

# Best Practices Guide to Natural Heritage Systems Planning



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Ontario Nature's Greenway Guide Series

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**Figure 1: A Greenway Concept in a Crowded Landscape**

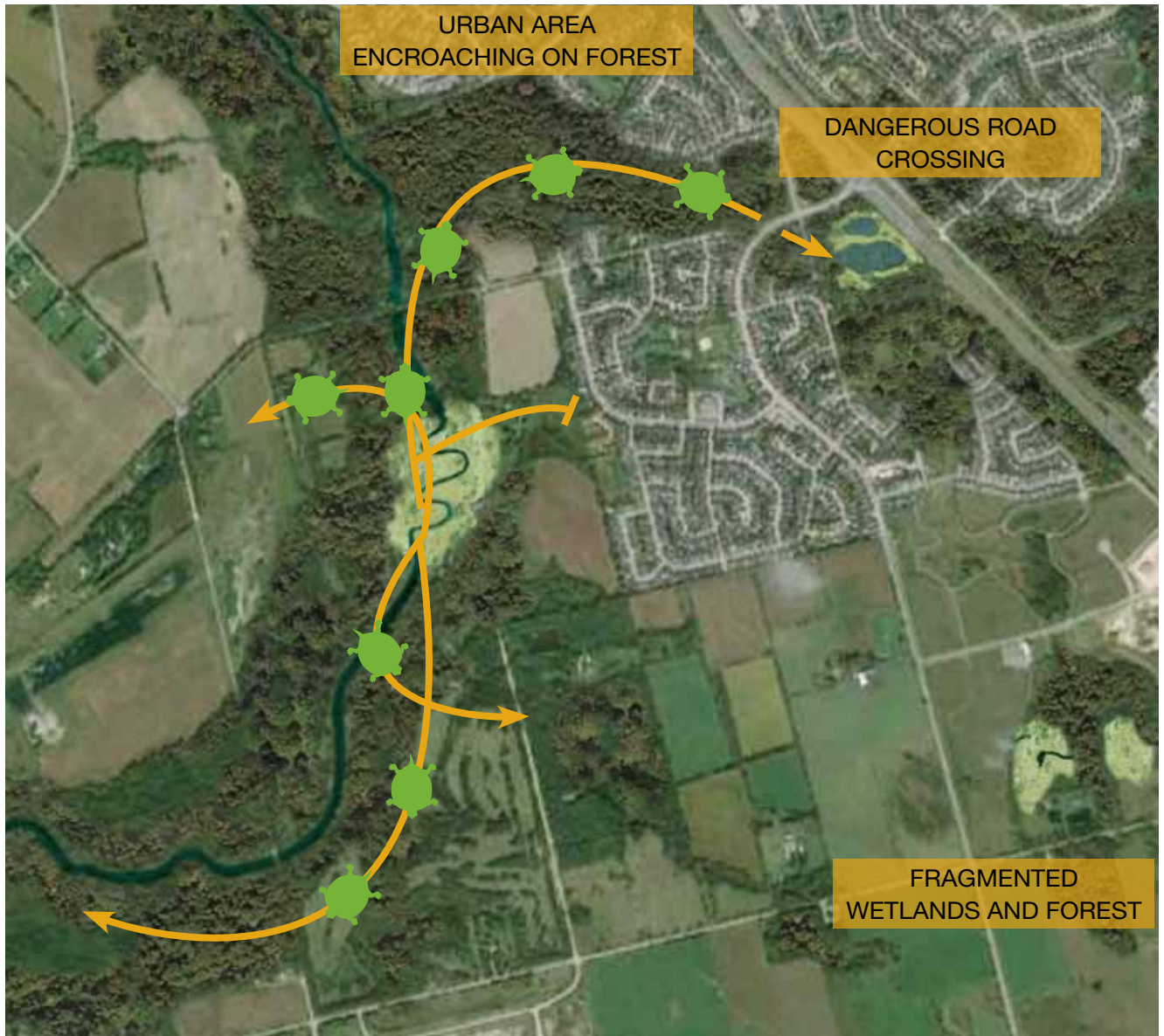


Southern and eastern Ontario was once a lush Carolinian and mixed wood forest with enormous wetland complexes, and cultural and native prairie. In the last 200 years we have seen a dramatic transformation. This landscape is now marked by enormous road networks, major cities, large scale agriculture, and many industrial and commercial activities.

Greenway planning is about maintaining, enhancing and restoring livable landscapes in this highly developed region. The Greenway is a systems-based approach to biodiversity conservation, which aims to establish an interconnected web of core natural areas and natural corridors.

Figure 2: Greenway Connectivity

## Slow and steady: The Blanding's vital journey



Throughout the year Blanding's turtles rely on different natural areas including wetlands, rivers, forests and fields. For example, females emerge from wetlands in the spring in search of a suitable area to lay their eggs. Habitat fragmentation and destruction from developments pose a major threat to the Blanding's turtle.



Ron Erwin



# INTRODUCTION

Natural heritage systems planning is about maintaining, restoring and enhancing ecologically sustainable and resilient landscapes. It is a strategic approach to addressing biodiversity loss, land use change and the uncertainties of climate change so that we always have clean air, clean water and a rich diversity of plant and animal life to sustain present and future generations. Natural heritage systems planning seeks to engage communities and educate citizens about the many benefits that nature provides and about nature's fundamental place in supporting social and economic health.

The *Best Practices Guide to Natural Heritage Systems Planning* is a resource designed for municipal planners. It provides leading examples of natural heritage systems policies in approved, adopted or draft municipal Official Plans from across southern and eastern Ontario, highlighting the good work that municipalities are undertaking to identify, preserve, enhance and restore natural heritage systems. The strength of the guide lies in its specific, local examples, drawn from a review of over 80 municipal Official Plans. The goal is to share and promote these examples so that municipalities across the province are better positioned to integrate natural heritage systems planning with other land use planning objectives.

“The purpose of this *Best Practices Guide* is to assist with policy development as municipalities review and update their Official Plans. It is intended to stimulate and facilitate innovative, systems-based policy development.”

Natural heritage systems planning goes beyond a features-based approach to natural heritage planning. It recognizes the inadequacy of protecting a particular woodland, river, wetland or natural area in isolation. Instead, it is premised on identifying Greenways – spatially and functionally interconnected systems of core natural features, corridors and buffers – so that the benefits they provide can be restored, enhanced or protected.

These benefits, often referred to as ecosystem services, are vital to human well-being and to the health and safety of our communities. They include flood control, soil retention, water purification, improved air quality, pollination, climate change mitigation and the provision of wildlife habitat, forest and freshwater foods, and places for outdoor recreation and activities.

This *Best Practices Guide* focuses on southern and eastern Ontario, home to the province's largest urban centres, most productive agricultural land and most biologically diverse ecosystems. The region supports agriculture, manufacturing, aggregate extraction, commercial forestry, expanding residential development and other major industries. It is also the most heavily populated area in Canada (12.5 million people in 2011), and its population is expected to grow by more than 40 percent to reach 17.7 million by 2031.<sup>3</sup> With population growth, development is intensifying, putting increased pressure on the remaining natural heritage features and systems and the benefits they provide.

Since European settlement, approximately 80 percent of the region's woodlands, 72 percent of its wetlands and more than 99 percent of its native grasslands have been lost to clearing and development.<sup>4</sup> As a result, the diversity of plant and animal life has also declined. With only 3.5 percent of southern and eastern Ontario protected for conservation,<sup>5</sup> natural heritage systems planning will

### Natural Heritage System

The province defines a natural heritage system as “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.”<sup>1</sup>

be a key mechanism for restoring and sustaining biodiversity – the intricate and wondrous web of life of which humans are a part. It will also be a critical component of strategies to meet the challenges associated with the anticipated impacts of climate change, such as drought, floods, insect infestations and extreme weather events.<sup>6</sup>

As the primary regulators of land use at the local level, municipalities play a key role in protecting natural heritage and the benefits it provides.

While the Province has required natural heritage protection for some time, only since 2005 has it recommended a systems-based approach across the region<sup>7</sup> (and *required* such an approach throughout the Greenbelt<sup>8</sup>). This policy regime was strengthened in 2014 with changes to the Provincial Policy Statement (PPS), which include a new requirement to identify natural heritage systems

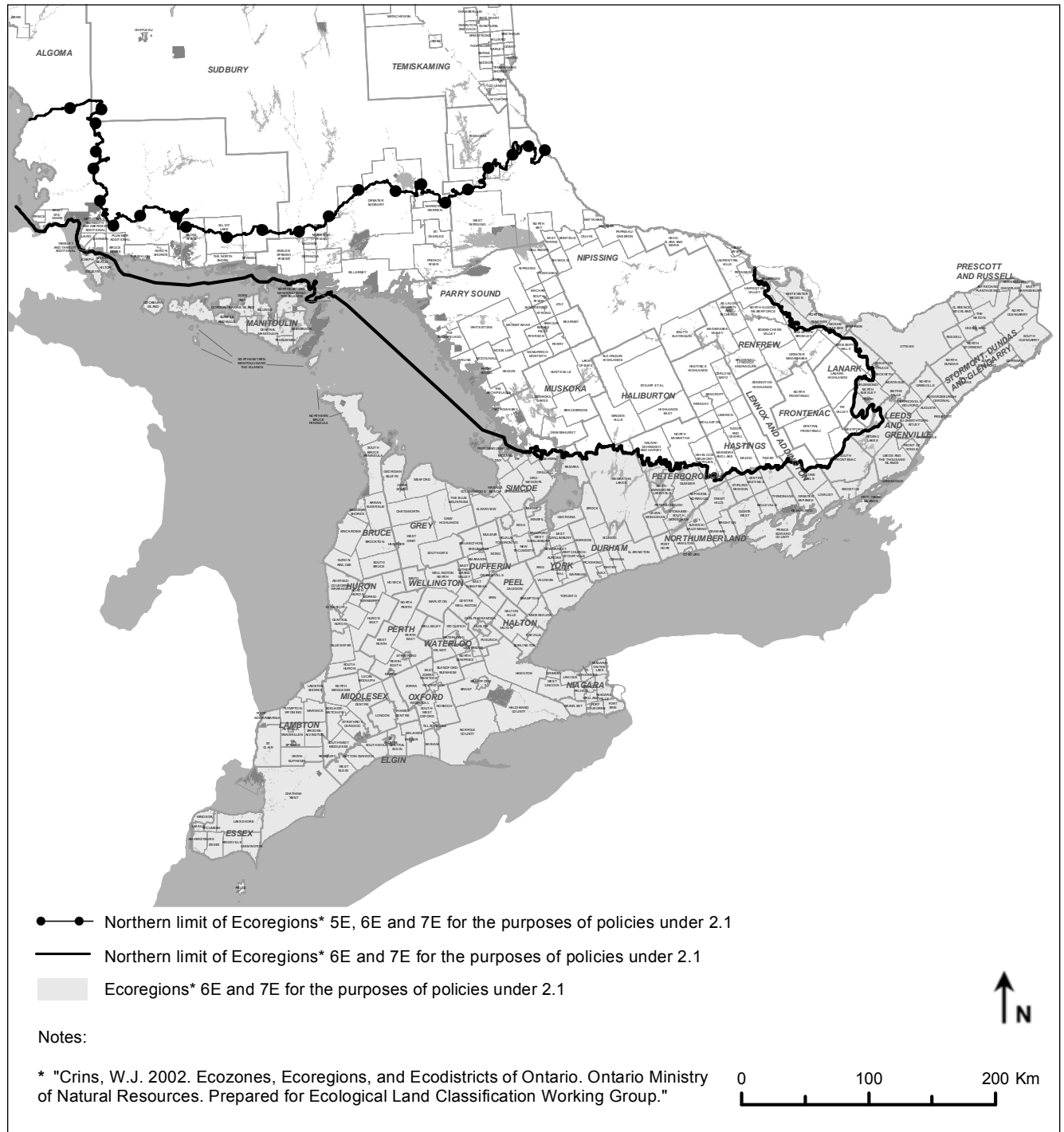
in southern and eastern Ontario (Ecoregions 6E and 7E).<sup>9</sup> The development of natural heritage systems plans at the municipal level is also one of the targets identified in *Ontario's Biodiversity Strategy*, with a target date of 2015.<sup>10</sup>

Many municipalities struggle with natural heritage systems planning because of a lack of resources and expertise. While there are tools to assist municipalities, such as the Ministry of Natural Resources' *Natural Heritage Reference Manual*,<sup>11</sup> most of these tools focus on technical information rather than policy development. The purpose of this *Best Practices Guide* is to address this gap as municipalities review and update their Official Plans. It is intended to stimulate and facilitate innovative, systems-based policy development.



### Figure 3: Ecoregions of Southern and Eastern Ontario

The area referred to as southern and eastern Ontario encompasses Ecoregions 6E and 7E, roughly south of the Canadian Shield but including the Frontenac Arch. With respect to provincial natural heritage policies, this region is treated somewhat differently from other parts of Ontario. See, for example, the Provincial Policy Statement (2014), section 2.1.3, which requires the identification of natural heritage systems in Ecoregions 6E and 7E.



Source: Ministry of Municipal Affairs and Housing, Government of Ontario.

## 1.1 Development of the Guide

The *Best Practices Guide to Natural Heritage Systems Planning* is organized according to systems planning principles, each illustrated with best practice examples. Ontario Nature established these principles through an examination of provincial policies and plans, the Ministry of Natural Resources' *Natural Heritage Reference Manual* and other relevant literature,<sup>12</sup> and through extensive consultation with planning experts from across southern and eastern Ontario. These experts included planning practitioners representing municipal planning departments, conservation authorities, provincial ministries and other organizations. Many of these experts provided guidance throughout the development of the guide, including insight on relevant examples, interpretation of the policies, accuracy of the information and its relevance and usability for planners. For broader input, Ontario Nature obtained feedback during presentations at the A.D. Latornell Conservation Symposium (November 2012 and November 2013), the ICLEI Livable Cities Forum (November 2012) and the ICLEI Biodiversity in the City Workshop (March 2013), and to the South Central Ontario Conservation Authorities Natural Heritage Discussion Group.

To identify best practice examples, Ontario Nature reviewed over 80 municipal Official Plans from across southern and eastern Ontario. Since natural heritage systems planning is required under the Greenbelt Plan, a significant number of examples came from the Greenbelt area of jurisdiction. Outside the Greenbelt, recommendations from planning experts guided the identification of best practice examples. Additional guidance came from a map in the 2010/2011 annual report of Ontario's Environmental Commissioner; the map summarizes the general status of natural heritage systems developed and incorporated into municipal Official Plans in southern and eastern Ontario.<sup>13</sup> Extensive peer review by planning experts further refined the principles and best practice examples. In many instances, the reviewers were planners with direct knowledge of the examples.

### Ecosystem Services

Ecosystem services have been categorized as follows: provisioning (e.g., food, fresh water, fuel and genetic resources), regulating (e.g., climate, disease and flood regulation), cultural (e.g., recreation, aesthetics and education), and supporting (services necessary for production of other ecosystem services, e.g., soil formation, waste treatment and nutrient cycling).<sup>2</sup>

## 1.2 The Role of Municipal Land Use Planning

There are many demands on the lands and waters of southern and eastern Ontario. How and where growth and ensuing development will be accommodated are directly influenced by and largely managed through

municipal planning. Municipal Official Plans set the direction for land use, in accordance with provincial policy. Ideally, these plans recognize the inter-relationship between the natural and built environments, ensuring that development does not compromise the ecological, cultural, economic and health benefits that natural features and systems provide. Achieving such an outcome, however, is no easy task for municipalities. It requires broad community support and an understanding that progressive natural heritage systems policies are vital if we hope to achieve healthy, sustainable communities in the face of challenges associated with growth, development, climate change and ongoing biodiversity loss.

Land use planning at the municipal level enables communities to outline their vision for the future with respect to growth, development, land use and community well-being. It is a values-based exercise intended to recognize the inter-relationship among environmental, economic and social factors. The process and framework are set out in Ontario by the Planning Act. Under this legislation, the PPS provides further direction on a variety of provincial interests, such as:

- the protection of ecological systems including natural areas, features and functions;
- the protection of the agricultural resources of the province;
- the conservation and management of natural resources;
- the conservation of water;
- the orderly development of safe and healthy communities;
- the provision and distribution of recreational facilities;
- the appropriate location of growth and development; and
- the economic well-being of the province and its municipalities.<sup>14</sup>

All of these interests are connected, and the establishment of healthy and sustainable natural heritage systems directly contributes to achieving provincial goals and objectives related to these interests.

The PPS requires that natural heritage features and areas be protected for the long term. To that end, it sets out some restrictions on development that vary from outright prohibitions to demonstrating that there will be no negative impact on natural features or their ecological functions. In terms of systems-based planning, the PPS also recommends 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.<sup>15</sup>

It goes further to require the maintenance of these linkages to protect, improve or restore the quality and quantity of water.<sup>16</sup>

In some parts of the province, broader land use plans exist to further guide municipalities in meeting specific provincial priorities. In southern Ontario, these plans have been developed in response



to the growth pressure felt within the Greater Golden Horseshoe, in an attempt to establish firm urban boundaries, protect natural heritage and agricultural land, and direct growth. Specific plans include: the Niagara Escarpment Plan (2005),<sup>17</sup> the Oak Ridges Moraine Conservation Plan (2002), the Greenbelt Plan (2005), the Growth Plan for the Greater Golden Horseshoe (2006) and the Lake Simcoe Protection Plan (2009) – these are explained in more depth in the Appendix.

Within Ontario’s land use planning regime, municipal Official Plans set out a municipality’s vision for its future through the establishment of goals and objectives, land use designations, and policies that will guide land use, conservation, development and growth. They are prepared with extensive input from the public and key stakeholders and must be adopted by an elected municipal council.

“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.”

Official Plans provide the framework for other planning instruments, such as zoning bylaws, site plan control and land division processes. All municipal decisions must comply with the direction and guidance that Official Plans provide, and they in turn must be consistent with the PPS and other provincial land use plans, if applicable.

Municipal Official Plans therefore represent a vital component of the policies intended to protect natural heritage in Ontario. Comprehensive and effective natural heritage policies that embody a Greenway approach will be essential to ensuring that municipal land use management and development approval processes adequately address the protection and restoration of the natural and hydrological systems that sustain us.

### 1.3 Natural Heritage Systems and Agriculture

The inter-relationship between protecting natural systems and agricultural land use is an important and unique consideration in southern Ontario. Agriculture is the predominant land use on the rural landscape, and nearly all of the province’s prime agricultural lands are located below the Canadian Shield.

The PPS (2014) protects natural features and their functions, as well as prime agricultural areas for agricultural use, for the long term. Appropriate planning for both interests (in Official Plans and zoning bylaws) will help to avoid conflict, foster co-operation, improve the quality of natural systems and maintain linkages. Protecting the environment and producing food do not need to be mutually exclusive.

Such co-operation and leadership are already evident in many parts of the province. For example, working with conservation groups like Ontario Nature and the Carolinian Canada Coalition, farmers played an important role in designing and mapping Greenways in Grey and Bruce counties and in Elgin County. These Greenway systems of core natural areas and potential connecting

corridors were identified to inform decisions about land management, land purchase and land use planning for natural heritage protection.

It is also important to acknowledge that agricultural lands produce significant monetary value in terms of ecosystem goods and services. A study commissioned by the Ontario Ministry of Natural Resources in 2009 estimated that agricultural lands in southern and eastern Ontario produced well over \$1 billion annually in ecosystem services such as pollination, atmospheric regulation, soil retention and wildlife habitat.<sup>30</sup> In a separate study conducted by the David Suzuki Foundation, the ecosystem services of agricultural lands in the Greenbelt alone were valued at \$329 million annually.<sup>31</sup> These studies identify the significant contribution of agricultural lands to human and ecosystem health generally, highlighting an important opportunity to consider how agricultural lands can and do complement natural heritage protection.

While all farming practices do not equally benefit the environment (e.g., they may result in habitat loss and fragmentation or leaching of soil nutrients), it is important to recognize and value practices that do and to promote their adoption. The introduction of programs that provide payment for ecosystem services can address financial barriers to restoring wetlands or converting selected parcels of farmland to wildlife habitat. Fortunately, a number of opportunities are emerging. For example, Alternative Land Use Services (ALUS), currently being piloted in Norfolk County, Elgin County, Grey and Bruce counties and the United Counties of Stormont, Dundas and Glengarry, provides financial incentives to farmers for producing ecosystem services ([alus.ca](http://alus.ca)). Demonstration sites are showing that environmentally focused activities can also produce a net benefit for farm production, including retaining topsoil and reducing flooding and soil erosion.

Biodiversity offsetting is another emerging opportunity, whereby landowners are paid to offset the impacts of development by creating or enhancing habitat for wildlife. Under Ontario's Endangered Species Act, 2007, for example, a Species at Risk Benefits Exchange is under development.<sup>32</sup> Already, as a permitting requirement, developers are paying landowners to restore habitat for bobolink and eastern meadowlark, two grassland birds at risk. Voluntary biodiversity offsetting is also moving forward in Ontario. Although there is not yet a market for biodiversity offsets in the province, instruments such as ALUS's Ontario Ecological Credit are in development.

Municipalities should be aware of and, where possible, promote these and other opportunities to cultivate the support of the farming community for natural heritage protection. Financial incentives, education and recognition of the ecosystem services that farmers provide for society will help to foster co-operation.

### Official Plans

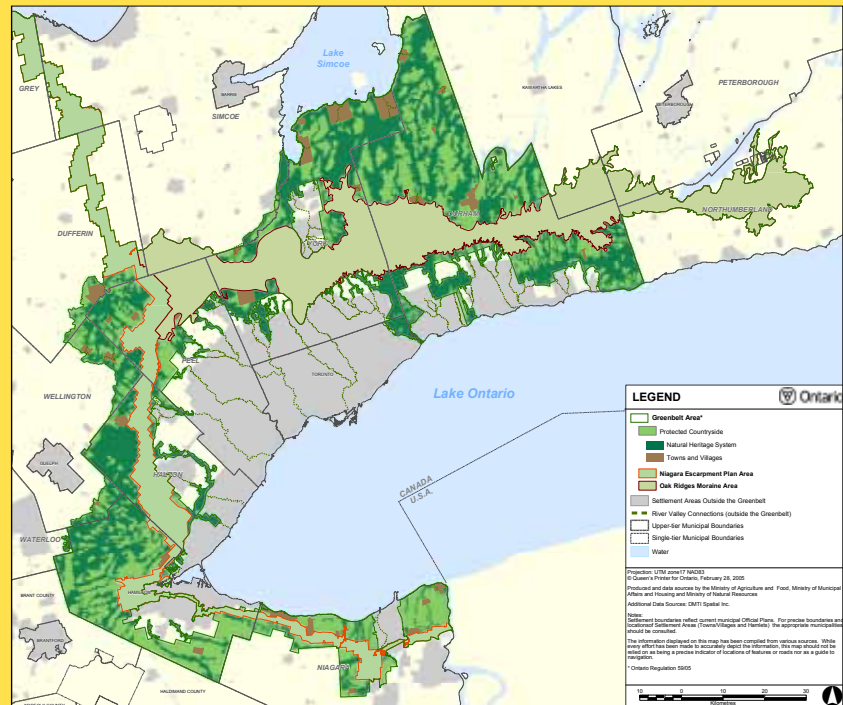
While a municipal Official Plan must be consistent with provincial legislation and policies, it is fundamentally the creation of a community and expresses the values of that community with respect to land use and land use management. Regarding natural heritage policies, municipal Official Plans can go beyond PPS policies, which represent only minimum standards.<sup>18</sup>

# Ontario's Greenbelt: A systems-based approach

**Figure 4: Greenbelt Plan, 2005 Schedule 4: Natural Heritage System**

Ontario's Greenbelt illustrates a systems-based approach to natural heritage planning at a landscape scale. Stretching northward from Niagara to the tip of the Bruce Peninsula, and eastward from Halton to Rice Lake in Northumberland County, the Greenbelt encompasses 720,000 hectares of land and water. The Greenbelt Plan is the cornerstone of sustainability for the region. It permanently protects a band of natural areas, agricultural land and rural settlements, safeguarding clean air, clean water, wildlife habitat, local food sources and access to nature for present and future generations. Its main objectives are:

- To protect against the loss and fragmentation of the agricultural land base and support agriculture as the predominant land use;
- To permanently protect the natural heritage and water resource systems that sustain ecological and human health and that form the environmental framework around which major urbanization in south-central Ontario will be organized; and
- To provide for a diverse range of economic and social activities associated with rural communities, agriculture, tourism, recreation and resource uses.<sup>19</sup>



**Figure 5: Flow Paths of the Oak Ridges Moraine Headwaters**



Created from original map by As the Crow Flies cAPtography

Within the Greenbelt, the protected Natural Heritage System comprises 216,500 hectares of lakes, wetlands, river valleys and forests. This includes areas with “the highest concentration of the most sensitive and/or significant natural features and functions,”<sup>20</sup> such as the headwaters for all major rivers flowing into the Greater Toronto Area, and habitat for 78 provincially listed species at risk.<sup>21</sup> A study by the David Suzuki Foundation valued the Greenbelt’s non-market ecosystem services at \$2.6 billion annually, with the major components of the natural heritage system – forests and wetlands – contributing the vast majority, at over \$2.3 billion per year.<sup>22</sup>

Greenbelt Plan policies governing the Natural Heritage System build upon the Natural Core Area and Natural Linkage Area designated under the Oak Ridges Moraine Conservation Plan and the Natural Area and Protection Area designated under the Niagara Escarpment Plan. Areas within the Natural System are to be “managed as a connected and integrated natural heritage system given the functional inter-relationships between them. ...”<sup>23</sup> Together, the Natural Heritage System and the Water Resource System make up the natural system, emphasizing the landscape linkages among natural features, surface and groundwater features and their functions.<sup>24</sup>

Other strengths of the Greenbelt Plan policies include limiting disturbance or site alterations within the system<sup>25</sup> and provisions to enhance the system in lands where development is occurring.<sup>26</sup> The plan encourages municipalities to include natural heritage systems policies in settlement areas (i.e., where the Greenbelt Plan itself does not).<sup>27</sup>

Importantly, the Greenbelt Plan recognizes the fundamental inter-relationship between agricultural and natural systems:

Many of the farms within this [Agricultural] system also contain important natural heritage and hydrologic features, and the stewardship of these farms has facilitated both environmental and agricultural protection. The Agricultural System is therefore integral to the long-term sustainability of the Natural Heritage System within the Protected Countryside. It is through evolving agricultural and environmental approaches and practices that this relationship can continue and improve.<sup>28</sup>

The plan permits “the full range of existing and new agricultural, agricultural-related and secondary uses and normal farm practices” to continue within the Natural Heritage System, subject to policies protecting key natural heritage and key hydrologic features.<sup>29</sup>



*Top: Birding in Rouge Park; bottom: Glenorchy Conservation Area*

Top: Noah Cole; bottom: B. VanRyswyk, Conservation Halton

Much like the roots of a tree, the features and functions that underpin the Greenbelt’s natural heritage system extend far beyond the visibly mapped area. It is important for municipalities with lands within and adjacent to the Greenbelt to preserve, enhance and connect the larger natural heritage system in order to preserve the ecological integrity of this landscape.

In 2008, the Province issued criteria for considering requests from municipalities to expand the Greenbelt, allowing municipalities to identify proposed expansion areas that are adjacent to the Greenbelt or demonstrate a clear functional relationship. In January 2013, Oakville’s Glenorchy Conservation Area, in Halton Region, was the first addition to the Greenbelt. That same month, the Province amended the Greenbelt Act to allow additional public lands along river valley corridors to join the Greenbelt. This Urban River Valley amendment promotes the value of external connections to the Greenbelt and acknowledges the importance of connecting the Greenbelt to the larger Great Lakes ecosystem.





# SYSTEMS-BASED NATURAL HERITAGE PLANNING: RATIONALE

**P**lanning for the future requires the maintenance, restoration and enhancement of functioning and interconnected natural heritage systems. These systems are vital to conserving the strength and resilience of the rich web of life that sustains us. The services that nature provides have been estimated to be worth over \$84 billion annually in southern and eastern Ontario.<sup>33</sup> Globally, the value has been conservatively estimated at \$33 trillion per year, a number that exceeds the combined GDP of all the world's economies.<sup>34</sup> From a human health perspective alone, research shows that the human connection with nature is fundamental to our physical, mental and social well-being.<sup>35</sup>

In Ontario, across Canada and around the globe, ongoing biodiversity loss and climate change jeopardize human well-being and the natural world. A Greenway approach to protecting and connecting core natural areas across the landscape is a recognized strategy for addressing these dual crises.<sup>37</sup>

As argued by the United Nations-appointed Intergovernmental Panel on Climate Change, it is critical that adaptation strategies maintain or establish linkages among natural areas that allow species to move and adapt as habitat changes. Without such areas, species will be less likely to survive. According to the panel, 20 to 30 percent of the earth's plants and animals may face extinction without the establishment of interconnected natural areas. The possible intensification of natural disturbances such as fires, floods and droughts will further threaten biological diversity.<sup>38</sup>

Municipalities have a central role to play in conserving biodiversity, as acknowledged, for example, in Ontario's Biodiversity Strategy, 2011. The provincial strategy envisions a future "where biodiversity loss is halted and recovery is advanced."<sup>39</sup> It sets out targets that reflect international goals, specifically the Aichi Biodiversity Targets agreed to by the parties to the Convention on Biological

## Health Benefits of Nature

In 2010, Dr. Frances (Ming) Kuo reviewed and summarized the evidence from around the world on the connection between human health and access to the natural world. She described the findings as “remarkable” in their strength, consistency and convergence: the health benefits of being connected with nature are real.<sup>36</sup> For example, the social health benefits of “green” environments include:

- Stronger neighbourhood social ties;
- Greater sense of community;
- More mutual trust and willingness to help others;
- More positive social interaction; and
- Greater shared use of space.

The mental health benefits of access to nature include:

- Better cognitive functioning;
- More effective “life functioning”;
- More self-discipline and impulse control;
- Greater resilience to stress; and
- Greater mental health overall.

The physical health benefits of access to nature include:

- Enhanced recovery from surgery;
- Higher levels of physical activity;
- Improved immune system functioning; and
- Improved health status and independent living skills among older adults.

In contrast, Dr. Kuo also looked at the costs of not having access to nature. It’s an impressive – and alarming – list:

- Higher rates of aggression, violence and crime;
- More loneliness and sadness;
- More stress and anxiety;
- Higher rates of clinical depression;
- Exacerbated attention deficit hyperactivity disorder (ADHD);
- Higher rates of childhood obesity;
- Higher rates of disease (15 out of 24 categories); and
- Higher rates of mortality in younger and older adults.

*Left top: Hiking in Ancaster; left middle: never too early to get outside; left bottom; fishing in Clearview; above: meditating in Halton’s Limehouse Conservation Area*



Bobcatnorth



Sharron Drummond



Dennis Dalton



Gord Spence

Diversity, including Canada, in 2010. Two of these provincial targets are of particular relevance to municipal planning:

1. By 2015, natural heritage systems plans and biodiversity conservation strategies are developed and implemented at the municipal and landscape levels;
2. By 2020, at least 17 percent of terrestrial and aquatic systems are conserved through well-connected networks of protected areas and other effective area-based conservation measures.<sup>40</sup>

The important role of municipalities in identifying and protecting natural heritage systems is likewise acknowledged federally in Environment Canada's *How Much Habitat Is Enough?* This document provides a science-based framework and guidelines for maintaining and enhancing wetland, riparian, forest and grassland habitats south and east of the Canadian Shield. Intended to serve as a starting point for the development of conservation strategies and natural heritage systems, the framework underlines the need for a systematic approach that "better captures the complexity of life and the multiple and often unknown linkages that allow species to flourish."<sup>41</sup> Of note is the recommendation to look beyond the boundaries of specific planning units, such as municipalities, to take into account surviving habitat corridors and to promote linkages across the landscape.<sup>42</sup>

## Aichi Biodiversity Target 11

One of 20 time-bound, measurable targets agreed to by Canada and the other parties to the Convention on Biological Diversity in Nagoya, Japan, in 2010, Target 11 identifies the importance of a systems-based approach to natural heritage protection: "By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes."<sup>43</sup>

Healthy, functioning and resilient ecosystems require diversity and connectivity. Just as human communities require connectivity to function effectively and efficiently, natural communities are equally dependent on the interchange of resources; the cycling of water, nutrients and minerals; and the movement of plants and animals among green spaces. Connectivity must accommodate movement that occurs at various scales – both geographically and temporally. These scales range from large, cross-continental annual migrations (e.g., migratory birds) to small seasonal movements to meet life-cycle requirements (e.g., amphibian breeding). As climate change alters habitat conditions and the ranges of plant and animal species, connectivity becomes ever more critical. A Greenway approach to natural heritage planning will serve to recreate webs of interconnected habitats to ensure functional linkages among areas of high conservation value. This planning approach represents the most promising option available for addressing habitat loss and fragmentation, the major drivers of biodiversity loss in the heavily developed and populated landscape of southern and eastern Ontario.

**Figure 6: Map of Best Practice Locations**



# SYSTEMS-BASED PLANNING: PRINCIPLES AND BEST PRACTICES

**T**his section lays out key principles for natural heritage systems planning. For each principle, we have selected examples of best practices from municipal Official Plans to illustrate innovative and progressive approaches to protecting, maintaining and enhancing natural heritage systems. The principles are organized into three broad groups: identification, protection and restoration of natural heritage systems; integration of natural heritage systems planning; and requirements for environmental impact studies. The examples are intended to stimulate discussion and provide a starting point for the development of strong municipal policy. They demonstrate what can and has been done. Figure 7 presents an overview of the principles and examples, with hyperlinks for easy access to the corresponding pages.

**Figure 7: Summary of Principles and Best Practices**

	<b>Principle</b>	<b>Examples from municipalities with land within the Greenbelt, Oak Ridges Moraine or Niagara Escarpment</b>	<b>Examples outside the Greenbelt</b>	<b>Page</b>
<b>3.1</b>	<b>Identification, Protection and Restoration of Natural Heritage Systems</b>			
<b>3.1.1</b>	<b>Policy should ensure that natural heritage inventories/ studies are undertaken, updated and maintained</b>	City of Vaughan: Official Plan Consolidation – 3.2.2 Clearview Township: Official Plan– 11.13	City of Waterloo: Official Plan Consolidation – 8.2.2	19
<b>3.1.2</b>	<b>Policy should require the identification and protection of core natural heritage features and corridors, and linkages to surface water and groundwater features and functions</b>	Town of Ajax: Official Plan Consolidation – 1.2, 2.2.1 City of Hamilton: Urban Hamilton Official Plan Consolidation – C2.0, C2.7.4, C2.7.5	City of Ottawa: Official Plan Consolidation – 2.4.2	21
<b>3.1.3</b>	<b>Policy should establish a commitment or reference to maintaining, improving and restoring the biodiversity and long-term ecological function of natural heritage systems</b>	City of Vaughan: Official Plan Consolidation – 3.2.1 Town of Oakville: Livable Oakville Plan – 10.1.1		26
<b>3.1.4</b>	<b>Policy should address and protect features, functions and linkages not otherwise identified in the Official Plan</b>	Town of Georgina: Official Plan Consolidation – 3.5.2.7 City of Vaughan: Official Plan Consolidation – 3.2.3.2 Clearview Township: Official Plan – 4.1.2.3, 4.1.2.4	Township of Central Frontenac: Official Plan Consolidation – 7.5.2	28
<b>3.1.5</b>	<b>Policy should direct that permitted uses take into account the impact on the natural heritage system, including ecological functions, and should incorporate prohibitions on development and site alteration within the natural heritage system</b>	York Region: Official Plan Consolidation – 2.1.9		32
<b>3.1.6</b>	<b>Policy should require the implementation of natural heritage system policies in zoning bylaws and subsequent amendments, as well as in other municipal bylaws</b>	Halton Region: Regional Official Plan Interim Consolidation– 118 Clearview Township: Official Plan – 4.1.2.4, 4.1.5		33

3.1.7	<b>Policy should establish provisions to grow and enhance the secured and environmentally managed portion of the natural heritage system (e.g., through conservation easements, stewardship agreements or acquisitions)</b>	Halton Region: Regional Official Plan Interim Consolidation– 118 (7, 8, 9)	Region of Waterloo: Regional Official Plan Consolidation – 7  County of Lambton: Official Plan Consolidation – 8.3.1  City of Waterloo: Official Plan Consolidation – 8.2.2 (21)	35
3.1.8	<b>Policy should require monitoring of the ecological health of the natural heritage system</b>		City of Guelph: Official Plan Amendment 42 – 6.1.2, 6.1.10.2.5	38
3.1.9	<b>Policy should enable biodiversity offsetting (i.e., compensatory mitigation) on a net gain basis, but only after avoidance and mitigation have been fully addressed, and only if: 1) the impacted biodiversity values have been explicitly measured, 2) the restoration of these values within a reasonable timeframe is demonstrably feasible, and 3) uncertainties and risks have been fully accounted for in the loss-gain calculation (i.e., replacement ratio)</b>	Clearview Township: Official Plan – 4.1.2.2.1, 4.1.2.2.2  Town of Ajax: Official Plan Consolidation – 5.0 a.o.d.xi		40
3.1.10	<b>Policy should provide for the involvement of the public and non-municipal agencies in the identification of natural heritage features and functions and in monitoring activities</b>	Halton Region: Regional Official Plan Interim Consolidation – 118 (8)  City of Hamilton: Urban Hamilton Official Plan Consolidation – C2.12.4  Clearview Township: Official Plan – 4.1.3	City of London: Official Plan Consolidation – 15.3.5.ii	43
<b>3.2</b>	<b>Integration of Natural Heritage Systems Planning</b>			
3.2.1	<b>Policy should ensure the integration of natural heritage systems planning at multiple levels: regional, watershed, subwatershed and/or secondary plan level</b>	City of Hamilton: Urban Hamilton Official Plan Consolidation – C.2.7.1  Simcoe County: Official Plan Draft – 3.11.21	Region of Waterloo: Regional Official Plan Consolidation– 7.2, 7.F.1  City of Guelph: Official Plan Consolidation – 3.3.2, 6.2.1	45
3.2.2	<b>Policy should acknowledge the importance of cross-jurisdictional communication and co-operation regarding natural heritage systems</b>	Simcoe County: Official Plan Draft: – 3.8.6  City of Burlington: Official Plan Consolidation – Part II, 2.4.1a  Halton Region: Regional Official Plan Consolidation– 118 (10)	City of Windsor: Official Plan Consolidation – 5.3.2.5  Region of Waterloo: Regional Official Plan Consolidation – Chapter 7  City of Ottawa: Official Plan Consolidation – 2.4	47

3.2.3	<b>Policy should recognize the relationship and synergies between natural heritage systems and the surrounding environment, including agricultural lands, urban areas and resource extraction areas</b>	Halton Region: Regional Official Plan Consolidation – 118 (5)	City of London: Official Plan Consolidation – 15.1  County of Lambton: Official Plan Consolidation – 8.3.1  City of Ottawa: Official Plan Consolidation – 2.4.5	51
3.2.4	<b>Policy should recognize the socio-economic, cultural and ecological values associated with natural heritage features and the services that the natural heritage system provides to the community</b>	Simcoe County Official Plan Draft – 3.8.8		54
<b>3.3</b>	<b>Requirements for Environmental Impact Studies</b>			
3.3.1	<b>Policy should require proponents to conduct environmental impact studies and demonstrate that through avoidance and mitigation measures, there will be no negative impacts on the natural heritage system</b>	Clearview Township: Official Plan – 4.1.2.2.1, 4.1.2.2.2		55
3.3.2	<b>Policy should clearly set out the requirements for impact assessments, including required content and analysis</b>	Niagara Region: Regional Policy Plan Consolidation – 7.B.2.2  Clearview Township: Official Plan – 4.1.2.2.1, 4.1.2.2.2	City of Kingston: Official Plan Consolidation – 6.1.10, 6.1.11  City of Guelph: Official Plan Consolidation – 6.3.1	57
3.3.3	<b>Policy should require the consideration of the role and importance of lands adjacent to natural heritage systems, an analysis of the impacts of development proposals, and the establishment of appropriate ecological buffers and setbacks</b>		Elgin County: Official Plan Consolidation – D1.3.2  City of London: Official Plan Consolidation – 15.3.6  City of Waterloo: Official Plan Consolidation – 8.2.4	64
3.3.4	<b>Policy should require that development proponents consult with municipal staff, environmental advisory committees and/or planning boards prior to submitting an application</b>	Region of Durham: Regional Official Plan Consolidation – 14.12.2  Clearview Township: Official Plan – 4.1.2.2.1		68
3.3.5	<b>Policy should provide for extended and meaningful consultation with stakeholders that may exceed requirements in the Planning Act, particularly where large-scale developments or developments with potential significant impacts are being considered</b>		Region of Waterloo: Regional Official Plan Consolidation – 7.A.14  City of London: Official Plan Consolidation – 15.3.9	69



### 3.1 Identification, Protection and Restoration of Natural Heritage Systems

#### 3.1.1 Principle: Policy should ensure that natural heritage inventories/studies are undertaken, updated and maintained

*Rationale:* A natural heritage inventory is usually the initial, ground-truthing step in identifying and protecting a natural heritage system. In providing information about the health of the system and about features and linkages to be included in the system, the inventory can support multiple municipal objectives and initiatives (e.g., watershed studies, ecological restoration, stewardship efforts, and impact and effectiveness monitoring), and it will guide important planning decisions. Accurate and updated inventories provide for accurate delineation, as well as ongoing refinement of the natural heritage system including features and functions.



Examining a specimen in Rouge Park

Noah Cole

#### Best Practice: City of Waterloo

The City may undertake studies to evaluate the status and completeness of the Natural System with the intent of determining the precise location of natural features, identifying elements of the system that need to be added or modified, and establishing targets related to ecological function and biodiversity.<sup>44</sup>



*Analysis:* This policy provides for studies to confirm the status of the natural heritage system and evaluate the completeness of the inventory of natural features. It recognizes the need to update information and refine the system on an ongoing basis. This policy also enables the setting of targets so that the system can be effectively evaluated with respect to ecological function and biodiversity.

### Best Practice: City of Vaughan



A comprehensive inventory of natural heritage features and understanding of their functions are the first steps in natural heritage management. Building an inventory is an ongoing process that involves co-operation between the City, the Toronto and Region Conservation Authority, York Region, the Province and private landowners. The information in Schedule 2 represents the most detailed and up-to-date information available. Vaughan is committed to updating this information through an ongoing process of environmental reporting associated with land-use planning studies, infrastructure development and related Environmental Assessments and development applications.

It is the policy of Council ... To use environmental data gathered through land-use planning studies, Environmental Assessments, infrastructure development, development applications, and other means, to maintain and update Vaughan's natural heritage inventory and Schedule 2 of this Plan, as appropriate ...

To evaluate Vaughan's natural heritage inventory from time to time to maintain effective natural heritage management is being achieved. Such a review may be coordinated with a comprehensive review of this Plan.<sup>45</sup>

*Analysis:* These policies express the city's commitment to continuously re-evaluate and update its natural heritage system with appropriate information from a variety of sources, including a range of studies that provide relevant information regardless of their primary purpose. Such an approach minimizes the risk of inaccuracies and helps to ensure both that features are provided appropriate protection and that lands that do not require this level of protection can be designated for other land uses.



Paul Henman

Hiking in York

### Best Practice: Clearview Township

To assist in future decision making, Council may choose to expand Clearview's land use database through the preparation of and/or participation in studies/reports focused specifically on the heritage, recreational, cultural, transportation, servicing and industrial/commercial needs of the municipality. Such studies may be undertaken for all or part of the municipality, and may be undertaken solely by the Township, or in partnership with public or private sector interests. These studies might include the completion of: ... A Natural Heritage Inventory and Management Plan ... Where appropriate, Council may incorporate the recommendations of such studies by ... amendment into the Official Plan or as a component of the Township's regular updating program pursuant to Section 1.6 of the document and ... the Planning Act. The municipality may however have regard to the outcome of such studies in considering development applications in the interim and/or require incorporation of such recommendations in an amendment requested by an applicant.<sup>46</sup>



*Analysis:* This policy provides for the development and continual refinement of the natural heritage inventory in part or in whole through a wide range of processes, mechanisms and information sources, helping to ensure reliable and supportable planning decisions. The policy also allows for the consideration and application of this information in the review of development applications prior to incorporation into the Official Plan.

#### 3.1.2 Principle: Policy should require the identification and protection of core natural heritage features and corridors, and linkages to surface water, and groundwater features and functions.

*Rationale:* A systems approach is based on understanding the linkages among natural heritage features and the underlying functions that connect them. Consideration of their linkages to the hydrologic system is also needed to ensure that biodiversity and ecosystem resiliency are maintained and enhanced over the long term.

Ontario Nature's Malcolm Bluff  
Shores Nature Reserve



J Reaume

### Best Practice: City of Ottawa



The natural heritage system in Ottawa is identified and protected by watershed and other environmental plans, land-use designations, in Schedules A and B, the Natural Heritage System Overlay (Schedules L1, L2 and L3) and policies that govern how land is used to ensure that development does not result in negative impacts on natural features or their functions. In this regard, the diversity and connectivity of natural features and the long-term ecological function and biodiversity of the City's natural heritage systems shall be maintained, restored, or where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features[.] ...

1. The natural heritage system in Ottawa comprises the following significant features and the natural functions they perform:
  - a. Provincially significant wetlands as identified by the Ministry of Natural Resources
  - b. Significant habitat for endangered and threatened species, as approved by the Ministry of Natural Resources;

- c. Significant woodlands defined in the rural area as woodlands that combine all three features listed below in a contiguous, forested area:
  - i. Mature stands of trees 80 years of age or older; and
  - ii. Interior forest habitat located more than 100 m inside the edge of a forest patch; and
  - iii. Woodland adjacent to a surface water feature such as a river, stream, drain, pond or wetland, or any groundwater feature including springs, seepage areas, or areas of groundwater upwelling;
- d. Wetlands found in association with significant woodlands;
- e. Significant valleylands defined as valleylands with slopes greater than 15% and a length of more than 50 m, with water present for some period of the year, excluding man-made features such as pits and quarries;
- f. Significant wildlife habitat found on escarpments with slopes exceeding 75% and heights greater than 3 m; or within significant woodlands, wetlands, and valleylands; or that may be identified through subwatershed studies or site investigation;
- g. Life Science Areas of Natural and Scientific Interest as identified by the Ministry of Natural Resources;
- h. Earth Science Areas of Natural and Scientific Interest as identified by the Ministry of Natural Resources designated on Schedule K;
- i. Urban Natural Features, consisting of remnant woodlands, wetlands and ravines within the urban area;
- j. Forest remnants and natural corridors such as floodplains that are identified through planning or environmental studies such as watershed or subwatershed plans, environmental management plans, community design plans, environmental impact statements or tree conservation reports as linkages between the significant features defined above, but may not meet the criteria for significance in their own right,



*Bullfrog*

Ron Erwin

- k. Groundwater features, defined as water-related features in the earth's subsurface, including recharge/discharge areas, water tables, aquifers and unsaturated zones that can be defined by surface and subsurface hydrogeologic investigations;
- l. Surface water features, defined as water-related features on the earth's surface, including headwaters, rivers, stream channels, drains, inland lakes, seepage areas, recharge/discharge areas, springs, and associated riparian lands that can be defined by their soil moisture, soil type, vegetation or topographic characteristics, including fish habitat.<sup>47</sup>

*Analysis:* The policy includes an explicit requirement (“shall”) to maintain the diversity and connectivity of natural features and the function and biodiversity of natural heritage systems. It also clearly sets out the natural heritage features and the linkages with surface and groundwater features that are subject to the policy. This positions natural heritage systems protection effectively within the entire functioning ecosystem.

### Best Practice: Town of Ajax



The Town will, first and foremost, protect and enhance a strong, biologically diverse Greenlands System that weaves throughout the municipality to interconnect with the broader Great Lakes ecosystem in adjoining municipalities and watersheds. ... Ajax shall: - Require the protection and enhancement of the ecological features and ecological functions of the natural heritage system within the Town, and its connections to natural areas in adjoining municipalities;<sup>48</sup> ...

Goals[:] ... To protect and enhance the local environment, the Town shall: ... enhance the Greenlands System and its connectivity by making decisions and taking actions that shall protect the natural heritage system, and support biodiversity.<sup>49</sup>

*Analysis:* Ajax brings together the concepts of connectivity and biodiversity, and uses direct and clear language in setting out its requirements to enhance connectivity and protect the natural

heritage system. It takes the concept of linkages one step further to include connections with adjoining municipalities and watersheds. This is essential from an ecological perspective, since natural heritage systems do not stop at jurisdictional boundaries.



Sean Marshall

Ajax

### Best Practice: City of Hamilton

The systems approach involves delineating a Natural Heritage System which includes Core Areas, as well as supportive features (Linkages) that maintain the ecological functionality and connectivity of the natural system.<sup>50</sup>

The City shall require the incorporation of Linkages into a design of new development requiring approval by this Plan to retain and enhance the cultural, aesthetic, and environmental qualities of the landscape, wherever possible. ...<sup>51</sup>

Where new development or site alteration is proposed within a Linkage in the Natural Heritage System ... the applicant shall prepare a Linkage Assessment. On sites where an Environmental Impact Statement (EIS) is being prepared, the Linkage Assessment can be included as part of the EIS report.<sup>52</sup>

*Analysis:* These three excerpts from the City of Hamilton's Official Plan identify linkages and core areas as the central components of the natural heritage system. There is a clear intent to





Hamilton

Glenn Davy

operationalize the Provincial Policy Statement (PPS) requirements with respect to linkages. Applicants must prepare a linkage assessment if they are proposing development in an identified linkage area. Linkages are seen as broadly beneficial when incorporated into the design of development proposals, offering a means to protect and enhance the cultural, aesthetic and environmental qualities of the landscape.

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### **3.1.3 Principle: Policy should establish a commitment or reference to maintaining, improving and restoring the biodiversity and long-term ecological function of natural heritage systems.**

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*Rationale:* Two key objectives of systems-based planning are to conserve and enhance biodiversity and to maintain and restore ecosystem function. Southern and eastern Ontario fall far below the provincial target for landscape conservation and protection set out in Ontario's Biodiversity Strategy,<sup>53</sup> as well as the international target to which Canada is committed under the Convention on Biological Diversity.<sup>54</sup> That target is to conserve at least 17 percent of the landscape through well-connected networks of conservation lands. While it does not bind municipalities, it should guide policy development so that the immense social, environmental and economic benefits that the natural heritage system provides are fully realized.



### Best Practice: City of Vaughan

It is the policy of Council: ...

To recognize the various functions performed by the natural environment that benefit ecological and human health and that these functions improve the overall quality of life for Vaughan residents. ...

To maintain the long-term ecological function and biodiversity of the Natural Heritage Network by utilizing an ecosystem function approach to planning that protects, restores and, where possible, enhances natural features and their functions. ...

To utilize an ecosystem function approach to enhancing and better linking Vaughan's Natural Heritage Network. Such an approach will clearly indicate areas for enhancing and linking the Network but allow for some flexibility in how that is achieved.<sup>55</sup>

*Analysis:* This policy aims to protect, restore and enhance biodiversity and the long-term ecological function of Vaughan's natural heritage network, explicitly recognizing the importance of linkages. It also explicitly recognizes the importance of an ecosystem function approach extending consideration beyond the simple protection of features. The policy strongly expresses the objective of enhancing function and biodiversity while also enabling flexibility in the means to achieve it.



### Best Practice: Town of Oakville

The Town is committed to *sustainable development* in order to achieve environmental sustainability. This section provides objectives and policies to implement the principle of sustainability where the Town has jurisdiction....

The general objectives for sustainability are: ...

- a) to minimize the Town's *ecological footprint*;
- b) to achieve sustainable building and community design;



- c) to preserve, enhance and protect the Town's environmental features, natural heritage systems and waterfronts;
- d) to enhance the Town's air and water quality;
- e) to maintain the existing urban forest; and,
- f) to progressively increase the urban forest to achieve a canopy cover of 40% Town-wide beyond the life of this Plan.

*Analysis:* This policy explicitly aims to preserve, enhance and protect natural heritage systems and other natural features, embedding this objective within an overall commitment to environmental sustainability.<sup>56</sup>

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#### **3.1.4 Principle: Policy should address and protect features, functions and linkages not otherwise identified in the Official Plan.**

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*Rationale:* This principle recognizes that natural systems are dynamic and that municipal resources for mapping natural heritage features may not be sufficient to capture all information when establishing mapping and designations. It also recognizes that functional relationships may not be captured in mapping and designations. The PPS requires protection of natural heritage features and functions regardless of whether Official Plan mapping has captured them. As natural systems are not static, ongoing revisions and additions to the elements identified may be required so that the system is comprehensively reflected. Advances in science and technology and our understanding of ecosystem functional relationships may also lead to adjustments in the delineation of natural heritage systems. This approach is entirely consistent with other elements of development and land use policy that are not captured in mapping and designation but are instead governed only by policy. Municipalities should develop provisions for non-identified features in close consultation with affected landowners and community stakeholders. This provides the municipality an additional opportunity to engage constituents in the planning process and to ensure public support for the natural heritage system.



Ron Erwin

Enjoying a paddle and the birdlife

Lydia Dotto



Great blue heron

### Best Practice: Town of Georgina

Any property containing a significant natural feature, function or attribute not identified in the Greenlands System, that is identified through subsequent study, will be subject to the Guiding Principles and Objectives of this Plan and to the applicable requirements in Sections 3.6 [Environmental Protection Areas] and 6.3.4 [Environmental Impact Statements].<sup>57</sup>

*Analysis:* This provision ensures that significant natural features, functions and attributes identified through studies that postdate the Official Plan will be subject to the municipality's guiding principles, objectives and governing policies. It also ensures that matters important to the municipality that may not have been captured in a single mapping exercise are treated equally to those previously identified.



### Best Practice: Township of Central Frontenac

The above list of Natural Heritage Features and Areas is not intended to be comprehensive. Additional features may be added to the inventory from sources such as a naturalist club, conservation authority or other agency, or by Council where the basis of the information is adequate to determine the nature and importance of the feature. Such information



may be incorporated as part of a regular update of this Plan or by a specific amendment. Where a known feature is not identified on the Land Use Schedules to this Plan, this may not preclude the requirement for an impact assessment in the review of a Planning application.<sup>58</sup>

*Analysis:* This policy recognizes that not all natural features or areas may have been identified, and it provides for plan updates and amendments to include additions. It allows for a wide range of potential input from community stakeholders and agencies to correct the inventory and mapping of features. Importantly, even where a feature is not identified in the Official Plan, the requirement for a study may still apply without the need for an amendment to incorporate the feature first.



Georgina

Bill Barber

### Best Practice: City of Vaughan



That the policy text prevails over the mapping shown on Schedule 2 in determining the Natural Heritage Network. Identification of elements comprising the Natural Heritage Network is an ongoing process and as such the Natural Heritage Network identified on Schedule 2 is based on the best information available. Schedule 2 may not identify all the natural heritage features in Vaughan. The precise limits of mapped natural heritage features, and any additions to the mapped network, will be determined through appropriate study undertaken in consultation with the Toronto and Region Conservation Authority and the Province. This may occur on a site-by-site basis through the development process or through studies carried out by the City, Region, Toronto and Region Conservation Authority or other government agencies.<sup>59</sup>

*Analysis:* This policy recognizes that mapping is not the only decision-making tool with regard to natural heritage system planning and that compliance with planning policy takes precedence. It also provides for correction to boundaries of natural heritage features through comprehensive or site-by-site studies. In some instances, natural heritage components missed in mapping may be afforded appropriate protection. In other instances, lands inappropriately identified as part of the natural heritage system may be removed from the system and become available for other appropriate land uses and activities.

### Best Practice: Clearview Township

The Township may utilize additional resources to identify natural heritage features (e.g. LANDSAT mapping of significant woodlands, endangered and threatened species mapping, subwatershed studies, proponents studies etc.) to identify the presence of natural heritage features on a site proposed for development, whether or not such features have been identified either in this Plan or in the County Official Plan. In accordance with the Provincial Policy Statement, the Township may apply the natural heritage protection policies of this Plan to such identified features.<sup>60</sup>



It is the intent of this Plan that the boundaries of the Greenland-Wetland Areas and Greenland-Natural Heritage Areas on Schedules A through A14 be used as guide in preparing implementing zoning criteria, and that the extent of the environmental buffers, pursuant to Section 4.1.2.6, be established in the Zoning By-law in consultation with the responsible approval authority(s). In the event that more detailed mapping becomes available, it shall take precedence in the consideration of the development application, and Council may amend the Official Plan and/or Zoning By-law to reflect the improved mapping or require an applicant to do so.<sup>61</sup>

*Analysis:* This policy clearly establishes that, in accordance with the PPS, natural heritage protection policies can be applied to newly identified features. The policy also clearly establishes that more detailed mapping will take precedence in the consideration of any development application and shall be incorporated in both



Monarch butterfly

DeFosiers



*Jefferson salamander*

Ryan Vince

the Official Plan and Zoning By-Law, either by the municipality or the applicant as part of the application review process. This policy is similar to other policies incorporated in the Official Plan, as well as other Official Plans, regarding the interpretation of mapping delineations for a wide variety of land uses. Ultimately, land use decisions are not to be based on the rigidity of potentially inaccurate mapping, but on the intent of the full extent of all policies of the Official Plan, including natural heritage policies.

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**3.1.5 Principle: Policy should direct that permitted uses take into account the impact on the natural heritage system, including ecological functions, and should incorporate prohibitions on development and site alteration within the natural heritage system.**

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*Rationale:* Natural heritage system protection can serve many social, economic and ecological objectives. While the PPS prohibits development and site alteration within certain features, it does not prohibit development within the entire system. Instead, it sets out minimum standards, leaving municipalities the authority to establish more restrictive policies to realize local goals and objectives.<sup>62</sup>

### Best Practice: York Region

It is the policy of Council: ... That development and site alteration be prohibited within the Regional Greenlands System and that development and site alteration applications within 120 metres of the Regional Greenlands System shall be accompanied by an environmental impact study. The requirement for, content and scope of the study will be determined through the pre-consultation meeting and a terms of reference shall be submitted to the approval authority early in the application process. The environmental impact study shall also address any requirements of the local municipality. Within the Oak Ridges Moraine, the Greenbelt and the Lake Simcoe watershed, environmental impact studies shall meet the requirements of those Plans.<sup>63</sup>



*Analysis:* This policy clearly prohibits development and site alteration within the natural heritage system and requires the preparation of an environmental impact study for any development on adjacent lands.

#### 3.1.6 Principle: Policy should require the implementation of natural heritage system policies in zoning bylaws and subsequent amendments, as well as in other municipal bylaws.

*Rationale:* Well-crafted zoning bylaws are essential to implementing the policies of an Official Plan and provide the regulatory protection for the municipal natural heritage system. Zoning bylaws, through the establishment of zones, permitted uses, and general and specific provisions, regulate and control land uses and how development occurs on a site. The Official Plan provides a basis for setting out clear authority for bylaws to implement natural heritage planning policy, such as site plan control bylaws, tree management bylaws, and bylaws allowing municipalities to enter into co-operative agreements in managing and acquiring natural heritage lands.



### Best Practice: Halton Region

It is the policy of the Region to: ... Require that the recommendations of an Environmental Impact Assessment, including the placement of *lot* lines and structures, carried out under Section 118(3) and endorsed by the *Region* be implemented through official plan amendments, zoning by-laws, site plan control, conditions of planning approval or regulations by the appropriate authority.<sup>64</sup>

*Analysis:* This policy recognizes that implementation of Official Plan policy should extend beyond the zoning bylaw to include other tools such as site plan control, conditions of approval, and other regulations by an appropriate authority. The policy also speaks to “lot lines,” indicating that land division processes should be subject to requirements to protect natural heritage features and functions.



Halton

Robbie V.

### Best Practice: Clearview Township



It is the intent of this Plan that the boundaries of the Greenland-Wetland Areas and Greenland-Natural Heritage Areas on Schedules A through A14 be used as guide in preparing implementing zoning criteria, and that the extent of the environmental buffers, pursuant to Section 4.1.2.6, be established in the Zoning By-law in consultation with the responsible approval authority(s).<sup>65</sup>



... All areas designated Greenland on Schedule 'A' may be designated by by-law as site plan control areas. Policies concerning site plan control in Section 8.5 of this Official Plan, shall apply.<sup>66</sup>

*Analysis:* This policy specifically recognizes the need to incorporate environmental buffers in zoning in addition to zoning natural heritage features. The policy also indicates that site plan control can be used to protect natural heritage features and functions.

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### **3.1.7 Principle: Policy should establish provisions to grow and enhance the secured and environmentally managed portion of the natural heritage system (e.g., through conservation easements, stewardship agreements or acquisitions).**

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*Rationale:* In many parts of the province, especially the heavily developed landscape of southern Ontario, the elements of the natural heritage network that are publicly owned and managed are not sufficient to protect biodiversity or sustain ecological functions over the long term. It is therefore important for municipalities to have a mandate to expand their natural heritage systems as opportunities arise. The tools available to acquire lands include outright purchase, donations, conservation easements, land exchanges and long-term leases. Additionally, municipalities can achieve long-term protection objectives by establishing stewardship agreements with non-government agencies and partners, as well as private landowners. While the lands may remain privately owned, agreements can provide for the protection of features and functions.

#### **Best Practice: Halton Region**

Obtain, or encourage the Local Municipalities, Conservation Authorities and other public agencies to obtain, through the development approval process and as permitted by legislation, parts of the Regional Natural Heritage System. ...



Promote the concept and functions of the Regional Natural Heritage System and encourage landowners and local residents to participate in its identification, protection, enhancement, and maintenance. ...

Promote, in conjunction with other public agencies and through stewardship programs, the donation of privately owned lands in the Regional Natural Heritage System to public agencies or charitable organizations, or the transfer of the protection of the ecological functions and features on such lands to a public agency or charitable organization through a conservation easement agreement.<sup>67</sup>

*Analysis:* These policies express the intent to work with multiple agencies, landowners and residents to expand the natural heritage system. Tools identified include: acquisition, private land stewardship, land donations and conservation easements.

### Best Practice: Region of Waterloo



7.I.8 The Region encourages landowners to maintain, enhance or, wherever feasible, restore environmental features on their property through measures including conservation easements, buffers and wherever appropriate, fencing.

7.I.9 The Region, in collaboration with the Province, Area Municipalities, the Grand River Conservation Authority and other stakeholders, will provide advice and information on other land stewardship programs to landowners wishing to exercise good stewardship of lands within the Greenlands Network.

7.I.10 Area Municipalities are encouraged to secure ownership of elements of the Greenlands Network and to prepare management plans for these lands to maintain, enhance or, wherever feasible, restore their ecological functions.

7.I.11 The Region will consider the establishment of a Land Trust to hold, purchase and manage elements of the Greenlands Network, or to hold conservation easements. ...

7.I.15 The Region may create and administer a Greenlands Network Stewardship financial incentives program to assist private landowners with stewardship initiatives and provide funds for the public acquisition of lands within the Greenlands Network.<sup>68</sup>

*Analysis:* This policy identifies acquisition, landowner stewardship and conservation easements as tools for building and enhancing the natural heritage system. The policy also provides for the potential establishment of a financial incentive program for landowner stewardship and acquisition of lands, which links resources with policy objectives. Incentives can be an effective tool in working with the agricultural community, aggregate developers and other rural landowners.



Doc Searles

Lambton

### Best Practice: County of Lambton

The County supports a wide variety of stewardship options to assist and encourage landowners to manage their natural resources. These programs should be established in partnership with land owners, to meet their needs. These programs can include land owner contacts, conservation easements, land trusts, tax incentives and rights of way to preserve, enhance and access natural corridors.<sup>69</sup>



*Analysis:* This policy sets out several methods to encourage private landowners to maintain natural heritage. The objective of preserving and enhancing natural corridors is specifically mentioned, implicitly supporting a systems-based approach.

### Best Practice: City of Waterloo



The City will work with other levels of government, the Grand River Conservation Authority, and the community to support education, outreach, and landowner stewardship programs.<sup>70</sup>

*Analysis:* This policy recognizes the need to work with all levels of government. It also recognizes that public education, outreach and stewardship are important components of securing the long-term health of natural heritage systems.



Ontario Nature's Sauble Dunes Nature Reserve

Noah Cole

#### 3.1.8 Principle: Policy should require monitoring of the ecological health of the natural heritage system.

*Rationale:* Monitoring serves to determine the ongoing health of the natural heritage system and understand the effectiveness of policy and implementation in achieving Official Plan objectives. It improves a municipality's understanding of the system's response to the impacts of development and other stressors (e.g., climate change, pollution). It also provides a basis for understanding improvements or adjustments needed in avoidance and mitigation techniques. A monitoring plan sets the direction for ongoing assessment including, for example, objectives, scope and approaches, as well as appropriate indicators and metrics for evaluation. Ideally, the policy directs municipal staff to identify monitoring indicators and a process for reporting to municipal council.

### Best Practice: City of Guelph

Objectives: ... n) To support the ongoing monitoring and management of the City's Natural Heritage System to ensure its long-term sustainability and resilience in relation to the impacts and stresses associated with being in an urban context, as well as other factors, such as climate change.<sup>71</sup>

*Analysis:* This policy objective acknowledges the connection between the continued investment in monitoring and long-term sustainability. Of note is the reference to the impacts of climate change, which has the potential to significantly alter the health of human, natural and hydrological systems.



### Best Practice: City of Guelph

1. A City-wide environmental monitoring program will be developed and implemented to assess the effectiveness of the policies, decisions and programs in meeting the objectives of the Natural Heritage System and the Urban Forest.
2. Opportunities for collaborating with the GRCA and the OMNR will be incorporated into the environmental monitoring program (e.g. fisheries, threatened *species*).
3. Short-term, site-specific monitoring may be required as a condition of the planning approval process and the results will be integrated into the City-wide monitoring program, where applicable.<sup>72</sup>

*Analysis:* This policy establishes the purpose and scope of monitoring, linking it to the achievement of Official Plan objectives. It recognizes that monitoring resulting from specific planning approvals can be integrated into municipal policy, and it recognizes the opportunity to collaborate with other agencies in ensuring the continued effectiveness of policies and approaches.



**3.1.9 Principle: Policy should enable biodiversity offsetting (i.e., compensatory mitigation) on a net gain basis, but only after avoidance and mitigation have been fully addressed, and only if: 1) the impacted biodiversity values have been explicitly measured, 2) the restoration of these values within a reasonable timeframe is demonstrably feasible, and 3) uncertainties and risks have been fully accounted for in the loss-gain calculation (i.e., replacement ratio).<sup>73</sup>**

*Rationale:* Biodiversity offsetting – or compensatory mitigation – entails “compensating for losses of biodiversity at an impact site by generating ecologically equivalent gains elsewhere.”<sup>74</sup>

Biodiversity offset programs are proliferating around the world and, if carefully implemented, offer an opportunity to engage development proponents in providing solutions for biodiversity conservation. Currently, in Ontario, it is one of the tools in fish habitat management and in the implementation of Ontario’s Endangered Species Act, 2007.

Nevertheless, in light of serious concerns about the actual or potential benefits of offsetting for biodiversity, policy needs to set a precautionary framework for implementation. Given ongoing biodiversity decline locally, provincially, nationally and globally, and given the uncertainties and risks involved, policy should allow offsetting on a “net gain” basis only. Also, policy should permit offsetting only where avoidance and mitigation are not feasible, where tried-and-true conservation techniques are available to achieve the offset, and where “additionality” (i.e., a conservation gain) is ensured. To this end, appropriate metrics are needed. Policy should require development proponents to clearly demonstrate the ecological equivalence of losses and gains, including identifying, measuring and monitoring the values to be offset.<sup>75</sup>



Ken Newcombe

Barn swallow

Finally, and most importantly, policy should set clear limits to situations where offsetting would be deemed acceptable. This would exclude situations involving irreplaceable or highly vulnerable species or ecosystems. As stated in Principle 2 of the Business and Biodiversity Offsets Programme: “There are limits to what can be offset: there are situations where residual impacts cannot be fully compensated for by a biodiversity offset because of the irreplaceability or vulnerability of the biodiversity affected.”<sup>76</sup>

### Best Practice: Clearview Township

If it is determined, through the EIS and natural heritage evaluation, that development can proceed, the proponent shall be required to prepare a protection and mitigation plan. Where appropriate, site remediation plans may also be required focusing on principles of site naturalization. Such plans and analysis shall be undertaken by a qualified professional acceptable to the Township and/or other responsible approval authority, and shall identify: ... The potential to restore or enhance environmental features and functions on a site or, where acceptable to the municipality and other approval agencies, the potential to compensate for unavoidable environmental impacts (this latter option will be applicable only in restricted circumstances and shall be based on a significant net gain approach). ... <sup>77</sup>



Sarah Hedges

Ontario Nature tree planting event in Mississauga

Although compensation may be considered by the municipality and other approval authorities, it is not the preferred option and may not be an acceptable approach. The acceptability and desirability of compensation as a technique shall be determined solely by the municipality and other approval authorities. The applicant, if proposing this approach, shall inform the municipality during pre-consultation.<sup>78</sup>

*Analysis:* The policy sets a high standard for compensation, based on significant net gain. It also sets limits to compensation, which is to be allowed “only in restricted circumstances.” It explicitly states that compensation is not the preferred option and may not be acceptable. The power to permit or deny compensation as part of the protection and mitigation plan resides with the municipality and other approval authorities.

### Best Practice: Town of Ajax



An Environmental Impact Study shall: ... Explain recommended actions to be taken by the proponent to avoid, or if not avoidable, reduce potential adverse effects, negative impacts, and cumulative impacts to the fullest extent possible, including any necessary compensation or restoration works acceptable to the Town, to achieve the environmental principles, goals and policies of this Plan[.]<sup>79</sup>

*Analysis:* The policy establishes avoidance as the first step for dealing with potential impacts. It then looks to ensure that proponents reduce impacts, including through compensation, and explicitly includes the consideration of cumulative impacts. While the standard for compensation is not net benefit, there is a clear link to the achievement of the plan’s environmental principles, goals and policies. In one instance, this provision led to the planting of an extensive Vegetative Protection Zone and other runoff/infiltration measures where a portion of a development had removed the edge of a woodlot.



### 3.1.10 Principle: Policy should provide for the involvement of the public and non-municipal agencies in the identification of natural heritage features and functions and in monitoring activities.

*Rationale:* Public involvement in identifying, protecting and monitoring elements of the natural heritage system benefits both the community and the system. Ensuring that landowners, residents, businesses and other agencies are meaningfully involved provides opportunities for promoting broader awareness and support for natural heritage protection.<sup>80</sup> It also capitalizes on the availability of broader resources beyond already constrained municipal budgets.

#### Best Practice: Halton Region

It is the policy of the Region to: ...Promote the concept and functions of the Regional Natural Heritage System and encourage landowners and *local* residents to participate in its identification, protection, enhancement, and maintenance.<sup>81</sup>

*Analysis:* This policy encourages the involvement of landowners and residents in identifying, protecting and stewarding the natural heritage system.



#### Best Practice: City of London

Where natural heritage areas are owned by the City, the City will encourage community groups and individuals to take an active role in their protection, rehabilitation and enhancement. The City may develop programs to facilitate community involvement in the protection and rehabilitation of these areas.<sup>82</sup>

*Analysis:* This policy provides strong direction for community involvement in protecting, rehabilitating and enhancing natural heritage.





### Best Practice: City of Hamilton

The City shall continue to gather data on natural areas through its partnerships with local agencies and organizations to conduct periodic natural area inventories. This data shall be used to monitor the condition and health of natural areas and the wildlife and plants that inhabit them.<sup>83</sup>

*Analysis:* This policy establishes the city's clear commitment to gathering data on the health of natural areas and wildlife in partnership with local agencies and organizations.



Ron Erwin

### Best Practice: Clearview Township



The Township of Clearview in consultation with the Nottawasaga Valley Conservation Authority and other agencies and organizations, shall encourage the establishment of public or private environmental monitoring programs in order to measure the effectiveness of the environmental policies of this Official Plan. If deemed necessary, the Plan shall be appropriately updated as per Section 1.6.<sup>84</sup>

*Analysis:* This policy encourages the use of both public and private monitoring programs to measure the effectiveness of environmental policies in the Official Plan. It also directly identifies monitoring as a basis or even a trigger for updating the Official Plan.

Carl Hiebert &amp; Grand River Conservation Authority



Laurel Creek, Waterloo

## 3.2 Integration of Natural Heritage Systems Planning

### 3.2.1 Principle: Policy should ensure the integration of natural heritage systems planning at multiple levels: regional, watershed, subwatershed and/or secondary plan level.

*Rationale:* Scale is an important consideration in natural heritage systems planning and in land use decision-making. The system should include features that are considered significant at a variety of scales (e.g., provincial, regional, watershed, local). Policy should support field verification of the features identified, as well as progressive refinement of the features at various stages in the development approval process. As natural heritage features and linkages are often connected across municipal boundaries, watersheds can serve as an ecologically meaningful scale at which to identify, protect, manage and monitor important elements of natural heritage systems.

#### Best Practice: Region of Waterloo

Use watershed studies, community plans and development applications as opportunities not merely to maintain, but also to enhance and restore the Greenlands Network.<sup>85</sup>

The Region recognizes the watershed as the regionally ecologically meaningful scale for planning and, in



collaboration with the Province, Area Municipalities and the Grand River Conservation Authority, will undertake watershed studies both to minimize adverse environmental impacts, including cross-jurisdictional and cross-watershed impacts, and to maintain, enhance or, wherever feasible, restore the Greenlands Network.<sup>86</sup>

*Analysis:* This policy identifies opportunities to improve the natural heritage system at various scales within the land-use planning and decision-making process. It provides strong direction with respect to watershed-based planning by supporting cross-jurisdictional analysis, action and collaboration to address adverse impacts and improve the natural heritage system.

### Best Practice: City of Hamilton



The City shall encourage the connection of Core Areas within the municipality and adjacent to its municipal boundaries through the identification of Linkages in Environmental Impact Statements, Secondary Plans, watershed plans, and other studies.<sup>87</sup>

*Analysis:* This policy is notable for its explicit emphasis on natural linkages within and across municipal boundaries. It also identifies specific opportunities for implementation at a variety of scales and for a variety of natural heritage features.

### Best Practice: Simcoe County



Watershed plans developed through an official plan amendment process shall be completed and implemented in consultation with local municipalities and the conservation authorities, including water budgets and water conservation plans to meet the requirements of the Oak Ridges Moraine Conservation Plan, in particular Sections 24 and 25. Development approvals shall be considered within the context of these plans.<sup>88</sup>

*Analysis:* This strongly worded policy (“shall”) requires that development approvals be considered from a watershed perspective, as well as a regional perspective.

### Best Practice: City of Guelph

The City will promote environmentally sustainable development by ... [c]ontinuing to move towards planning policies that are based on the principles of watershed planning, ecological systems planning and natural heritage systems planning, taking into account both landscape and ecosystem values. ...<sup>89</sup>

The City will use watershed/subwatershed planning as the basis for environmental and land use planning in the Municipality. This form of planning will also serve as a *comprehensive environmental impact study* framework.<sup>90</sup>

*Analysis:* This commitment to systems-based planning recognizes that the watershed/subwatershed level is an appropriate scale for planning and for measuring environmental impacts associated with development proposals.



#### 3.2.2 Principle: Policy should acknowledge the importance of cross-jurisdictional communication and co-operation regarding natural heritage systems.

*Rationale:* Jurisdictional boundaries often impede the success and long-term benefits of systems-based conservation efforts.<sup>91</sup> Section 1.2.1 of the PPS directs municipalities to provide a coordinated, integrated and comprehensive approach to planning matters including the management of natural heritage, ecosystem and watershed issues. This is also outlined in Section 3.2.1 of the *Natural Heritage Reference Manual*.<sup>92</sup> As natural heritage systems extend across administrative planning boundaries, planning for these systems requires communication and co-operation across jurisdictions and should involve neighbouring municipalities and other relevant agencies, such as conservation authorities.

### Best Practice: City of Windsor



Council, in co-operation with the Town of LaSalle, Town of Tecumseh, the Essex Region Conservation Authority and other organizations, shall encourage regional extensions of the Greenway System as opportunities arise through the planning approval process or through other measures as may be appropriate.<sup>93</sup>

*Analysis:* Windsor commits to working with adjacent municipalities and other organizations to encourage regional extension of its Greenway System as opportunities arise, recognizing that the functionality of its system is dependent on regional co-operation.

### Best Practice: Simcoe County



To ensure that the Greenlands Designation complements and supports the natural heritage systems established in provincial plans and is linked with the natural heritage systems of adjacent jurisdictions, and to require local municipalities to identify and protect natural features and ecological functions that in turn complement and support the Greenlands.<sup>94</sup>



Wasaga Beach and Elmvale, Simcoe

Joe Mabel

*Analysis:* This strongly worded upper-tier policy objective aims to ensure interconnections across jurisdictions, in part by requiring lower-tier municipalities to identify natural heritage elements that will complement the broader network and by specific reference to provincial plans.



Ken Newcombe

Kerncliff Park, Burlington

### Best Practice: City of Burlington

The City will undertake to identify a connected Natural Heritage System and develop appropriate policies associated with its protection. The City's Natural Heritage System will conform with and be complementary to the Halton Region Greenlands system of designated lands, the Niagara Escarpment Plan and the Provincial Greenbelt Plan. The Natural Heritage System will include connections between existing natural heritage features. Where specific connections of natural heritage do not currently exist, the City will define areas for future improvement to the system.<sup>95</sup>



*Analysis:* This policy integrates natural heritage system planning across lower-tier, upper-tier and provincial plans. At the time of publication, Burlington is applying this policy as an enabling policy until there is an identified natural heritage system for the city. Meanwhile, the city uses the Halton Region system. The natural heritage system will be applied to both the rural and urban designated areas. The policy also stands out in terms of its emphasis on “connections” and, in particular, on identifying areas that need improvements to create linkages where they do not yet exist.

### Best Practice: Halton Region



Support the interconnection of Halton's Regional Natural Heritage System with those in the Greater Toronto and Hamilton Area and neighbouring municipalities.<sup>96</sup>

*Analysis:* This is a clear, concise expression of support for cross-jurisdictional co-operation at the upper-tier level.

### Best Practice: Region of Waterloo



Overall Goal – Work with the *Province*, Area Municipalities, the Grand River Conservation Authority and private landowners to maintain, enhance and restore a comprehensive Greenlands Network within the region.<sup>97</sup>

*Analysis:* The fact that this is expressed as an overall policy goal signals the importance of cross-jurisdictional co-operation.

This goal recognizes that effective natural heritage system planning involves multiple partners, including private landowners.

### Best Practice: City of Ottawa



Natural features, groundwater and surface water systems cross municipal boundaries. The City will undertake environmental studies in partnership with the Conservation Authorities and neighbouring municipalities, recognizing that the municipalities share the same natural systems, and impacts on those systems. Arising from their historic and continuing use and knowledge of the rivers within the city, the Algonquins of Ontario have a fundamental interest in matters relating to the protection and utilization of historic waterways (e.g. Ottawa River, Rideau River, Mississippi River, Jock River, and Carp River) throughout the City of Ottawa. Hence, the City will engage the Algonquins in discussions concerning the preparation of environmental studies affecting natural features, groundwater and surface water associated with these waterways.<sup>98</sup>



*Analysis:* Ottawa expressly recognizes not only the need for partnerships with conservation authorities and neighbouring municipalities, but also the need to work in meaningful consultation and partnership with First Nations.

### 3.2.3 Principle: Policy should recognize the relationship and synergies between natural heritage systems and the surrounding environment, including agricultural lands, urban areas and resource extraction areas.

*Rationale:* While designated boundaries define natural heritage systems and features, their functions extend into adjacent areas. Interactions among plants, animals and other ecological components occur continuously with surrounding lands. Promoting environmentally compatible agricultural and extractive practices and environmentally based urban design that consider the relationship between the natural heritage system and other uses will enhance and complement measures to protect natural systems and functions.

#### Best Practice: Halton Region

Ensure that the Local Municipalities will enhance, through the development process and where appropriate, the function of the Regional Natural Heritage System within the Urban Area by locating local open space adjacent to or near the Regional Natural Heritage System.<sup>99</sup>

*Analysis:* This policy encourages lower-tier municipalities to locate open space adjacent to or near the regional system. This enhances the protection and function of both.



Sorin Nechita

Crawford Lake, Halton



### Best Practice: City of London

It is intended that the development and use of natural heritage areas, areas containing natural or human generated hazards, and aggregate, mineral and petroleum resource areas, shall be directed towards the following objectives: ...

iv) Enhance the contribution of the Natural Heritage System to urban form and community design.<sup>100</sup>

*Analysis:* This policy specifically acknowledges that the natural heritage system contributes to and has a significant role in urban form and community design.



ALUS

### Best Practice: County of Lambton



The County, in co-operation with local municipalities, may utilize site-specific techniques to maximize the protection and rehabilitation of the Natural Heritage System when development proposals or public works are considered. Such techniques may include, but are not limited to, increases in density of development, revision of current development standards or adoption of alternative development standards, reconfiguration of uses, shared facilities, and public/private sector agreements to facilitate protection or rehabilitation.<sup>101</sup>

*Analysis:* This policy recognizes that the design of development proposals including public works, can be adjusted to accommodate natural heritage systems. It allows the efficient use of resources to benefit the natural and built components of communities.

### Best Practice: City of Ottawa

Pending completion of a Forest Strategy, the City will maintain a target for forest cover for the entire city of 30 per cent. The City will increase forest cover in urban and rural areas through the planning and development review process by:

- a. Identifying and protecting environmental areas designated in the Plan, including provisions for environmental assessments for adjacent lands;
- b. Emphasizing tree preservation and planting in the requirements for private development and public works, including road corridors, parks and municipal buildings;
- c. Developing guidelines for tree preservation and planting in the development review process, including a policy on compensation for loss of forest as a result of development. This policy, to be developed in consultation with the development



Brendan Toews

Tapping maple trees

industry and the community, will consider various forms of compensation, including planting on other sites owned by the applicant or the City.<sup>102</sup>

*Analysis:* This policy sets a clear target for the maintenance of forest cover, to be integrated with the development review process. Guidelines for tree preservation will include a policy on compensation for forest loss.

### 3.2.4 Principle: Policy should recognize the socio-economic, cultural and ecological values associated with natural heritage features and the services that the natural heritage system provides to the community.

*Rationale:* It is important to explicitly value natural heritage systems for a wide variety of reasons and to acknowledge that they provide significant benefit to communities in terms of ecosystem services, as well as public health, recreational, social and economic opportunities. Cultivating appreciation of these benefits will help to create an engaged constituency committed to the long-term sustainability of the natural heritage system.



Casey Lessard

Sunnivue Farm, a community land-trust

### Best Practice: Simcoe County

To provide opportunities for natural heritage enjoyment and appreciation and for recreational and tourism uses in keeping with the Greenlands objectives, that foster healthy and liveable communities and enhance the sense of place and quality of life that characterize the *County*.<sup>103</sup>



*Analysis:* This policy recognizes the broader value of natural heritage in fostering healthy, liveable communities and enhancing quality of life. It integrates the natural heritage policies with other community objectives and goals.



ALUS wetland, Norfolk

### 3.3 Requirement for Environmental Impact Studies

#### 3.3.1 Principle: Policy should require proponents to conduct environmental impact studies and demonstrate that through avoidance and mitigation measures, there will be no negative impacts on the natural heritage system.

*Rationale:* Environmental impact studies (EIS) are intended to protect natural heritage features and functions by demonstrating that development will not have potential adverse impacts. Such studies are also important in identifying, through site-specific investigation, the full and accurate presence and extent of natural heritage features and functions. To ensure that there is no negative impact on the natural heritage system and to arrive at a workable planning recommendation, environmental impact study requirements should be flexible in relation to the scale of the proposal and its potential impacts, and study requirements should be determined in consultation with the relevant approval agencies in each circumstance.



Joe Mabel

Clearview Township

### Best Practice: Clearview Township

Where development is proposed in natural heritage features, or where development may impact the functions of natural heritage features, the proponent shall be required to prepare, as part of an EIS, an evaluation of the feature's composition and function to assess the significance of the area and its suitability for development. If it is determined, through the EIS and natural heritage evaluation, that development can proceed, the proponent shall be required to prepare a protection and mitigation plan. Where appropriate, site remediation plans may also be required focusing on principles of site naturalization. ... The Township of Clearview may require the entering into of agreements and associated securities to ensure the implementation of the preservation techniques described in the evaluation study, protection and preservation plan, remediation plan, and/or EIS. ...<sup>104</sup>

The primary objective of an EIS is first, to identify and assess the potential impacts of development on the natural features and functions of the area, and second, where development is concluded to be appropriate, to ensure its integration with the natural system through sensitive design. ... Only where it is established through an EIS, approved by the Township of Clearview and/or other responsible approval authority(s), that development can occur in accordance with sound management practices, the permitted use may proceed on the basis of the recommendations of the EIS, the requirements of the municipality, and the other pertinent policies of this Official Plan.<sup>105</sup>

*Analysis:* This policy establishes the requirement to undertake an environmental impact study, including an analysis of the features' functions and significance and the appropriateness of development. It requires the preparation of protection and mitigation plans, and it establishes the ability for the municipality to require agreements and securities to ensure that the recommendations of an environmental impact study are properly carried out. Only when the municipality approves the environmental impact study can development proceed.

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**3.3.2 Principle: Policy should clearly set out the requirements for impact assessments, including required content and analysis.**

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*Rationale:* Environmental impact assessments are an essential component of the planning and development review process. The studies must determine the potential impacts of a development proposal; provide direction on whether or not development should occur; provide mitigation recommendations; and set out requirements for monitoring. Policy should establish the minimum requirements for content and the appropriate levels of background research and impact assessment. Detailed requirements provide strong direction to applicants who are submitting information in support of development proposals. Guidance on requirements should also provide for a scaled approach suited to the nature of the development and its potential for impacts.



Ontario Nature's Altberg Wildlife Sanctuary Nature Reserve



### Best Practice: City of Kingston

The scope and scale of any environmental impact assessment required by this Plan must be determined in consultation between the City, the Cataraqui Region Conservation Authority or other appropriate agency or Ministry. For areas having a particular value for their natural heritage feature or function, the Conservation Authority may recommend that the distances noted in Section 6.1.12 may be increased in order to ensure that the environmental impact assessment adequately evaluates the impacts of a proposed development on the natural heritage system. ... <sup>106</sup>

The “Guidelines for Environmental Impact Assessment” as amended from time to time by the Conservation Authority are attached to this Plan as Appendix “A”, and will guide the preparation of environmental impact assessments. In general, an environmental impact assessment must:

- a. be undertaken by a qualified person with current knowledge in the field of biology, ecology, hydrology or other specialty as required by the specific circumstances;
- b. use appropriately scaled maps to show topography, existing uses and buildings, and all existing natural heritage features and areas, whether or not they have been deemed significant for the subject site and areas adjacent to it;
- c. use appropriately scaled maps with topographic contours to show proposed uses, proposed site alteration and/or development;
- d. provide a thorough inventory of flora and fauna and related habitat communities to be completed over a seasonal time span that is appropriate;
- e. provide relevant information on geology (significant landforms), hydrology or hydrogeology;
- f. summarize the best information available collected from other agency or scientific sources and discuss



Wen Zhang



- the natural heritage features and areas, and the associated ecological functions;
- g. review the ecological functions of the natural heritage features and areas identified including habitat needs and the contribution of the site to the natural heritage system;
  - h. assess the cumulative impacts of the development proposal and any other existing or known future proposals in the vicinity; and,
  - i. assess the impact of the proposed development or site alteration on the various attributes of the natural heritage system during and after construction; and,
    - recommend measures designed to ensure there is no disturbance of the feature, and that will result in no negative impact;
    - review alternative options and identify any monitoring requirements; and,
    - provide a professional conclusion as to whether the proposal is acceptable, considering potential impacts to natural heritage features and areas, related functions, and any proposed measures needed to protect the natural heritage feature(s) or area(s) affected, consistent with the Provincial Policy Statement and the policies of this Plan.<sup>107</sup>

*Analysis:* This policy sets out detailed requirements for an environmental impact study while also allowing the city to adjust the requirements, as recommended by the relevant conservation authority. Thus, while providing clear direction on content, the policy also provides for flexibility. A systems-based assessment is explicitly required. The requirement to assess cumulative impacts, including those of other proposed activities, is also incorporated as an important consideration in developing effective mitigation and monitoring plans. The policy requires the proponent to consult with the municipality, the conservation authority and other appropriate agencies to determine the scope and scale of the assessment.



Kingston

Dennis Jarvis



### Best Practice: Niagara Region

An Environmental Impact Study shall include the following as outlined in the EIS Guidelines:

- a) A description of the existing environment including: an assessment of its setting in the broader landscape and the identification, analysis and evaluation of significant natural features and ecological functions, of significant surface and ground water features and hydrologic functions, and of the linkages among them; and
- b) A description of the proposed development;
- c) A description of measures to avoid or, if avoidance is not possible, to minimize or mitigate negative impacts on the Core Natural Heritage System, including impacts on significant natural features and ecological functions, and on significant surface and ground water features and hydrologic functions;
- d) An assessment, with respect to standards set out in the EIS Guidelines, of the significance of the cumulative net environmental impacts expected over the long term after these measures have been implemented; and
- e) Recommendations on the advisability of proceeding with the development as proposed or modified.

Where the EIS deals with development or site alteration on adjacent lands as specified in Table 7-1 it shall include an evaluation of the ecological functions of the adjacent lands and of expected impacts on those functions.

The Terms of Reference for an EIS shall be submitted for review to the Region, the appropriate local municipality and, where appropriate, the Conservation Authority prior to preparation of the study.<sup>108</sup>

*Analysis:* This policy requires a systems-based assessment that considers impacts on features, functions and linkages. It requires an assessment of cumulative impacts, as well as impacts on the ecological functions of adjacent lands.



Kiril Strax

Niagara

### Best Practice: City of Guelph

- b) The environmental impact study shall address:
- i. A description of and statement of the rationale for the development proposal and alternatives to the proposal;
  - ii. A description of the proposed development, including a location map showing proposed buildings, existing land uses and buildings, existing vegetation, fauna, site topography, drainage, hydrology, soils, hydrogeological conditions, habitat areas and other applicable matters;
  - iii. A description of adjacent land use and the existing regulations affecting the development proposal and adjacent lands;
  - iv. A description of all natural features and their ecological functions that might directly or indirectly be negatively impacted;
  - v. A description of the negative impacts that might reasonably be caused to the natural heritage feature and its associated ecological functions by the development proposal including a statement of the significance of the natural heritage feature;
  - vi. A description of alternate forms that the development proposal could take including an assessment of the advantages and disadvantages of each;
  - vii. A description of the actions necessary to prevent, change, mitigate or remedy any expected negative impacts upon natural heritage features;
  - viii. A description of alternative methods of protecting the ecological functions of the areas affected;
  - ix. Where reasonable and appropriate measures to provide for the enhancement of natural heritage features and their ecological functions;



- x. A description of any short/long term monitoring techniques/devices that will be necessary to determine if negative impacts to the natural heritage features are occurring; this may also be used to trigger identified remediation measures; and
- xi. Any other information required by the City (including its Environmental Advisory Committee) or the Grand River Conservation Authority that is deemed necessary to evaluate the development proposal in relation to the particular natural heritage feature under investigation.<sup>109</sup>

*Analysis:* This policy incorporates a requirement to describe alternate forms of development and the advantages and disadvantages of each. It also includes a requirement to address the enhancement of natural features and ecological functions, as appropriate, and a requirement to describe short- and long-term monitoring techniques.

### Best Practice: Clearview Township



The following provides examples of the types of issues which may require consideration through the EIS process.

- The potential impacts of development on groundwater quantity and quality and recharge/discharge function.
- The potential impacts of development on surface water quality and quantity.
- The potential impacts of development on fish habitat.
- The potential impacts of development on vegetation, wildlife and wildlife habitat.
- The potential impacts of development on biodiversity of an area, corridors and connectivity.
- The potential impacts of noise and other disturbances on wildlife.
- The quality, quantity, distribution and water balance of storm water run-off.
- The potential impacts of grade alterations and topsoil removal.

- The potential constraints open or closed waste disposal sites and other potential sources of contamination may place on development.
- Methods of avoiding or mitigating the impact.
- Monitoring requirements.
- Any other issues deemed to warrant consideration by the Township of Clearview or other responsible approval authority. ... <sup>110</sup>

Subject to the further requirements of the Township and/or other responsible approval authority(s), an EIS shall include:

- A description of the physical features of the lands proposed to be developed, including buildings, structures, soils, vegetation, wildlife, habitat, topography, watercourses and other relevant features, together with a general description of the same physical features for lands adjacent to the proposed development site.
- A description of the development proposal including a detailed site plan.
- A description of the potential impacts of the proposed development on the site's natural heritage features and functions.
- A review of alternate development options and ultimate methods of avoiding or mitigating the impacts of development.
- An analysis of the opportunities for environmental enhancement, restoration ...
- The preparation of an implementation and monitoring plan. ...

Where development is proposed in natural heritage features, or where development may impact the functions of natural heritage features, the proponent shall be required to prepare, as part of an EIS, an evaluation of the feature's composition and function to assess the significance of the area and its suitability for development. If it is determined, through the EIS and natural heritage evaluation, that development can proceed, the proponent shall be required to prepare



*Minesing swamp, Simcoe*

Noah Cole

a protection and mitigation plan. Where appropriate, site remediation plans may also be required focusing on principles of site naturalization. Such plans and analysis shall be undertaken by a qualified professional acceptable to the Township and/or other responsible approval authority[.] ...<sup>111</sup>

*Analysis:* In addition to outlining the matters to be considered in an environmental impact study, the policy also sets out a requirement for the preparation of protection and mitigation plans, as well as site remediation plans. This requirement bridges the analysis and findings with planning decisions and instruments. The policy also mentions the potential involvement of authorities other than the township regarding the undertaking and approval of the study, providing for some flexibility.

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### 3.3.3 Principle: Policy should require the consideration of the role and importance of lands adjacent to natural heritage systems, an analysis of the impacts of development proposals, and the establishment of appropriate ecological buffers and setbacks.

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*Rationale:* In accordance with the PPS, development and site alteration are not permitted on lands adjacent to natural heritage features and areas except where evaluation has demonstrated that no negative impacts on the natural features or functions will occur.<sup>112</sup> The intent is to ensure that adjacent lands act as a buffer to protect natural heritage features and functions from impact. They help to sustain the ecological function and long-term viability of natural heritage systems.

The *Natural Heritage Reference Manual* provides a recommended distance from natural heritage features identified in the PPS to prevent potential negative impacts from a proposed development or site alteration. According to the manual: “If studies determine that development anywhere within the adjacent lands will have a negative impact on natural features and their functions, buffers identified to mitigate these impacts could include the entire adjacent lands.”<sup>113</sup> Municipal policy should set out additional requirements to address site-specific issues



Noah Cole

Red-tailed hawk in Port Rowan

and to ensure that buffers and setbacks are designed to prevent any adverse impacts on the natural heritage system. They could provide recommendations on the width and nature of buffers, for example.

### Best Practice: Elgin County

*Adjacent lands* are the lands contiguous to a natural heritage feature or area where it is likely that *development* or *site alteration* would have a *negative impact* on the feature or area. For the purposes of this Official Plan, *adjacent lands* are defined as all lands within the specified distance of the boundary of *natural heritage features and areas* as set out in the following Table.



NATURAL HERITAGE FEATURE	ADJACENT LANDS (metres)
Provincially Significant Wetlands	120
Significant woodlands	120
Significant wildlife habitat and wildlife core areas	120
Significant habitat of endangered species and threatened species	120
Provincially Significant Areas of Natural and Scientific Interest – Earth Science	50
Provincially Significant Areas of Natural and Scientific Interest – Life Science	120
Significant Valleylands	120
Fish Habitat	120

No *development* or *site alteration* shall be permitted on these *adjacent lands* unless the *ecological function* of the *adjacent lands* has been evaluated and it has been demonstrated, through an Environmental Impact Study (EIS), that there will be no *negative impact* on the natural features or their *ecological functions*.<sup>114</sup>



White-tailed deer

Lydia Dotto

*Analysis:* This policy requires proponents to evaluate potential impacts on both natural features and functions of the natural heritage system. It allows development on adjacent lands only if there will be no adverse impacts. The policy provides clear direction on what is to be considered adjacent lands.

### Best Practice: City of London



i) Ecological buffers serve to protect the ecological function and integrity of the Natural Heritage System. Ecological buffers will be required around, or adjacent to, and other components of the Natural Heritage System, based upon the recommendations of an approved Environmental Impact Study.

ii) The location, width, composition and use of ecological buffers necessary to protect natural heritage areas from the impacts of development on adjacent lands will be specified through application of the Council approved Guidelines for Determining Setbacks and Ecological buffers as part of a secondary plan and/or an environmental impact study.<sup>115</sup>

*Analysis:* This policy acknowledges the importance of buffers and requires that they be established to protect the natural heritage system from adverse impacts. It establishes that their design and use are to be based upon an environmental impact study and/or municipal guidelines.



## Best Practice: City of Waterloo

Buffers of Core Natural Features are to remain in a primarily natural state or be restored to a primarily naturalized state if disturbed through historical land use or approved works. Permitted uses within the buffers of Core Natural Features will be limited to low impact uses consistent with those permitted within Core Natural Features. In addition, portions of stormwater management facilities may be permitted where the Core Natural Feature can be enhanced, no other alternative location is feasible, low impact development measures are implemented to the extent feasible outside the buffer, root zones are not impacted, and the facility replicates or complements an existing function of the buffer lands. Impervious surfaces and grading will not be permitted, except for approved works associated with public trails and stormwater management that conform to detailed engineering and environmental analysis accepted by the City and the other public agencies having jurisdiction. Such works will only be permitted where there will be no adverse environmental impacts on the Core Natural Feature and the works within the buffer are minimized to the extent possible.<sup>116</sup>

*Analysis:* This policy acknowledges the importance of natural or naturalized buffers within urban areas. It allows only low-impact uses in the buffers, and these must be consistent with those allowed in the natural features themselves. The development of stormwater facilities is permitted only if there are no adverse impacts on the core natural features and if other specific criteria are satisfied. Adverse impacts of permitted activities in the buffer must be minimized.



Niagara Escarpment, Halton

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### 3.3.4 Principle: Policy should require that development proponents consult with municipal staff, environmental advisory committees and/or planning boards prior to submitting an application.

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*Rationale:* Requiring a development proponent to consult with planning authorities and other involved approval agencies early in the planning process will benefit all parties by ensuring submission of complete, accurate applications that comprehensively address multiple values. Consultation prior to submission will assist in identifying information gaps, outlining expectations and soliciting advice from various authorities. The Planning Act has identified pre-consultation as an important municipal tool, and a municipality can establish policies and bylaws to require such pre-consultation.

#### Best Practice: Region of Durham



Prior to the submission of any development application for which the Region is the approval authority, applicants shall pre-consult with the Region's Planning Department in accordance with the provisions of this Plan and the Region's Mandatory Pre-Consultation By-law. The pre-consultation process is intended to address the requirements for a complete application as specified in Schedule 'E' – Table 'E8' and other sections of the Official Plan and may require more than one pre-consultation meeting and involve other agencies and Regional departments. For clarification purposes, this policy is not intended to apply to an application for an area municipal official plan amendment regardless of whether it has been deemed to be non-exempt from Regional approval.<sup>117</sup>

*Analysis:* This policy establishes mandatory pre-consultation through the Official Plan and in accordance with the region's pre-consultation bylaw. It enables the involvement of other agencies and allows for environmental and other municipal considerations to be integrated into development review. It informs proponents of the intended content and expected analysis of the required studies and plans to be submitted in support of their application.

### Best Practice: Clearview Township

The issues to be addressed and the complexity of an EIS will vary with the scale and type of development and/or its distance from the resource area in question and shall be determined on a site by site basis in pre-consultation with the Township of Clearview and/or other responsible approval authority(s), prior to the EIS proceeding.<sup>118</sup>



*Analysis:* This policy recognizes that the issues to be addressed and the complexity of a required study may vary. It requires pre-consultation to determine the scope of the environmental impact study, and it also signals the potential involvement of other relevant agencies.

#### 3.3.5 Principle: Policy should provide for extended and meaningful consultation with stakeholders that may exceed requirements in the Planning Act, particularly where large-scale developments or developments with potential significant impacts are being considered.

*Rationale:* The Planning Act sets out minimum requirements for public consultation, which generally require only a single public meeting to be held regarding any particular development proposal. Municipal policy should build on the provincial minimum standard to better reflect community values and perspectives from the outset, through additional consultation opportunities. These may include additional meetings, extended review periods, extended or wider public access to applicant information, and other measures.



Paul Hamilton



Glenn Davy

### Best Practice: Region of Waterloo



Regional Council will maintain an Ecological and Environmental Advisory Committee to advise the Region in the review of development applications, policy proposals and other matters, in accordance with terms of reference adopted and periodically reviewed by Regional Council.<sup>119</sup>

*Analysis:* Through the involvement of a public advisory committee, the municipal council has the advantage of receiving advice not just from staff but also from an advisory group that has a particular interest in natural heritage matters. This is similar to the role of other advisory committees on such topics as heritage, agriculture and economic development.

### Best Practice: City of London

City Council may establish an environmental advisory committee, consisting of individuals appointed on the basis of their expertise, experience, academic qualification and/or availability, to provide expert technical advice to the City of London on environmental matters that are relevant to the formulation and implementation of the City's Official Plan. Detailed terms-of-reference, membership guidelines and operational requirements for the Committee will be determined by City Council, from time to time.<sup>120</sup>

*Analysis:* Through the involvement of an expert public advisory committee, the city receives additional advice from environmental experts with respect to the formulation and implementation of its Official Plan.



Denis Giles

London



# CONCLUSION

**T**he protection of southern and eastern Ontario’s natural heritage is vital to maintaining and enhancing a livable landscape in the region. As evidenced by the best practices presented in this guide, many municipalities across Ontario are developing the policies necessary to ensure that present and future generations will always be able to enjoy the province’s forests, rivers, lakes and wildlife, and the many benefits that they provide.

Ontario Nature hopes that the guiding principles and best practice examples provided will inform and inspire planners across Ontario who wish to improve municipal natural heritage policies. It is acknowledged, of course, that every municipality faces unique pressures and unique opportunities – there is no “one size fits all” when it comes to municipal policy. Nevertheless, the principles and examples should, at the very least, provide good reference points, given that the best practices span upper-, lower- and single-tier municipalities from Lambton County to Ottawa.

A robust natural heritage system with a strong associated policy framework sets the stage for the planning of healthy, resilient communities. In addition to the policy framework, municipalities must be committed to implementation. This means setting aside budgetary and other resources to allow for the identification, inventory, management, restoration and securement of core natural areas and connecting corridors.

Ultimately, the protection of natural heritage is essential to meeting the needs of Ontario’s expanding population and requires the co-operation of all sectors and interests. Municipal land use planning provides an ideal opportunity to integrate Greenway planning into urban design, agricultural management and other resource utilization activities, and to achieve multiple long-term benefits for all members of society.

*Nature Guardians Youth Camping  
Trip, Ontario Nature’s Altberg Wildlife  
Sanctuary Nature Reserve*

# APPENDIX

## Legislative and Policy Context for Land Use Planning in Southern and Eastern Ontario

There are many laws and policies directing land use planning in Ontario. Over the last 20 years, the province has begun to systematically address the impacts of growth and development on the landscape, including the loss of biodiversity and ecosystem function. Within southern and eastern Ontario, a suite of laws and policies guide municipal land use planning with respect to natural heritage. This includes geography-specific plans such as the Niagara Escarpment Plan, the Oak Ridges Moraine Conservation Plan, the Greenbelt Plan, the Growth Plan for the Greater Golden Horseshoe, and the Lake Simcoe Protection Plan. These plans provide an additional level of direction to that set out under the Planning Act and the PPS for municipal planning within these regions, as discussed below.

### Planning Act and Provincial Policy Statement

Land use planning in Ontario is governed by the Planning Act, which “describes how land uses may be controlled, and who may control them.”<sup>121</sup> The purposes of the act are:

- (a) to promote sustainable economic development in a healthy natural environment within the policy and by the means provided under this Act;
- (b) to provide for a land use planning system led by provincial policy;
- (c) to integrate matters of provincial interest in provincial and municipal planning decisions;
- (d) to provide for planning processes that are fair by making them open, accessible, timely and efficient;
- (e) to encourage co-operation and co-ordination among various interests;
- (f) to recognize the decision-making authority and accountability of municipal councils in planning.<sup>122</sup>

The act sets out provisions by which municipalities are empowered to control land uses and development, as well as requirements for municipal planning. It also lists provincial interests and requires all planning decisions to be consistent with provincial policy statements intended to address those interests.

The PPS provides specific guidance for municipalities regarding the preparation of Official Plans and other planning instruments (including bylaws). Section 2.1 of the PPS specifically addresses natural heritage:



**2.1.1** Natural features and areas shall be protected for the long term.

**2.1.2** 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.

**2.1.3** 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.

**2.1.4** Development and site alteration shall not be permitted in:

- a) significant wetlands in Ecoregions 5E, 6E and 7E; and
- b) significant coastal wetlands.

**2.1.5** Development and site alteration shall not be permitted in:

- a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
- b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- c) significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- d) significant wildlife habitat;
- e) significant areas of natural and scientific interest; and
- f) coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b) unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

**2.1.6** Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

**2.1.7** Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

**2.1.8** 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.

**2.1.9** Nothing in policy 2.1 is intended to limit the ability of agricultural uses to continue.

It is important to note that the PPS does not prevent municipalities from establishing policies that are more stringent, as long as those policies do not conflict with another matter of provincial interest. While the PPS sets minimum standards and requirements to address provincial interests, it is through the development of municipal Official Plans that local interests, values and priorities are addressed.

### **Niagara Escarpment Planning and Development Act and Niagara Escarpment Plan**

The purpose of the Niagara Escarpment Planning and Development Act is “to provide for the maintenance of the Niagara Escarpment and land in its vicinity substantially as a continuous natural environment, and to ensure only such development occurs as is compatible with that natural envi-

ronment.”<sup>123</sup> Under this act, the Niagara Escarpment Plan guides development and protects the Niagara Escarpment and surrounding lands through land use designations, development criteria, and park and open space policies. It is Canada’s “first large-scale environmental land use plan,”<sup>124</sup> overseen by the Niagara Escarpment Commission, an independent and impartial body that reviews and makes decisions on a wide range of land use issues affecting the plan area. In contrast to municipal planning, the commission is directed to plan for the Niagara Escarpment ecosystem, thus transcending municipal boundaries.

The plan area is included within the Greenbelt area under the Greenbelt Act, 2005, but nothing in the more recent law derogates from the provisions of the earlier Niagara Escarpment Planning and Development Act. In other words, the requirements of the Niagara Escarpment Plan continue to apply. Furthermore, where the policies of the Niagara Escarpment Plan are in effect, they prevail over any other local plans or zoning bylaws. They must be read in conjunction with all other applicable land use planning policies, regulations or standards.<sup>125</sup> The Niagara Escarpment Plan is to be reviewed in 2015, at the same time as the Greenbelt Plan.

### **Oak Ridges Moraine Conservation Act, 2001 and Oak Ridges Moraine Conservation Plan**

The Oak Ridges Moraine Conservation Plan, established under the Oak Ridges Moraine Conservation Act, 2001, guides land use and resource management in the Oak Ridges Moraine, a geological landform that covers an area of 160 kilometres, extending from the Niagara Escarpment in the west to the Trent River in the east. The objectives of the plan, as set out in legislation, are:

- (a) protecting the ecological and hydrological integrity of the Oak Ridges Moraine Area;
- (b) ensuring that only land and resource uses that maintain, improve or restore the ecological and hydrological functions of the Oak Ridges Moraine Area are permitted;
- (c) maintaining, improving or restoring all the elements that contribute to the ecological and hydrological functions of the Oak Ridges Moraine Area, including the quality and quantity of its water and its other resources;
- (d) ensuring that the Oak Ridges Moraine Area is maintained as a continuous natural landform and environment for the benefit of present and future generations;
- (e) providing for land and resource uses and development that are compatible with the other objectives of the Plan;
- (f) providing for continued development within existing urban settlement areas and recognizing existing rural settlements;
- (g) providing for a continuous recreational trail through the Oak Ridges Moraine Area that is accessible to all including persons with disabilities;
- (h) providing for other public recreational access to the Oak Ridges Moraine Area; and
- (i) any other prescribed objectives.<sup>126</sup>

Municipalities located within the moraine are responsible for implementing the plan and for considering the policies in the review of development applications. The plan takes precedence over municipal Official Plans and zoning bylaws. Natural core and linkage areas are a unique feature of this plan, designated with the intent of protecting sensitive natural heritage features and linkages by limiting land use activities. The plan explicitly recognizes the importance of connections between core areas and along river and stream systems through the protection of natural and open space linkages. Buffers and setbacks are also prescribed for key natural fea-

tures or hydrologically sensitive features, and the plan requires that these setbacks be met where development or site alteration activities are proposed.

The area is included within the Greenbelt area under the Greenbelt Act, 2005, but the requirements of the Oak Ridges Moraine Conservation Plan continue to apply. They must be read in conjunction with all other applicable land use planning policies, regulations or standards.<sup>127</sup> The Oak Ridges Moraine Conservation Plan is to be reviewed in 2015, at the same time as the Greenbelt Plan.

### **Greenbelt Act, 2005 and Greenbelt Plan**

The Greenbelt Plan, created under the Greenbelt Act, 2005, knits together the existing Niagara Escarpment and Oak Ridges Moraine plan areas and the protection they provide to natural heritage systems while establishing a Protected Countryside in the fast-growing Greater Golden Horseshoe region. The objectives of the plan, as set out in legislation, are:

- (a) to establish a network of countryside and open space areas which supports the Oak Ridges Moraine and the Niagara Escarpment;
- (b) to sustain the countryside, rural and small towns and contribute to the economic viability of farming communities;
- (c) to preserve agricultural land as a continuing commercial source of food and employment;
- (d) to recognize the critical importance of the agriculture sector to the regional economy;
- (e) to provide protection to the land base needed to maintain, restore and improve the ecological and hydrological functions of the Greenbelt Area;
- (f) to promote connections between lakes and the Oak Ridges Moraine and Niagara Escarpment;
- (g) to provide open space and recreational, tourism and cultural heritage opportunities to support the social needs of a rapidly expanding and increasingly urbanized population;
- (h) to promote linkages between ecosystems and provincial parks or public lands;
- (i) to control urbanization of the lands to which the Greenbelt Plan applies;
- (j) to ensure that the development of transportation and infrastructure proceeds in an environmentally sensitive manner;
- (k) to promote sustainable resource use; and
- (l) any other prescribed objectives.<sup>128</sup>

Greenbelt Plan policies are intended to enhance and extend the protection afforded by the Niagara Escarpment Plan and Oak Ridges Moraine Conservation Plan, and to improve linkages between plan areas and within the watersheds. (For further information, see pp. 14 of this guide.) Municipalities are required to bring their Official Plans into conformity with the Greenbelt Plan. The Greenbelt Plan prevails in the case of a conflict with municipal Official Plans, zoning bylaws and the PPS.<sup>129</sup>

### **Places to Grow Act, 2005 and Growth Plan for the Greater Golden Horseshoe**

The purposes of the Places to Grow Act, 2005 are:

- (a) to enable decisions about growth to be made in ways that sustain a robust economy, build strong communities and promote a healthy environment and a culture of conservation;

- (b) to promote a rational and balanced approach to decisions about growth that builds on community priorities, strengths and opportunities and makes efficient use of infrastructure;
- (c) to enable planning for growth in a manner that reflects a broad geographical perspective and is integrated across natural and municipal boundaries;
- (d) to ensure that a long-term vision and long-term goals guide decision-making about growth and provide for the co-ordination of growth policies among all levels of government.<sup>130</sup>

Under this legislation, the Growth Plan for the Greater Golden Horseshoe sets the direction for growth and development of the region to 2041. Natural heritage and resource protection are identified as priorities of the plan and important contributors to economic prosperity in the region. The plan encourages planning authorities to identify natural heritage features and areas that contribute to the connectedness and enhancement of natural systems. The plan identifies the Greenbelt, Oak Ridges Moraine and Niagara Escarpment as the key building blocks of the Greater Golden Horseshoe's natural system. This, along with the plans listed above, express the government's interests in regards to growth management.<sup>131</sup>

### **Official Plans**

Municipal Official Plans are fundamental land use plans, developed by municipalities, setting out a vision, values, goals, objectives, policies and land use designations for the municipality. Official Plans are created through a community-oriented development process that solicits input from stakeholders such as landowners, developers, planners and the public. Many municipal Official Plans recognize the value of natural heritage systems in maintaining resilient, healthy communities and have included strong natural heritage policies. Official Plans are regularly reviewed and updated to reflect the PPS and applicable provincial plans. Official Plans may be created at both the upper and lower municipal tiers. Where an upper-tier Official Plan is in place, the lower-tier plan must comply with it, though the lower-tier plan may be more restrictive. Decisions of Council must comply with the Official Plan.

### **Ontario Municipal Board**

The Ontario Municipal Board is a provincial adjudicative tribunal that hears a range of applications and appeals related to municipal planning, financial matters and land matters. Most appeals to the board involve land use planning conflicts that fall under the Planning Act. This independent tribunal provides an opportunity for persons, public bodies or incorporated groups to appeal municipal decisions.

### **Conservation Authorities and the Official Plan**

Conservation authorities play an important role in municipal planning, providing technical knowledge and expert advice. Under the Conservation Authorities Act, they have the power to study and investigate the watershed to identify programs with the intent of conserving, restoring, developing or managing natural resources. Some conservation authorities have undertaken natural heritage studies to identify natural heritage systems, providing a valuable resource in the preparation of Official Plans. Many have undertaken watershed or subwatershed studies, which can be used for the same purpose. Conservation authorities are often involved in the review of municipal planning documents and development applications. They also play an important role through their setting of development control regulations, which can directly and indirectly protect natural heritage systems from impacts associated with site alteration and development. Conservation authorities have substantial land holdings and are a significant partner in the public securement of natural heritage systems.

# REFERENCES

## Official Plans

- City of Burlington – [Official Plan Consolidation](#) (June, 2012) [Approved by the OMB Oct 2008].
- City of Guelph [Official Plan Amendment 42](#) (July 27, 2010)
- City of Guelph – [Official Plan Consolidation](#) (March 20, 2013) [Provincial approval December 1995].
- City of Hamilton – [Urban Hamilton Official Plan Consolidation](#) (October 2013) [OMB Decision August, 2013].
- City of Kingston – [Official Plan Consolidation](#) (June 1, 2013) [Approved by MMAH January 2010].
- City of London – [Official Plan Consolidation](#) (December 17, 2009) [adopted by Council June 1989].
- City of Ottawa – [Official Plan Consolidation](#) (May 22, 2013) [adopted by Council May 2003].
- City of Vaughan – [Official Plan Consolidation](#) (June 28, 2012) [endorsed by Regional Council June 2012].
- City of Waterloo – [Official Plan Consolidation](#) (December 21, 2012) [approved by Regional Municipality of Waterloo November 2012].
- City of Windsor – [Official Plan Consolidation](#) (August 28, 2013) [approved by the MMAH August 2013].
- Clearview Township – [Official Plan](#) (last amended May 27, 2013) [approved Jan 2002].
- County of Lambton – [Official Plan Consolidation](#) (January 3, 1998) [approved by County Council September 1997].
- Elgin County – [Official Plan Consolidation](#) (October 9, 2013) [Approved by MMAH October 2013].
- Halton Region – [Regional Official Plan Interim Consolidation](#) (October 21, 2013) [approved by OMB for certain parts February 4, 2014].
- Niagara Region – [Regional Policy Plan Consolidation](#) (August 1, 2012)
- Region of Durham – [Regional Official Plan Consolidation](#) (January 9, 2013) [Approved by MMAH November 1993].
- Region of Waterloo – [Regional Official Plan Consolidation](#) (December 22, 2010) [approved by Council December 2010 \*the plan in its entirety is currently under appeal].
- County of Simcoe – [Official Plan Draft](#) (January 22, 2013) [endorsed by Council Jan 2013].
- Town of Ajax – [Official Plan Consolidation](#) (February 10, 2012) (2.2.1) [approved by Durham Region Dec. 23, 2011].
- Town of Georgina – [Official Plan Consolidation](#) [approvals by the Regional Municipality of York and/or the Ontario Municipal Board, as well as Amendments to the Official Plan approved between October 17, 2002, and October 1, 2010].
- Town of Oakville – [Livable Oakville Plan](#) (June 2009) [Approved by the OMB May 2011].
- Township of Central Frontenac – [Official Plan Consolidation](#) [approved June 2008].
- York Region – [Official Plan Consolidation](#) (June 20, 2013) [approved by MMAH Sept 2010 \*area/site-specific appeal of Chapter 2].

## Other References

- Business and Biodiversity Offsets Programme (BBOP). *Resource Paper: Limits to What Can Be Offset*. Washington, D.C.: BBOP, 2012.
- Costanza, R., R. d'Arge, R. de Groot, S. Farber, M. Grasso, B. Hannon, K. Limburg, K., et al. "The value of the world's ecosystem services and natural capital." *Nature* 387 (May 15, 1997): 253-60.
- David Suzuki Foundation and Ontario Nature. *Biodiversity in Ontario's Greenbelt*. Toronto: 2011.
- David Suzuki Foundation. *Ontario's Wealth, Canada's Future: Appreciating the value of the Greenbelt's eco-services*. Vancouver: David Suzuki Foundation, 2008.
- The Economics of Ecosystem and Biodiversity (TEEB). 2010. *The Economics of Ecosystems and Biodiversity. Mainstreaming the Economics of Biodiversity: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*. A Report to the United Nations Environment Program.
- Environment Canada. *How Much Habitat is Enough? Third Edition*. Toronto: Environment Canada, 2013.
- Environmental Commissioner of Ontario. *2010/2011 Annual Report of the Environmental Commissioner of Ontario*. Toronto: Environmental Commission of Ontario, 2011.
- Fischlin, A., G. F. Midgley, J. T. Price, R. Leemans, B. Gopal, C. Turley, M. D. A. Rounsevell, O. P. Dube, J. Tarazona and A. A. Velichko. "Ecosystems, their properties, goods and services." *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden and C.E. Hanson, eds. Cambridge: Cambridge University Press: 2007.
- Green Infrastructure Ontario Coalition. *Health, Prosperity and Sustainability: The Case for Green Infrastructure in Ontario*. Downsview: Green Infrastructure Ontario Coalition, 2012.
- Kuo, Frances E. (Ming). *Parks and Other Green Environments: Essential Components of a Healthy Human Habitat* (National Recreation and Park Association, 2010).
- Lemieux, C. M. *Connecting Nature and People: A Guide to Designing and Planning Natural Heritage Systems (NHS) in Southern Ontario*. Toronto: Ministry of Natural Resources, 2011.
- Louv, Richard. *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin Books, 2005)
- Maron, M., R. J. Hobbs, A. Moilanen, J. W. Matthews, K. Christie, T. A. Gardner, D. A. Keith, D. B. Lindenmayer and C. A. McAlpine. "Faustian bargains? Restoration realities in the context of biodiversity offset policies." *Biological Conservation* 155 (October 2012): 141-8.
- Miller, Eric and Patrick Lloyd-Smith, *The Economics of Ecosystem Services and Biodiversity in Ontario (TEEBO): Assessing the Knowledge and Gaps*, report prepared for the Ontario Ministry of Natural Resources (March 2012).
- Ministry of Finance. *Ontario Population Projections Update: 2012-2036: Ontario and Its 49 Census Divisions*. Toronto: Queen's Printer for Ontario, 2013.
- Ministry of Natural Resources. *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005, Second Edition*. Toronto: Queen's Printer for Ontario, 2010.
- Ontario Biodiversity Council. 2010. *State of Ontario's Biodiversity 2010*. A report of the Ontario Biodiversity Council, Peterborough, ON.
- Ontario Biodiversity Council. 2011. *Ontario's Biodiversity Strategy, 2011: Renewing Our Commitment to Protecting What Sustains Us*. Ontario Biodiversity Council, Peterborough, ON.
- Puric-Mladenovic, D. and S. Strobl, Designing natural heritage systems in southern Ontario using a systematic conservation planning approach. *The Forestry Chronicle* 88, no. 6 (2012): 722-35.
- Secretariat of the Convention on Biological Diversity. 2010. *Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets: Living in Harmony with Nature*. Convention on Biological Diversity Conference of the Parties (COP) 10 Decision X/2, Nagoya, Japan.
- Troy, A. and K. Bagstad. *Estimating Ecosystem Services in Southern Ontario*. Pleasanton, CA: Spatial Informatics Group, 2009. A report to Ontario's Ministry of Natural Resources.

# ENDNOTES

- 1 Ontario Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2014, Section 6.0 Definitions.
- 2 Millennium Ecosystem Assessment. *Ecosystems and Human Well-Being: A Framework for Assessment* (Washington D.C.: Island Press, 2003), [millenniumassessment.org/en/Framework.aspx](http://millenniumassessment.org/en/Framework.aspx). As noted in A. Troy and K. Bagstad, *Estimating Ecosystem Services in Southern Ontario* (Pleasanton, CA: Spatial Informatics Group, 2009), 3, commissioned by the Southern Region Planning Unit of the Ontario Ministry of Natural Resources.
- 3 Ontario Ministry of Finance, *Ontario Population Projections Update: 2012-2036: Ontario and Its 49 Census Divisions* (Toronto: Queen's Printer for Ontario, 2013).
- 4 Environmental Commissioner of Ontario, *2010/2011 Annual Report of the Environmental Commissioner of Ontario* (Toronto: Environmental Commissioner of Ontario, 2011), 53.
- 5 Ontario Biodiversity Council, *State of Ontario's Biodiversity* (Toronto: Ontario Biodiversity Council, 2010), 88.
- 6 A. Fischlin et al., "Ecosystems, their properties, goods and services," *Climate Change 2007: Impacts, Adaptation and Vulnerability*, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. M. L. Parry et al., eds (Cambridge: Cambridge University Press: 2007).
- 7 Ontario Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2005, section 2.1.2.
- 8 Ontario Ministry of Municipal Affairs and Housing, Greenbelt Plan, 2005, section 3.2.
- 9 Ontario Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2014, section 2.1.3.
- 10 Ontario Biodiversity Council, *Ontario's Biodiversity Strategy 2011: Renewing our Commitment to Protecting What Sustains Us* (Peterborough: Ontario Biodiversity Council, 2011), 49. Note the strategy calls for natural heritage systems plans at both municipal and landscape levels.
- 11 Ontario Ministry of Natural Resources, *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005, Second Edition* (Toronto: Queen's Printer for Ontario, 2010), <http://www.mnr.gov.on.ca/en/Business/LUEPS/Publication/249081.html>. The *Natural Heritage Reference Manual* presents the Ministry of Natural Resources' recommended technical criteria and approaches to help guide municipalities and other practitioners, such as conservation authorities, in the development of a natural heritage system. See especially Table 12-1, "Official Plan Approaches for Protecting Natural Heritage Systems, Features and Areas."
- 12 See P. Berke and D. Godschalk, "Searching for the Good Plan: A Meta-Analysis of Plan Quality Studies," *Journal of Planning Literature* 23, no. 3 (2009): 227-40; T. A. Steelman and G. R. Hess, "Effective Protection of Open Space: Does Planning Matter?" *Environmental Management* 44, no. 1 (2009): 93-104; J. Posen, "Greening the Greenfield, Planning Natural Heritage Systems in New Subdivisions" (*master's report, School of Urban and Regional Planning, Queen's University, 2011*); and S. D. Brody and W. E. Highfield, "Does Planning Work?: Testing the Implementation of Local Environmental Planning in Florida," *Journal of the American Planning Association* 71, no. 2 (2005): 159-75.
- 13 Environmental Commissioner of Ontario, 2011, p. 54. Note, this map was originally published in D. Puric-Mladenovic and S. Strobl, "Designing natural heritage systems in southern Ontario using a systematic conservation planning approach," *The Forestry Chronicle* 88, no. 6 (2012).
- 14 Planning Act, 1990, section 2.

- 15 Ontario Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2014, section 2.1.2.
- 16 Ibid., section 2.2.1 d).
- 17 The Niagara Escarpment Plan came out in 1985, and since then has been reviewed and revised twice, in 1994 and in 2005. It will be reviewed again in 2015, along with the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan.
- 18 Ontario Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2014, section 4.9.
- 19 Ontario Ministry of Municipal Affairs and Housing, Greenbelt Plan, 2005, section 1.2.
- 20 Ibid., section 3.2.1.
- 21 David Suzuki Foundation and Ontario Nature, *Biodiversity in Ontario's Greenbelt* (Toronto: David Suzuki Foundation, 2011), 33, 5.
- 22 David Suzuki Foundation, *Ontario's Wealth, Canada's Future: Appreciating the value of the Greenbelt's eco-services* (Vancouver: David Suzuki Foundation, 2008), 2.
- 23 Ontario Ministry of Municipal Affairs and Housing, Greenbelt Plan, 2005, section 3.2.1.
- 24 Ibid., section 3.2.1
- 25 Ibid., section 3.2.2.
- 26 Ibid., section 3.2.2.4.
- 27 Ibid., section 3.2.2.5.
- 28 Ibid., section 3.2.1.
- 29 Ibid., section 3.2.2.1.
- 30 As noted in Troy and Bagstad, *Estimating Ecosystem Services*, 18, Table 4.
- 31 David Suzuki Foundation, *Ontario's Wealth, Canada's Future*, 41.
- 32 Eric Miller and Patrick Lloyd-Smith, *The Economics of Ecosystem Services and Biodiversity in Ontario (TEEBO): Assessing the Knowledge and Gaps*, report prepared for the Ontario Ministry of Natural Resources (March 2012), 35.
- 33 Troy and Bagstad, *Estimating Ecosystem Services*, 18, Table 4.
- 34 R. Costanza et al., "The value of the world's ecosystem services and natural capital," *Nature* 387 (May 15, 1997): 253–60. For further information on nature's benefits and their value to society, see The Economics of Ecosystem and Biodiversity (TEEB), *The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Biodiversity: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*. A Report to the United Nations Environment Program, 2010.
- 35 See Richard Louv, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Chapel Hill, NC: Algonquin Books, 2005) and Frances E. (Ming) Kuo, *Parks and Other Green Environments: Essential Components of a Healthy Human Habitat* (National Recreation and Park Association, 2010).
- 36 Kuo, *Parks and Other Green Environments*, 5.
- 37 Secretariat of the Convention on Biological Diversity. 2010. *Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets: Living in Harmony with Nature*. Convention on Biological Diversity Conference of the Parties (COP) 10 Decision X/2 (Nagoya, Japan), Target 11 <http://www.cbd.int/sp/targets>.
- 38 A. Fischlin et al., "Ecosystems," 213.
- 39 Ontario Biodiversity Council, *Ontario's Biodiversity Strategy 2011: Renewing our Commitment to Protecting What Sustains Us* (Peterborough: Ontario Biodiversity Council, 2011), iii.
- 40 Ontario Biodiversity Council, 2011, 49.
- 41 Environment Canada, *How Much Habitat is Enough? Third Edition* (Toronto: Environment Canada, 2013), 1, 4.
- 42 Ibid., 7.
- 43 Secretariat of the Convention on Biological Diversity. 2010. Target 11 <http://www.cbd.int/sp/targets>.
- 44 City of Waterloo – Official Plan Consolidation (December 21, 2012) (8.2.2) Last accessed from [waterloo.ca/en/government/officialplan.asp](http://waterloo.ca/en/government/officialplan.asp) on September 23, 2013 [approved by Regional Municipality of Waterloo November 2012].



- 45 City of Vaughan – Official Plan Consolidation (June 28, 2012) (3.2.2) Last accessed from [https://www.vaughan.ca/projects/policy\\_planning\\_projects/official\\_planning\\_2010/Pages/default.aspx](https://www.vaughan.ca/projects/policy_planning_projects/official_planning_2010/Pages/default.aspx) on September 23, 2013 [endorsed by Regional Council June 2012].
- 46 Clearview Township – Official Plan (last amended May 27, 2013) (11.13) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 47 City of Ottawa – Official Plan Consolidation (May 22, 2013) (2.4.2) Last accessed from <http://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/official-plan> on February 28, 2014 [adopted by Council May 2003].
- 48 Town of Ajax – Official Plan Consolidation (February 10, 2012) (1.2) Last accessed from <http://www.ajax.ca/en/doingbusinessinajax/officialplan.asp> on January 10, 2013 [approved by Durham Region Dec. 23, 2011].
- 49 Town of Ajax – Official Plan Consolidation (February 10, 2012) (2.2.1) Last accessed from <http://www.ajax.ca/en/doingbusinessinajax/officialplan.asp> on January 10, 2013 [approved by Durham Region Dec. 23, 2011].
- 50 City of Hamilton – Urban Hamilton Official Plan Consolidation (October 2013) (C.2.0) Last accessed from <http://www.hamilton.ca/NR/rdonlyres/0A939735-8827-4D79-8C54-B01970515106/0/UHOPVol1PoliciesrevOct2013.pdf> on February 28, 2014. [OMB Decision August, 2013].
- 51 City of Hamilton – Urban Hamilton Official Plan Consolidation (October 2013) (C.2.7.3) Last accessed from <http://www.hamilton.ca/NR/rdonlyres/0A939735-8827-4D79-8C54-B01970515106/0/UHOPVol1PoliciesrevOct2013.pdf> on February 28, 2014. [OMB Decision August, 2013].
- 52 City of Hamilton – Urban Hamilton Official Plan Consolidation (October 2013) (C.2.7.5) Last accessed from <http://www.hamilton.ca/NR/rdonlyres/0A939735-8827-4D79-8C54-B01970515106/0/UHOPVol1PoliciesrevOct2013.pdf> on February 28, 2014. [OMB Decision August, 2013].
- 53 Ontario Biodiversity Council, 2011, 15.
- 54 Secretariat of the Convention on Biological Diversity. 2010. Target 11 <http://www.cbd.int/sp/targets>.
- 55 City of Vaughan – Official Plan Consolidation (June 28, 2012) (3.2.1) Last accessed from [https://www.vaughan.ca/projects/policy\\_planning\\_projects/official\\_planning\\_2010/Pages/default.aspx](https://www.vaughan.ca/projects/policy_planning_projects/official_planning_2010/Pages/default.aspx) on September 20, 2013 [endorsed by Regional Council June 2012].
- 56 Town of Oakville – Livable Oakville Plan (June 2009) (10.1.1) Last accessed from <http://www.oakville.ca/town-hall/livable-oakville-official-plan.html> on January 10, 2014 [Approved by the OMB May 2011].
- 57 Town of Georgina – Official Plan Consolidation (October 1, 2010) (3.5.2.7) Last accessed from <http://georgina.ca/opr-index.aspx> on September 23, 2013 [approvals by the Regional Municipality of York and/or the Ontario Municipal Board, as well as Amendments to the Official Plan approved between October 17, 2002, and October 1, 2010].
- 58 Township of Central Frontenac – Official Plan Consolidation (June 18, 2008) (7.5.2) Last accessed from <http://www.centralfrontenac.com/Planning.html> on September 23, 2013 [approved June 2008].
- 59 City of Vaughan – Official Plan Consolidation (September 7, 2010) (3.2.3.2) Last accessed from [https://www.vaughan.ca/projects/policy\\_planning\\_projects/official\\_planning\\_2010/Pages/default.aspx](https://www.vaughan.ca/projects/policy_planning_projects/official_planning_2010/Pages/default.aspx) on September 23, 2013 [endorsed by Regional Council June 2012].
- 60 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.2.3) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 61 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.2.4) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 62 Ontario Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2014, section 4.9.
- 63 York Region – Official Plan Consolidation (June 20, 2013) (2.1.9) Last accessed from [http://www.york.ca/wps/portal/yorkhome/yorkregion/yr/regionalofficialplan/officialplanpackages/officialplanpackages/!ut/p/a1/vVJfb4IwH-PwoPpL-KP\\_qI2HZAKcuccmAF1MrYBUKYmfMpv2KLtkedMSkWW\\_au\\_xy7doVZShBmaBHXILJGoGrHmfuMvKfojCcQDy3SQA-zPoYewTIxENvKEMZE7KVG5SeuiVrhMyFHMGP6XYKHCSX72dio9T5he7yUqmP4LLTqikKzjitt200q9jdqKdvRMj9cZ\\_urW3VY5wdeijNifl1SoNhkFgajsHJm2CtwDErtleHadAoMjx3bxcpZqpbjeXDkPF4aEBdGLtpMC37R8qNwUXRoOSaZ5RedXeDRSnf7veZr2Lvs\\_6QKpNv3M-lK\\_eY225oBhBDOCCQPXovzgmJtQicgYEJ\\_h74I\\_9UFeTddHhhosWdjQ8IepoFmdYt6OgW1G050lKZGkW9HWXoj6qZsH7S2nrmmYLZ6cqiRxHW6c9fr4Wdb2czQy6ImD9EFP\\_C4Nhjwo!/dl5/d5/L2dBISEvZoFBIS9nQSEh/#.UtBNz9JDtiz](http://www.york.ca/wps/portal/yorkhome/yorkregion/yr/regionalofficialplan/officialplanpackages/officialplanpackages/!ut/p/a1/vVJfb4IwH-PwoPpL-KP_qI2HZAKcuccmAF1MrYBUKYmfMpv2KLtkedMSkWW_au_xy7doVZShBmaBHXILJGoGrHmfuMvKfojCcQDy3SQA-zPoYewTIxENvKEMZE7KVG5SeuiVrhMyFHMGP6XYKHCSX72dio9T5he7yUqmP4LLTqikKzjitt200q9jdqKdvRMj9cZ_urW3VY5wdeijNifl1SoNhkFgajsHJm2CtwDErtleHadAoMjx3bxcpZqpbjeXDkPF4aEBdGLtpMC37R8qNwUXRoOSaZ5RedXeDRSnf7veZr2Lvs_6QKpNv3M-lK_eY225oBhBDOCCQPXovzgmJtQicgYEJ_h74I_9UFeTddHhhosWdjQ8IepoFmdYt6OgW1G050lKZGkW9HWXoj6qZsH7S2nrmmYLZ6cqiRxHW6c9fr4Wdb2czQy6ImD9EFP_C4Nhjwo!/dl5/d5/L2dBISEvZoFBIS9nQSEh/#.UtBNz9JDtiz) on Jan. 10, 2014 [approved by MMAH Sept 2010 \*area/site-specific appeal of Chapter 2].

- 64 Halton Region – Regional Official Plan Interim Consolidation (October 21, 2013) (118) Last accessed from <http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=115808#ropdocs> on February 28, 2014 [approved by OMB for certain parts February 4, 2014].
- 65 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.2.4) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 66 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.5) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 67 Halton Region – Regional Official Plan Interim Consolidation (October 21, 2013) (118 (7, 8, 9)) Last accessed from <http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=115808#ropdocs> on February 28, 2014 [approved by OMB for certain parts February 4, 2014].
- 68 Region of Waterloo – Regional Official Plan Consolidation (December 22, 2010) (7.I) Last accessed from <http://www.regionofwaterloo.ca/en/regionalGovernment/PreviousROP.asp> on September 24, 2013 [approved by Council December 2010 \*the plan in its entirety is currently under appeal].
- 69 County of Lambton – Official Plan Consolidation (January 3, 1998) (8.3.1) Last accessed from <http://www.lambtononline.ca/HOME/RESIDENTS/PLANNINGANDDEVELOPMENT/Pages/OfficialPlan.aspx> on September 24, 2013 [approved by County Council September 1997].
- 70 City of Waterloo – Official Plan Consolidation (December 21, 2012) (8.2.2 (21)) Last accessed from <http://www.waterloo.ca/en/government/officialplan.asp> on September 24, 2013 [approved by Regional Municipality of Waterloo November 2012].
- 71 City of Guelph – Official Plan Amendment 42 (July 27, 2010) (6.1.2) Last accessed from <http://guelph.ca/plans-and-strategies/natural-heritage-strategy/> on September 25, 2013 [adopted by Council July 2010 \*currently being appealed to the OMB].
- 72 City of Guelph – Official Plan Amendment 42 (July 27, 2010) (6.1.10.2.5) Last accessed from <http://guelph.ca/plans-and-strategies/natural-heritage-strategy/> on September 25, 2013 [adopted by Council July 2010 \*currently being appealed to the OMB].
- 73 Regarding the last three points, see M. Maron et al., “Faustian bargains? Restoration realities in the context of biodiversity offset policies,” *Biological Conservation* 155 (October 2012): 141–8.
- 74 Ibid., 141.
- 75 Ibid., 145. This has proven very challenging.
- 76 Business and Biodiversity Offsets Programme (BBOP), *Resource Paper: Limits to What Can Be Offset* (Washington, D.C.: BBOP, 2012), 2. BBOP is a collaboration of more than 75 leading organizations and individuals, including companies, financial institutions, government agencies and civil society organizations, that are testing and developing best practices on biodiversity offsets and conservation banking worldwide. <http://bbop.forest-trends.org>.
- 77 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.2.2.1) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 78 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.2.2.2) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 79 Town of Ajax – Official Plan Consolidation (February 10, 2012) (5.0 a)0d)xi) Last accessed from <http://www.ajax.ca/en/doingbusinessinajax/officialplan.asp> on January 10, 2013 [approved by Durham Region December 23, 2011].
- 80 Ontario Ministry of Natural Resources. March 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen’s Printer for Ontario. 165.
- 81 Halton Region – Regional Official Plan Interim Consolidation (October 21, 2013) (118 (8,)) Last accessed from <http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=115808#ropdocs> on February 28, 2014 [approved by OMB for certain parts February 4, 2014].
- 82 City of London – Official Plan Consolidation (December 17, 2009) (15.3.5.ii) Last accessed from <https://www.london.ca/business/Planning-Development/Official-Plan/Pages/OfficialPlanDocument.aspx> on September 24, 2013 [adopted by Council June 1989].

- 83 City of Hamilton – Official Plan Consolidation (August 16, 2013) (C.2.12.4) Last accessed from <http://www.hamilton.ca/NR/rdonlyres/0A939735-8827-4D79-8C54-B01970515106/0/UHOPVol1PoliciesrevOct2013.pdf> on February 28, 2014.
- 84 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.3) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 85 Region of Waterloo – Regional Official Plan Consolidation (December 22, 2010) (7.2) Last accessed from <http://www.regionofwaterloo.ca/en/regionalGovernment/PreviousROP.asp> on September 24, 2013 [approved by Council December 2010 \*the plan in its entirety is currently under appeal].
- 86 Region of Waterloo – Regional Official Plan Consolidation (December 22, 2010) (7.F.1) Last accessed from <http://www.regionofwaterloo.ca/en/regionalGovernment/PreviousROP.asp> on September 24, 2013 [approved by Council December 2010 \*the plan in its entirety is currently under appeal].
- 87 City of Hamilton – Official Plan Consolidation (August 16, 2013) (C.2.7.1) Last accessed from <http://www.hamilton.ca/CityDepartments/PlanningEcDev/Divisions/StrategicServicesSpecialProjects/Policy+Planning/HamiltonNewOfficialPlan/MinistryApprovedUrbanHamiltonOfficialPlan.htm> on September 24, 2013.
- 88 County of Simcoe – Official Plan Draft (January 22, 2013) (3.11.21) Last accessed from [http://www.simcoe.ca/ws\\_cos/groups/public/@pub-cos-pln/documents/web\\_content/wscos\\_040107.pdf](http://www.simcoe.ca/ws_cos/groups/public/@pub-cos-pln/documents/web_content/wscos_040107.pdf) on September 24, 2013 [endorsed by Council Jan 2013].
- 89 City of Guelph – Official Plan Consolidation (December 2012) (3.3.2) Last accessed from <http://guelph.ca/plans-and-strategies/official-plan/> on September 24, 2013 [Provincial approval December 1995].
- 90 City of Guelph – Official Plan Consolidation (December 2012) (6.2.1) Last accessed from <http://guelph.ca/plans-and-strategies/official-plan/> on September 24, 2013 [Provincial approval December 1995].
- 91 Lemieux, C. M. *Connecting Nature and People: A Guide to Designing and Planning Natural Heritage Systems (NHS) in Southern Ontario* (Toronto: Ministry of Natural Resources, 2011).
- 92 Ontario Ministry of Natural Resources, *Natural Heritage Reference Manual*, section 3.2.1.
- 93 City of Windsor – Official Plan Consolidation (August 28, 2013) (5.3.2.5) Last accessed from <http://www.city-windsor.ca/residents/planning/Plans-and-Community-Information/Windsor---Official-Plan/Pages/Windsor-Official-Plan.aspx> on September 23, 2013 [approved by the MMAH August 2013].
- 94 County of Simcoe – Official Plan Draft (January 22, 2013) (3.8.6) Last accessed from [http://www.simcoe.ca/ws\\_cos/groups/public/@pub-cos-pln/documents/web\\_content/wscos\\_040107.pdf](http://www.simcoe.ca/ws_cos/groups/public/@pub-cos-pln/documents/web_content/wscos_040107.pdf) on September 23, 2013 [endorsed by Council Jan 2013].
- 95 City of Burlington – Official Plan Consolidation (June, 2012) (Part II, 2.4.1a) Last accessed from <http://cms.burlington.ca/Page846.aspx> on September 23, 2013 [Approved by the OMB Oct 2008].
- 96 Halton Region – Regional Official Plan Interim Consolidation (October 21, 2013) (118 (10)) Last accessed from <http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=115808#ropdocs> on February 28, 2014 [approved by OMB for certain parts February 4, 2014].
- 97 Region of Waterloo – Regional Official Plan Consolidation (December 22, 2010) (Chapter 7) Last accessed from <http://www.regionofwaterloo.ca/en/regionalGovernment/PreviousROP.asp> on September 23, 2013 [approved by Council December 2010 \*the plan in its entirety is currently under appeal].
- 98 City of Ottawa – Official Plan Consolidation (May 22, 2013) (2.4) Last accessed from <http://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/official-plan> on February 28, 2014 [adopted by Council May 2003].
- 99 Halton Region – Regional Official Plan Interim Consolidation (October 21, 2013) (118 (5)) Last accessed from <http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=115808#ropdocs> on February 28, 2014 [approved by OMB for certain parts February 4, 2014].
- 100 City of London – Official Plan Consolidation (December 17, 2009) (15.1) Last accessed from <https://www.london.ca/business/Planning-Development/Official-Plan/Pages/OfficialPlanDocument.aspx> on September 25, 2013 [adopted by Council June 1989].
- 101 County of Lambton – Official Plan Consolidation (January 3, 1998) (8.1) Last accessed from <http://www.lambtononline.ca/HOME/RESIDENTS/PLANNINGANDDEVELOPMENT/Pages/OfficialPlan.aspx> on September 25, 2013 [approved by County Council September 1997].

- 102 City of Ottawa – Official Plan Consolidation (May 22, 2013) (2.4.5) Last accessed from <http://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/official-plan> on February 28, 2014 [adopted by Council May 2003].
- 103 County of Simcoe – Official Plan Draft (January 22, 2013) (3.8.8) Last accessed from <http://www.simcoe.ca/search/index.htm?ssUserText=official+plan+draft#.UkBgQexzbcu> on September 24, 2013 [endorsed by Council January 2013].
- 104 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.2.2.1) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 105 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.2.2.2) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 106 City of Kingston – Official Plan Consolidation (June 1, 2013) (6.1.10) Last accessed from <http://www.cityofkingston.ca/business/planning-and-development/official-plan> on September 24, 2013 [Approved by MMAH January 2010].
- 107 City of Kingston – Official Plan Consolidation (June 1, 2013) (6.1.11) Last accessed from <http://www.cityofkingston.ca/business/planning-and-development/official-plan> on September 24, 2013 [Approved by MMAH January 2010].
- 108 Niagara Region – Regional Policy Plan Consolidation (August 1, 2012) (7.B.2.2) Last accessed from <http://www.regional.niagara.on.ca/living/icp/policy-plan.aspx> on September 24, 2013.
- 109 City of Guelph – Official Plan Consolidation (March 20, 2013) (6.3.1) Last accessed from <http://guelph.ca/plans-and-strategies/official-plan/> on September 24, 2013 [Provincial approval December 1995].
- 110 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.2.2.1) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 111 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.2.2.2) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 112 Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2014 (2.1.8).
- 113 Ontario Ministry of Natural Resources, *Natural Heritage Reference Manual*, 45.
- 114 Elgin County – Official Plan Consolidation (October 9, 2013) (D1.3.2) Last accessed from <http://www.elgin-county.ca/departments/administrative-services/official-plan> on January 14, 2014 [Approved by MMAH October 2013].
- 115 City of London – Official Plan Consolidation (December 17, 2009) (15.3.6) Last accessed from <https://www.london.ca/business/Planning-Development/Official-Plan/Pages/OfficialPlanDocument.aspx> on September 24, 2013 [adopted by Council June 1989].
- 116 City of Waterloo – Official Plan Consolidation (December 21, 2012) (8.2.4) Last accessed from <http://www.waterloo.ca/en/government/officialplan.asp> on September 24, 2013 [approved by Regional Municipality of Waterloo November 2012].
- 117 Region of Durham – Regional Official Plan Consolidation (January 9, 2013) (14.12.2) Last accessed from [http://www.durham.ca/planed.asp?nr=/departments/planed/planning/op\\_documents/ropat128.htm&setFooter=/includes/planningFooter.inc](http://www.durham.ca/planed.asp?nr=/departments/planed/planning/op_documents/ropat128.htm&setFooter=/includes/planningFooter.inc) on September 24, 2013 [Approved by MMAH November 1993].
- 118 Clearview Township – Official Plan (last amended May 27, 2013) (4.1.2.2.1) Last accessed from [http://www.clearview.ca/home/information/publications/op\\_with\\_links.pdf?attredirects=0](http://www.clearview.ca/home/information/publications/op_with_links.pdf?attredirects=0) January 14, 2014 [approved Jan 2002].
- 119 Region of Waterloo – Regional Official Plan Consolidation (December 22, 2010) (7.A.14) Last accessed from <http://www.regionofwaterloo.ca/en/regionalGovernment/PreviousROP.asp> on September 24, 2013 [approved by Council December 2010 \*the plan in its entirety is currently under appeal].

- 120 City of London – Official Plan Consolidation (December 17, 2009) (15.3.9) Last accessed from <https://www.london.ca/business/Planning-Development/Official-Plan/Pages/OfficialPlanDocument.aspx> on September 24, 2013 [adopted by Council June 1989].
- 121 Ministry of Municipal Affairs and Housing, *Citizen's Guide 1: The Planning Act* (Toronto: Queen's Printer for Ontario, 2010).
- 122 The Planning Act, 1994, c. 23, s. 4.
- 123 Niagara Escarpment Planning and Development Act, R.S.O. 1990, c. N.2, s. 2.
- 124 "Land Use Planning," Ontario's Niagara Escarpment website, accessed January 20, 2014, <http://www.escarpment.org/landplanning/index.php>.
- 125 Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2005, section 4.12.
- 126 Oak Ridges Moraine Conservation Act, 2001, section 4.
- 127 Ministry of Municipal Affairs and Housing, Provincial Policy Statement 2005, section 4.12.
- 128 Greenbelt Act, 2005, section 5.
- 129 Greenbelt Act, 2005, section 8.
- 130 Places to Grow Act, 2005, section 1.
- 131 Ibid.



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*Kawartha Highlands*





J Reaume

Above: Naturalist talks about a smooth green snake; left: honey bee and chive, Guelph

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