Town of Niagara-on-the-Lake Official Plan Review:
ENVIRONMENTAL DISCUSSION PAPER

Prepared for the Town of Niagara-on-the-Lake

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1.0 Introduction

1.1 Project Overview

The Town of Niagara-on-the-Lake's (herein referred to as the Town) current Official Plan was adopted in 1994. Several pieces of environmental policy and legislation that guide local land use decision-making have come into effect since the Town's last Official Plan was prepared, including an updated Provincial Policy Statement (2014), Ontario Greenbelt Plan and Act, Ontario Endangered Species Act (2007), and updates to the Regional Official Plan. Since 1994, numerous amendments to the Town's Official Plan have also been made. Due to these circumstances, an Official Plan review is being undertaken to guide land use and development over the next 25 years.

North-South Environmental Inc. was retained as part of the Planscape-led consulting team to assist the Town with their Official Plan update to address environmental policy and mapping issues. The discussion paper that follows highlights the changes that are mandatory to be consistent with current policy and legislation, and outlines options for how the Town may address these changes where decisions are needed to update policies and mapping of the natural heritage system and natural heritage features.

1.2 Study Area Overview

The Town is located in Niagara Region, nestled along the shores of the Niagara River and Lake Ontario, within the Greater Golden Horseshoe. The Town includes five urban areas: Glendale, Old Town, Virgil, St. Davids and Queenston, and has a significant rural component which includes a unique agricultural base of grapes and tender fruit. In order to farm these lands, an extensive network of field tile drains, municipal drains and irrigation canals has been constructed. This network of drainage features connects the headwater areas on the Niagara Escarpment with the watercourses in the northern part of the Town, which flow into Lake Ontario. The Town's remaining natural features are primarily limited to areas along the Niagara Escarpment, small woodland patches, wetlands and riparian lands. Though small and few in number, these areas sustain a relatively high diversity of flora and fauna, and provide habitat for many Carolinian species that are considered rare in Ontario.

The Town's agricultural community recognizes that the long term viability of agriculture is dependent upon responsible environmental stewardship. This ethos is deeply rooted in the tradition of farming and environmental stewardship for many farmers. The discussion that follows recognizes the role that the agricultural community has played in the protection and stewardship of natural heritage in the Town over the last century. The inter-relationship between agriculture and the natural environment is recognized at the outset, as is the careful balance that is required in natural heritage policies to ensure that natural heritage features and functions are protected, but not at the expense of agricultural sustainability. As such, options for better integrating natural heritage systems with agricultural systems are explored below.

2.0 Natural Heritage Goals

The Town's current Official Plan provides the following goals and objectives in relation to the protection of natural heritage resources in Section 16.2 Conservation/Wetlands:

1. To protect wetlands from incompatible activities.
2. To encourage the retention of woodlots and the reforestation of low capability farmland.
3. To protect areas of natural and scientific interest.
4. To control development within the 100 year erosion limit of Lake Ontario.
5. To petition the senior levels of government for physical and financial assistance in stabilizing the Lake Ontario shoreline.
6. To increase public access to the Niagara River and Lake Ontario and to prevent damage to the shoreline.
7. To delineate and regulate development on all lands having inherent physical environmental hazards such as flood susceptibility, poor drainage or other physical conditions which act as a constraint to development in order to prevent loss of life and to minimize property damage and social disruption.
8. To preserve and enhance the amenities and natural resources offered by waterways, wetlands and natural areas in the Town.
9. To preserve and protect provincially significant wetlands in accordance with provincial policy statements.

The Town commenced a review of the Official Plan in 2013, following the development of a Community Vision in 2012 through stakeholder consultation. The outcome of the Town-led review provides important background information, as well as the Official Plan structure. The Community Vision process was undertaken to help guide the future development and growth of the Town, and resulted in the creation of a Community Vision Statement, eight strategic pillars and a number of associated goals to help ensure that the Town's vision is fulfilled over the next 20 years. The eight strategic pillars are [emphasis added]:

- A prosperous and diverse economy
- Strong environmental stewardship
- An inclusive, integrated, healthy town
- A centre for culture, heritage and recreation
- Mobility choices
- A well-planned built environment
- A prosperous and sustainable agricultural sector
- Well-managed municipal finances

The Community Vision process defines "Strong Environmental Stewardship" as "a town that protects its environment for present and future generations through creative stewardship of land, water and air". In order to achieve this priority, the Town identifies that they will:

1. Promote environmental stewardship as part of all municipal decision-making.

2. Recognize the contribution of landowners that conserve the countryside and natural landscapes so that they continue to contribute to our unique sense of place and beauty.
3. Promote the responsible protection of natural areas and their related ecological functions.
4. Promote environmental stewardship programs to ensure that the town's air, water and soil will be safeguarded for current and future generations.
5. Encourage the municipal acquisition of significant natural areas.
6. Conserve energy through community design, land use planning, transportation planning, and the design/retrofitting of public and private buildings.

Niagara Region's current Official Plan identifies the following "Objectives for a Healthy Landscape" under Natural Environment in Chapter 7:
Objective 7.1 To maintain a healthy natural environment for present and future generations.
Objective 7.2 To conserve Niagara's distinctive natural character.
Objective 7.3 To apply an ecosystem-based approach to planning and decision-making.
Objective 7.4 To foster and promote cooperation among public agencies, private landowners and community groups.
Objective 7.5 To support and encourage environmental stewardship and restoration.

Consideration could be given to revising the natural heritage goals of the Town to include elements of environmental stewardship and restoration, and include reference to the protection of the natural heritage system. This would bring the Town's goals for the natural environment policies more in line with the direction provided by the Community Vision process, the Region, and the Province (in both the Greenbelt Plan and the 2014 Provincial Policy Statement).

Consideration could also be given to including a statement of the intent of the Town's natural environment policies, such as:
The intent of the Natural Environment policies is to protect significant natural heritage features and functions for their ecological benefit, contribution to human health, and to preserve the natural heritage of the Town of Niagara-on-the-Lake. Where possible, this is to be achieved through the protection of natural heritage features within a Natural Heritage System and within the Conservation designation.

Options for Updating Natural Heritage Goals:

- Consider updating the natural environment policy goals to include elements of restoration and rehabilitation, and NHS planning and protection.
- Consider including a statement of the intent of the Town's natural environment policies.

3.0 The Town's Existing Official Plan Policies

Environmental policies in the Town's existing Official Plan are provided under Section 16: Conservation/Wetlands. The Conservation/Wetlands designation applies to lands considered environmentally significant or where lands are considered unsuitable for building purposes and require special attention to avoid loss of life and property damage. This designation includes: Provincially Significant Wetlands, flood prone and shoreline erosion areas, Areas of Natural and Scientific Interest, woodlands and fish habitat. Schedule A maps the Land Use Plan for the Town, and includes lands designated as "Conservation", "Escarpment Protection Area", "Escarpment Natural Area", "Area of Natural and Scientific Interest", and "Wetland". Schedules B through F show Land Use Plans for the settlement areas.

The Town's existing environmental policies protect environmental features (e.g., wetlands) by restricting development, requiring the establishment of appropriate environmental buffers and/or designating the lands for conservation uses. The existing environmental policies have evolved over the years into a series of different environmental policies for different settlement areas. The Town's strongest environmental policies are generally those that were developed more recently. Within the older more established portions of the Settlement Areas in the Town, the environmental policies protect valleyland features (e.g., creek corridors), but provide limited policy direction on the enhancement and active management of these and other environmental features over the long term.

The existing environmental policy approach is one of protecting and designating environmental features. The Town's new environmental policy approach must shift to not only protect environmental features, but also manage environmental functions over the long term. This can be achieved by shifting the environmental policy approach to continue to protect environmental features while enhancing and actively managing environmental functions over the long term through the protection of a natural heritage system.

Landowner stewardship plays a key role in natural heritage conservation in the Town. Land use regulations also are needed, however, to protect natural heritage while at the same time providing for growth and development. The sections that follow outline specific policy areas that require revision or addition in order to achieve conformity with Regional and/or Provincial policies and legislation, and also identify opportunities to promote a balanced approach.

4.0 Achieving Conformity with the 2014 PPS

Section 2.1 Natural Heritage of the 2014 Provincial Policy Statement contains policies for the long term protection of natural features including significant wetlands, significant woodlands, significant valleylands, wildlife habitat and significant areas of natural and scientific interest. Section 2.2 Water includes policies that restrict site alteration in or near sensitive surface water

features and sensitive ground water features. Municipalities are required to be consistent with and potentially exceed the level of protection provided by the Provincial Policy Statement.

4.1 Natural Heritage System Policies

The definition of Natural Heritage System (NHS) provided in the Provincial Policy Statement (2014) states that:
"natural heritage system: means a system made up of natural heritage features and areas, and linkages intended to provide connectivity (at the regional or site level) and support natural processes which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems. These systems can include natural heritage features and areas, federal and provincial parks and conservation reserves, other natural heritage features, lands that have been restored or have the potential to be restored to a natural state, areas that support hydrologic functions, and working landscapes that enable ecological functions to continue. The Province has a recommended approach for identifying natural heritage systems, but municipal approaches that achieve or exceed the same objective may able be used."

The Provincial Policy Statement (2014) puts a greater emphasis on NHS and the use of a systems approach to protect natural heritage, and now requires municipalities to identify NHS while recognizing that they will "vary in size and form in settlement areas, rural areas, and prime agricultural areas" (Policy 2.1.3, PPS 2014). The definition of NHS also now includes "working landscapes", which is interpreted to mean agricultural land that can be included in a NHS owing to the ecological function it provides, but it does not mean that it needs to be naturalized. The concept of working landscapes is key to the discussion and options related to the NHS, and is reinforced throughout this review.

The Town's urban structure includes "Core Natural Heritage System" as a component, and the current Official Plan recognizes that Core Natural Heritage Systems may extend beyond the Urban Areas into the Agricultural Area. The function of the Core Natural Heritage System within the Urban Area Boundary is planned to provide a framework for the protection, maintenance, restoration, integration and where possible, the enhancement of the Town's natural systems, ecological health and biodiversity. The Town's current Official Plan states that the Core Natural Heritage System is delineated on the Core Natural Heritage Map (Schedule C) in the Regional Policy Plan. A Town-wide NHS is not currently included in the Official Plan, nor is a definition of what a natural heritage system is, or how it is delineated. At a minimum, the Town will need to provide policies that direct the protection of the Core Natural Heritage System identified by the Region in order to conform to PPS and Regional Policy Plan policies.

Consideration could be given to providing policy guidance on the general principles to use for delineating the NHS. For example, in Policy 7.B.1.1 of the Regional Policy Plan, components of the NHS are identified:

"The Core Natural Heritage System consists of:

a) Core Natural Areas, classified as either Environmental Protection Areas or Environmental Conservation Area;
b) Potential Natural Heritage Corridors connecting the Core Natural Areas;
c) The Greenbelt Natural Heritage and Water Resources Systems; and
d) Fish Habitat.

The System generally is shown on Schedule C, which provides an overall indication of provincially and regionally significant natural features and provides the framework for natural heritage planning and development review in Niagara. The Niagara Region Planning and Development Services Department should be contacted for more detailed information. Natural heritage features may be further defined through future studies. Additional Natural Heritage features of local significance may be identified by local municipalities in their planning documents."

Since the PPS specifies that "natural heritage systems **shall** be identified…" [emphasis added], consideration could be given to providing further policy guidance for including linkages as part of the NHS designation. For example, an Official Plan policy that clarifies that in addition to natural heritage features, linkages are also to be included as an integral component of the NHS designation could be included. In addition, a policy that specifies that potential and/or additional linkages shall be identified through a watershed plan, Secondary Plan and/or Environmental Impact Study (EIS) could be included. These linkages, once identified, would be considered to form part of the NHS and would thus be protected from development. Working landscapes may be an integral part of the approach for linkages. In fact, agricultural land use is an integral part of the NHS, and specifically of linkages.

Following policies that provide guidance on what the NHS consists of, policies that direct the protection of the NHS from development are required. In Policy 2.1.2, the PPS states that "The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features." Policy 2.1.3 of the PPS (2014) states that "Natural heritage systems shall be identified in Ecoregions 6E & 7E, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas." The Town could adopt language similar to what is used in the Regional Official Plan in policy 7.B.1.10, which currently states[1]:

"Notwithstanding Policies 7.B.1.15 and 7.B.1.20 and the Policies in Chapter 7.A.2, within Environmental Protection Areas, within Fish Habitat in the Greenbelt Natural Heritage System, within key hydrologic features within the Unique Agricultural Areas, and within any associated

[1] The Region is in the process of or is intending to revise its natural heritage policies, so that Town may not want to tie in too closely to the Region's existing policies.

vegetation protection zones in the Greenbelt Area, development and site alteration shall not be permitted except for the following:

a) forest, fish and wildlife management;
b) conservation and flood or erosion control projects where it has been demonstrated that they are necessary in the public interest and other alternatives are not available; and
c) small scale, passive recreational uses and accessory uses such as trails, boardwalks, footbridges, fences, docks and picnic facilities that will have no significant negative impact on natural features or ecological functions of the Core Natural Heritage System.

Where such uses are proposed, the proponent shall be required to prepare an Environmental Impact Study (EIS) to the satisfaction of the Region in accordance with Policies 7.B.2.1 to 7.B.2.5."

Recognizing agricultural operations as existing uses, consistent with PPS Policy 2.1.9 should be considered as part of the NHS.

Emphasis on providing clear direction in policies to identify and protect NHS will greatly assist the Town with implementing the NHS, and with minimizing disputes over site-specific applications.

Options for mapping the Town's NHS are reviewed in Section 11 below.

Options for achieving conformity with PPS NHS policies:

- Consider providing policy guidance on the general principles to use for delineating the Town's NHS.
- Consider providing policies that direct the protection of the Core Natural Heritage System identified by the Region in order to conform to PPS and Regional Policy Plan policies.
- Consider providing further policy guidance for including linkages as part of the NHS designation.
- Consider including a policy that specifies that potential and/or additional linkages shall be identified through a watershed plan, Secondary Plan and/or Environmental Impact Study (EIS) could be included.
- Consider a clear indication that agricultural operations and working landscapes are components of the Town's NHS.
- Consider including a policy that limits development and/or site alteration within the Town's NHS.

4.2 Harmonization with the Endangered Species Act

Policy 2.1.7 of the 2014 PPS states that "Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements". This updated policy is harmonized with the Ontario Endangered Species Act, which came into effect in 2007. The Endangered Species Act (ESA) provides automatic legal protection of species classified as endangered or threatened in Ontario, including habitat protection.

The Town's current Official Plan does not contain policies for the protection of endangered or threatened species. Consideration could be given to including policies that conform to Policy 2.1.7 of the 2014 PPS.

Options for achieving conformity with PPS SAR policy:

- Consider including a policy to address Policy 2.1.7 of the 2014 PPS to protect the habitat of endangered species and threatened species from development and site alteration, except in accordance with provincial and federal requirements.
- Consider involving MNRF in the review of the Town's Official Plan policies that pertain to SAR.

5.0 Achieving Conformity with Greenbelt Policies

The Greenbelt Plant (2005) identifies where urbanization should not occur in order to provide permanent protection to the agricultural land base and the ecological features and functions occurring on this landscape. In the Town, the Greenbelt Plan also protects natural connections between the Great Lakes and the Niagara Escarpment. Protecting natural heritage systems is one of the primary objectives of the Greenbelt Plan.

5.1 Policies to Conform with Greenbelt Plan

The Greenbelt Plan (2005) was established under Section 3 of the Greenbelt Act, 2005, to take effect on December 16, 2005. The Town's current Official Plan predates the Greenbelt, and thus does not include policies related to the Greenbelt Plan. The entire Town is located within the Greenbelt Plan Area and is subject to the Greenbelt Act and Plan. In the Town, the Greenbelt consists of lands within the Niagara Escarpment Plan Area, and lands within the Protected Countryside Area. The Greenbelt Plan indicates that municipal Official Plans must include mapping that shows "the Greenbelt Area, the Protected Countryside, and the Natural Heritage System, as well as key natural heritage features and key hydrologic features and their associated minimum vegetation protection zones, wellhead protection and vulnerable areas. In addition to mapping, Greenbelt Plan policies should be added to the Town's Official Plan to

ensure that planning processes regarding its implementation are clear, easy to understand, and satisfy the Provincial and Regional requirements.

In the Greenbelt, new development or site alteration in the Greenbelt NHS shall demonstrate that there will be no negative effects on key natural heritage features or key hydrologic features or their functions. Key natural heritage features include significant habitat of endangered species, threatened species and special concern species, fish habitat, wetlands, Life Science Areas of Natural and Scientific Interest (ANSIs), significant valleylands, significant woodlands, significant wildlife habitat, and barrens, savannahs and tallgrass prairies; and alvars. Key hydrologic features include permanent and intermittent streams, lakes (and their littoral zones), seepage areas and springs, and wetlands. Within key natural heritage features or key hydrologic features, including any associated vegetation protection zone, development or site alternation is not permitted except for:

- Forest, fish and wildlife management;
- Conservation and flood or erosion control projects; and
- Infrastructure, aggregate, recreational, shoreline and existing uses.

The Greenbelt Plan includes provisions to protect, maintain and enhance the Natural Heritage and Water Resource Systems within the Greenbelt Area (shown on Schedule C of the Regional Official Plan). The Regional Official Plan treats the Greenbelt Natural Heritage and Water Resources Systems as components of the broader Regional Core Natural Heritage System. The Greenbelt Natural Heritage System is shown on the Core Natural Heritage Map of the Region's Official Plan. The key natural heritage features within the Greenbelt Natural Heritage System are identified as Environmental Protection Areas, and Fish Habitat on Schedule C. The Regional Official Plan integrates the environmental conservation provisions of the Greenbelt Plan into the policies provided in Section 7 Natural Environment.

The Region retained a planning consultant and facilitator to prepare a report dated August 2013 entitled "Niagara Region's Greenbelt Plan Review" based on consultation activities with municipal stakeholders and organizations. This review identifies issues specifically related to the agricultural community and natural heritage protection. The Town's Official Plan policies will attempt to address the challenges faced by the local agricultural community through use of innovative planning policy solutions, while ensuring that the Greenbelt Plan's overarching goals of long term agricultural viability and protection of the most sensitive areas of the natural environment are accomplished. An appropriate balance will be sought.

The province will be conducting a coordinated review of the Niagara Escarpment Plan and the Greenbelt Plan, commencing in 2015. This review is likely to impact the Town's Official Plan.

Options for achieving conformity with Greenbelt Plan policies:

- Add Greenbelt Plan policies and mapping to the Town's Official Plan to ensure that planning processes regarding its implementation are clear, easy to understand, and satisfy the Provincial requirements.

5.2 Vegetation Protection Zones

The Greenbelt Plan defines vegetation protection zone as "a vegetated buffer area surrounding a key natural heritage feature or key hydrologic feature within which only those land uses permitted within the feature itself are permitted. The width of the vegetation protection zone is to be determined when new development or site alteration occurs within 120 metres of a key natural heritage feature or key hydrologic feature, and is to be of sufficient size to protect the feature and its functions from the impacts of the proposed change and associated activities that will occur before, during, and after, construction, and where possible, restore or enhance the feature and/or its function." The agricultural operations and working landscapes of the Town could be identified as integral parts of the vegetation protection zones.

Policy 3.2.4.4 of the Greenbelt Plan states that "In the case of wetlands, seepage areas and springs, fish habitat, permanent and intermittent streams, lakes, and significant woodlands, the minimum vegetation protection zone shall be a minimum of 30 metres wide measured from the outside boundary of the key natural heritage feature or key hydrologic feature."

Policy 3.2.4.5 of the Greenbelt Plan states that "A proposal for new development or site alteration within 120 metres of a key natural heritage feature within the Natural Heritage System or a key hydrologic feature anywhere within the Protected Countryside requires a natural heritage evaluation and hydrological evaluation, which identify a vegetation protection zone which:

a) Is of sufficient width to protect the key natural heritage feature or key hydrologic feature and its functions from the impacts of the proposed change and associated activities that may occur before, during, and after, construction, and where possible, restore or enhance the feature and/or its function; and
b) Is established to achieve, and be maintained as natural self-sustaining vegetation.

As stated above, the Greenbelt Plan requires that vegetation protection zones (VPZ) be applied to key natural heritage features and key hydrologic features. Minimum VPZs are also required by the Greenbelt Plan for land use conversions, redevelopment, and/or resort development along a shoreline. These policies may benefit the natural environment in the Town, helping to ensure that significant environmental features are buffered from land uses that may be disruptive to them. However, if not managed sensitivity, these riparian zones present a challenge to even the most sustainable forms of agriculture, encouraging pests that may be harmful to crops. In the Town, there is the additional issue of the very small size of farm parcels (many are only 10 acres), which provides little to no room for extensive VPZs. The landscaping of VPZs is a significant issue in the Town due to challenges faced by the agricultural community surrounding pest encroachment on prime agricultural land as a result of required setbacks. However, the environmental benefits of these setbacks must be considered. The development of policies dealing with plantings in riparian zones and pest prevention techniques in tender fruit and grape growing areas may help to mitigate some of the challenges faced by the

agricultural community in this regard, by providing best practice recommendations, while ensuring the maintenance of a high quality environment and agricultural landscape.

The Town's Official Plan will need to provide a definition of VPZ, and policies for the protection and implementation of minimum required VPZs to conform to Greenbelt, Regional Official Plan and Niagara Peninsula Conservation Authority regulations. NPCA has expressed frustration over the lack of flexibility with setbacks from natural heritage features in the Greenbelt; the minimum setback is 30 m and NPCA would like to have the flexibility to reduce minimum setback requirements to reflect local site conditions.

Conflicts have been identified between Greenbelt Plan objectives. Farmers believe that natural heritage protection currently takes precedence over agricultural protection without giving consideration to the negative impacts on farming. There are concerns in the agricultural community that environmental restrictions are eroding the agricultural land base and agricultural viability. For example, natural heritage protection policies limit the ability of farms to grow while at the same time promote ecosystem restoration that creates habitat for pests and wildlife that are detrimental to agricultural production (Niagara Region's Greenbelt Plan Review Summary Report, Urban Strategies Inc. & Niagara Region, August 2013). Minimum setback requirements can reduce the area available for agricultural production, which is an issue that becomes magnified on small farm parcels.

Even where the 30 m VPZ is necessary per the Greenbelt Plan, Official Plan policies could allow farmers to have a reduced setback if further site assessment through an EIS or other appropriate scoped study is completed, notwithstanding the current Greenbelt policy. The Province may allow for reduced setbacks in agricultural settings in the future; therefore, it may be desirable to have a proposed local policy regime that allows reduced setbacks, even if the Greenbelt Plan currently does not. If the future Greenbelt Plan allows this approach, then the Town will already have a policy regime in place. If the Greenbelt Plan does not allow this approach, the Town can then refer to the policies at the Ontario Municipal Board.

Niagara Region and the Town note that VPZs do not have to be entirely natural. The 30 m VPZ can include crops but should also include vegetation such as deeply rooted grasses between watercourses and crops. For example, a portion of the VPZ could be planted in crops such as grape vines, with the remainder planted with deep rooted grasses (or similar vegetation) to ensure stability and ecological integrity of the watercourse. The appropriate setback for the non-crop portion of the VPZ will be determined based on the Hydrological Feature Type in the case of watercourses (Section 10.6.1) or the ecological sensitivity of the natural area in the case of wetlands, woodlands or other natural heritage features, following some type of environmental analysis, such as an Environmental Impact Study.

Options for achieving conformity with Greenbelt VPZ policies:

- Provide a definition of VPZ, and include the concept of working landscapes.
- Provide policies for the protection and implementation of minimum required VPZs to conform to Greenbelt policies.

- Exempt or reduce buffers for human-made features.
- Clarify that VPZs do not have to be natural, and can be planted in crops such as grape vines.

5.2.1 Riparian Zone Best Management Practices

A riparian buffer is land next to streams, lakes or wetlands that is managed for perennial vegetation (i.e., grasses, forbs, shrubs and/or trees) to enhance and protect aquatic resources and promote natural heritage system connectivity. In an agricultural context, eroding and collapsing banks can remove valuable agricultural land, particularly if unchecked for many years. Soil from bank erosion becomes sediment in the waterway which damages aquatic habitat, degrades drinking water quality, and fills wetlands, lakes and reservoirs. The benefits of planting a vegetated buffer include:

Benefits for Aquatic Resources

- stabilize eroding banks;
- filter sediment from agricultural land runoff;
- filter nutrients, pesticides, and animal waste from agricultural land runoff;
- provide shade, shelter, and food for fish and other aquatic organisms;
- improve stream temperatures by partially blocking direct solar radiation through shading by vegetation and mitigating impacts of run-off;

Benefits for Terrestrial Resources

- wildlife habitat;
- economic products (e.g., lumber and veneer, fiber, hay, nuts, fruit and berries);
- visually diversify a cropland landscape; and
- protect cropland from flood damage.

Management methods can be designed to protect streams, ditches and floodplains from soil erosion and water contamination. Stable, well-vegetated stream banks reduce the amount of sediment and nutrients that reach the watercourse. Buffers reduce the frequency of having to clean out sediment, which ultimately saves time, energy and cost to clean drains, maintain tile outlets and irrigation ditches. Natural overhanging vegetation provides shade that cools the watercourse, improving habitat for fish and wildlife, while reducing algae and weeds. Well-managed buffers along watercourses and ditches beside cropland can reduce crop damage from waterfowl (Agriculture and Agri-Food Canada and Ontario Ministry of Agriculture and Food and Ministry of Rural Affairs 2013, Canada-Ontario Environmental Farm Plan 4th Edition Workbook p. 231).

Expansive cultivated cropland may provide insufficient cover and food for wildlife. Vegetated buffers assist in supplying diversity of cover and food for wildlife. The effectiveness of buffers providing wildlife habitat tends to be very good for smaller animals and birds, depending on the kind of vegetation that is planted or maintained. Connected stretches of buffers become

wildlife corridors, greatly improving habitat for larger animals. The downside of vegetated buffers that support excellent wildlife habitat is that pest pressure on agricultural crops can have impacts on crop yields and can also increase management costs. Introducing pests through the planting and maintenance of vegetated buffers can negatively impact agriculture.

5.2.2 Plantings Promoted in Riparian Zones

In "Best Management Practices: Buffer Strips" (Ontario Ministry of Agriculture, Food and Rural Affairs 2004), a section is provided on establishing and managing buffers. It is important to have a clear idea of what key functions or benefits are desired with respect to the riparian buffer. The function desired will affect width, cover types, and special features or concerns. For example, if it is desired that the buffer act as a setback and offer some sediment control on flat, clayey, intensive cropland, the buffer strip will probably be narrow and grassed. In a riparian area through moderately sloping cropland, erodible soils and concentrated flow, the buffer will have to be wider – perhaps with woody plants and some streambank and in-field erosion control measures (OMAFRA 2004 p. 65).

In "Best Management Practices: Buffer Strips" (OMAFRA 2004), the relative effectiveness of riparian vegetation types is assessed in terms of the degree of function they provide. This assessment is summarized in the table below.

Table 1. Relative effectiveness of riparian types by function

Function	Vegetation Type		
	Grasses/Forbs	Shrubs	Trees
bank/shore stability	low/medium	medium/high	high
filtration of sediment	high	medium	high
filtration of soil-bound nutrients, pesticides, bacteria	high	medium	high
retention of nutrients, bacteria, pesticides	low	low	medium
water storage	low	medium	high
flood protection	low	medium	high
fish habitat	low	medium	high
wildlife habitat	medium	medium	medium
forestland habitat	low	medium	high
greenhouse gas – carbon sequestration	low	medium	high
nitrate uptake	low	low	medium/high
phosphorous	high	low/medium	high

economic products	low	low	high
visual diversity	low	medium	high

Buffer strips can be planted with grasses, forbs, shrubs and/or trees. Plants should be selected according to the desired buffer function and also the plants' suitability to local site conditions, including climate, soil, soil drainage, soil pH, and risk of flooding. Non-native invasive species should be avoided in plantings. Plants can be established in many arrangements and mixtures to suit design needs. OMAFRA provides the following tables to describe species suitable for buffer plantings in an agricultural context (OMAFRA 2004).

Table 2. Species recommended for riparian zone plantings

Grasses	Forbs	Shrubs	Trees
Reed Canary Grass	Alfalfa	Ninebark	Silver Maple
Perennial Rye Grass	Alsike Clover	Elderberry	Green Ash
Annual Rye Grass	Birdfoot Trefoil	Red Osier Dogwood	Black Willow
Orchard Grass	Red Clover	Staghorn Sumac	Cottonwood
Timothy	White or Ladino	Alternate-leaf Dogwood	Black Walnut
Brome Grass	Clover	Nannyberry	White Ash
Tall Fescue	Sweet Clover	Highbush Cranberry	Red Oak
Meadow Fescue			White Cedar
Creeping Red Fescue			Tamarack
Meadow Foxtail			White Spruce
Kentucky Blue Grass			White Pine
Big Bluestem			Red Pine
Little Bluestem			Hemlock
Eastern Gama Grass			Red Cedar
Indian Grass			
Switch Grass			

It is likely not practical to consider shrubs and trees and fully naturalized areas as buffers to watercourses in agricultural settings. A potential solution to balancing the protection of watercourses through vegetated buffers, achieving linkages within natural heritage systems, while also having regard for the working landscape could be to consider deep-rooted native grasses as an alternative for vegetated buffers along watercourses. This approach could benefit agricultural practices and environmental protection in the following ways:

- allow for unimpeded turning areas for machinery;
- prevent soil erosion from occurring along bank areas;
- help ensure agricultural soils are kept on the land;
- assist with water quality filtration; and
- contribute to ecological linkage, as most natural heritage features in NOTL are found adjacent to a watercourse or ditch system.

Species included in buffer plantings can be selected to deter mammal and bird pests, by selecting species with growth forms that create conditions that are less hospitable. The following examples are provided in "Ontario Wildlife Crop Damage and Livestock Predation Assessment Manual" (Ontario Federation of Anglers and Hunters, Ministry of Natural Resources and Victoria Stewardship Council):

White-tailed Deer

- White-tailed deer may feed on the tender shoots and individual leaves of grape vines, usually at the height of one meter.
- White-tailed deer can also be a problem in fruit orchards. Serious damage occurs when dormant browsing of the top terminal buds causes uncontrolled growth. During the growing season, deer browse on foliage, buds, young shoots and fruit. Heavy deer pressure can seriously impact overall crop production.
- Repellents and controls will provide some temporary relief from deer damage.
- Deer fencing (at least 2.5 m high) is effective, but it is expensive.

Rabbits/Voles

- Rabbits and voles can be responsible for girdling trees and roots when their normal food supply is limited. Rodents chew through the inner bark's vascular tissue known as the cambium layer, severing the process of the leaves transporting sugar to the roots, which subsequently kills the tree.
- Girdling by voles primarily occurs beneath the snow and goes undetected until spring. This damage is often extensive and incorrectly blamed on rabbits.
- Properly installed tree or vine protectors can negate this damage.

Birds

- Wild birds, including songbirds, can be a significant cause of damage to grapes and tender fruit crops.
- Birds damage bundles by pecking at fruitlets or ripened fruit, opening the bunch up to further secondary damage by bacteria, insects or mold.

Weeds, heavy mulch, and dense vegetation cover encourage mammal pests by providing food and protection from predators and environmental stresses. Clearing dense, grassy areas adjacent to vineyard or other agricultural areas reduces the area from which mammals invade. The wider the cleared strip, the less apt mammals (particularly small mammals like meadow voles) will be to cross in the open and become established. A minimum width of 4.5m is recommended.

Plant growth form is one of the most important considerations in selecting plant species to minimize infestations of small mammals in particular. Dense cover forming a continuous canopy tends to support high populations of small mammals. By contrast, plants with erect bunch-type growth or plants that reach a short mature height increase the light penetration at

ground level and provide less protective cover. Food preference also should be considered when selecting species to plant in buffer plantings. Most mammals forage above ground on fresh leaves and stems of a wide variety of grasses and broadleaf plants. Seeds, woody materials, and bark are eaten when green foods are of low quality or are in short supply. The following general recommendations for minimizing small mammal infestations in buffer strips have been made:

- plant grasses rather than forbs;
- select species with erect bunch-type growth or short plants;
- avoid high-moisture plants;
- maintain an unvegetated gap between the buffer and agricultural crop; and
- delay planting of buffer vegetation until vines or fruit trees are approximately 1 year old and less susceptible to damage cause by small mammals.

Bird pests could be minimized by avoiding the planting of plant species that produce fruit or berries that are desirable to birds. Also, some insect pests could be minimized by avoiding the planting of flowering plant species. Flowering plant species (i.e., angiosperms) produce pollen and fruit, which is a desired food source for many insect and bird species. A focus for buffer plantings could be on wind-pollinated species like grasses, willows, etc. which would minimize some insect and bird pests.

Options for Riparian Zone Best Management Practices:

- Consider adopting the recommendations made above for minimizing small mammal infestations in buffers.
- Consider balancing buffer width requirement with agricultural viability.

6.0 Niagara Escarpment Plan Policies

Policies applying specifically to the Greenbelt Area do not apply within the Niagara Escarpment Plan Area.

The Town's current Official Plan provides policies pertaining to the Niagara Escarpment Plan in Section 17. Within the Town, the Niagara Escarpment Plan contains lands designated as Escarpment Natural Area, Escarpment Protection Area and Escarpment Rural Area. The Escarpment Natural Area includes Escarpment features which are in a relatively natural state and associated stream valleys, wetlands and forests which are relatively undisturbed. These contain important plant and animal habitats, geological features and cultural heritage features and are the most significant natural and scenic areas of the Escarpment. Policies in the Niagara Escarpment Plan aim to maintain these natural areas.

Escarpment Protection Areas are important because of their visual importance and their environmental significance. They are often more visually prominent than Escarpment Natural Areas. Included in this designation are Escarpment features that have been significantly modified by land-use activities such as agriculture or residential development, land needed to

buffer prominent Escarpment Natural Areas, and natural areas of regional significance. Policies in the Niagara Escarpment Plan aims to maintain the remaining natural features and the open, rural landscape character of the Escarpment and lands in its vicinity.

Escarpment Rural Areas are an essential component of the Escarpment corridor, including portions of the Escarpment and lands in its vicinity. They provide a buffer to the more ecologically sensitive areas of the Escarpment.

An alternative approach to providing Niagara Escarpment Plan policies in a separate section would be to integrate the environmental conservation provisions of the Niagara Escarpment Plan into the Town's Natural Environment policies. This is the approach that is used in the Regional Policy Plan.

Options for Niagara Escarpment Plan Policies:

- Consider integrating the environmental conservation provisions of the Niagara Escarpment Plan into the Town's Natural Environment policies.

7.0 Consistency with Niagara Region's Official Plan

The Regional Official Plan (Consolidated Official Plan for August 2014) implements the Niagara Region Growth Management Strategy (Niagara 2031), and its content aligns with the Provincial Growth Plan for the Greater Golden Horseshoe, the Provincial Policy Statement and the Greenbelt Plan. Natural heritage-related policies are covered in Section 7 Natural Environment. Figure 7-1 in the Region's Official Plan entitled "A Healthy Landscape A Shared Responsibility" states that ensuring a healthy landscape as the Niagara community develops involves individual residents, businesses, community groups and all levels of government. Local Municipalities have the following specific roles to play:

- Develop and adopt Local Official Plans and Secondary Plans containing more detailed environmental policies in conformity with Provincial and Regional policies and Plans.
- Review and approve Zoning By-law Amendments and development applications (subdivision plans, site plans, severances and variances) with input from the Region and the Conservation Authority.

7.1 Core Natural Heritage System, Environmental Protection Areas and Environmental Conservation Areas

Chapter 7.B of the Regional Plan generally identifies a Core Natural Heritage System consisting of natural areas of special significance. The Healthy Landscape policies apply to these areas and they also are subject to NHS policies which are concerned with their conservation and protection. The Natural System identified in the Provincial Greenbelt Plan is an important component of the broader Healthy Landscape in Niagara. The Greenbelt Natural System is

made of areas of natural heritage, hydrologic and landform features which are often functionally inter-related. It is addressed as part of the Core Natural Heritage System in Chapter 7.B as well as through the broader Healthy Landscape and Implementation Policies (Chapters 7.A and 7.C respectively in the Regional Official Plan).

Niagara Region's Core Natural Heritage System contains environmental features and functions of special importance to the character of the Niagara community and to its ecological health and integrity. The Core Natural Areas within the NHS are significant in the context of the surrounding landscape because of their size, location, outstanding quality or ecological functions. They contribute to the health of the broader landscape, protecting water resources, providing wildlife habitat, reducing air pollution and combating climate change. Some contain features of provincial or even national significance, such as threatened or endangered species.

Niagara Region's Core Natural Heritage System consists of:

a) Core Natural Areas, classified as either Environmental Protection Areas or Environmental Conservation Areas;
b) Potential Natural Heritage Corridors connecting the Core Natural Areas;
c) The Greenbelt Natural Heritage and Water Resources Systems; and
d) Fish Habitat.

Environmental Protection Areas include provincially significant wetlands; provincially significant Life Science Areas of Natural and Scientific Interest; and significant habitat of threatened and endangered species. In addition, within the Greenbelt Natural Heritage System, Environmental Protection Areas also include wetlands; significant valleylands; significant woodlands; significant wildlife habitat; habitat of species of concern; publicly owned conservation lands; savannahs and tallgrass prairies; and alvars.

Environmental Conservation Areas include significant woodlands; significant wildlife habitat; significant habitat of species of concern; regionally significant Life Science ANSIs; other evaluated wetlands; significant valleylands; savannahs and tallgrass prairies; and alvars; and publicly owned conservation lands.

Objective 7.B.1 of the Regional Official Plan is "To maintain, restore and, where possible, enhance the long term ecological health, integrity and biodiversity of the Core Natural Heritage System and its contributions to a Healthy Landscape".

Policy 7.B.1.10 of the Regional Official Plan generally prohibits development and site alteration within Environmental Protection Areas, Fish Habitat in the Greenbelt Natural Heritage System, within key hydrologic features within the Unique Agricultural Areas, and within any associated VPZ in the Greenbelt Plan Area, except for a few permitted uses. Policy 7.B.1.11 of the Regional Official Plan states that development and site alteration may be permitted in Environmental Conservation Areas and on adjacent lands if it has been demonstrated that there will be no significant negative impacts to the Core Natural Heritage System through an Environmental Impact Study (EIS).

The Town's Official Plan will need to be updated to include policy protection measures for the Region's Core Natural Heritage System, including Environmental Protection Areas and Environmental Conservation Areas. Consideration could be given to rewording Regional policies for use in the Town's Official Plan to state that "development and site alteration shall not be permitted in Environmental Conservation Areas unless it has been demonstrated that there will be not negative impacts on the natural features or their ecological functions" to conform with policy 2.1.5 of the 2014 PPS.

Options for Addressing the Region's EPA, ECA and Core NHS Policies

- Include policy protection measures for the Region's Core NHS, including Environmental Protection Areas and Environmental Conservation Areas.
- Consider enhancing Region policies to state that "development and site alteration shall not be permitted in Environmental Conservation Areas unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions".
- Consider addressing impacts on agriculture.

7.2 Potential Natural Heritage Corridors

Within a settled community such as the Town of Niagara-on-the-Lake, natural areas can become isolated islands of green in a landscape dominated by human activity. Natural areas are healthier and function better if they are connected by naturally vegetated corridors. Corridors support the movement of wildlife and dispersal of plant material, playing a vital role in maintaining ecosystem health and integrity.

Objective 7.B.2 of the Regional Official Plan is "To recognize the linkages among natural heritage features and ground and surface water resources". Potential Natural Heritage Corridors are identified on Schedule C Core Natural Heritage Map of the Region's Official Plan. Policy 7.B.1.13 states that "Where development or site alteration is proposed in or near a Potential Natural Heritage Corridor shall be considered in the development review process. Development should be located, designed and constructed to maintain and, where, possible, enhance the ecological functions of the Corridor in linking Core Natural Areas or an alternative corridor should be developed. The Potential Natural Heritage Corridors are illustrated conceptually on Schedule C. The Region shall undertake a study to further define Corridors within the Core Natural Heritage System." The Region's Potential Natural Heritage Corridors have not been confirmed. A such, the Town could conduct further studies to identify and confirm corridors, or show them conceptually, as outlined on Schedule C of the Regional Official Plan.

Section 2.1.2 of the 2014 Provincial Policy Statement states that "The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing

linkages between and among natural heritage features and areas, surface water features and ground water features".

To conform to Regional and Provincial policy, the Town's updated Official Plan will need to include policies and mapping that address the protection of the NHS, of which corridors or linkages are an integral component.

Options for Addressing the Region's Natural Heritage Corridor Policies:

- Include policies and mapping that address the protection of the NHS, including the protection of corridors or linkages as an integral component.
- Consider conducting further studies to identify and confirm the location of corridors in the Town's NHS.
- Consider noting that agricultural uses are consistent with natural corridors.

7.3 Hazard Lands Policies

Niagara Region's Official Plan provides policies that address specific environmental concerns under the Healthy Landscape policies in Section 7.A. These policies apply throughout the Town. Section 7.A.6 addresses Natural Hazards. Natural hazards pose risks to life and property. Development and site alteration shall be directed away from hazardous lands and hazardous sites where there is an unacceptable risk to public health or safety or to property. Hazardous lands are lands that could be unsafe due to naturally occurring processes such as flooding, erosion, slope failure and beach movement. Hazardous sites are those that could be unsafe due to naturally occurring physical conditions such as unstable soil or bedrock. The Region's objectives pertaining to natural hazards are:

- To minimize the risk of personal injury, loss of life or property damage, public costs and social and economic disruption from natural hazards.
- To ensure that development and site alteration do not create new hazards, aggravate existing ones, or have negative environmental impacts.

Hazardous lands are identified and mapped by the NPCA. Local Official Plans and Zoning By-laws are to include maps showing the location and extent of hazardous lands and sites as determined by the NPCA.

Niagara Region's Official Plan provides policies that identify land uses that are not permitted on hazard lands in Policy 7.A.6.7, which states:
"On hazardous lands and hazardous sites the following uses shall not be permitted:

a) institutional uses associated with hospitals, nursing homes, pre-school, school nurseries, day care or schools;
b) essential emergency services such as that provided by fire, police and ambulance stations and electrical substations; and
c) uses associated with the disposal, manufacture, treatment or storage of hazardous substances."

Policy 3.1.5 a) of the 2014 PPS states that "Development shall not be permitted to locate in hazardous lands and hazardous sites where the use is: a) an institutional use including hospitals, long-term care homes, retirement homes, pre-schools, school nurseries, day cares and schools…".

Land uses not permitted on hazardous lands and sites listed in the Regional Official Plan may be revised to be consistent with the 2014 PPS policy 3.1.5. a) and included in the Town Official Plan to enhance transparency and aid in making local planning processes easier to understand.

Options for Hazard Lands Policies:

- Include a map of hazardous lands as identified and mapped by the NPCA.
- Consider including land uses not permitted on hazardous lands and sites listed in the 2014 PPS Policy 3.1.5 a) and the Regional Official Plan to enhance transparency and aid in making local planning processes easier to understand.

7.4 Environmental Impact Study Guidelines

Where development or site alteration is proposed within or adjacent to the Region's Core Natural Heritage System (including Environmental Protection Areas, Environmental Conservation Areas, or Potential Natural Heritage Corridors), dune areas, fish habitat, the Greenbelt Natural Heritage System, etc. an Environmental Impact Study (EIS) is required to be completed, according to Regional Official Plan Policies. The Regional Official Plan includes the following policies pertaining to EISs:

Policy 7.B.2.1:
"An Environmental Impact Study (EIS) required under this Plan shall be submitted with the development application and shall be prepared and signed by a qualified biologist or environmental planner in accordance with the Environmental Impact Study Guidelines (EIS Guidelines) adopted by Regional Council. An EIS shall be prepared to the satisfaction of the appropriate Planning Authority, in consultation with the NPCA and the other commenting body. Within Settlement Areas as delineated in this Plan, an EIS shall be prepared to the satisfaction of the appropriate local municipality in consultation with the Region and the NPCA. Outside of Settlement Areas, an EIS shall be prepared to the satisfaction of the Region, in consultation with the appropriate local municipality and the NPCA. The Planning Authority, the other commenting body and the NPCA shall work collaboratively throughout the EIS process."

Policy 7.B.2.2:
"The appropriate Planning Authority, in consultation with the NPCA, shall review the proposed development or site alteration in accordance with the waiving requirements in the EIS Guidelines to determine whether an EIS is required or whether requirements can be waived. Waiving the requirement for an EIS may be subject to conditions. If an EIS is waived, other requirements as outlined in the EIS Guidelines and other policies in this Plan may apply."

Policy 7.B.2.3:
"The scope and content of the EIS shall be determined in accordance with the EIS Guidelines by the appropriate Planning Authority, in consultation with the NPCA and the other commenting body.

The draft terms of reference shall be prepared by the consultant and reviewed by the NPCA, the Region and the local municipality. It shall be the responsibility of the appropriate Planning Authority to approve the terms of reference."

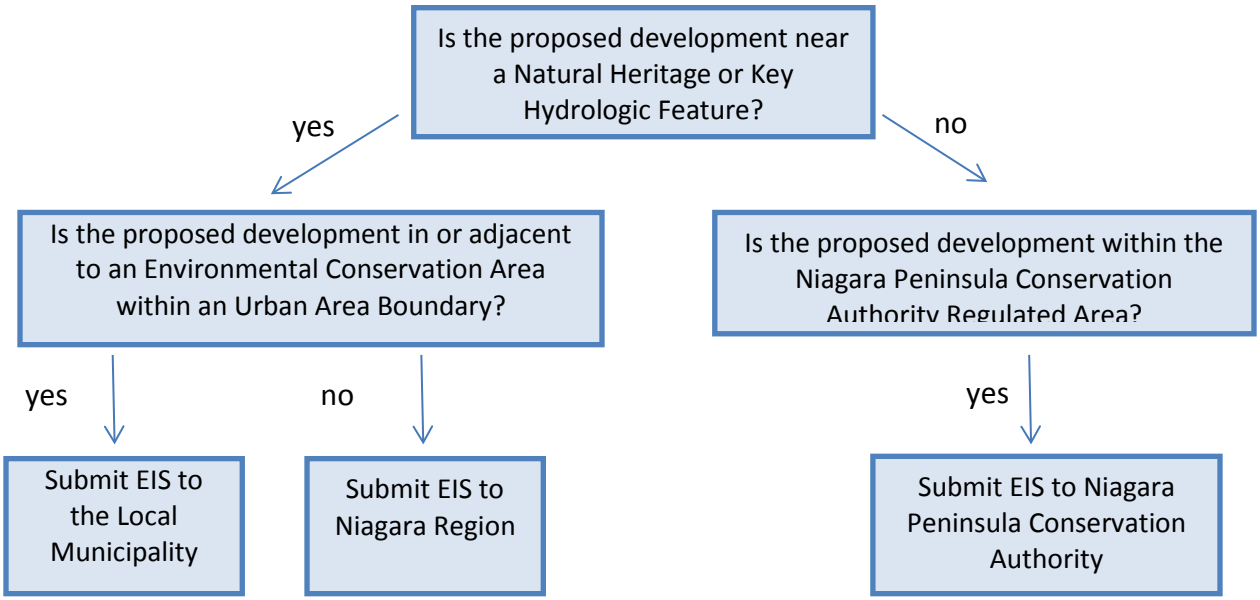

Figure 1. Who the EIS will be Submitted to?
(Niagara Region's Environmental Impact Study Guidelines, Version 1, September 2012)

Under Section 3.1 General Policies in the Town's current Official Plan, "(d) Applications for development on lands within or adjacent to Environmental Conservation Areas shall include an environmental impact study stating that there will be no negative impact on the natural feature or its ecological function". The Town's policies could be revised to include a definition for "adjacent lands" and when an EIS would be triggered (e.g., within 120 m of a Provincially Significant Wetland, within 50 m of a significant woodland that is identified as an Environmental Conservation Area in the Regional Policy Plan; see Table 7.1 Guidelines for Environmental Impact Study Requirements in the Region's Official Plan).

Policy requirements for Environmental Impact Studies are discussed in the Regional Official Plan and specific details are outlined in the Region's "Environmental Impact Study Guidelines", dated September 2012. A specific reference to the Region's EIS Guidelines may be included in

the Town's Official Plan to enhance transparency and aid in making local planning processes easier to understand.

Options for EIS-based policies and EIS Guidelines:

- Consider incorporating higher level EIS-based policies that allow for flexibility to address changing circumstances through the EIS Guidelines and eliminate the need to update policies in the future.
- Consider incorporating policies that clarify the EIS process in Niagara Region, including policies around waiving and scoping.
- Consider incorporating a table in the Town's Official Plan based on Table 7.1 of the Region's Official Plan to clarify when an EIS is required.
- Consider including reference to Niagara Region's EIS Guidelines in the Town's Official Plan to enhance transparency and aid in making local planning processes easier to understand.
- Consider including policies in the Town's Official Plan which would provide for "scoping and waiving" with respect to requiring an EIS.
- Consider introducing the concept of an "environmental passport" for farmers which could potentially exempt them from or reduce EIS requirement if an environmental farm plan is prepared and maintained to address potential concerns.

8.0 Conservation Authority Regulations and Guidelines

The NPCA undertakes land management and stewardship programs, establishes regulations and policies to manage hazards and water resources, and provides comments to the Region and the Town on planning and development applications based on Authority policies and regulations plus delegated Federal and Provincial responsibilities, such as natural hazards and fish habitat protection. The NPCA also assists the Region and the Town in carrying out certain Provincial review responsibilities such as stormwater management.

Ontario Regulation 155/06: Niagara Peninsula Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses under the Conservation Authorities Act, R.S.O. 1990, c. C.27 prohibits development within or adjacent to the Great Lakes shoreline, river or stream valleys, hazardous lands, wetlands, or other areas where development could interfere with the hydrologic function of a wetland, including adjacent lands.

The Town's current Official Plan references NPCA's regulations in several locations. The addition of policies pertaining to Environmental Impact Study requirements and reference to Niagara Region's EIS Guidelines, will assist in bringing clarity to the role the NPCA is to play in development applications. This will enhance transparency and aid in making local planning processes easier to understand (see Section 7.4 above).

Furthermore, reference to NPCA's Stormwater Management Policies and Guidelines could be provided in the Town's Official Plan, or in supporting documentation to provide guidance for safe and effective management of runoff in urban and urbanizing areas, while sustaining the health of local rivers and streams. Detailed stormwater management, erosion and sediment control policies and criteria for existing and proposed development in Niagara Region within the NPCA watershed are provided in the "Niagara Peninsula Conservation Authority Stormwater Management Guidelines Report" approved by NPCA Board on March 17, 2010. This document is meant to be used as a companion to local municipal stormwater management policies and guidelines. It is not meant to supersede local municipal criteria. Rather, the intent of this document is to attempt to provide a consistent approach to stormwater management planning for all municipalities within the NPCA watershed.

Options related to NPCA Regulations and Guidelines:

- Consider including a reference to Niagara Region's EIS Guidelines in the Town's Official Plan to enhance transparency and aid in making local planning processes easier to understand, and to clarify the role that the NPCA is play in the review process.
- Consider including a reference to NPCA's Stormwater Management Policies and Guidelines.
- Consider adopting municipally relevant policies to provide a consistent approach (e.g., policies or guidelines related to Low-Impact Development and stormwater management).

9.0 Developing a Natural Heritage System for the Town

The definition of NHS provided in the Provincial Policy Statement (2014) is provided in Section 4.1 of this report. The Town's urban structure currently includes "Core Natural Heritage System" as a component, and states that the Core Natural Heritage System may extend beyond the Urban Areas into the Agricultural Area. The Town's Urban Structure is delineated on Schedules 1-1 to 1-5. Within the Urban Area Boundary the Core Natural Heritage System is planned to provide a framework for the protection, maintenance, restoration, integration and where possible, the enhancement of the Town's natural systems, ecological health and biodiversity. The Core Natural Heritage System is delineated on the Core Natural Heritage Schedule C in the Region's Official Plan. Policies which pertain to the Core Natural Heritage System are provided in the Natural Environment section of the Region's Official Plan and Conservation Policies of the Town's current Official Plan (section 2.7 Core Natural Heritage System); however, upon reading the policies included in Section 16: Conservation/Wetlands, policies pertaining to the protection of the Core Natural Heritage System are not included.

In order to conform to Provincial and Regional policies, the Town will need to incorporate NHS policies in the updated Official Plan. In many Official Plans, the NHS is included as an overlay designation and provides additional natural heritage protection policies to those set out in feature-based policies (e.g., policies for provincially significant wetlands). It is not intended to affect the continuation of existing uses or prohibit future development, unless otherwise designated on the land use Schedule. It is the intent, however, that new development

maintains and protects natural heritage features, linkages and their functions. In this light, NHS can be viewed as mitigation tools.

The Town has already prepared the basis for draft NHS mapping (Schedule 1 referred to in Section 11 of this report), which may require some adjustments to reflect the discussion in this report.

Considerations for policy guidance on the general principles to use for delineating the NHS could include the following:

- Incorporate Environmental Protection Area, Environmental Conservation Area designated areas, and Potential Natural Heritage Corridors identified by Niagara Region.
- Preserve, and where possible improve, functional connections among natural heritage features.
- In particular, maintain connections between open water features (e.g., ponds and small lakes) and upland woods.
- Include local level connections where ever practical and ecologically desirable.
- Wherever possible, include coldwater streams, headwater wetlands and associated woodlands.
- Link woodlands that occur along watercourses.
- Evaluate the role of smaller woodlands and meadows, and the linkages among them and other natural heritage features, and incorporate them into the NHS where appropriate.
- Ensure that agricultural uses and working landscapes are considered key components of the Town's NHS.
- Have policies in place for site specific studies to determine precise locations of the NHS, linkages, etc.

Options for delineating the Town's NHS include the following:

1) Base the Town's NHS on the Region's Core Natural Heritage System identified in policy and on Schedule C of the Region's Official Plan.

2) Base the Town's NHS on Schedule 1: Natural Heritage Features (Draft as of January 21, 2015) with some Linkages identified. Consider incorporating buffers and enhancements as well.

9.1 Linkages, Buffers and Enhancements

Policy protection of key features is strong in general; however, there is some flexibility in terms of how and/or if linkages, buffers and enhancements are defined and therefore protected as part of the NHS. For example, the PPS and the Natural Heritage Reference Manual provide detailed guidance on how to identify significant wetlands, significant woodlands, etc. Less detail and guidance is provided on how to identify linkages, buffers and enhancements as components of the NHS. Lack of detail and guidance from the province on this matter has led

to greater interpretation of how these components of the NHS are identified (or not) and how they are implemented (or not).

Defining and Protecting Linkages

In the context of NHS planning, linkage means an area intended to provide connectivity supporting a range of community and ecosystem processes enabling plants and animals to move between natural heritage features over multiple generations. Linkages are preferably associated with the presence of existing natural areas and functions and they are to be established where they will provide an important contribution to the long term sustainability of the overall NHS. They are not meant to interfere with normal agricultural practices. The extent and location of linkages can be assessed in the context of both the scale of the proposed development or site alteration, and the ecological functions they contribute to the overall NHS.

There may be substantial flexibility in the location and/or adjustment of linkage boundaries in some cases. For all linkages, the location must be based on providing ecologically functional connections that maintain a consistent width (i.e., "bottlenecks" or narrowing of the NHS will adversely impact the ecological function provided by a linkage and should therefore be avoided). However, in some cases an entire linkage could be shifted one way or another provided the ecological function is maintained. In cases where a linkage is centered on a feature, it is important that the feature continue to be included within the linkage, and this may in turn limit the degree of flexibility in moving the linkage. Where a linkage is associated with a watercourse, it may be possible to move the watercourse feature and the associated linkage function, to a new location within the landscape. Where two or more linkages have been defined within the NHS, these linkages should not be regarded as "optional linkages", while the location of individual connections may be flexible, the number of connections should remain the same.

Defining and Protecting Buffers

In the context of NHS planning, buffer means an area of land located adjacent to a natural heritage feature or watercourse and usually bordering lands that are subject to development or site alteration. The purpose of the buffer is to protect the feature and ecological functions of the NHS by mitigating impacts of the proposed development or site alteration. Therefore, agricultural crops can be buffers within the NHS. The extent of the buffer and activities that may be permitted within it should be based on the sensitivity and significance of the natural heritage feature or watercourse and their contribution to the long term ecological functions of the overall NHS as determined through some sort of ecologically- and/or hydrologically-based study (e.g., Subwatershed Study, Environmental Impact Study, or other similar study) that examines a sufficiently large area. Also, other applicable policies included in other plans, such as the Greenbelt Plan, must also be considered when determining buffers (e.g., the terminology "Vegetation Protection Zones" is used in the Greenbelt to refer to buffers).

There is very little flexibility for the minimum buffer widths to be applied from the edge of the feature being protected, in general. Field studies are required to make a precise determination of the location of a feature such as a wetland or woodland edge. The delineation of wetland

boundaries is based on the Ontario Wetland Evaluation System (MNRF 2013) and the delineation of woodland boundaries is based on areas meeting the definition of "woodland" as defined in Niagara Region's Official Plan (and in the Town's Official Plan in the future). A woodland edge is generally defined by the "dripline", which is defined by the outer edge of the canopy of edge trees. It should be noted that in some cases more detailed studies may recommend a buffer width greater than the minimum 30 m buffer width defined in order to protect natural heritage features and functions.

Stream buffers are applied from the stable top of bank. It should also be noted that there may be some flexibility in the location of some watercourses and that as part of a development approval process a stream may be re-located if approved by the appropriate authority (e.g., Conservation Authority). Following stream re-location and restoration, a 30 m buffer width should be applied to the stable top of bank of the re-located stream.

Defining and Protecting Enhancements

In the context of NHS planning, enhancements means ecologically supporting areas adjacent to natural heritage features and/or measures internal to the natural heritage features that increase the ecological resilience and function of an individual natural heritage feature or groups of natural heritage features.

There may be some flexibility in determining the final boundaries of proposed NHS enhancement areas providing the ecological intent and functionality of the proposed enhancement is achieved. In determining NHS enhancement boundaries, existing natural heritage features should not be removed and flexibility should be restricted to those areas identified for enhancement. For example, if the intent of the enhancement is to increase the size of an existing 17 ha woodland to achieve a minimum 20 ha threshold for woodlands, and if the proposed enhancement maximizes the amount of interior forest present, then there would be flexibility regarding the location of the enhancement, as long as these objectives are achieved.

There are different options for the level of protection for non-features (e.g. linkages, buffers and enhancements) in the NHS, as outlined above. The entire system can be protected using the same set of policies (e.g., the same policies would apply to linkages as they would for natural heritage features). Alternatively, strong policy protection can be provided for natural heritage features, and separate policies suggesting but not requiring the protection of linkages, buffers and enhancement areas (i.e., non-feature-based components of the NHS) can be provided.

Within the remaining rural or "working landscape" of the Town, the remaining natural heritage features co-exist with ongoing rural, largely agricultural, land uses. Over time a balance has been established between agricultural lands and the remaining woodlands, wetlands, open habitats and riparian areas that provide habitat capable of sustaining the remaining natural communities that are relatively rich in native plants and animals. In rural areas, the predominantly agricultural land use has less impact on natural heritage features and functions

than does the more intensive land use of urban areas. Rural stewardship of natural areas is often directed at further enhancing the ecological integrity of natural areas and increasing the sustainability of native biodiversity.

As such, the Town's NHS delineated within rural areas will be intended to provide direction for potential future land use changes that would alter the existing balance of the natural heritage features and functions that are embedded within an agricultural landscape matrix. Should there be a change from rural to urban land use, a system of core areas, ecological linkages, buffers and enhancements that is sufficiently robust to withstand the more intense ecological impacts associated with urban land use and thereby achieve long term protection of native biodiversity must be identified. Therefore, the delineation and implementation of the NHS is most important within existing rural areas where future land use changes may be proposed within the Town. Flexibility is necessary to incorporate the concept of "working landscapes" within the definition of NHS per policy 2.1.9 of the 2014 PPS.

Options for Natural Heritage Policies:

- Develop a NHS for the Town that maps and identifies natural heritage features, core areas, and linkages. Also consider incorporating buffers and enhancements.
- Determine if there is a desire to protect the entire NHS using the same set of policies (i.e., equal measures of protection for core areas, linkages, enhancement areas and buffers). The Town could consider applying NHS as a Land Use Designation to further strengthen the protection of the NHS, including protection of enhancement, linkage and buffer areas.
- Determine if there is a desire to protect natural heritage features using a specific set of policies to address their protection and a separate set of policies to guide the protection of non-features (i.e., linkages, buffers and enhancement areas). Policies addressing the protection of natural heritage features must offer little flexibility to ensure that features are adequately protected, whereas policies addressing the protection of linkages, buffers and enhancements can offer quite a bit of flexibility.
- Consider including the NHS as an overlay designation, to maintain flexibility in the implementation and refinement of the NHS.
- Consider introducing the "environmental passport" concept.

10.0 Natural Feature Definitions

The Town's current Official Plan does not provide definitions for the various natural heritage features that are protected under the PPS, Greenbelt Plan and Regional policies. The following section provides some example definitions that could be included in the Town's updated Official Plan.

The Town's Official Plan policies should consider that there are very few natural heritage features remaining on the Niagara-on-the-Lake landscape, and attempt to ensure that those present are either protected, or that creative solutions are employed to ensure "net gain" or

"no net loss" of these features over the long term. Options that explore flexibility in the policies for the protection of natural heritage features that keep these concepts in mind would be beneficial and may help achieve no negative impact over the long term.

10.1 Woodland

The 2014 PPS definition of woodland "means treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels. Woodlands may be delineated according to the Forestry Act definition or the Province's Ecological Land Classification system definition for "forest"."

The *Forest Act* definition of woodlands means "land with at least, (a) 1,000 trees, of any size, per hectare, (b) 750 trees, measuring over five centimetres in diameter, per hectare, (c) 500 trees, measuring over 12 centimetres in diameter, per hectare, or (d) 250 trees, measuring over 20 centimetres in diameter, per hectare, but does not include a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees."

The Province's Ecological Land Classification system definition for "forest" is "A terrestrial vegetation community with at least 60% tree cover".

In Niagara Region's Official Plan, woodland "means a treed area that provides environmental and economic benefits to both the private landowner and the general public such as erosion prevention, hydrologic and nutrient cycling, provision of clean air and long term storage of carbon, provision or wildlife habitat, outdoor recreational opportunities and the sustainable harvest of woodland products. It does not include a cultivated fruit or nut orchard or a plantation used for the purpose of producing Christmas Trees".

Over the past decade, woodland protection has been gathering support throughout much of southern Ontario. The 2014 PPS states that development and site alteration shall not be permitted in significant woodlands in Ecoregion 7E (i.e., the Ecoregion which covers the Town), unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

The 2014 PPS definition of significant woodland is "an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history. These are to be identified using criteria established by the Ontario Ministry of Natural Resources".

Detailed technical guidance for the identification of significant woodlands is offered in the Natural Heritage Reference Manual (OMNR 2005, Second Edition) on woodland size criteria, ecological functions criteria (i.e., woodland interior, proximity to other woodlands or other habitats, linkages, water protection, woodland diversity), uncommon characteristics criteria, and economic and social functional values criteria.

Niagara Region's Official Plan provides criteria for identifying significant woodlands in Policy 7.B.1.5, which states that:
"To be identified as significant a woodland must meet one or more of the following criteria:

a) Contain threatened or endangered species or species of concern;
b) In size, be equal to or greater than:
    i. 2 hectares, if located within or overlapping Urban Area Boundaries;
    ii. 4 hectares, if located outside Urban Areas and north of the Niagara Escarpment;
    iii. 10 hectares, if located outside Urban Areas and south of the Escarpment;
c) Contain interior woodland habitat at least 100 metres in from the woodland boundaries;
d) Contain older growth forest and be 2 hectares or greater in area;
e) Overlap or contain one or more of the other significant natural heritage features listed in Policies 7.B.1.3 or 7.B.1.4; or
f) Abut or be crossed by a watercourse or water body and be 2 or more hectares in area."

Niagara Region protects significant woodlands under their Environmental Protection Areas designation within the Greenbelt Natural Heritage System, and under their Environmental Conservation Areas designation outside the Greenbelt Natural Heritage System. Therefore, development is not permitted within significant woodlands within the Greenbelt Natural Heritage System. Outside the Greenbelt Natural Heritage System, development within significant woodlands is prohibited unless it can be determined that there will be no negative impact to the feature or its functions through the preparation of an EIS, prepared to the satisfaction of the Region or other agency.

The 2014 PPS provides a definition for significant woodlands, but no criteria. It is the responsibility of municipalities to identify and protect significant woodlands within their jurisdictions. The Town is required to conform to the Region's significant woodlands criteria. This can be achieved by adopting the criteria verbatim, or by creating a set of criteria that are equal to or at least as constraining as the Regional criteria. Flexibility comes in the delineation of the woodland boundary

The Town's current Official Plan does not provide a definition for woodland or significant woodland, nor are their feature-specific policies to address the protection of significant woodlands in the Town per the 2014 PPS. As such, the Town could consider adopting the definitions of woodland and significant woodland used by Niagara Region. Furthermore, in

order to conform to the 2014 PPS and the Region's Official Plan, the updated Official Plan will need to include policies that prohibit development within significant woodlands within the Greenbelt Natural Heritage System, and prohibit development within significant woodlands outside the Greenbelt Natural Heritage System unless no negative impact can be demonstrated through an EIS, completed to the satisfaction of the review agencies.

Policy 2.1.9 of the 2014 PPS states that "Nothing in policy 2.1 is intended to limit the ability of agricultural uses to continue". The 2014 PPS definition of agricultural uses "means the growing of crops, including nursery, biomass, and horticultural crops; raising of livestock; raising of other animals for food, fur or fibre, including poultry and fish; aquaculture; apiaries; agro-forestry; maple syrup production; and associated on-farm buildings and structures, including, but not limited to livestock facilities, manure storages, value-retaining facilities, and accommodation for full-time farm labour when the size and nature of the operation requires additional employment."

Policy 3.2.2 Natural Heritage System Policies of the Greenbelt Plan states that "for lands within the Natural Heritage System of the Protected Countryside the following policies shall apply: 1. The full range of existing and new agricultural, agricultural-related and secondary uses and normal farm practices are permitted subject to the policies of 3.2.2.2 below. 2. New buildings or structures for agriculture, agricultural-related and secondary uses are not subject to the Natural Heritage System policies below, but are subject to the policies on key natural heritage features and key hydrologic features as identified in the natural features policies of section 3.2.4".

The Greenbelt Plan defines agricultural uses, agricultural-related and secondary uses and normal farm practices as follows:
Agricultural uses "means the growing of crops, including nursery and horticultural crops; raising of livestock; raising of other animals for food, fur or fibre, including poultry and fish; aquaculture; apiaries; agro-forestry; maple-syrup production; and associated on-farm buildings and structures, including accommodation for full-time farm labour when the size and nature of the operation requires additional employment.

Agricultural-related uses "means those farm-related commercial and farm-related industrial uses that are small scale and directly related to the farm operation and are required in close proximity to the farm operation.

Secondary uses "means uses secondary to the principle use of the property, including but not limited to, home occupations, home industries, and uses that produce value-added agricultural products from the farm operation on the property".

Options for Woodlands:

- Consider including a definition of 'woodland'.
- Consider including a definition of 'significant woodland', including a set of criteria for designation significant woodlands.

- Include policies that prohibit development within significant woodlands, unless no negative impact can be demonstrated through an EIS.
- Consider including policies to clarify what agricultural uses are permitted within and/or adjacent to significant woodlands.

10.2 Wetland

The 2014 PPS definition of wetland "means lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs and fens. Periodically soaked or wet lands being used for agricultural purposes which no longer exhibit wetland characteristics are not considered to be wetlands for the purposes of this definition". In regard to wetlands, significant means "an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time."

The Ontario Wetland Evaluation System (OWES) was developed by OMNR in 1984 and has been periodically updated since (currently 3rd Edition, Version 3.2 (Ontario Ministry of Natural Resources 2013). OWES is the provincial standard used to delineate and evaluate wetlands in the Province of Ontario. Identification and delineation of outer wetland boundaries is based, first and foremost, on the presence and relative abundance of wetland plant species. OWES evaluates the importance of a wetland based on a scoring system where four components (biological, social, hydrological and special features) are evaluated. Once evaluated, a wetland can become either a Provincially Significant Wetland (PSW) or an evaluated non-provincially significant wetland (non-PSW). Municipalities can choose to designate non-PSWs as locally significant wetlands or key natural heritage features in their official plans.

The Ontario Ministry of Natural Resources and Forestry (MNRF) completed an update to wetland mapping in Niagara Region, which also included evaluation of wetland significance. Within the Town, six Provincially Significant Wetland Complexes have been identified:

- Two and One Mile Creek Wetland Complex
- Four Mile Creek Estuary Wetland Complex
- Laurent Wetland Complex
- Welland Canal North Turn Basin Wetland Complex
- Fireman's Park Wetland Complex
- Eight Mile Creek Estuary Wetland Complex

The Town's current Official Plan lists only four PSWs. This will need to be updated to reflect the mapping update completed by MNRF.

Section 2.1.4 of the PPS 2014 specifies that: "Development and site alteration shall not be permitted in significant wetlands in Ecoregions 5E, 6E and 7E". The Town of Niagara-on-the-Lake is located within Ecoregion 7E.

The Town's current Official Plan includes PSWs under the "Conservation/Wetlands" designation and recognizes the benefits that wetlands provide. The Town's current policies prohibit development within PSWs, and require that an EIS be completed for development and/or site alteration proposed on lands within 120 m of a PSW. These policies conform to the 2014 PPS.

Within the Greenbelt Natural Heritage System, all wetlands are protected as key natural heritage features, regardless of their provincial status or size. The Town's policies will need to be updated to reflect this in order to conform with the Greenbelt Plan.

The Region's Official Plan protects PSWs under Environmental Protection Area and Core Natural Heritage System policies. Other evaluated wetlands are included under Environmental Conservation Areas and are protected under Environmental Conservation Area and Core Natural Heritage System policies. The Town will need to provide policies that protect other wetlands in order to conform with the Region's Official Plan.

NPCA's regulations prohibit development in wetlands and other areas where development could interfere with the hydrologic function of a wetland, including areas within 120 m of all PSWs and wetlands greater than 2 ha in size, and areas within 30 m of wetlands less than 2 ha in size, unless it can be demonstrated that the hydrological function of adjacent lands has been evaluated and it has been demonstrated through the submission of a hydrologic study to the satisfaction of the NPCA that there will be no negative impacts on the wetland as a result of the proposed development. A minimum 30 m buffer or setback is required on all other wetlands unless it can be demonstrated that there will be no negative impacts on the wetland as a result of the proposed development to the satisfaction of the NPCA. The Town could consider including policies that are consistent with NPCA's regulations in order to maintain one consistent set of rules across approval agencies.

Recent MNRF mapping has classified many woodlands as wetlands within the Town. Both wetlands and significant woodlands qualify as key natural heritage features under the Greenbelt Plan. Qualification as key natural heritage features has removed farmers' ability to manage this component of their farming operations (Niagara Region Greenbelt Plan Review, Urban Strategies Inc. & Niagara Region, August 2013). This may have implications on the viability of some farm operations within the Town. The 2014 PPS recognizes that working landscapes are a part of the NHS and includes policies that state that natural heritage-based policies (under policy 2.1) are not intended to limit the ability of agricultural uses to continue.

Options for wetlands:

- Consider including a definition of wetland.
- Consider including a definition of Provincially Significant Wetland and Other Wetlands.

- Consider providing policies that protect PSWs and Other Wetlands with the aim of providing consistency across provincial policies and approval agencies.

10.3 Valleyland

The PPS definition of valleylands "means a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year". The PPS provides policies for the protection of valleylands under policy 2.1.5 which states that "Development and site alteration shall not be permitted in significant valleylands in Ecoregions 6E and 7E… unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions". Significant, in regard to valleylands means "ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system" according to the PPS definition.

The Town's current Official Plan does not mention valleylands.

The Region's Official Plan includes significant valleylands under the Environmental Protection Areas designation in the Greenbelt Natural Heritage System, and under Environmental Conservation Areas outside the Greenbelt Natural Heritage System. The Region requires an EIS for development within 120 m of a significant valleyland within the Greenbelt NHS and within 50 m of a significant valleyland outside the Greenbelt NHS.

Mapping of valleylands is currently not available in the Town or Region. Stream corridors are generally used as a surrogate for mapping significant valleylands. Consideration could be given to completing a GIS-based exercise to map valleylands based on Digital Elevation Model information, contours, etc. Examples of this type of analysis have been completed by several Conservation Authorities and municipalities as part of natural heritage system studies. However, this approach has limitations. Valleylands are based on the precise location of physical top of bank, which is determined by NPCA staff in the field through a geotechnical study. Clear guidance in terms of principles for identifying and classifying valleylands features as significant could be provided so that policies that protect significant valleylands can be implemented effectively and consistently. Given the relatively flat topographic nature of the Town, valleylands are likely incorporated through other components (i.e., watercourses) of the NHS.

Options for valleylands:

- Consider including a definition for valleylands.
- Consider including a definition for significant valleylands.
- Consider completing a GIS-based exercise to map valleylands based on Digital Elevation Model information, contours, etc.

- Consider including a policy in the Town's Official Plan to clarify that the precise location of valleylands is based on the stable top of bank which is determined by NPCA staff in the field through a geotechnical study.
- Consider including principles for identifying and classifying valleyland features so that the protection of significant valleylands can be implemented effectively and consistently.
- Include policies that protect significant valleylands from development and site alteration.
- Consider stating that valleylands are incorporated into the NHS through the incorporation of watercourse features.

10.4 Significant Wildlife Habitat

The PPS definition of wildlife habitat "means areas where plants, animals and other organisms live, and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species". The PPS provides policies for the protection of significant wildlife habitat under policy 2.1.5 which states that "Development and site alteration shall not be permitted in significant wildlife habitat… unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions". Significant Wildlife Habitat (SWH) is considered "ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system", according to the 2014 PPS definition.

Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF, January 2015) provide further guidance on identifying SWH, building on the Significant Wildlife Habitat Technical Guide (MNRF, 2000). In addition to providing criteria for assessing and evaluating SWH, the criteria schedules for SWH also indicate that identification of SWH is not intended to identify the habitat of SAR. For example, 1.3 Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species) including Open Country Bird Breeding Habitat. Species included in the criteria for identifying this form of SWH include Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, Northern Harrier, Savannah Sparrow, and Short-eared Owl (Special Concern). Note that this list does not included Bobolink or Eastern Meadowlark, which are two open country bird Species at Risk (SAR). This would suggest that all policies pertaining to SWH should be exclusive of references to SAR and SAR habitat and vice versa.

The Town's current Official Plan does not mention SWH.

The Region's Official Plan includes SWH under the Environmental Protection Area designation within the Greenbelt Natural Heritage System, and under the Environmental Conservation Area designation outside the Greenbelt Natural Heritage System. The Region requires that an EIS be completed for development or site alteration proposed within 120 m of SWH within the Greenbelt NHS and within 50 m of SWH outside the Greenbelt NHS.

Mapping of SWH is not currently available for the Town or Region, and may most appropriately be completed as part of environmental studies completed in support of site specific applications. Reference to the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF, January 2015) could be included in the Town's updated Official Plan to give guidance for delineating SWH as part of the Environmental Impact Study (EIS) or other environmental study process.

Options for Significant Wildlife Habitat:

- Consider including a definition of wildlife habitat.
- Consider including a definition of Significant Wildlife Habitat
- Consider including reference to the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF, January 2015) to give guidance for delineating SWH as part of environmental study processes.
- Include policies to protect SWH from development and site alteration, per the 2014 PPS and Niagara Region Official Plan.

10.5 Areas of Natural and Scientific Interest

The PPS definition of Areas of Natural and Scientific Interest (ANSI) "means areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education". The PPS provides policies for the protection of significant ANSIs under policy 2.1.5 which states that "Development and site alteration shall not be permitted in significant areas of natural and scientific interest … unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions". Significant, in regard to ANSIs, "means an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time" according to the 2014 PPS.

ANSIs are included under the Conservation/Wetlands designation of the Town's current Official Plan. MNRF is responsible for identifying and assessing unique or representative physical, biological cultural and historical features (i.e., ANSIs). In the Town of Niagara-on-the-Lake there are two provincially significant ANSIs:

- Niagara River Bedrock Gorge (Earth Science ANSI); and
- Two Mile-Four Mile Creek Plain (Life Science ANSI).

The Town's current official plan states that "The Town shall have regard to any development on or within 120 metres of any ANSI to ensure that there are no negative effects on the ANSI. The Municipality shall control the design and development of any abutting lands to ensure protection and compatibility with an ANSI as designated in this Plan". The Town's policies apply to "any" ANSI which could be interpreted to mean both provincially significant and regionally significant ANSIs, as well as life science, and earth science ANSIs. If it is the intent of the Town to protect provincially and regionally significant ANSIs and/or earth science and life science

ANSIs, this could be clarified in text and a list of all ANSIs identified in the Town could be provided in the Official Plan.

In the Region's Official Plan, provincially significant Life Science ANSIs are included under the Environmental Protection Areas designation and regionally significant Life Science ANSI are included under the Environmental Conservation Areas designation. Under Policy 7.A.4.1 "Development and site alteration may be permitted within an Earth Science Area of Natural and Scientific Interest (ANSI) shown on Schedule C if it has been demonstrated that there will be no significant negative impacts on the earth science features for which the area was identified or on ecological functions related to the ANSI". The Region requires that an EIS be completed for development or site alteration proposed within 50 m of a provincially significant Life Science ANSI. The Region does not permit development or site alteration within provincially significant life science ANSI. The Town's ANSI policies will need to be updated to reflect this in order to conform to the Region's Official Plan as well as the 2014 PPS.

Options for Areas of Natural and Scientific Interest:

- Consider including a definition of ANSI.
- Consider including a definition of significant ANSI.
- The Town's policies could be updated to clarify whether policy protection applies to all ANSIs regardless of whether they are life science or earth science, or are provincially or regionally significant. If the Town's intent is to protect all ANSIs, policies should clearly state this.

10.6 Surface Water Features

The PPS definition of surface water feature "means water-related features on the earth's surface, including headwaters, rivers, stream channels, inland lakes, seepage areas, recharge/discharge areas, springs, wetlands, and associated riparian lands that can be defined by their soil moisture, soil type, vegetation or topographic characteristics". The Town contains a unique municipal irrigation system, which is a network of human-made ditches and water features. Discussion as to how this unique system should be addressed is provided below.

In the Greenbelt, key hydrologic features include:

- permanent and intermittent streams
- lakes (and their littoral zones)
- seepage areas and springs
- wetlands

Policy 2.2.2 of the 2014 PPS states that "Development and site alteration shall be restricted in or near sensitive surface water features and sensitive ground water features such that these features and their related hydrologic functions will be protected, improved or restored. Mitigative measures and/or alternative development approaches may be required in order to

protect, improve or restore sensitive surface water features, sensitive ground water features, and their hydrologic function".

The PPS definition of fish habitat "as defined in the *Fisheries Act*, means spawning grounds and any other areas, including nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes".

Policy 2.1.6 of the PPS states that "Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements". And Policy 2.1.8 states that "Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions".

The Town's current official plan includes fish habitat under the Conservation/Wetlands designation. Official Plan policies will need to be updated to reflect policy direction provided in the Greenbelt and Niagara Region Official Plan for the protection of key hydrologic features, surface water features, and fish habitat in order to conform to overarching policies.

There is some concern from the agricultural community within the Town with the mapping of the key natural heritage and hydrologic features in the Greenbelt. The mapping has classified human-made agricultural drainage ditches and irrigation channels as key hydrologic features. This has hampered property owners' ability to manage their land and expand their operations due to setback policies, and has also introduced the requirement for costly EISs. The problem is compounded in the Town where the small farm parcels combined with the policies regarding setbacks and EISs make it difficult or impossible to site farm-related facilities appropriately (Niagara Region Greenbelt Review Summary Report, Urban Strategies Inc. & Niagara Region, August 2013).

Within the Niagara Region, the classification of watercourses does not use a common and up-to-date inventory of surface water features at a scale that appropriately addresses the needs of the land use planning process. This has led to implementation problems related to development and management activities such as policy development and associated implementation (MyPlanNOTL Official Plan Review, Agriculture and Natural Environment Public Engagement, February 12, 2015). In order to address these issues, the NPCA and the Niagara Region have worked together to update a large scale surface water inventory for the Niagara watershed through a project called 'Contemporary Mapping of Watercourses'. The inventory has initially been piloted in NOTL and continues to be developed and applied to the entire Niagara watershed.

10.6.1 Hydrologic Feature Classifications

Category 1, 2 and 3 Hydrologic Feature classifications provide a structure in which to classify watercourses for the development and implementation of policy in NOTL. These classifications are intended to designate hydrologic features through a subset of characteristics into

appropriate categories and provide a corresponding setback extent. These categories were formulated under the guidance of overarching environmental policies which seek to preserve the natural landscape, while also considering the overall hydrological system present in NOTL and implications to landowners seeking to maximize use of their land. The values contained in the subsets of hydrological characteristics stem from identification of features, flow regime, channel type, and existing mapped data including constructed drain status and identified fish habitat.

Category 1 Hydrologic Feature:

- all watercourses identified as Type 1 (Critical) fish habitat
- watercourses identified as 'natural' channels with a flow regime of intermittent through permanent
- watercourses identified as 'constructed – open' channels with a flow regime of permanent
- **30 m setback**

The MNRF provides fish habitat information on several watercourses in the Niagara Region through an identification system which assigns 'type' to select watercourses based on the sensitivity of fish habitat that is present. A watercourse identified as 'Type 1' is considered 'critical habitat' because sensitive species are present. NPCA policy defines a 30 m natural buffer setback requirement for any watercourse with Type 1 fish habitat. In alignment with this policy, all surface watercourses documented by the MNRF as 'Type 1' fish habitat are included into the Category 1 Hydrologic Feature classification.

In the Greenbelt Plan under Section 3.2, Key Hydrologic Features (KHF) are composed of permanent and intermittent streams, lakes (and their littoral zones), seepage areas and springs, and wetlands. The Greenbelt Plan identifies that a VPZ a minimum of 30 m wide should be established from the outside boundary of a KHF. Greenbelt policies prohibit any development or site alteration in KHFs and any associated VPZ with few exceptions listed in section 3.2.4.1 of the plan. In conformity with these policies, Category 1 Hydrologic Features include all intermittent through permanent flow regime watercourses which have a 'natural' channel. A natural channel is a path which has been carved naturally by flowing water with no human influence.

Surface watercourses which have been engineered and constructed, or altered from their original natural state, are identified as 'constructed-open' channels. A 'constructed-open' channel with a permanent flow regime is a watercourse with a permanent channel and a year-round base flow. The main channel bed does not dry up at any time of the year; therefore, the channel is constantly supported by flows produced from smaller watercourses draining into the channel and natural hydrologic causes, such as precipitation events. Constructed-open channel watercourses which meet these criteria are included in the Category 1 Hydrologic Feature classification.

In line with existing overarching policy, a 30 m setback regulation is recommended to watercourses classified as Category 1 Hydrologic Features.

Category 2 Hydrologic Feature:

- Watercourses identified as 'constructed-open' channels with a flow regime of intermittent **and** identified as Type 2 (Important) fish habitat
- Watercourses identified as 'constructed-open' channels with a flow regime of intermittent **and** identified as Type 3 (Marginal) fish habitat
- **15 m setback**

NOTL has a unique hydrological setting: a relatively flat landscape laden with agricultural land use and a substantial network of municipal drains used as channels for pumped agricultural irrigation during the growing season. These irrigation channels are imbedded alongside active agricultural land, have manually controlled flow regimes, and in many areas require an adjacent working space the municipality may access with equipment necessary for the maintenance (e.g., clean-out) or repair of a drain. These municipal drains are considered 'constructed-open' channels.

When the irrigation system is not in active use, municipal ditches function as a drainage system for roadside ditches, and run-off from surrounding agricultural or other land uses. Some municipal drains form part of the hydrological network which carries flow from escarpment headwaters. The expected inferred flow regime becomes significantly different in the summer months with the introduction of irrigation water pumped inland from surrounding large waterbody sources such as the Welland Canal or Niagara River. The ability to greatly alter the primary purpose and flow regime of these channels indicates that they function very differently than hydrologic features targeted under the criteria of the Greenbelt Plan.

Through the Greenbelt Plan, watercourses which are Key Hydrologic Features (KHFs) are identified solely as streams with an intermittent or permanent flow regime. Feature type, channel type, and whether the flow regime is artificial or natural, do not factor into policy surrounding KHFs.

An irrigated constructed agricultural drain designated as a KHF creates a restrictive policy framework for farmland adjacent to these features. Landowners with multiple drains on their property are subjected to a large portion of land designated for VPZs thus restricting their ability to manage or expand their operations. Additionally, landowners with small parcels may be unable to site farm infrastructure appropriately due to setback policies.

Although municipal drains with constructed-open channels can be large in size and support intermittent flow, it is not appropriate to categorize them under the same umbrella of policies as KHFs, as KHFs have natural flow paths and regimes, and constructed drains in NOTL do not.

Category 2 Hydrologic Feature classification captures constructed-open channels with an intermittent flow regime and MNRF identified Type 2 or Type 3 fish habitat. Type 2 fish habitat is 'important' and identifies that sensitive species may be present certain times of the year. Type 3 fish habitat is 'marginal' and indicates no sensitive species are present although fish may

still be found. The NPCAs fish habitat setback policy for Type 2 and Type 3 habitat is a 15 m natural buffer between the watercourse and any development. As a result, Category 2 Hydrologic Features are recommended to have a 15 m setback regulation.

Category 3 Hydrologic Feature:

- all watercourses ('natural' channel and 'constructed-open' channel) with a flow regime of ephemeral **and** identified as Type 2 (Important) fish habitat
- all watercourses ('natural' channel and 'constructed-open' channel) with a flow regime of ephemeral **and** identified as Type 3 (Marginal) fish habitat
- watercourses identified as 'constructed-open' channel with a flow regime of intermittent and no identified Type 1, Type 2 or Type 3 fish habitat
- **10 m setback**

Category 3 effectively captures remaining watercourses which do not present characteristics sufficient for a Category 1 or 2 classification, but still require a certain level of environmental protection. This includes any type of watercourse feature that has an ephemeral flow regime and are dry for the majority of the months in a year (only flowing after a precipitation or melt event) but have been identified by the MNRF as Type 2 fish habitat or Type 3 fish habitat. Constructed-open channels with an intermittent flow regime with no indicated fish habitat are also captured in this category.

Category 3 Hydrologic Features have a recommended 10 m setback regulation.

Required setbacks for Category 1-3 Hydrologic Features apply to all properties and are not site specific.

10.7 Habitat of Endangered Species, Threatened Species and Special Concern Species

In the 2014 PPS, endangered species "means a species that is listed or categorized as an "Endangered Species" on the Ontario Ministry of Natural Resources' official Species at Risk list, as updated and amended from time to time". Threatened species "means a species that is listed or categorized as a "Threatened Species' on the Ontario Ministry of Natural Resources' official Species at Risk list, as updated and amended from time to time".

The 2014 PPS does not include a definition for Special Concern Species. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) defines special concern species as "a wildlife species of special concern because it is particularly sensitive to human activities or natural events, but not include an extirpating, endangered or threatened species". The Committee on the Status of Species at Risk in Ontario (COSSARO) defines special concern species as "a species with characteristics that make it sensitive to human activities or natural events".

In the PPS, habitat of endangered species and threatened species "means:

a) with respect to a species listed on the Species at Risk in Ontario List as an endangered or threatened species for which a regulation made under clause 55(1)(a) of the Endangered Species Act, 2007 is in force, the area prescribed by that regulation as the habitat of the species; or
b) with respect to any other species listed on the Species at Risk in Ontario List as an endangered or threatened species, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding, as approved by the Ontario Ministry of Natural Resources; and

places in the areas described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nests, hibernacula or other residences."

Policy 2.1.7 of the PPS states that "Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements". This policy harmonizes with the ESA, 2007.

The Region's Official Plan includes significant habitat of threatened and endangered species as an element of Environmental Protection Areas. Where habitat requirements are well defined, development is not permitted. Where habitat requirements are not well defined an EIS is required where development or site alteration is proposed. The Region requires an EIS for development proposed within 50 m and specifies that habitat must be defined in consultation with the MNRF.

Significant habitat of endangered species, threatened species and special concern species is also protected as key natural heritage features within the Greenbelt Natural System. The Greenbelt Plan definition of special concern species "means a species that is listed or categorized as a "special concern species" on the Ontario Ministry of Natural Resources' official species at risk list, as updated and amended from time to time". And, "significant in regard to the habitat of endangered species, threatened species and special concern species, means the habitat, as approved by the Ontario Ministry of Natural Resources, that is necessary for the maintenance, survival, and/or the recovery of naturally occurring or reintroduced populations of endangered species, threatened species or special concern species, and where those areas of occurrence are occupied or habitually occupied by the species during all or any part(s) of its life cycle".

The Town's current official plan does not contain policy pertaining to the protection of the habitat of endangered species and threatened species, or special concern species.

Options for Endangered Species, Threatened Species, and Special Concern Species:

- Consider including definitions for endangered species, threatened species, and special concern species.
- Consider including a definition for the habitat of endangered species and threatened species.

- Consider including a definition of significant habitat of endangered species, threatened species and special concern species per the Greenbelt Plan.
- Include policies that prohibit development in the habitat of endangered species and threatened species, except in accordance with provincial and federal requirements to conform to 2014 PPS policies and the Ontario Endangered Species Act.
- Include policies that protect significant habitat of endangered species, threatened species and special concern species as key natural heritage features within the Greenbelt NHS.

10.8 Greenbelt Key Natural Heritage Features and Key Hydrologic Features

Under Section 3.2 Natural System of the Greenbelt Plan, key natural heritage features are identified as:

- Significant habitat of endangered species, threatened species and special concern species;
- Fish habitat;
- Wetlands
- Life Science Areas of Natural and Scientific Interest (ANSIs);
- Significant valleylands;
- Significant woodlands;
- Significant wildlife habitat;
- Sand barrens, savannahs and tallgrass prairies; and
- Alvars.

Under Section 3.2 Natural System of the Greenbelt Plan, key hydrologic features are identified as:

- Permanent and intermittent streams;
- Lakes (and their littoral zones);
- Seepage areas and springs; and
- Wetlands.

Greenbelt policies prohibit development and site alteration in key natural heritage features and key hydrologic features within the Greenbelt Natural Heritage System, including any associated vegetation protection zone, with a few exceptions listed in section 3.2.4.1 of the Greenbelt Plan. Policies related to the protection of key natural heritage features and key hydrologic features per the Greenbelt Plan will need to be incorporated into the Town's updated Official Plan.

The following definitions from the Greenbelt Plan could be referenced in the Town's Official Plan to clarify what is meant by the different feature types included under key natural heritage features and key hydrologic features:

- Sand barrens "means land (not including land that is being used for agricultural purposes or no longer exhibits sand barrens characteristics) that: (a) has sparse or patchy vegetation that is dominated by plants that are: (i) adapted to severe drought and low nutrient levels; and (ii) maintained by severe environmental limitations such as drought, low nutrient levels and periodic disturbances such as fire; (b) has less than 25 per cent tree cover; (c) has sandy soils (other than shorelines) exposed by natural erosion, depositional process or both; and (d) has been further identified, by the Ministry Natural Resources or by any other person, according to evaluation procedures established by the Ministry of Natural Resources, as amended from time to time".
- Savannah "means land (not including land that is being used for agricultural purposes or no longer exhibits savannah characteristics) that: (a) has vegetation with a significant component of non-woody plants, including tallgrass prairie species that are maintained by seasonal drought, periodic disturbances such as fir, or both; (b) has from 25 per cent to 60 per cent tree cover; (c) has mineral soils; and (d) has been further identified, by the Ministry of Natural Resources or by any other person, according to evaluation procedures established by the Ministry of Natural Resources, as amended from time to time".
- Tallgrass prairie "means land (not including land that is being used for agricultural purposes or no longer exhibits tallgrass prairie characteristics) that: (a) has vegetation dominated by non-woody plants, including tallgrass prairie species that are maintained by seasonal drought, periodic disturbances such as fire, or both; (b) has less than 25 per cent tree cover; (c) has mineral soils; and (d) has been further identified, by the Ministry of Natural Resources or by any other person, according to evaluation procedures established by the Ministry of Natural Resources, as amended from time to time".
- Alvars are "naturally open areas of thin or no soil over essentially flat limestone, dolostone or marble rock, supporting a sparse vegetation cover of mostly shrubs and herbs".
- Permanent Stream "means a stream that continually flows in an average year".
- Intermittent Streams are "stream-related watercourses that contain water or are dry at times of the year that are more or less predictable, generally flowing during wet seasons of the year but not the entire year, and where the water table is above the stream bottom during parts of the year".
- Lake "means any inland body of standing water, usually fresh water, larger than a pool or pond or a body of water filling a depression in the earth's surface".
- Seepage areas and springs "are sites of emergence of groundwater where the water table is present at the ground surface".
- Wetlands "means land such as a swamp, marsh, bog or fen (not including land that is being used for agricultural purposes and no longer exhibits wetland characteristics) that: (a) is seasonally or permanently covered by shallow water or has the water table close to or at the surface; (b) has hydric soils and vegetation dominated by hydrophytic or water-tolerant plants; and (c) has been further identified, by the Ministry of Natural Resources or by any other person, according to evaluation procedures established by the Ministry of Natural Resources, as amended from time to time".

Options for Greenbelt Key Natural Heritage Features and Key Hydrologic Features:

- Consider including a definition of each of the features that make up key natural heritage features and key hydrologic features in the Greenbelt Plan. However, these would only need to be included once (avoid repeating definitions).
- Include policies that protect key natural heritage features and key hydrologic features per the Greenbelt Plan.
- Incorporate polices to address the 2014 PPS regard for working landscapes and agricultural operations as a part of the NHS, and how 2014 PPS policies related to natural heritage are not intended to limit the ability of agricultural uses to continue.

11.0 Mapping

Official Plan Review Schedule 1: Natural Heritage Features (DRAFT as of January 21, 2015) has been prepared by the Town, and maps known natural heritage features within the Town of Niagara-on-the-Lake based on best available knowledge. This map illustrates:

- Type 1Key Hydrologic Features
- Type 2 Key Hydrologic Features
- Type 3 Key Hydrologic Features
- Floodplain
- Significant Wetlands
- Significant Woodlots
- Areas of Natural & Scientific Interest (ANSI)

At the time this report was written, the Schedule 1: Natural Heritage Features map is available for discussion purposes only and has not been included in this report. The following sections review mapping options for the Town's Natural Heritage System, and natural heritage features listed above. Some suggestions for changes to the Draft Schedule 1 map are also made.

11.1 Natural Heritage System

Options for delineating the Town's Natural Heritage System are reviewed in Section 9, which include:

1) Base the Town's NHS on the Region's Core Natural Heritage System identified in policy and on Schedule C of the Region's Official Plan; or

2) Base the Town's NHS on Schedule 1: Natural Heritage Features (Draft as of January 21, 2015) with some Linkages identified.

The Town's overall NHS could be mapped as part of the Municipal Structure.

The NHS and supporting natural heritage features could be mapped in Schedules or Appendices. For example;

- Schedule X: Natural Heritage System
- Schedule X1: Natural Heritage System + PSW, Other Wetlands, ANSIs and significant woodlands
- Schedule X2: Natural Heritage System + surface water, fish habitat and floodplain and/or NPCA Regulation Limit

In order to avoid the "islands of green" effect, it is recommended that a comprehensive natural heritage system that includes linkages be defined for the Town.

11.2 Natural Heritage Features

11.2.1 Watercourses

The "Contemporary Watercourse Mapping for the Niagara Region" project, a collaboration between the NPCA and Niagara Region, has mapped Category 1-3 Hydrologic Features in NOTL. The designation of some watercourses currently remains under investigation. The map of watercourses that will go into the draft Official Plan in December will differentiate between what watercourses have been designated and what watercourses are still under investigation by the Region and the NPCA.

11.2.2 Significant Wetlands

Wetland mapping has been updated in the Town since the last Official Plan was prepared. The MNRF Guelph District Vineland Office updated wetland mapping in the Town of Niagara-on-the-Lake. The November 29, 2012 map maps PSW and non PSW wetlands. Based on the Ontario Wetland Evaluation System, the provincial standard for determining the significance of wetlands, there are six provincially significant wetland complexes in the Town of Niagara-on-the-Lake:

- Two and One Mile Creek Wetland Complex
- Four Mile Creek Estuary Wetland Complex
- Eight Milk Creek Estuary Wetland Complex
- Laurent Wetland Complex
- Fireman's Park Wetland Complex
- Welland Canal North Turn Basin Wetland Complex

Schedule 1: Natural Heritage Features maps Significant Wetlands. This language should be changed to Provincially Significant Wetlands to be consistent with the PPS and other policies. Consideration could be given to also mapping "Other Wetlands" which would include unevaluated wetlands and wetlands evaluated as non-PSW, as noted in the Greenbelt Plan.

11.2.3 Significant Woodlands

Schedule 1: Natural Heritage Features maps Significant Woodlots. This language should be changed to Significant Woodlands to be consistent with the PPS and Regional policies. Any known changes to woodland boundaries (i.e., removal of a woodland or portion of a woodland due to an approved development application) should be updated prior to finalizing the mapping of significant woodlands within the Town.

11.2.4 Areas of Natural and Scientific Interest

Schedule 1: Natural Heritage Features maps Areas of Natural & Scientific Interest (ANSI). It is unclear as to whether this refers to life science or earth science ANSI, or both, or provincially significant or regionally significant. At a minimum, the Town should consider mapping provincially significant life science and provincially significant earth science ANSIs. Since there are varying policies provisions for earth science versus life science, and provincially significant versus regionally significant ANSI, these should be differentiated in mapping.

11.2.5 Unmapped Natural Heritage Features

Certain natural heritage features will not be mapped in the Town's Official Plan, such as significant valleylands, significant wildlife habitat, habitat of endangered species, threatened species and species of special concern, and sand barrens, savannahs, tallgrass prairies and alvars. The absence of mapping for these features does not mean that they do not occur within the Town. Official Plan policies will need to clearly state the requirement of determining whether or not these features occur within an area proposed for development or site alteration, based on a determined set of criteria or definition based on provincial standards as part of environmental studies, such as an EIS.

11.3 Hazards

Municipalities are directed to include mapping of hazards in their official plans by the Region and Conservation Authority. Hazards refer to floodplain, erosion prone areas, areas of organic soils, etc. Consideration could be given to including a Schedule in the Town's Official Plan to map the locations of known hazards. Hazards are also regulated by the Conservation Authority, and natural hazard areas identified by the NPCA should be included in the mapping. Consideration could also be given to including NPCAs regulation limit on the hazards map.

12.0 Boundary Refinement Policies

The Town's Official Plan should have policies that indicate where a feature meeting the requirements for classification as a core natural heritage system component are identified on

lands undergoing a planning application, the core natural heritage policies will apply, despite any mapping to the contrary (per the Regional Official Plan policy 7.B.1.9). Some of the Region's Core Natural Heritage Feature mapping is out of date, such as significant woodland and significant wildlife habitat mapping. It is recommended that the mapping of these features be updated while still using the criteria for significance laid out in Regional and Provincial policies.

No matter how detailed the refinements may be to the mapping of natural heritage features included in the Official Plan, the boundaries of the features must be considered schematic. Precise delineation of features would require on-site evaluation of the boundaries and significance of each natural feature; this level of evaluation is beyond the scope of an Official Plan review. Furthermore, development approvals and/or Ontario Municipal Board Hearings may result in natural heritage feature and NHS boundary changes, which will not necessarily be reflected in current mapping layers. Therefore, the Town's Official Plan must provide a clear policy framework for refinement and evaluation of natural features and the NHS at the secondary plan and draft plan stages.

For example, an Official Plan policy that provides a clear, fair and defendable approach to natural heritage feature and NHS boundary refinement and evaluation could be included, such as:

The general boundaries of natural heritage features are delineated on Schedule 1. These boundaries are based on the best available mapping and are not intended to be precise. The boundaries of natural heritage features shall be confirmed and refined through an environmental analysis during the Secondary Plan process, and/or through the review of any site specific development applications through an Environmental Impact Study (EIS). The precise delineation of natural heritage features shall occur through the staking of the limits of the area as part of environmental studies in support of Secondary Plans, or development applications. Such staking will be undertaken in co-operation with the Town, the NPCA and/or the Region.

And, an Official Plan policy that pertains to the delineation/refinement of NHS boundaries could be included, such as:

The boundaries of the Natural Heritage System, as shown on the Schedule, are schematic and shall be refined if and when land use changes are proposed. At that time, the spatial extent and functional requirements of linkages shall be determined through a watershed plan, Secondary Plan and/or Environmental Impact Study (EIS) process and the boundaries of the NHS refined using the principles provided. Where such studies delineate lands to be protected from development in order to maintain the linkage function, these areas may be designated as integral to the NHS.

13.0 Conclusion

The Town's existing environmental policies aim to protect environmental features (e.g., provincially significant wetlands) by controlling development activities and through designation of lands for conservation uses. The existing environmental policies have evolved over the years into a series of different environmental policies prepared for different Settlement Areas through Official Plan Amendments. The Town's strongest environmental policies are generally those that were developed more recently. Within the older built up areas in the Town, the environmental policies protect valleyland features (such as the Four Mile Creek valley), but provide limited policy direction on the enhancement and active management of these and other environmental features over the long term.

The current Official Plan represents a mixture of inconsistent environmental policies in terms of areas protected, standards of protection and applicable terminology. In addition the Official Plan has yet to address many of the recent trends in environmental policy and conservation biology such as the systems approach to protecting natural heritage features and functions. It is no longer considered enough to protect natural areas as individual "islands of green". The province has provided municipalities with the direction to protect natural areas within large connected natural heritage systems that consist of the size, connectivity, diversity and resilience needed to maintain and/or enhance natural features and functions over the long term. The natural heritage system could also integrate existing recreational features to enhance its connectivity and to take advantage of opportunities for naturalization in appropriate areas. Furthermore, the role of agricultural landscapes as "working landscapes" in the NHS needs to be acknowledged.

Strategies for enhancing existing natural heritage resources can include:

- identification of target restoration areas;
- identification of appropriate areas for naturalization on public and private lands;
- identification and implementation of linkages;
- development of focused education and/or enhancement programs;
- recommendation of sustainable design approaches for development proposed on lands adjacent to the natural heritage system;
- incorporation of Low Impact Development standards to mitigate impacts associated with stormwater; and
- establishment of a monitoring program.

This background paper provides a review of the Town's natural heritage features, mapping and policy framework, and provides options and recommendations for updating the Town's natural environment policies to conform to provincial and regional standards. Combined with ongoing public consultation, this report will form the basis for developing environmental policy options for the Town. The options will be integrated with other essential agricultural, social and economic aspects of the Official Plan being developed in other background papers.

14.0 References

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