

Appendix G: Risk Mitigation through the Protection of Natural Areas

This appendix describes how the removal of natural features can increase the impacts of extreme weather events; presents the growing evidence supporting economic valuation of natural areas; outlines current land protection mechanisms and strategies; and identifies opportunities to work in partnership with other stakeholders to achieve greater stewardship and conservation for climate change adaptation.

Why Protect Natural Areas?

Vegetation and natural areas serve the following functions on a localized, regional, and global level, several of which are important in *adapting* to extreme weather events and a changing climate:

- Stormwater retention (flood protection for crops, buildings, roads) ¹
- Shoreline stabilization (for roads, bridges, buildings, and docks)
- Streamflow maintenance (for recreation and agriculture purposes)
- Erosion control (windbreaks for farm fields)
- Rodent and insect control (habitat for predator species)
- Groundwater recharge (private and communal well systems and recreation)
- Water purification (hydrologic cycle)
- Air purification (particulate matter)
- Stable ambient air temperatures (reduces heat island effect)
- CO₂ storage and sequestration (in vegetation and soil)
- Noise and dust attenuation (e.g. near roads and extraction uses)
- Screening and privacy (e.g. from highways)
- Recreation and relaxation (active and passive activities, tourism)
- Numerous ecological processes
- Enhance property values²

Forests and wetlands provide major benefits to the community, including reduced hard infrastructure costs for water filtration and storage, additional cooling, and community liveability benefits³.

The Trust for Public Land, a U.S.-based non-profit land protection organization, conducted several studies on conservation investments in Ohio, Pennsylvania and New York and found a range of economic return on investments, varying between a 4-to-1 return (Ohio) to 7-to-1 (Pennsylvania and New York). The Trust found, for example, “that every \$1 invested in land conservation returned \$4 in natural goods and services

to the Ohio economy.”⁴ The Ohio Program, using 2012 dollars, gives an annual value to deciduous forest of \$2682/ha US, very close to Ottawa’s estimate of \$3060/ha.

The City of Ottawa piloted a similar program to assess the economic value of the ecosystem services and benefits provided by its urban forest cover, and found that within Ottawa⁵:

- Trees sequester close to 29,000 tonnes of CO₂ per year;
- Trees remove over 600,000 kg of pollutants from the air each year;
- Trees that shade homes reduce cooling costs by 20-50% in the summer;
- Trees that provide wind protection reduce heating costs by 10-15% in winter;
- A single tree on a property can increase property values from 9-30%; and
- Trees provide the equivalent of almost four million m³ of stormwater storage.

Traditionally municipalities and conservation agencies have focused primarily on ecosystem values such as biodiversity to target lands for conservation. Adding climate change mitigation and adaptation values enriches the business case for land stewardship and securement, for the purposes of flood protection and cooling sinks, among others.

How Much Land is Currently Protected?

The City of Ottawa and its surrounding communities continue to grow, with an economy that continues to attract new residents. The City is geographically very large at 2,790 km², of which 28% is available for development in villages and the urban area, 35% is agricultural lands, and 37% is natural areas.

The City’s recent update of its Urban Natural Areas Strategy summarized the greenspace network within the National Capital Commission (NCC) Greenbelt and the urban area of Ottawa, as detailed in Table 1. Of a total area of 57,710 hectares, 15,770 ha (27 per cent) is comprised of Natural Environment Area, Major Open Space, Significant Wetlands and Urban Natural Features,”⁶

Table 1: Greenbelt and Urban Natural Lands in Ottawa

Classification in the Official Plan	Area (ha)
Major Open Space	2689
Natural Environment Area	8106
Provincially Significant Wetland	3662
Existing and Proposed Urban Natural Features	1313
Total	15,770

Outside the urban boundary, the City owns over 10,000 hectares of rural land in such environmentally significant areas as the South March Highlands, the Carp Hills, Torbolton Forest, Cumberland Forest and Marlborough Forest.

The City of Ottawa also owns and cares for its own trees throughout the city. The urban tree canopy is a major asset and its stewardship has been recently enhanced by the City's Trees and Forests Maintenance Program. The inspection and tree trimming cycle has moved from 1-in-42 years to 1-in-7 years, aligning with best practices and reducing long term costs and liabilities.⁷

Tree cover varies considerably across the city with recent estimates finding 20% tree cover in the urban area, well below the 30% target citywide in the Official Plan. With the Emerald Ash Borer, the City is losing more of its tree cover although it is implementing replacement plans.

Other natural areas are owned and managed by a variety of governmental and non-governmental organizations:

- The National Capital Commission is a major landowner in the City of Ottawa, with a Greenbelt of roughly 20,600 hectares of which 14,950 hectares are in its ownership/control and one quarter is agricultural land.
- Three conservation authorities overlap geographically with the City of Ottawa: Rideau Valley CA, Mississippi Valley CA, and the South Nation CA. Collectively, they own and manage dozens of properties, with four significant conservation areas within the City of Ottawa.
- The Nature Conservancy of Canada has preserved approximately 4200 hectares of rare ecosystems and habitats within the entire Ottawa Valley Conservation Area of 9,827 square kilometres (an area much larger than the city limits, and including lands in both Ontario and Quebec).

How Does the City Currently Protect Natural Areas?

The City has an active role in land protection and securement, both in its own right and in partnership with other organizations and agencies.

Provincial Policy Statement

The 2014 Provincial Policy Statement (PPS) for land use strengthens the protection of natural areas, by calling for the identification and protection of natural heritage system features and areas and their ecological functions. The 2014 PPS, which came into effect on April 30, 2014, *require* the identification of such systems – a requirement absent in the 2005 version – and also require the application of provincial criteria for the identification of significant woodlands. They also now call for planning authorities to “promote” green infrastructure, defined as “natural and human-made elements that

provide ecological and hydrological functions and processes... [including] natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces, and green roofs.”

The City has defined its natural heritage system in the Official Plan and protects it through controls on development and, in some areas, through acquisition.

Greenspace Master Plan

The City’s Greenspace Master Plan (2006) sets out the long term vision and policies to preserve and protect greenspace in urban Ottawa.⁸ Greenspace is considered to be land that serves either or both of these purposes:

- The provision of recreation and leisure opportunities for the use and benefit of the public;
- Preservation of the natural environment and environmental systems.

The best way to preserve these functions is a network approach. As a connected and protected physical network of natural lands and open spaces, the network can constitute the permanent, defining feature of the city’s physical form – where it may grow and what areas should be protected. The City continues to grow this network in new communities through parkland dedication and a variety of other tools.

City of Ottawa Official Plan

The current Official Plan (with amendments) sets out the following targets from the Greenspace Master Plan – forest cover of 30% across the urban and rural area; 4.0 hectares of greenspace per 1,000 population in the urban area; open space and leisure land within 400 metres of every urban home.

Various sections of the Plan describe how natural areas will be protected.

Strategic directions (Section 2) define the Natural Heritage System citywide and establish watershed plans as the basis for land use planning.

- 1) *Designations and Land Use* (Section 3) sets policies to preserve the most significant natural features, identified individually as well as within a natural heritage system on maps in the Plan. Designation as Natural Environmental Areas, Urban Natural Features or Rural Natural Features may create an obligation for the City to acquire affected properties at the request of the landowner. Furthermore, OP policy requires the conveyance the natural heritage system to the City for \$1 within selected expansion areas added to the urban area in 2011.⁹
- 2) *Review of Development Applications* (Section 4) requires environmental impact statements and other studies in order to protect vegetative cover, surface water

quality through erosion prevention, endangered or threatened species, stormwater and groundwater quality, and landform features.

While land securement through acquisition is the strongest protection strategy in most cases, it is not the only strategy available to the City. Other techniques are employed when feasible, and tailored to the unique circumstances of a given transaction. Such techniques include land exchanges, which were used to acquire several Urban Natural Features, conservation easements, and creative financing solutions such as tax credits, or long-term leases such as the Nepean Sportsplex.

Where possible, the City also supports enhanced stewardship of lands in private hands without having to acquire. The Rural Clean Water Grants Program is an example of 'fostering stewardship'. Planning Growth Management staff is preparing a "sensitive environmental land stewardship framework" for consideration in the 2015 – 2019 Term of Council Priorities, which will recommend more coordination between departments and with external partners on the stewardship of both public and private lands.

How Are Other Agencies Currently Protecting Natural Areas in Ottawa?

The Ottawa region contains a high diversity of natural habitats and rare species. It is also home to a large number of organizations working to protect and conserve the natural environment, including the Ottawa Field Naturalists Club, the oldest natural history club in Canada.

The following are some of the significant initiatives undertaken by other organizations in Ottawa and environs to conserve natural areas and linkages:

- *National Capital Commission Greenbelt Master Plan (2013)*: The NCC's Greenbelt is largely complete. The Plan focuses on stewardship, enhancement of natural features, changes in management practices, and further connectivity between key protected areas through additional land securement of 481 hectares over the coming decades.
- *Nature Conservancy of Canada Ottawa Valley Conservation Plan (2013)* The Plan lays out a vision of preservation for the Ottawa Valley, and focuses on conserving rare ecosystems and representative communities, specifically, alvars, sand dunes, bogs, fens and grassland bird communities. The organization aims to raise \$4.775 million to acquire a target of 500 hectares in the Ottawa Valley (in both Ontario and Quebec), working with local partners and other levels of government.
- *Conservation Authorities* play an important role in conservation of source water through watershed planning, land conservation, flood prevention and warning systems, and landowner outreach and education. Each of the three local

conservation authorities acquires, owns, and manages land for preserves and public access.

- Other organizations such as Ducks Unlimited Canada, land trusts in the upper Mississippi-Madawaska and Rideau Valley watersheds, and the Ontario Heritage Trust, among others, play similar roles in regional conservation.
- The Ontario Land Trust Alliance and Canadian Land Trust Alliance provide support to local organizations through training, communications, and public awareness of the role of land trusts.

The City is fortunate to have this robust collection of organizations contributing to conservation locally. Nonetheless, there are gaps in the capacity, scope and funding for land stewardship and acquisition programs in Ottawa as detailed in the following section.

Opportunities for Improvement

- **A regional conservation plan.** The City, conservation groups and other municipal, provincial and federal agencies work on aspects of land conservation in the region. An overall vision for conservation amongst stakeholders, in which knowledge would be better shared and resources better targeted. While individual plans exist, they fail to draw the linkages in capacity, focus and implementation that may be needed to better leverage efforts.
- **Business case for land securement:** Currently the City and its conservation partners tend to focus primarily on ecosystem values such as biodiversity in targeting lands for conservation. Adding ecosystem values, features, functions along with climate change mitigation and adaptation values and functions, will assist in creating the business case for additional land securement, for the purposes of flood protection and cooling sinks, among others.
- **Dependability of funding.** An important step regionally would be the development of an endowed or dedicated funding stream, which is preferable to funding that is dependent on current political will or growth in general tax revenues. Neither the City nor most land trusts can count on a steady funding stream for conservation due to the lack of a dedicated funding mechanism.¹⁰
- **Multi-faceted.** Land acquisition is not the only solution available to protect natural areas. Ample stewardship models are available to enable landowners to participate without giving up ownership or control of their properties.
- **Responsive.** A land conservation regime must be able to seize opportunities when they come while working toward specific conservation targets. For example, planning for the purchase of small parcels to provide ecological corridors and linkages may be less flashy than snapping up high-profile acquisitions, which

sometimes exhaust people and budgets. On the other hand, high-profile parcels tend to have high ecological (and sometimes, historical and cultural) values as well as high development potential, and at times resources are best spent on their protection.

Next Steps

Members of the local and regional land conservation communities have engaged in discussions about greater cooperation and mutual support.¹¹ These discussions of partnerships have focused on the kind of structure that would best assist the participants, and have generally fallen into three main concepts:

a) *Establish an alliance or network to facilitate collaboration*

A strengthened network or alliance offers the hope of more support and collaboration without the necessity of organizational structures and constraints. Collaborative models exist elsewhere in Ontario amongst municipal and non-governmental partners, including York Region which set up a Land Securement Program and organizes and hosts a Land Securement Working Group. Through these mechanisms, York participates in joint conservation projects with land securement partners, and in particular, has a joint venture with the Nature Conservancy of Canada.

b) *Create a chapter within an existing organization*

Existing organizations, such as the Rideau Valley Conservation Foundation, have been proposed as potential homes for a new chapter to support focused additional local conservation work. A strong advantage is avoiding the duplication of administrative efforts and resources, and the built-in resources offered by the parent organization. A major drawback is the possible constraints placed by an existing organization on the new chapter.

c) *Create a new land trust for Ottawa*

A new land trust would provide a major focal point for organizing, planning and collaborating in Ottawa. With an independent director, staff and board, it would have the opportunity to create fresh relationships with both landowners and potential donors. However, it would also require resources to set up and operate, and could potentially compete with existing organizations in its fundraising and volunteer opportunities.

A working group with key partners to determine how the City can best direct its resources and efforts, research and discussions to improve the collective ability to secure public interest and funds to protect natural areas for climate adaptation as well as ecological functions, is now underway with some preliminary meetings planned for June 2014.

¹ Urban Natural Features Strategy update 20 Sept 2013

² Crompton, J.L. 2005. *The impact of parks on property values: empirical evidence from the past two decades in the United States*. *Managing Leisure* 10(4):203-218.

³ “Taking the economic benefits of green space into account Urban Climate” (Volume 7, Pages 1-134 - March 2014) [Urban Adaptation to Climate/Environmental Change: Governance, policy and planning](#).

⁴ Executive Summary, The Economic Benefits of Clean Ohio Fund Conservation, 2013, The Trust for Public Land; Pennsylvania’s Return on Investment in the Keystone Recreation, Park, and Conservation Fund, Trust for Public Land; The Economic Benefits of New York’s Environmental Protection Fund, Trust for Public Land

⁵ CityGREEN Pilot City of Ottawa in partnership with Federation of Canadian Municipalities and Tree Canada Foundation

⁶ [Urban Natural Features Strategy](#) update 20 Sept 2013, p. 7

⁷ Growing a Healthy Forest for the Nation’s Capital, report to the City of Ottawa Planning and Environment Committee, 11 May 2010, Ref N°: ACS2010-COS-PWS-0009, p. 4

⁸ [Greenspace Master Plan, City of Ottawa](#)

⁹ Policies 3.11 (6b) and 3.11 (7b)

¹⁰ For example, the City has spent millions of dollars in the past on land conservation, but the 2014 budget did not include additional allocations for land securement. The National Capital Commission has had a relatively secure funding source in its annual allocations from the federal government, but funding has been dramatically reduced in recent years. In contrast, conservation authorities’ funding streams are relatively well-established between provincial, municipal and self-generated funds.

¹¹ A 1999-2001 working group held numerous meetings, and charted a course for collaboration. The amalgamation of former municipalities into the current City of Ottawa subsumed much of that agenda. Again in 2011, a large group convened to understand who was doing what.