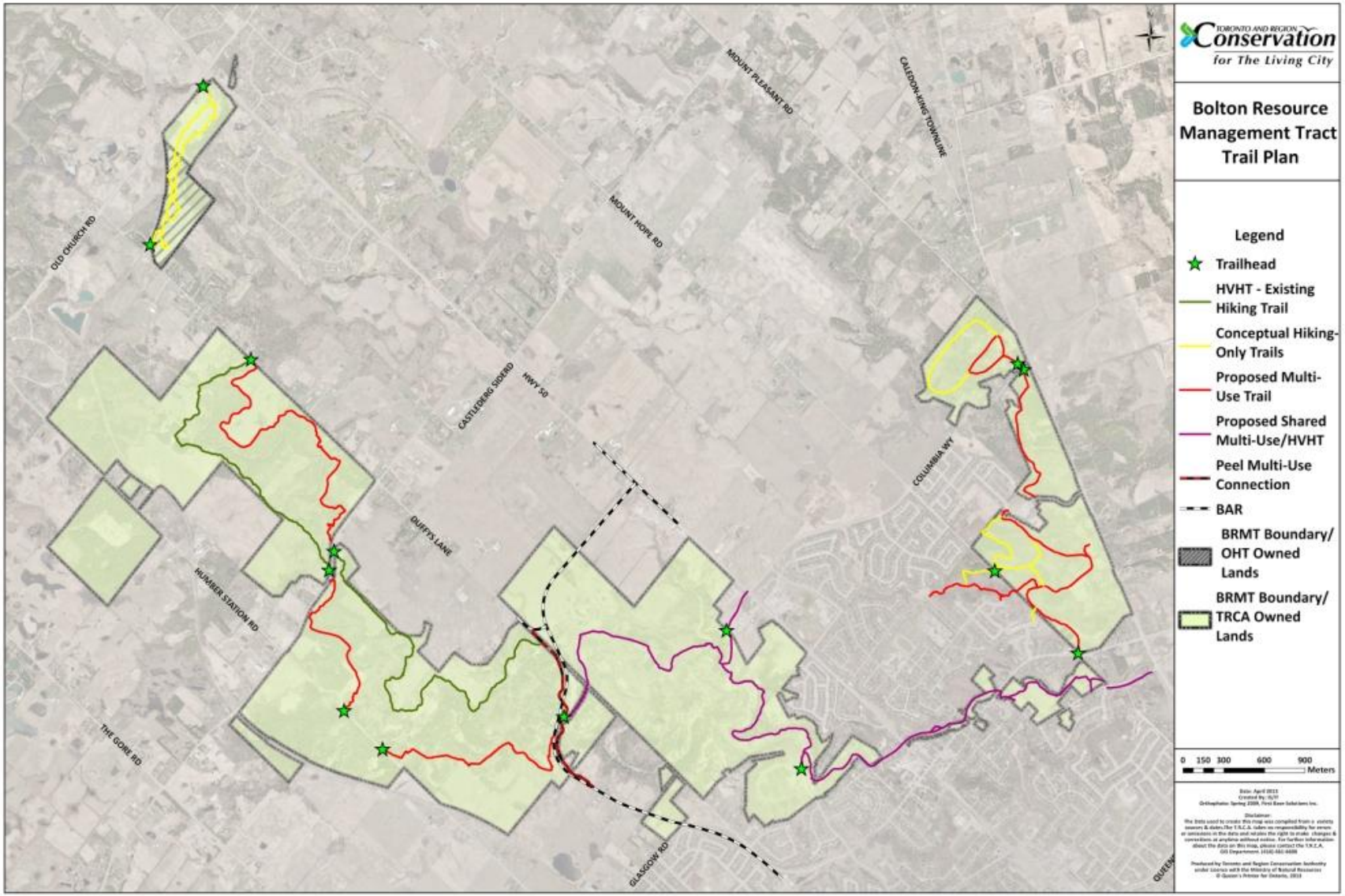
As part of the management planning process for the BRMT, a detailed trail plan has been developed for the area. The plan went through extensive consultation and re-drafting at the various steering and advisory committees, in an effort to design a system that would be enjoyable for users while also maximizing protection for the natural system.

This plan represents a balance of a) the need to manage existing trail uses, b) the opportunity to provide a strategic multi-use trail connection for Caledon residents and regional trail users, and c) the desire to maintain and enhance the trail agreement with the HVHTA as much as possible. By providing a trail that is inclusive of other trail users, the beneficial impacts of trail use including active lifestyles, passive nature appreciation and education and environmental stewardship, can be maximized.

5.2 Trail System

The trail system is composed of a shared multi-use trail that will run from the Albion-Vaughan Townline to the Duffy's Lane/BAR crossing. From this point, the Humber Valley Heritage Trail will continue north along its existing alignment. A parallel multi-use trail will be constructed on the opposite side of the river, eventually ending on Duffy's Lane, south of Old Church Road. Additional pedestrian-only and multi-use trails will be constructed and/or formalized on the Cedar Mains, Campbell and Bolton Camp properties, which will also connect to the main multi-use trail, as well as a short interpretive trail around the Cedar Mains heritage site. Map 5.1 shows detail of the planned trail system, including the location of multi-use and pedestrian-only trails and trailheads.

Map 5.1 BRMT Trail Plan



Recommendation:

- ***The detailed alignment of proposed trails must be reviewed by TRCA technical staff to ensure proper placement of the trail and reduced impacts to the natural environment.***

5.2.1 Shared Multi-Use Trail

The shared multi-use trial will stretch a total of 11.3 kilometres(km) from the Albion-Vaughan Townline to the Duffy's Lane/BAR crossing. This portion of trail will largely follow the existing alignment of the HVHT. Through targeted trail improvements, this portion of trail will be upgraded to safely accommodate multiple uses as part of the inter-regional trail system in the Humber River watershed. This portion of trail will continue to be labeled as the HVHT but legal and financial responsibility will be transferred to TRCA.

5.2.1.1 Albion-Vaughan Townline to Edelweiss Park

This 6.8km portion of trail is located along the valley floor through historic downtown Bolton and includes Dick's Dam, Mill and Sunkist Woods parks. Given its proximity to the urban centre and relatively flat topography, this trail segment is well suited to provide a 'barrier-free' trail opportunity for trail users of varying levels of fitness and ability.

Recommendation:

- ***Utilize TRCA's High Efficiency Trail Assessment Process (HETAP) device to assess the feasibility of a barrier-free trail through downtown Bolton.***

- ***Work with Town of Caledon staff to ensure a coordinated trail construction and maintenance standard for this trail segment.***

5.2.1.2 Edelweiss Park to Duffy's Lane/BAR Crossing

Throughout the BRMT trail planning process every effort was made to provide multi-use trail opportunities that would be physically separate from the exiting HVHT. This was not possible for the entire property due to the environmental and topographical characteristics of the site. As such, this 4.5km portion of the existing HVHT will receive targeted trail improvements to enhance the sustainability of the trail generally and allow for the safe accommodation of multiple uses.

5.2.1.3 Campbell and Bolton Camp trails

A multi-use trail connection to the Bolton Camp has also been included in this trail plan. This link will provide an active transportation option to future employees at the site. This 5.3km, linear multi-use trail also includes an extension north to the Campbell property, allowing all types of trail users to access this unique property. These multi-use trails will be complemented by pedestrian-only loops and side-trails, that will offer additional trail opportunities for hikers.

Recommendation:

- ***Work closely with the HVHTA and BRMT Stewardship Committee to develop detailed trail improvement plans for these portions of trail.***

- ***Do not re-designate this portion of trail from pedestrian-only to multi-use until all trail improvements and additional multi-use trail segments have been completed.***

5.2.2 Pedestrian-Only Trails

This type of trail experience is valued and desired within BRMT and the Trail Plan provides for the retention and expansion of the existing pedestrian-only trail network to the extent possible.

5.2.2.1 Humber Valley Heritage Trail: Albion-Vaughan Townline to Duffy's/BAR

As stated, this portion of the existing HVHT will eventually be improved to safely accommodate multiple uses; primarily off-road cyclists. Once these improvements have been made, and the additional segments of multi-use trail have been constructed, this portion of the HVHT will be re-designated as a shared multi-use trail. The trail will continue to be named and signed as the HVHT, but maintenance, liability, and insurance concerns will be transferred to TRCA.

5.2.2.2 Humber Valley Heritage Trail: Duffy's/BAR to Old Church Road

This 8.6km portion of the existing HVHT will remain unchanged and continue to be managed and maintained by the HVHTA through an annual Trail Agreement.

Recommendation:

- ***Continue to administer the annual Trail Agreement between TRCA and HVHTA for the management and maintenance of pedestrian-only trails within BRMT. Update the map schedule as necessary to reflect any changes to applicable trails.***

5.2.2.3 Campbell and Bolton Camp Trails

Acquired by TRCA in 2009 and 2011 respectively, the Campbell and Bolton Camp properties currently contain a dense network of informal trails. Through targeted trail improvements and the closure of redundant and unsustainable trail, these properties will provide roughly 3.1km of pedestrian-only trails within the beautiful Cold Creek subwatershed.

Recommendation:

- ***Work closely with the HVHTA and BRMT Stewardship Committee to develop detailed trail improvement plans for Campbell and Bolton Camp trails including appropriate connections to adjacent residential communities and the former Montessori School site.***

- ***Engage adjacent residential neighbours to determine appropriate secondary access points to Campbell and Bolton Camp trails.***

- ***Adequately secure and/or decommission structures at the Bolton Camp property before the public trail network is opened. This limits TRCA's liability due to decrepit structures and provides increased area for public use or for terrestrial habitat regeneration. If the structures may be of cultural heritage value, take steps to investigate retention and restoration.***

5.2.2.4 Cedar Mains Side-Trail

Located between Regional Road 50 and Duffy's Lane, south of Old Church Road, this property will complement the pedestrian-only trail network with the addition of a 3km looped side-trail. This would provide BRMT hikers with a connection to the Cedar Mains historic site. A short interpretive trail will also be developed to guide visitors through the rich history of the site.

Recommendation:

- ***Work with HVHTA, OHT and the BRMT Stewardship Committee to plan and construct the 'Cedar Mains Side-trail' between Duffy's Lane and Cedar Mains Drive at Regional Road 50.***

- ***Work with OHT and the BRMT Stewardship Committee to develop an interpretive trail experience through the Cedar Mains site. (See Sections 4.7 and 4.12 for related Cultural Heritage Recommendations).***

5.2.3 Multi-use trail

Approximately 7.6km of new multi-use trail will be constructed from the Duffy's Lane/BAR crossing to the northern boundary of the property. This trail will run roughly parallel to the existing HVHT, on the opposite side of the Humber River. Being a natural surface trail 1.5-3m wide, this trail is intended for the casual off-road cyclist and hiker rather than providing the steep and technical trail experience associated with mountain-biking trails.

The Multi-Use Trail alignment shown on Map 5.1 has received preliminary approval from appropriate TRCA and Ministry of Natural Resources (MNR) staff. Additional approvals and considerations may be required once a more detailed construction plan has been prepared.

Recommendation:

- ***Develop a detailed trail construction plan for the Multi-Use trail and receive all necessary permits and approvals.***

- ***Implement the multi-use trail with the assistance of the BRMT Stewardship Committee and any other interested trail partners.***

5.2.4 Bolton Arterial Road

The Region of Peel intends to construct Phase 2 of the Bolton Arterial Road (BAR) through the BRMT from Regional Road 50 to King Street (See Section 2.5.3 of the BRMT Management Plan Background Report). The BAR will have a paved shoulder with appropriate painted markings to accommodate commuter cyclists. A 'trail off-ramp' will be constructed on north/east bound BAR to allow access to the BRMT trail network. To the north, Duffy's Lane will connect to the BAR by a new intersection and adjacent parking lot for trail users. This parking lot will link to the BRMT trail network by an additional trail to be constructed by the Region of Peel. This realignment of Duffy's Lane and parking lot addition will also allow south/west-bound cyclists to access the BRMT trail network from the BAR. The current vehicle bridge over the Humber

River on Duffy's Lane will be closed to vehicle access but retained for use in the trail network. It is at the site of this bridge that:

- The shared multi-use trail will end;
- The "trail off-ramp" from the BAR will connect BAR users to the BRMT trail system;
- The trail to the new Duffy's Lane parking lot will connect including a link to the existing HVHT and;
- The TRCA multi-use trail will begin, initially aligned north-west, towards Humber Station Road

5.2.5 Potential Trail Connections

There are a number of possible alternative and secondary trail connections that are not feasible to include in the BRMT Management and Trail Plan at this time. Many of these potential opportunities rely on future land acquisition, easements, or the development of private land to become actionable. Map 5.2 Potential Trail Linkages shows these connections, which are briefly described below.

Humber River at Albion-Vaughan Townline: Here the Humber River crosses the regional boundary between Peel and York from TRCA's Bolton Resource Management Tract into the Nashville Resource Management Tract (NRMT). As similar management planning process is currently underway for NRMT including the development of a trail plan.

Campbell Property to Cold Creek Conservation Area: As stated, the Campbell and Bolton Camp properties will provide great pedestrian-only trail opportunities within BRMT. Mere kilometers east of these properties, with King Township, York Region, is Cold Creek Conservation Area; a 190ha TRCA property managed by King Township with 6.5km of nature trails. Efforts should be made to provide some form of trail connection to these properties within the Cold Creek subwatershed.

Bolton Camp to YMCA Cedar Glen: During previous consultation efforts to restore the Bolton Camp property, preliminary interest has been developed with neighbouring YMCA to establish a trail connection somewhere along the Caledon-King Townline to the 106 hectare YMCA Cedar Glen property. Further study and discussion is needed between TRCA, YMCA, and Peel and York regions to determine if a safe trail crossing can be found.

Town of Caledon Works Yard to Bolton Camp: The 'Camp Villas' property, at the western edge of Bolton Camp, is in the process of being conveyed to TRCA from the Town of Caledon. Once the land transfer is complete, the pedestrian-only trail network within Bolton Camp should be extended into the Camp Villas property and connect to the paved municipal trail that runs parallel to a tributary feature. This municipal trail runs between residential communities on Bolton's North Hill, eventually ending at Columbia Way. The combination of TRCA trails and municipal trail and sidewalk would provide an additional east-west link between the trails systems in the Main Humber and Cold Creek subwatersheds.

Future development – Regional Road 50 to Caledon-King Townline, north of Columbia Way: Town of Caledon is seeking an expansion of its urban growth boundary in this area for the purpose of a retail development. Should additional expansion for residential development also be pursued, TRCA will work with Town of Caledon to secure meaningful trail connections with the existing trail and greenspace network as these lands go through the development process.

5.2.6 Trailheads

The trail plan features both primary and secondary trailheads which will be located at formal access points including those listed below. Primary trailheads may include one or both TRCA and HVHT standard signs (See Figure 5.1), as well as other trail amenities including benches, additional interpretive information and/or community information boards. Secondary trailheads may only include basic property identification and way-finding information provided on TRCA and/or HVHT standard signs.

Primary Trailheads

- South-west corner of the Bolton Camp property at King Street
- North-west corner of Bolton Camp/ Camp Villas at Kingsview Crescent
- Edelweiss Park
- Duffy's Lane/BAR bridge crossing
- New Duffy's Lane parking lot at the BAR
- Cedar Mains property at Cedar Mains Drive.

Secondary Trailheads

- Multi-Use trail northern terminus at Duffy's Lane
- Multi-Use trail north access at Castlederg Sideroad
- Multi-Use trail south access at Castlederg Sideroad
- Humber Station Road north access
- Humber Station Road south access
- Caledon Works yard entrance at Regional Road 50/Columbia Way
- South-east corner of the Campbell Property at Columbia Way/ Caledon-King Townline
- North-east corner of the Bolton Camp Property at Columbia Way/ Caledon-King Townline
- Other locations through downtown Bolton as appropriate

Recommendation:

- ***Install primary and secondary trailheads at the above locations. See Section 5.3.3 Signs for guidelines on required content.***

Map 5.2 BRMT Trail Plan with Potential Trail Linkages

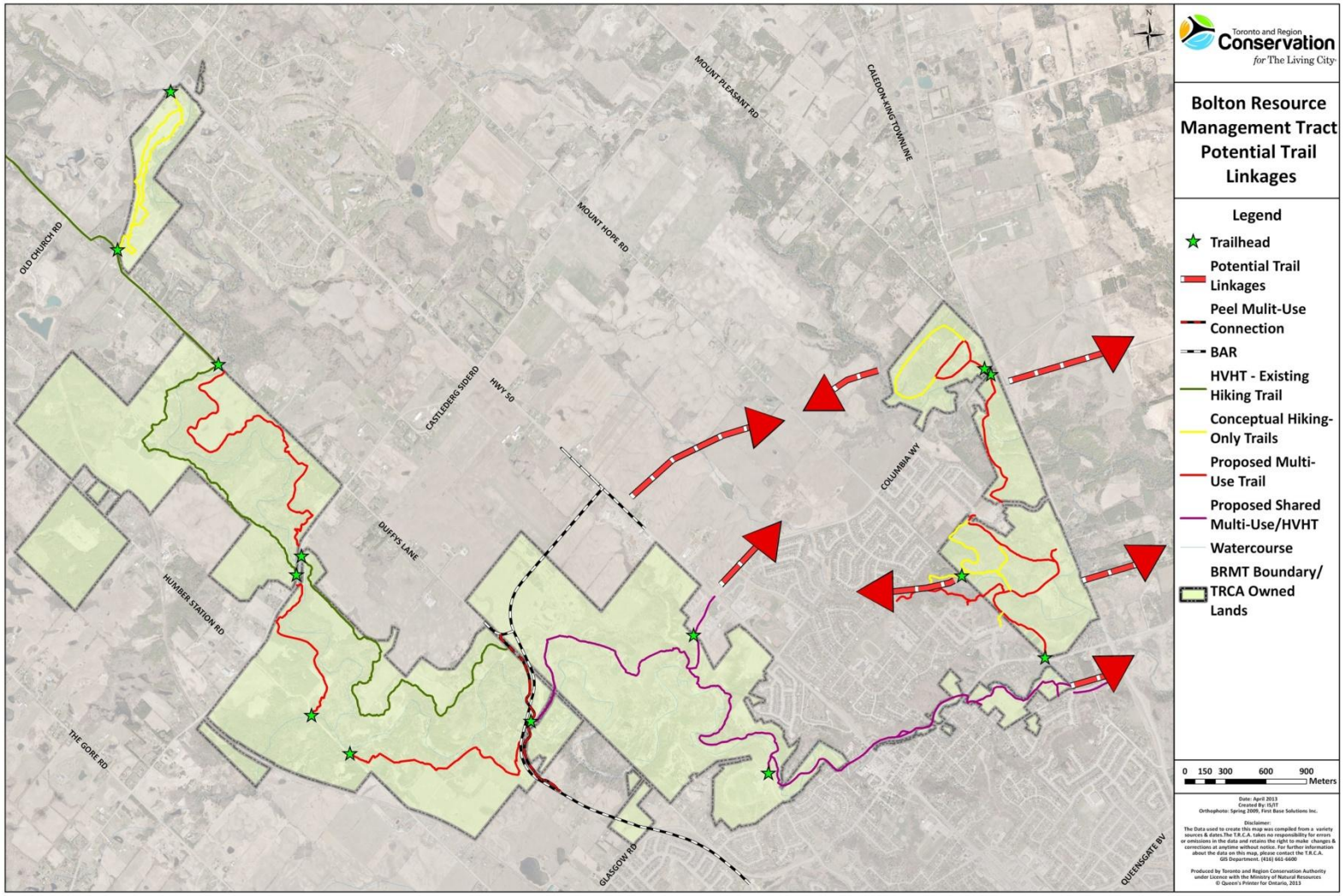


Figure 5.1: Standard TRCA and HVHTA trail signs

5.3 Trail Management

The trail system will require annual trail management and maintenance. Detailed recommendations are contained in Appendix D. An annual work plan and maintenance budget should be developed, and should include addition of granular fines, wood chips and other trail surface materials, repairs to trails, removal of hazard trees, replacement of signage, and re-routing as required. See Appendix E for more details on trial management.

Recommendation:

- ***Involve local community members as trail stewards to help care for and maintain the trail system, in collaboration with the Humber Valley Heritage Trail Association***
- ***Develop a maintenance schedule for the trail system in accordance with TRCA's Trail Planning and Design Guidelines (1992)***
- ***TRCA to conduct regular trail monitoring, including monitoring for informal trails and hazard trees.***

5.3.1 Decommissioning Existing Trails

Portions of the BRMT, especially the Campbell and Bolton Camp properties, have an extensive system of informal trails. These trails were mapped as part of the Site Securement and Protection Plan (See Appendix A from the BRMT Management Plan Background Report). Redundant or unsustainable trails that are not going to form part of the planned trail system should be closed to public access and allowed to regenerate. Trail closure methods include ground scarification, placement of woody debris or live plantings at trail openings, signage, or mechanical closures as needed. It is also important to include signs regarding trail closures that provide context and rationale. More importantly, experience has shown that trail closures will be ineffective if a better, logical and well communicated trail alternative is not provide first. As such, trail implementation should begin with a focus on upgrading and formalizing the desired trail network, followed by trail decommissioning. See Section 5.2.2.3 for management recommendations regarding the trail network at the Campbell and Bolton Camp properties.

Recommendation:

- ***Ensure viable trail alternatives have been developed before decommissioning redundant/unsustainable trails***
- ***Close all informal trails that are not part of the formal trail network using methods which include ground scarification, placement of woody debris, live plantings at trail openings, signage, or mechanical structures.***

5.3.2 Hazard Tree Management

Hazard tree management must be carried out to ensure the safety of trail users. These recommendations are based on TRCA's Policy for Managing Hazard Trees and the associated Operational Procedures for Managing Hazard Trees.

Temporary trail re-routes or closures may be required until the hazard tree can be removed and the trail safely re-opened.

Recommendation:

- ***Ensure trails in BRMT are inspected and managed as directed under TRCA's Policy for Managing Hazard Trees and the associated Operational Procedures for Managing Hazard Trees. Additional hazard tree monitoring to be conducted after weather events that include high winds (>60km/h).***

5.3.3 Signs

Signage for the trail system will be designed comprehensively and will be consistent with that of other TRCA Conservation Lands. The following general considerations apply to all signage types:

- Consistency of design and graphic communications.
- Clarity in conveying the desired message to a range of users, including considerations for accessibility.
- Vandal and weather resistant materials with long-term durability.

Signage should be designed to address general trail information, regulatory and directional information, and interpretation. Special consideration must also be given to the HVHT to ensure consistent branding of this trail as well as the differentiation of the HVHT and the multi-use trail system within BRMT.

Recommendation:

- ***Ensure the HVHT is consistently signed to protect its identity and distinguish it from the multi-use trail network***

- ***Ensure that signage design and installation complies with requirements of the Accessibility for Ontarians with Disabilities Act.***

5.3.3.1 Trail Identification and Information

Primary and secondary trailhead signs will be placed at all trailhead points, and will include:

- Trail identification, including: trail name, trail identity logo (e.g. HVHTA) and permitted uses.
- Trail route map, showing trail alignments and distances, degree of difficulty, and any necessary accessibility information.
- Trail user code of conduct.
- Notice board for promotion of trail related events or activities, habitat sensitivities, etc…
- Trail management contact information.

Recommendation:

- ***Install trailhead signs at all primary and secondary trailheads, and include trail identification information, trail route map, user code of conduct, trail management contact information and emergency contact information.***

5.3.3.2 Directional

Trail intersection signs should be located at trail junctions, and directional signs should be placed as needed. Signage may include:

- Trail identity logo, styling and colours compatible with trail information signs.
- Trail name and/or distinctive logo, distance marker and directional arrows.
- Simple post markers with graphic, numeric or colour coding that identify the trail and correspond with an overall route map at trailheads or on trail guide brochures.

Recommendation:

- ***Install trail intersection signs at all trail junctions, and additional way-finding signs as needed.***

5.3.3.3 Regulatory

Regulatory signs display permitted uses, authorized access points, and where necessary, prohibitions and warnings. Such signage must be included on all trailhead signs, and may also be required near natural areas where access is discouraged, potential hazard areas, and restoration areas. Temporary trail closures due to conditions, wildlife considerations or environmental restoration will also be signed. Regulatory signs should be designed as part of the overall signage system using compatible styling; however, the message should be easily recognized from a distance.

Due to the shape and size of BRMT, trail users are forced to cross a number of municipal roads (both local and regional). Efforts should be made to install appropriate signage on these roads to alert drivers to these trail crossings. Ministry of Transportation (MTO) is the developer and custodian of Ontario Traffic Manual (OTM) Book 15 – Pedestrian Control and Protection. The purpose of the OTM is to provide information and guidance for transportation practitioners and to promote uniformity of treatment in the design, application and operation of traffic control devices and systems across Ontario. These guidelines will be a valuable resource when designing and signing road crossings throughout BRMT

Recommendation:

- ***Install regulatory signs at all authorized access points and where needed to inform users of prohibitions, hazards, restoration areas, trail closures, etc.***

- ***Once completed, work with the Region of Peel and Town of Caledon to implement best practices from the MTO's OTM 15 for pedestrian crossings within BRMT.***

-

5.3.3.4 Interpretive

These signs should be used in conjunction with "special feature" areas along the trail. Possible themes include wildlife and natural ecosystems, landscape and human heritage. The information should be both interesting and informative and be oriented to building a stewardship ethic.

Interpretive signs should be located within a widened trail node, at viewing locations or rest areas, to allow for unimpeded use of the trail. Sign design and construction may vary according to the trail setting or storyline, but consistent design should be used within each trail segment and each sign series should be compatible with the overall BRMT trail system identity.

Numbered markers can be found along the existing HVHT which correspond with interpretive information in the HVHTA's trail guide *Points of Interest, Places of Power.* It may be necessary to update/replace these markers to ensure the trail signage system is clear and consistent.

Recommendation:

- ***Develop and install interpretive signs at appropriate points throughout the BRMT.***
- ***Update/replace interpretive posts along the HVHT as necessary.***

5.3.4 Emergency Access

With the exception of small portions of trail through downtown Bolton, the BRMT trail network will be inaccessible to cars or trucks. The signage system described above will aid trail users in being aware of their location should they require emergency assistance. Trail access information will also be gathered using TRCA's HETAP device including trail slope, cross-slope, obstacles and pinch-points. This information will be useful to emergency responders potentially using motorized vehicles such as ATV's.

Recommendation:

- ***Provide trail plan mapping and HETAP information for BRMT to all local emergency service providers.***

Chapter 6: Plan Implementation

It is anticipated that BRMT will become a model of sustainability, achieved through protecting and enhancing the property's natural environment while providing environmental, public use and outdoor education benefits to the community as well as the opportunity for stewardship. It is therefore imperative that management of the property follows sound environmental management principles and collaboration with partner municipalities, interest groups and the local community.

The management recommendations listed in this plan cover a wide diversity of actions and scales of activity including heritage interpretation, trail development and environmental restoration. All of these recommendations are intended to be implemented in phases, subject to further analysis, detailed plans and funding availability.

The development and improvement of the public trail network within BRMT received particular attention during the development of the management plan. This is an acknowledgement of the tremendous opportunity available to increase and improve access to this stunning greenspace, as well as the pressing need to ensure trail development is planned and implemented carefully, with proper regard for environmental protection. As such, a more detailed description of trail plan implementation and budgets can be found below.

Trail Plan Implementation

The trail plan will be implemented in phases over a period of five to six years, and in partnership with the Humber Valley Heritage Trail Association, BRMT Stewardship Committee, Peel Region, Town of Caledon and other community groups.

It is the overall intent of this trail plan to create separate multi-use and hiking–only trail opportunities on either side of the Humber River, north of the Bolton Arterial Road (BAR) and a shared multi-use connection from the BAR south to the Albion-Vaughan Townline. As trail implementation continues and individual elements are completed, the existing Humber Valley Heritage Trail (HVHT) between Edelweiss Park and the BAR will remain hiking-only. Only when the plan is fully implemented will the use designation of this portion of trail be changed to "Shared Multi-Use." At that time, the map schedule for the trail agreement between TRCA and HVHTA will be amended to reflect this change, and legal and financial responsibility for this portion of trail will be transferred to TRCA.

A high priority for implementation is the improvement of the Shared Multi-Use trail between Edelweiss Park and the Bolton Arterial Road (BAR) crossing at Duffy's lane, as well as a pedestrian link through the Bolton Camp property from King Street to Kingsview Drive. This initial trail connection through the Bolton Camp property will be implemented in 2013, while more extensive trail development on-site will be dependent on the outcomes of the education/camp planning process currently underway (expected 2014). Construction of the BAR is expected to begin in the spring of 2013 and be completed by winter 2014. Improvement of the Edelweiss to Duffy's Lane/BAR trail will therefore be undertaken in phases, so as not to interfere with road construction. Since construction of the BAR will temporarily cut off trail access from one side of Duffy's Lane to another, it is recommended that improvements to the Works-yard side trail be a priority for 2013 as well. If the BAR construction is completed according to schedule then the five-year implementation schedule detailed in 'Scenario A' will

be pursued. However, if BAR construction takes longer than anticipated 'Scenario B' will be pursued:

SCENARIO A:
2013:

- Bolton Camp trail connection from King Street to Kingsview Drive
- Caledon works-yard side trail re-route

2014:

- Multi-use trail construction from Castlederg Sideroad to Duffy's Lane
- Staircase replacement north of English Rose Lane SWMP

2015:

- Trail improvement and re-alignment: Edelweiss Park to BAR
- Multi-use trail construction from BAR to Humber Station Road

2016:

- Multi-use trail construction from Humber Station Road to Castlederg Sideroad

2017:

- Bolton Camp trail link to Campbell property
- Cedar Mains side trail construction

SCENARIO B:
2013:

- Bolton Camp trail connection from King Street to Kingsview Drive
- Caledon works-yard side trail re-route

2014:

- Multi-use trail construction from Castlederg Sideroad to Duffy's Lane
- Staircase replacement north of English Rose Lane SWMP

2015:

- Trail improvement from Edelweiss Park to Caledon Works Yard side trail

2016:

- Trail improvement and re-alignment: Caledon Works Yard side trail to BAR
- Multi-use trail construction from BAR to Humber Station Road

2017:

- Multi-use trail construction from Humber Station Road to Castlederg Sideroad

2018:

- Bolton Camp trail link to Campbell property
- Cedar Mains side trail construction

A detailed implementation plan will be developed that outlines the phasing of trail construction, and where necessary, will form the basis of funding requests to support trail development.

Table 6.1 provides an approximate budget for implementing the various components of the BRMT Trail Plan while Table 6.2 details some of the annual costs associated with maintenance and stewardship.

Table 6.1 Approximate BRMT Trail Plan Costs

Component	Details	Anticipated Cost ($)
Trail Development (Av. $10/m for construction or improvement)	• Shared Multi-Use (16.5km) • Hiking-Only (6.0km) • Multi-Use (7.5km)	$300,000
Access point and parking lot improvements	• Primary and Secondary access points • Parking lot construction	$100,000
Site Securement	Fencing, structure removals, trail closures	$150,000
Subtotal		$550,000
Planning, Design, Permits and Contingency (15%)		$83,250
TOTAL		**$638,250**

Table 6.2 Annual Management Plan Implementation Costs

Item	TRCA Lead	Supporting Groups and Funding Partners	Anticipated Cost ($)
Stewardship Committee & Newsletter	Conservation Lands		25,000
Trail Maintenance	Conservation Lands		25,000
Restoration Maintenance	Restoration Services		25,000
TOTAL			75,000

Recommendation:

- ***Work with the BRMT Stewardship Committee and Humber Valley Heritage Trail Association to implement the trail system and associated management recommendations and actions.***

- ***Prepare a detailed implementation plans for specific areas of trail improvement and construction. Obtain any necessary permits/approvals for work within sensitive areas, close to water or near private or municipal property.***

Stewardship Committee

This plan contains a variety of detailed management recommendations that were established with the assistance and support of the management plan advisory committee. All of the recommendations are important management actions that will protect and improve BRMT. An integral part of BRMT management is the establishment of a working stewardship committee to oversee and participate in the management and implementation of the necessary and numerous plan objectives. The committee would assist with specific aspects such as trails, education and communications. It would also assist TRCA to implement site development, maintenance, environmental protection and restoration activities. Finally, the committee would assist in the monitoring of environmental and public use indicators and of plan implementation.

The management plan recommendations provide a basic framework from which the stewardship committee can begin to operate. While the key recommendations are outlined here, it is anticipated that the committee will undertake a complete assessment of the management plan on a regular and ongoing basis and will establish a through priority list. The key directions for the stewardship committee include:

- Review the management plan and advise in determining priority actions for implementation
- Assist the implementation of a detailed trail plan and develop a trail guide for users
- Participate as a designated Trail Captain
- Develop and maintain a BRMT newsletter and communications plan to raise awareness and inform surrounding communities about the area
- Educate private landowners in and around BRMT regarding stewardship practices and “Natural Neighbour” initiatives
- Establish a list of volunteers willing to aid in a volunteer program
- Prepare and install natural and cultural heritage interpretive signs
- Develop educational resources and tools for private landowners and visitors
- Monitor the trails for invasive plant species and prevent their spread through barriers and other eradication techniques
- Monitor the presence of noxious vegetation and remove the as necessary
- Organize celebrations events to increase public awareness
- Assist TRCA in implementing the volunteer Terrestrial Monitoring Program
- Secure financial and in-kind resources to undertake the work.

Agency and Municipal Stewardship

The natural, cultural and recreational resources that exist in BRMT provide benefits beyond the TRCA property boundaries; these resources extend into, and contribute to, the surrounding local and regional landscape. Therefore, integration with the community was considered throughout the planning process. An effort was made to reflect the recommendations and opportunities identified in municipal and government agency documents so that support for and implementation of the management plan can be achieved.

There is a great opportunity to connect the recommendations of the BRMT management plan to municipal goals and objectives, and continued communication with the Town Caledon and the Regional Municipality of Peel will be crucial to finding shared opportunities and efficiencies for achieving the recommendations within this management plan.

To support TRCA policies, municipalities and government agencies should be encouraged to have regard for the following recommendations when considering new community design:

- Protect, restore and enhance as many natural open spaces as possible to maintain terrestrial natural habitat connectivity and interior habitats.
- Create publicly accessible trail systems that will connect communities to the Town of Caledon and other Regional municipalities such as the City of Brampton, City of Vaughan and King Township
- Promote private land stewardship that increases awareness about best management practices and creates opportunities to engage landowners in protecting and enhancing the BRMT and its valuable resources.

Private Land Stewardship

BRMT will provide opportunities for outdoor recreation, conservation education and nature appreciation to the surrounding communities. It will also provide many health benefits to the community. Adjacent landowners and users of the TRCA property can help to ensure that the surrounding landscape does not negatively impact the environmental quality of this unique natural area. One of the key recommendations of this management plan is the creation of a stewardship committee. This committee will be made up of representatives of local government, residents, community groups, business owners and other stakeholders. The role of the committee will be to assist in implementation where appropriate, such as in trail development, clean-up activities, restoration or naturalization projects, etc. The committee can also help to encourage area residents to undertake the following actions in an effort to fulfill the goals and objectives of this management plan:

- Plant native species on adjacent lands instead of using exotic horticultural species, some of which may be invasive, such as Norway maple and goutweed.
- Leash pets on site to minimize disturbance to wildlife and pick up waste to prevent feces from entering watercourses after rainfall.
- Assist in promoting the TRCA's "Natural Neighbours" messaging.

All priorities should be reviewed and re-evaluated in terms of their feasibility as needed.

Public Use

Completion and implementation of the management plan recommendations is critical to ensure protection of the environment, appropriate public use and user safety. The management plan was developed through extensive consultation with the public and community partners, and the proposed plan implementation is fully supported. If realized, the Bolton Resource Management Tract Management Plan will help to enhance the experience of users, while ensuring environment protection is achieved.

Safety and Security

Discussions will be held with police and other emergency service providers to identify their concerns and questions regarding accessing the BRMT lands for patrol and emergency response purposes. Due to the land's natural character, many areas are inaccessible by conventional response vehicles, such as fire, ambulance and police vehicles. Special considerations are therefore required, including:

- A trail locator system, such as a series of way-finding post markers along the trails in order to locate and orient users.
- Geographic integration of the trail location system into the emergency response system of the fire, police and ambulance departments. A fully integrated map depicting all named trails and location of markers along each trail should be installed at all primary and secondary trailheads.
- An emergency response plan for BRMT with involvement from local and neighbouring emergency service providers.

Endorsement and Maintenance of the Management Plan

As a partnership between Peel Region, the Town of Caledon, the Management Plan Public Advisory Committee and the community, this management plan required endorsement from a variety of groups. The public, local community and BRMT users were informed and consulted through the process through newsletters, questionnaires, open houses and public meetings held for each phase of the master plan process. Their concerns, comments and suggestions were heard and integrated into the plan.

The advisory committee brought many interests, issues and insights from the broader community to the forefront of the planning process, and their comments and suggestions were also integrated into this plan.

TRCA and the newly formed stewardship committee will continue to work together towards implementing, maintaining and adapting the plan.

Plan Review and Amendment

With the support of the BRMT Stewardship Committee, the master plan will undergo a review every seven to ten years. If major revisions are necessary to reflect changing environmental, social or economic conditions, they will only be made after consultation with the affected groups and individuals. Revisions of the plan will be consistent with the original stated vision, goals and objectives to protect the natural, recreational and educational values of the property.

The management plan identifies management zones, with public trails detailed in the trail plan. Any additional uses proposed for these zones will be screened and assessed according to the Strategy for Public Use of Conservation Authority Lands (1995). The BRMT stewardship committee will provide input on all such proposals. The screening process for specific public uses will ensure that all proposed uses, facilities and landscape changes are thoroughly examined and designed to minimize disruption and to protect, enhance or restore the natural values of this area.

APPENDIX A: Terrestrial Natural Heritage Recommendations for BRMT.

Table 1: Summary and Recommendations for the BRMT Study Area by Indicator

INDICATOR	BRMT STUDY AREA SUMMARY		RECOMMENDATIONS
Quality Distribution	Size, Shape, & Forest Interior	34 area-sensitive forest-fauna species, three of which require in excess of 100 ha of forest	Reforest open land both within and adjacent to the site to increase habitat interior & improve size. This would improve the opportunities for species such as red-shouldered hawk and broad-winged hawk, and would bolster the already fairly healthy populations of forest songbirds.
	Matrix Influence	Matrix surrounding much of the site is largely agricultural and natural; to the south-east there has been some relatively recent urbanization associated with the town of Bolton. These mixed land-uses combine for a total matrix influence score of 3 out of 5 (fair). - 156 of the 162 flora species of regional concern are sensitive to development - 48 of the 51 fauna species of regional concern are sensitive to development, located in north-west section of TRCA jurisdiction where there is relatively little urbanization.	Mitigate impacts of public use. Plan any trails to limit damage to species and vegetation communities. cluster non-natural land uses to specific nodes on perimeter of area with buffer zones Convert nearby agricultural land and old field to forest and/or wetland, especially where such conversion will create a buffer against the urbanization that is occurring in the south-east corner of the site. Prevent further invasive species spread into high-quality natural areas, especially mature forests. Encourage stewardship from neighbouring landowners. Retain and restore natural cover TRCA's jurisdiction can retain a range of flora, fauna, and community types relatively diverse parts of jurisdiction such as this BRMT are protected.
Quantity	The study area contains 721 ha of natural cover. This contributes 2.5 per cent to the total natural cover within the Humber watershed. Of this, 607 ha is forest and 8.5 ha are wetland; 3.3 and 0.6 per cent of the watershed totals respectively.		-Maximize natural cover at BRMT in order to protect flora, fauna and vegetation communities -Maintain/enhance continuous links between habitat patches. -Recruit/encourage local stakeholders/landowners to restore riparian natural cover downstream of the study area in order to connect the site with other sites in the lower Humber watershed. Judicious positioning of restoration projects will have far reaching effects on all other Indicator categories.

APPENDIX B ***Humber River Fisheries Management Plan (2008):*** **Rehabilitation priorities for the Upper Main Humber River subwatershed**

		Management Zones	
		Zone 1A	Zone 1B
Description	Approximate Location	Headwaters to Bolton	All headwater tributaries of the watershed
	Stream Order	First to fifth	First
	Channel Slope	Moderate to high	High
	Target Fish Species	Brook and brown trout, Atlantic salmon	Contributing and seasonal in-situ habitat for Zone 1A
	Aquatic Habitat Category	Small Riverine Coldwater and Intermediate Riverine Coldwater	Small Riverine Coldwater
	Median IBI	Good	Not available
Management Direction	**Riparian Zone[1]:** Thermal benefits, erosion stability, habitat creation, and run-off filtration. **Delisting Target:** 75% of watercourse length with woody vegetation. Additional 164 km needed. Goal is 2 km annually.	**High Priority** – focus on Albion Hills, Glen Haffy, Palgrave, Cold Creek and other public lands. Private land stewardship is Centreville, Cold and Coffee Creeks; implement TRCA's Habitat Implementation Plan.	**Low Priority** – Cold Creek Conservation Area; implement TRCA's Habitat Implementation Plan.
	Wetland Creation and Rehabilitation Wetlands – Alternate run-off and increase infiltration. Habitat creation. Planting of aquatic vegetation, enhancing spawning habitats. **Delisting Target:** 75% of historical area. Additional 271 ha of wetlands.	**High Priority** – protect existing wetlands. Rehabilitate or restore wetlands where degraded or eliminated. **Medium Priority** – create wetlands identified in TRCA's Terrestrial Natural Heritage System Strategy and recently initiated projects to identify sites for wetlands creation in the Regions of Peel and York; implement TRCA's Habitat Implementation Plan.	**High Priority** – protect existing wetlands. **Medium Priority** – create wetlands identified in TRCA's Terrestrial Natural Heritage System Strategy and recently initiated projects to identify sites for wetlands creation in the Regions of Peel and York; implement TRCA's Habitat Implementation Plan.
	Habitat Rehabilitation Rehabilitate altered streams. Addition of tree stumps, logs, brush bundles for instream cover. **Target:** 150 pieces of	**High Priority** – Continue work with Trout Unlimited in Centreville Creek and Ontario Stream's Upper Humber River Rehabilitation Project. **Medium Priority** – identify	**Low Priority** – identify degraded reaches.

	woody material or equivalent per km.	degraded reaches.	
	Water Quantity and SWMP Retrofits Protect or enhance existing water budget. **Target:** Maximum 10% total impervious surface in management zone.	**High Priority** – existing quantity ponds to be retrofitted to include quality control. **High Priority** – stormwater pond outlets to have bottom draw outlets or sub-surface drainage. **High Priority** – protect or enhance existing water budget.	**High Priority** – protect or enhance existing water budget.
	Stream Baseflow **Target:** Protect 60% duration flow for June, July, August and September	**High Priority** – maintain or enhance existing baseflow.	**High Priority** – maintain or enhance existing baseflow.
	Water Quality Restrict livestock access and reduce agricultural runoff through the Rural Clean Water Program. Pollution prevention, lot level and conveyance controls, end of pipe controls.	**High Priority** – identify livestock access and manure storage locations. **High Priority** – reduce overland sediment run-off over all construction periods. **Medium Priority** – implement best management practices for all land uses.	Not applicable at this time.
	Natural Channel Design	**Low Priority** – alongside Highway 50 north of Palgrave	None identified
	Instream Barriers: Mitigate identified barriers or install bottom draw, if appropriate. Delisting Target: Free range for all native species from Lake Ontario to Highway 9, except where otherwise indicated.	**High Priority** – mitigate Taylor Pond and assess mitigation options for Albion Hills CA pond. **High Priority** – mitigate private on-line ponds. **High Priority** – identify additional barriers and assess stream crossing for fish passage.	**Low Priority** – assess stream crossings for fish passage.
	Public Lands **Target:** All public lands accessible for angling.	Most public lands (Palgrave FWA, Albion Hills CA, Glen Haffy CA, Bolton RMT) are accessible, some restrictions apply. Access to private lands by permission	Cold Creek CA **High Priority** – implement best management practices on all public lands.

		only. **High Priority** – implement best management practices on all public lands; land acquisition; improve trail heads and access.	
	Species of Conservation Concern	**Low Priority** – assess populations of Group 2 and 3 Priority Candidate Species	None recommended at this time.
	Angling Regulations and Enforcement	**Medium Priority** – increase enforcement and implement a Fish and Wildlife Guardian Program	None recommended
	Fish Stocking and/or Transfer: (1) encourage reintroduction of Atlantic salmon; (2) rehabilitative stocking of brown trout fry/fingerlings; (3) transfer migratory adult brown trout into the Upper Main Humber River.	**High Priority** – stock 40,000 brown trout between Zones 1A and 3 annually for 10 years. Introduce Atlantic salmon when sufficient donor stock exists.	None recommended.
	Baitfish Harvest	No changes recommended.	No changes recommended.
	Non-consumptive Uses Education and stewardship programs, signs and information kiosks.	**High Priority** – continue education programs associated with Watershed on Wheels golf course stewardship, continue work at Caledon East, Palgrave and Bolton Community Action Sites and establish new sites. **High Priority** – develop signs for fishway projects at Palgrave and McFall dam; information kiosks at major access points; maintain viewing window at Palgrave fishway.	None recommended at this time.
	Monitoring and Surveys Fish passage at mitigated barriers, spawning surveys, distribution of Species of Concern and	**High Priority** – conduct aquatic habitat and species surveys in 2004 at Highway 9 east of St. Andrews Road, Coolihans Sideroad west of Centreville Creek Road, Innis Lake Road south of	**High Priority** – determine location of this management zone in the subwatershed.

	invasive species, additional aquatic community data; baseflow indicator sites.	Patterson Sideroad, and Castlederg east of Mount Hope Road. **Medium Priority** – expand existing brook and brown trout spawning surveys to private lands, Cold Creek and north of Highway 9. **Medium Priority** – conduct surveys to determine mussel and rusty crayfish distributions. **Medium Priority** – complete U of T project to assess algae communities.	

[1] Those areas currently vegetated with herbaceous vegetation are considered lower priority for restoration than manicured vegetated reaches. However, this does not mean that opportunities to establish woody riparian vegetation in currently vegetated areas will not be pursued.

APPENDIX C: Humber River Watershed Plan: Selected Targets and Bolton Resource Management Tract Management Plan Contributions (TRCA, 2012)

Component	Objective	Indicator	Target	BRMT MP contribution
Aquatic System	Protect, restore and enhance the health and diversity of native aquatic habitats, communities and species	Fish Communities	All HRWP sites upstream of urban development rated as "good" based on Index of Biotic Integrity (IBI) scores HRWP sites in urban areas should maintain or improve baseline conditions (see TRCA, 2008) Maintain or restore target fish communities (see TRCA, 2008)	Protection of aquatic habitat, communities and species through management recommendations.
		Aquatic Habitat	Increase wetland cover to 10% of total watershed area Greater than 75% of riparian areas with natural cover (60% forest or succession; 15% meadow or wetland)	
		Quantity of natural cover	Increase natural cover to at least 39% of total watershed area (see TRCA, 2008) Increase wetland cover to 10% of total watershed area	Protection, restoration and enhancement of wetlands and riparian areas through management recommendations. 75 ha of natural cover to be created through restoration, in the following categories: 78% forest, 1% meadow, 14% riparian, 7% wetland
Terrestrial System	Protect, restore and enhance natural cover to improve connectivity, quality, biodiversity, and ecological function Minimize the negative influences from surrounding land uses on terrestrial system quality and function	Quality and distribution of natural cover	Average habitat patch total quality rating of "good" for all patches in, or partially within, the watershed (see TRCA, 2008); and "good" for the Main Humber primary subwatershed	75 ha of natural cover to be added through restoration Approximately 5 ha of wetland to be added through restoration
		Disturbances in natural areas	Maintain or reduce baseline ratios of severely disturbed area to total evaluated areas (see TRCA, 2008)	Current average patch quality of "good" will be maintained, despite increased pressures from surrounding development, through restoration of damaged areas and agricultural fields
		Biological diversity	Maintain or improve baseline representation of native vegetation community types and species (baseline to be determined through HRWP natural heritage inventories)	23 ha of severely disturbed area to be restored to natural cover

		Cultural heritage resources	Increase number of known, Listed and Designated archaeological and historical sites and built heritage features (see TRCA, 2008)	Maintain or improve representation of native vegetation community type and species through management recommendations.
Cultural Heritage	Identify, document, protect and conserve cultural and heritage resources	Quantity of public greenspace	Increase quantity of public greenspace (see TRCA, 2008) Public greenspace is located within 2 km of all homes	Increase number of sites and features through management recommendations.
Nature-based recreation	Incorporate greenspace in all urban and rural developments and create an accessible and connected greenspace system that is compatible with ecological and cultural integrity	Management of public greenspace	Manage 100% of public greenspace through application of standards of best practice	Currently 973 ha of greenspace protected; approximately 12 ha of additional greenspace to be conveyed to TRCA
		Trails	An additional 60 km of inter-regional trails are built in the watershed (see TRCA, 2008 and TRCA, 2008) Increase connectivity between inter-regional and local trails	100% of BRMT will be managed through application of standards of best practice
	Develop a system of inter-regional trails, and local and regional nature-based recreation, education and tourism destinations within the greenspace system	Nature-based recreation, education and tourism destinations	Provide opportunities for nature-based recreation experiences related to following concept areas or themes: - Hills of the headwaters - Humber Valley wilderness Urban Escape	10 km of trails will be built, including 4 km of inter-regional trails.
			-	Trails will provide nature-based recreation opportunities in both concept areas, including interpretive signage.

APPENDIX D: TRAIL MANAGEMENT

Trail Impacts and Mitigation Techniques

The major sources of disturbance to the environment include clearing of trail routes, human contact with wildlife, soil erosion, trail side trampling and shortcutting. Key potential causes of disturbance and their recommended mitigation methods are listed below:

Clearing the Trail Route

Clearing the trail refers to the actual creation of trail according to TRCA Trail Planning and Design Guidelines. It may also refer to amendments and repairs to existing trails. Correctly routing the trail and implementing trail construction and clearing will help eliminate potential impacts caused by clearing. Of course, clearing by its very nature will always result in some impact, but the type and extend of impact can be controlled through careful planning, timing, design and implementation.

Human Contact

Wildlife species and plant communities have different environmental levels of tolerance to human activity that could result in abandonment of habitats or ecological imbalances. As a result, trail routing and accompanying signage should focus on preventing disturbance to sensitive or rare species through avoidance of associated habitats. Education and proactive approaches such as signage and positive interpretation can also help ensure that interactions between humans and wildlife within BRMT are positive.

Environmental Impacts Created By Overuse

Environmental impacts caused by overuse can include trampled vegetation, slope erosion, soil compaction, increased root exposure and trial widening around wet areas. These impacts can negatively affect the surrounding natural area and features over time. The result is a spreading, compacted trail system that not only affects the ecological quality of the surroundings but also negatively affects the user experience.

Soil Erosion

Erosion is the natural process through which soil and rock are worn away by wind and water. Trail erosion can be accelerated by a combination of users, water and gravity. When left unmitigated erosion can destroy a trail and damage the surrounding environment (IMBA 2004). Erosion affects functional utility, safety, ecological balance and aesthetics. The effects include loss of topsoil, root exposure, stream sedimentation, contaminations of water supplies, and sliding and slumping. The chance of erosion is increased on erosion susceptible soils (especially when wet), excessive removal of vegetation, excessive compaction of vegetation due to trampling, uncontrolled surface runoff, steep slopes and improper installation of trail structures such as bridges or culverts.

Trail-side Trampling

Damage to vegetation and soils occurs when users wander off trials. This happens due to overly narrow trails, overuse, ill-defined trail edges and difficult or unsafe trails (muddy, eroded, blocked, subject to mud slide, etc...)

Shortcutting

Damage to vegetation and soils occurs when users wander off trials. This happens if trails are too difficult or unsafe, if the user is attracted to an interesting feature off trail, or if an easier route is visible.

Trail Construction
In addition to the impact caused by on-going use, the actual trial construction process results in various impacts to the environment. These can include pruning, removal of vegetation or soil compaction caused by construction machinery. Great care must be taken to control impacts both directly and indirectly during the construction process. Work done on existing and new trails should be completed to minimize the disturbance of a site as much as possible.

Timing
Timing of construction should take into consideration the life cycles of the various flora and fauna near the trail location. Wherever possible, trail work should occur during times when the least disruption will take place to the local species and in particular local or regional species of concern.

Clearing
Clearing refers to the removal of all materials that may obstruct movement along the trial, thus creating a potential hazard. This may include the removal of small obstacles or vegetation such as brush, shrubs or in some cases even trees. Prior to clearing any trees onsite, an impact assessment will be completed to describe the trees, numbers, species, conditions and location of their removal. The assessment will ensure an appropriate trail routing with an acceptable environmental impact. Complete flush to grade clearing will generally occur on the tread surface, while the rest of the right of way (ROW) will only see the removal of trees and large shrubs. Smaller shrubs and groundcover will remain.

Surfacing
The existing grade should not be unnecessarily disturbed to obtain a trail base, especially on flat solid ground. Minimum disturbance will provide the best natural image for the final trail. In all cases, natural trail surfaces should be used for trail construction wherever possible. However, due to property or land form constraints, this may not be feasible. When native soil is not a suitable tread surface to carry a specific user or does not provide adequate support, special tread surfaces can be provided. The surfaces should provide an appropriate level of comfort and safety for the user and should be constructed to blend in with the surrounding environment. Some of these may include granular fills, hard trail surfacing materials or poured surfaces such as asphalt or concrete.

A mulch type surface (bark/wood chips) is attractive and in many cases compatible with the natural environment, but does not compact well. Mulch type surfaces can also act as mediums for the transport of potentially harmful diseases or pests to the forest. It is therefore not a preferred material for trail surfaces in the BRMT or a suitable material for heavy use foot traffic or multi-use trails.

Granular surfaces commonly consist of gravel, limestone fines or other crushed rocks. Granular surfaces, when compacted are suitable for high use areas and when placed upon a sub grade of larger clear stone are suitable for areas susceptible to erosion or rutting.

Hard trail surfacing materials such as armour stone, flag stone or precast concrete pavers can be used in areas requiring greater protection from erosion, or in areas that are susceptible to excessive moisture. These materials are initially expensive and labour intensive, but if installed correctly, will require little maintenance in the long term.

Asphalt and other paving solutions such as concrete are potentially suitable for high level use areas or for accessible trails such as the trail segment through downtown Bolton. Some of this trail may be considered for future assessment and designation as accessible trails.
Because by their very nature, paving surfaces have a long life span and as a result are very difficult to remove or reroute once implemented. Furthermore poured paving solutions have a high impact on slow moving fauna species such as snakes and salamanders that have difficulty evading trail users. As such, the ecological impacts associated with paving sections of trail within conservation lands can be considered as high. All alternative paving/ routing solutions should be explored prior to the use of asphalt, concrete or any other long term hard paving surface.

Boardwalks
Boardwalks should only be constructed in extremely wet areas where alternative routing solutions are not available. Typically, boardwalk construction involves fixing untreated rot-resistant timber and planking on rot-resistant timber sills that are made to sit on large concrete pavers leveled with gravel. A variety of configurations are possible depending on site conditions and whether the boardwalk is to be used as a simple walkway or a as a key trail feature such as a lookout platform. Boardwalks should be constructed in a robust manner to withstand all weather conditions, high levels of use and potential vandalism. Construction, design and technique for any particular boardwalk application should conform to local building codes.

Barriers
Barriers can be constructed from a variety of materials including rock, timber or steel. “Green” or live barriers may also be suitable in certain situations by using abrasive shrubs or plants to deter entry (i.e. Hawthorn, raspberry etc). Care should be taken to choose an appropriate barrier material and design that is safe, blends well with the natural landscape while still deterring undesired access or encroachment. Where green or live barriers are used, it is important to take environmental balance into consideration and select species that are non-invasive and native to the site.

Trail Management
Environmental concerns include the need for trail rehabilitation and/or closure. Measures such as the rerouting of trails, trail edge definition and structures will help to protect sensitive areas. Trail management will be coordinated with the BRMT Stewardship committee and the HVHTA.

User Management
Trail operation involves managing the type, volume and season of trail use to achieve the goals and objectives for trail development and management. Elements of user management include monitoring volume of use, type of use and effects of use on the trail management objectives; implementing trail restrictions; and informing users through newsletters, brochures, maps and signs of the types and levels of use intended for the trail.
Due to the fact that the BRMT is largely an un-serviced area, the majority of user management will be implemented through trail design and signage as opposed to active enforcement or management.

Managing Trail Use
Trails should be actively monitored by TRCA staff, the stewardship committee and trail captains to ensure adequate trail conditions and impacts on the natural and cultural features of the site.

Maintenance

A well designed and constructed trail system is the foundation for many enjoyable years of walking, hiking and cycling. To keep the trails safe functional and attractive through the years, a routine maintenance program is necessary. Maintenance should be carried out on a regular basis by TRCA staff or contractors with the help of Trail Captains and the stewardship committee to prevent the trails from falling into disrepair.

Surface Treatment

The material on the trail bed can provide the desired tread thereby minimizing the impact of the user on the trail bed and surrounding flora. The three most important factors to consider when providing a special tread surface are firmness, evenness and dryness. Surface treatments can be used to lessen the compaction of soil, provide a dry surface for users, and prevent potential erosion and abrasion. Trails can be surfaced with asphalt, a boardwalk, dirt, rock gravel, sand , mud, snow, grass and others substances depending on the user group and their needs.

A firmer tread and even grades are generally required on trails travelled by those with mobility problems or those trails that are to see a high level of traffic by maintenance vehicles.

Erosion

Erosion affects functional utility, safety, ecological balance and aesthetics. Minimizing and mitigating erosion is important to keeping the trails in the BRMT in good working order.

Trails should be regularly monitored for signs of erosion. Areas identified as having a high risk of erosion should be marked as a priority and addressed by following the trail modification process guidelines identified in section 5.6. A wide variety of alternatives should be considered including resurfacing, redesign, rerouting and in some cases trail closure.

Litter Removal

At present trash has not been an issue of high concern in the BRMT. However, as more people use the trails in the BRMT, there is a greater chance for litter to become a problem along the trails. It is important that levels of litter be monitored on an ongoing basis and where issues of litter are found that they be dealt with as soon as possible. TRCA should work with the stewardship committee, trail captains and staff to ensure that the BRMT remains a clean and safe conservation site.

Invasive Vegetation Control

Non-native invasive species of vegetation are aggressive plants that outcompete with local varieties of plants and can cause these local varieties to fall into decliner. Examples of invasive plants that are spreading through the BRMT are dog-strangling vine, garlic mustard and common buckthorn. Monitoring and control of these species is crucial to ensure the continued biodiversity of the BRMT.

Pruning and Trimming

All pruning and trimmings of trees along trail routes shall be subject to the standards and guidelines established in TRCA's Policy for Managing Hazard Trees and the associated Operational Procedures for Managing Hazard Trees. Any major limbs or trees that are in poor condition and within falling range of the trail should be trimmed. Branches, limbs and any other debris that fall across the trail or at the trail head should be removed.

Windfalls/Hazard Tree Removal

Hazard tree removal along trail routes shall be subject to the standards and guidelines established in TRCA's Policy for Managing Hazard Trees and the associated Operational Procedures for Managing Hazard Trees.

Trails should be monitored for fallen trees, limbs and debris or trees that are in poor condition and within falling range of the trail. Where such trees or limbs are found they should be removed

as quickly as possible. Upon removal of the hazard trees, the trail surface should be returned to its intended condition as soon as possible.

Structures
Trail structures may include bridges, drainage structures, raised trails, stairways, retaining walls and barriers. The first consideration of providing a trail structure is to actually determine the need. Structures are expensive and should only be used where they are essential to retain the level of comfort and safety on the trail. The type of structure should be designed to reflect the natural surroundings. As a general rule, natural materials are best, and if possible, local materials should be used.
All trail structures should be monitored on a regular basis for safety and stability. All broken or rotting or broken sections of lumber should be replaced immediately.

Signage
Trail signs are important elements that enhance the trail experience and provide guidance to the user. All signs should be placed so that they face the anticipated direction of traffic, are unobstructed by vegetation and are easy to read and understand. Signs should be mounted at a height appropriate to the specific user.

Monitoring and Management Systems:

An operations system is required to plan, schedule, perform and evaluate maintenance activities. The following guidelines outline the development of such a system. TRCA should encourage user groups to actively participate with the BRMT Stewardship Committee.

Establish Maintenance Objectives
These may vary from trail to trail depending on traffic flow or special trail features such as build structures or a particularly ecologically sensitive area. The major objectives will include (1) ensuring user safety and (2) maintaining the trail and its amenities at a level consistent with the design and planning standards. This may also involve undertaking seasonal trail closures if deemed appropriate through monitoring.

Evaluate Trail Needs
This process of making lists of maintenance tasks and seasonal requirements would be required to satisfy the maintenance objectives. It may be determined that certain trails will be require closure or seasonal signage as a part of this evaluation of trail needs. These would prevent safety hazards and negative impacts on the trail and surrounding ecosystem due to inappropriate use during certain times of the year (i.e., washouts due to rain or snowmelt).

Develop a Maintenance Program
Condense the maintenance tasks and seasonal requirements into a preliminary schedule. Use this schedule to determine the number of crews or contractors required to complete the program and the number of staff per crew. With this information, an initial inventory of needed equipment and power equipment, including motor vehicles, can be determined. Of course, the maintenance budget becomes a factor in all these decisions.

Establish a Trail Monitoring Program
Trails must be monitored regularly. To facilitate prompt repairs along a trail system or to determine if a trail needs additional seasonal maintenance. This involves a thorough inspection

of the trails, reporting all deficiencies and their location in a log format . Specific tasks can be assigned a code number for ease of reference and execution by staff.

Schedule and Record of Maintenance
Regular maintenance can be scheduled on a yearly basis. This forms the basic structure of the maintenance program for which labour and equipment can be allocated. However, special maintenance (such as windfalls or vandalism, which are unplanned occurrences) must also be given attention during scheduling. Schedules will become the basis for work orders. As the work orders are completed by staff on the trails, work reports should be kept detailing the tasks completed, time required and work conditions (such as sun, rain, brush, bog, etc...) these work reports should be filed according to each particular trail and can be used to develop activity summary sheets or work standards. Activity summaries should be reviewed every two to three years to ensure that they conform to the work on the trails. The summaries can be used to evaluate efficiency or work crews and create time-efficient maintenance schedules.

Maintenance Evaluation
The trail logs and work reports should be reviewed on an annual basis, if not more frequently, to determine excessive trail use, vandalism, damage and environmental degradation. This information must be communicated to trail planning and routing authorities so that they can reassess the trail routes. This evaluation may result in trial closures, up scaling, downscaling or rerouting.

Vandalism
Trails are subject to many forms of vandalism including the carving, defacing and misuse shelters, benches, picnic tables and trees. Such acts of willful or negligent destruction require both preventative and reactive attention.
Although very little will stop the determined vandal, many techniques deter casual vandalism or bring the vandal to justice. Bollards, posts or gates should be used to control unwanted vehicular access. Semi-regular police or enforcement patrols can be used to monitor trail sections that are particularly attractive to vandals. Strategically placed lighting will discourage destructive activity lighting should be placed at main trail head locations and associated buildings wherever possible. Also, all lighting should function on motion sensors and be directional – directed downward, lighting only the area associated with the building or trial head.
Perhaps the most important effort that should be made in the prevention and apprehension of vandalism is the education of the public. Various media, including television and newspapers as well as educational programs in schools, can raise public awareness regarding the issues surrounding vandalism.
Within parks and along trails, orientation displays can be used to educate trail users about the damages of vandalism. Trail brochures and eye-catching posters can also service similar functions. Outreach programs to children in their classrooms, as well as sponsoring outdoor education programs, allow TRCA to teach respect for the facilities and foster pride in the natural environment. Neighbourhood Watch and other volunteer surveillance programs should be encouraged to reduce vandalism.