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About the Clean Air Partnership
Clean Air Partnership (CAP) is a registered charity that works in partnership to promote and coordinate actions to improve local air quality and reduce greenhouse gases for healthy communities. Our applied research on municipal policies strives to broaden and improve access to public policy debate on air pollution and climate change issues. Our social marketing programs focus on energy conservation activities that motivate individuals, government, schools, utilities, businesses and communities to take action to clean the air.

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This case study is one of five produced by Clean Air Partnership for the Community Adaptation Initiative, a provincially funded program through the Ontario Ministry of the Environment that delivers climate change adaptation resources for municipalities. The case studies provide detailed examples of climate change adaptation in Ontario communities. Tailored for municipal audiences, each study examines a program, plan or action with a view to encouraging replication in other municipalities confronting similar challenges. To this end, important data relating to regional background, planning process, challenges and lessons learned have been highlighted.

Climate change is expected to place increased stress on natural, social and built environments. It will also create challenges for municipalities as they work to minimize the impacts of climate change through the development and implementation of climate change adaptation plans. Municipalities must be prepared for increasing variability in temperature and precipitation patterns and increasing occurrences of extreme events such as droughts, extreme heat, storms and other expected impacts. Climate change will place additional stress on infrastructure, planning and social services, environmental conditions and buildings.

Existing municipal efforts primarily focus on mitigating climate change. However, through adaptation, municipalities can implement plans or take action to reduce the more immediate impacts of climate change. This process may involve altering existing policies, or creating new ones that address observed or expected climate changes. Ultimately, adaptive action at this juncture will prepare municipalities for future climate change impacts that threaten their populations, infrastructure and daily operations.
Executive Summary

Similar to other communities within the Great Lakes Basin, the Town of Ajax is experiencing several climate-related impacts, including variable weather, higher and more intense winds, loss of aquatic and terrestrial wildlife habitats, shorter winters and an increase of invasive species.

Recognizing the value of the natural environment and the importance of building resilient communities, the Town of Ajax has recently incorporated climate change adaptation and mitigation strategies in their Official Plan.

This case study offers insight into how climate change adaptation strategies can be mainstreamed into official documents. It provides background information on how climate change is expected to affect the Town of Ajax and describes the importance of mainstreaming climate change initiatives and planning.

The case study concludes with lessons learned that may assist other Ontario communities to adopt action-oriented policies to move toward adapting to climate change.
1 Introduction

Evidence that the climate is changing is no longer open to question. Increasingly, communities across Ontario are feeling the effects, from more frequent and heavier rainstorms, to longer summers. Communities will need to address climate change with a variety of approaches. Most efforts today are focused on reducing greenhouse gas emissions through mitigation policies and programs. However, we now know that even if we make significant progress in reducing emissions, the climate will still continue to change for decades. As a result, there is a strong need to complement greenhouse gas (GHG) mitigation efforts with elective climate adaptation strategies.

This case study examines the Environment Policy Review component of the Town of Ajax’s Official Plan Review. It demonstrates how climate change adaptation can be included in municipal official plan policies.

Ajax’s Official Plan Amendment No. 38 (OPA 38) updates Ajax’s Official Plan (adopted and approved in 2000) to conform to the environmental provisions of the Provincial Policy Statement (2005) and Provincial Greenbelt Plan (2005). Additionally, OPA 38 introduces new themes, including predicted local impacts of climate change and resulting adaptation and mitigation strategies.

While OPA 38 demonstrates the integration of progressive climate change adaptation policies into local land use planning policies, the document itself does not provide insight into the process by which these policies were developed and adopted. This information can be invaluable to other municipalities undertaking similar initiatives. As a result, this case study examines the following research questions:

1. How did the Town of Ajax come to be concerned with climate change?
2. How important was leadership in this process?
3. What have been the challenges in implementing climate change adaptation strategies into the Town’s Official Plan and how were these overcome?

1.1 Geographic Context

The Town of Ajax is situated on the northern shore of Lake Ontario. The Town is within the Greater Toronto Area (GTA), which is Canada’s largest urban region (see Figure 1). With a population of approximately 100,000 (Town of Ajax, 2010a), Ajax is one of eight municipalities that make up the Regional Municipality of Durham. Though the Town is small – in terms of land area, its population is similar in size to other lakeshore communities, including the City of Pickering, the Town of Whitby and the Municipality of Clarington. As one of the fastest growing communities in Ontario, the Town is expected to
reach a population of 138,000 by 2031 (Town of Ajax, 2010a).

Figure 1   Map of the Greater Toronto Area (With Region of Durham)

![Map of the Greater Toronto Area](image)

1.2 Climate Change Concerns in Ajax

As a coastal community within the broader Great Lakes Basin, Ajax is expected to be subjected to significant climatic changes (Taylor et al., 2006). Air temperature is set to increase over the Great Lakes Basin by between 2°C and 4°C by 2050 (MOE, 2009). Over the same period, precipitation is projected to increase by 20% in all but the summer months (MOE, 2009). These two impacts lead to a shortened ice cover season, which results in greater water evaporation (MOE, 2009). Combined with stronger winds and a longer ice-free period, evaporation is likely to reduce the flow in rivers (MOE, 2009). These impacts can result in a significant decrease in lake levels (15-115 cm over next 40 years), and disruption to the structure, function and productivity of aquatic systems (MOE, 2009; Mortsch et al., 2006; USEPA, 2009). Reduced water levels can result in diminished wetlands which perform vital functions such as reducing erosion, filtering contaminants, absorbing excess storm water, and providing wildlife habitat (Branfireum et al., 1999; Mortsch, 1998).

As a result of warmer air and water temperatures, the Great Lakes Basin will become more susceptible to invasive species, nuisance algae, and waterborne diseases (MOE, 2009). Additionally, these conditions will impact recreational activities, including skiing, ice fishing and snowmobiling (see Figure 2 for description of localized impacts of Climate Change).
There is concern that steadily increasing urbanization upstream in those portions of watersheds in Durham and York Region that drain through Ajax to Lake Ontario will exacerbate existing vulnerabilities to climate-related impacts for Ajax. For instance, implementation of the Central Pickering Development Plan and approval of Durham Region’s “Growing Durham” Official Plan Amendment (ROPA 128) by the Province and/or the Ontario Municipal Board to designate and develop new urban areas in Pickering directly upstream from Ajax could have serious implications for flooding, erosion and sedimentation (Durham Region, 2011). (see Figures 3)

Heavy rains and extreme flooding are not uncommon in southern Ontario. Hurricane Hazel in 1954 and localized flooding in 2005 and 2008, as well as the possibility that such events may happen more frequently in the future, are cited by Ajax officials as the driving reasons to pursue more stringent climate change policies and preventative actions.

Storms in 2005 and 2008 caused damage to homes in the Lawrie Road area of Ajax, when a series of intense rainfall events over a short period contributed to sewage back-ups into basements. In these instances, the volume of surface runoff to the Town’s stormwater system and creeks overwhelmed the design standard of the Region’s sanitary system and resulted in stormwater infiltrating the system in the Lawrie Road area. Mayor Parish (2011) recognized that this is an increasingly worrisome issue: “Storms that we had traditionally called 100-year storms are now happening every five years”.

Figure 2 Climate Change Impacts in the Great Lakes Basin

| Source: Town of Ajax, 2011b |

- Surface water runoff, especially in winter when the ground is frozen
- Frequency and duration of heavy rainfall, flooding and other extreme weather events
- Evaporation of surface water into the atmosphere, reducing water levels in the Great Lakes
- Temperature of the water in the Great Lakes, creeks, ponds, and urban stormwater
- Soil moisture in winter

- Annual surface water runoff
- Flows of surface water in the summer and fall
- Recharge of groundwater
- Volume and duration of groundwater flowing into creeks and wetlands
- Water level in the Great Lakes
- Ice cover (or eliminated) on the Great Lakes
- Snow cover (depth, area, and duration)
- Soil moisture in summer and fall (Hodgins & Andis, 2009; 18)
Other impacts of concern include earlier spring thaws, high winds, ice storms, more frequent temperature fluctuations above and below 0°C and more excessively cold and hot days (Andis, 2011; Hodgins, 2011; Parish, 2011). The Town’s Environment Policies Discussion Paper explains that these impacts will have a growing effect on the Town, including:

- Increased risk to buildings and transportation systems, especially considering that more of this infrastructure will be needed as Ajax’s population grows.
- Increased costs associated with maintenance of infrastructure as more frequent extreme weather occurs.
- Vulnerability of energy systems (below & above ground) as a result of wind, ice and
flood damage.

- The need to upgrade the design and capacity of water supply and wastewater treatment facilities to accommodate more frequent and intense rainfalls.
- Vulnerability of the natural heritage system, which may result in damaged shorelines and stream banks, forests and habitats of various animals.
- Public health risks associated with extreme heat and cold spells (Hodgins & Andis, 2009).

2 Mainstreaming Climate Change Adaptation

The evolution of Ajax’s Environment Policies Discussion Paper and OPA 38 demonstrates that climate change considerations can be an integral part of the planning and decision-making process (CAP, 2011).

By mainstreaming climate change adaptation as a theme in all relevant decision-making, adaptation can be integrated into day-to-day operations, rather than addressing it through a separate municipal department or strategy (CAP, 2011).

2.1 Ajax’s Official Plan Review Process

The Town of Ajax adopted its first Official Plan in 2000 (Hodgins & Andis, 2009); a consolidation of District and Community Plans as well as several Official Plan Amendments directing the Town’s growth and development (Town of Ajax, 2009a). The 2000 Ajax Official Plan helps to ensure that Ajax achieves:

Managed, sustainable growth that is necessary to ensure the preservation of natural heritage features, create residential and employment opportunities, provide quality services and infrastructure, and maintain fiscal responsibility (Official Plan, 2009a).

Since 2000, various amendments have been made to the Official Plan to help fulfill this purpose (Town of Ajax, 2009a). In 2005, in accordance with the Planning Act, the Town of Ajax commenced its mandatory Official Plan Review known as Ajax Forward. Ajax Forward is comprised of two phases:

Phase 1: The initial phase involved extensive changes to Official Plan policies. Issues addressed included promoting urban intensification in specified areas and enhancing both urban design policies and employment land policies. Phase 1 was completed in 2008 (Hodgins & Andis, 2009).

Phase 2: The second phase was initiated in 2008, and involved a review of the Official Plan’s environment policies (OPA 38), transportation policies (OPA 40), residential policies (OPA
41), and employment policies (OPA 42), including an update to the Town’s Employment Report and the completion of a Commercial Policy Review. Fundamental to the successful completion of the Official Plan Review was an extensive public consultation program, including an Environment Policy Review consultation process for OPA 38 conducted by staff. No consultants were retained to carry out the Environment Policy Review and development of OPA 38.

As part of the Official Plan Review, Town policies needed to conform to new higher-order government policies, plans, and legislation, including but not limited to, the Province’s Growth Plan for the Greater Golden Horseshoe, the Provincial Greenbelt Plan, the Provincial Policy Statement, 2005, the Durham Regional Official Plan, and new and updated Federal and Provincial environmental legislation. During this phase, staff prepared an Environment Policies Discussion Paper and drafted evolving versions of OPA 38 that were adopted by Council in June 2010.

An Official Plan is intended to guide growth and development of a municipality or region for at least 20 years. As a forward-looking document establishing a shared vision for the future, it considers populations and employment growth projections established by senior governments. It must take into consideration how the projections will be affected, whether by changes to regional or national economies, changing demographics and transformed environmental conditions. If a potential issue of substance is excluded or overlooked, the effectiveness of an official plan and the attainment of its goals can be undermined – possibly exposing citizens, property and local ecosystems to greater risks than necessary. As one of the leaders of the process, Hodgins (2011) explained that the OP review is:

... an opportunity to look ahead into the future, to look at the changing environmental conditions and emerging scientific findings, “think the unthinkable” (at times) and chart a course for this community to, as safely and successfully as possible, navigate the challenges of mitigating and adapting to climate change.

2.2 Integrating Adaptation into Ajax’s Official Plan

Environment Policies Discussion Paper

Direction and policy recommendations for OPA 38 came from the Environment Policies Discussion Paper, which was part of Phase 2 of the Official Plan Review. The Discussion Paper was a “starting point for public input” on defining the changing environmental policy and planning conditions in Ajax (Hodgins & Andis, 2009).

As no federal or provincial policies, or Durham Regional Official Plan policy frameworks on climate change exist at this time, it was important for Ajax to develop and adopt policy recommendations that were “appropriate, and defensible before the Ontario Municipal Board and courts” (Hodgins & Andis, 2009).
The Discussion Paper emphasized that, in this initial stage of the Environment Policy Review, it was important to be as all-encompassing as possible, to help ensure that foreseeable matters related to climate change would be considered and addressed in the Draft Official Plan Amendment.

The Environment Policies Discussion Paper recognized the distinction between adaptation and mitigation strategies, and emphasized the importance of providing a balance of both strategies. Overall, the Discussion Paper included recommendations for climate change adaptation strategies to be incorporated in several areas, including

*Air Quality and Urban Heat Island*: Designing neighbourhoods and buildings that can decrease the *urban heat island* effect in Ajax.

*Green Roofs*: Intensification of green roofs on new and existing buildings to manage stormwater, reduce energy use for cooling, and reduce the heat island.

*Coof Roofs*: Using light-coloured building materials and surfaces to reduce heat transfer to various surfaces.

*Permeable Surfaces*: inclusion of more permeable surfaces (i.e. porous concrete, interlocking pavers, reinforced turf, unit pavers) to reduce the amount of pollutants directly entering creeks and Lake Ontario and the volume of stormwater entering municipal stormwater infrastructure (Hodgins & Andis, 2009).

### 2.3 Official Plan Amendment 38

Translating the Environment Policies Discussion Paper into OPA 38 involved extensive public consultation. Ajax wanted the process to be as transparent and inclusive as possible (Hodgins, 2011). Overall, the driving impetus behind the Amendment was the notion of producing,

... Stronger ecosystem-based principles and policy direction regarding the Town’s natural resources and built environment required to respond to the challenges posed by the need to accommodate forecasted population/employment growth and climate change (Town of Ajax, 2010a).

Climate change formed a fundamental component of the Draft OPA and was afforded a dedicated section entitled “Climate Change Context and General Environmental Policies”. In this section, the Town describes policies “to enhance its adaptive capacity to moderate potential damages, take advantages or opportunities, and better cope with the consequences” (Town of Ajax, 2010b). Climate change policies were created under eight broad themes: Climate Change Protection; Air Quality and Urban Heat Island; Tree Canopy; Energy Conservation; Water Conservation; Urban Agriculture; Outdoor Lighting; and Renewable Energy. Additionally, certain policies outside of the specific Climate Change...
section dealt with adaptation. The relevant policies can be found in the Table 1 (though not all are explicitly identified as climate change adaptation):

As part of the Discussion Paper and policy development process, staff consulted with each of the Town’s Citizen Advisory Committees (Accessibility; Diversity and Community Engagement; Environmental; Heritage; and, Recreation, Arts and Culture). One Town Councillor sits on each Advisory Committee, creating a communication link with Council. Consultation with the Citizen Advisory Committees was helpful in developing a policy direction that reflected the relationship between community planning and climate change. For example, the Environmental Advisory Committee emphasized that protecting and enhancing the Town’s existing natural heritage features and their functions from an ecosystem perspective could be instrumental in helping to mitigate the impacts of climate change (Andis, 2011).

In April 2009, Council authorized staff to present the Discussion Paper at a public open house and to prepare draft OPA 38 (Town of Ajax, 2009a).

Draft OPA 38 was introduced widely to the community through further consultation activities including a statutory public open house (advertised through the newspaper, the Town’s website, Facebook, email, and mail), a comment form on the Town’s website, and additional discussion with other relevant stakeholders (e.g.; Durham Region and the Conservation Authorities) (Town of Ajax, 2009a).

Thorough consultation was managed by Town staff using a variety of approaches, including “branding” the Official Plan Review process and its various components, and involving:

- Presentations tailored to each audience, including all Town Advisory Committees, and discussions/comments;
- Meetings with the Youth Engagement Committee (mini-charette illustrating how urban design influences both the natural and built environment);
- Posting the Discussion Paper and draft/proposed versions of OPA 38 on the Town’s website with an online comment form for the duration of the Review process;
- Advertising and conducting several Public Open Houses (in afternoons and evenings) and a Statutory Public Meeting;
- Presentations to the development and building industry
- Sending e-surveys to roughly 300 BILD\textsuperscript{1}/DRHBA\textsuperscript{2} members requesting feedback and suggestions on policies promoting green building design, green and energy efficient technologies and building materials. As well, the survey asked for feedback on existing obstacles to green building and what policies could overcome them to promote usage; and
- Meetings with several regional and provincial authorities to obtain their advice (Town of Ajax, 2009a).

\textsuperscript{1} BILD refers to the Building Industry and Land Development Association (BILD, 2011).
\textsuperscript{2} DRHBA refers to the Durham Region Home Builders Association (DRHBA, 2008).
While public participation was not as extensive as hoped, the questions and input received from the residents and the Advisory Committees were focused and contributed substantially to the environmental policy framework in OPA 38, including the climate change mitigation and adaptation policies (Hodgins, 2011). Draft OPA 38 provides strong policy language around climate change.

Public and agency feedback suggested revisions that strengthened policies, and confirmed that OPA 38 appropriately addressed a wide range of environmental issues that mattered to the community. This process led staff and council to strengthen the policies that were presented in Draft OPA 38 and to consider new ideas, including Health Impact Assessments.

Additionally, during this phase of the Environmental Policy Review, staff led a focused consultation program (one-to-one) with the owners of large vacant land holdings within the Town’s fixed Urban Area Boundary – to listen to concerns and work toward mutually agreeable solutions wherever possible.

On the whole, there were very few concerns expressed by the development community. There was some limited opposition regarding perceptions of the ‘prescriptive’ nature of green development policies. Some concerns were eased with minimal modifications that changed the language from prescriptive to encouraging, facilitating a smoother and more incremental transition to more environmentally sensitive development in Ajax.

For instance, Goal 2.1.1 (b) of the Draft version of OPA 38 initially read,

Develop and implement an integrated Climate Change Action Plan with mitigation and adaptation strategies through a coordinated plan, to improve resilience to environmental stresses and changes (Town of Ajax, 2010a).

In the Council Adopted version of OPA 38 it was changed to read,

Develop and implement climate change mitigation and adaptation strategies through a coordinated plan (Town of Ajax, 2010b).

During this period, the Town committed resources to developing an Integrated Community Sustainability Plan (ICSP) funded by the Federation of Canadian Municipalities and subject to a certain time frame. At the time, it was not clear if there might be "overlap" between an ICSP and of a Climate Change Action Plan.

Additionally, certain elements of Draft OPA 38 were strengthened when translated into Council Adopted OPA 38. Consider Section 2.1.2 (a), which initially read,

Prepare an effective, coordinated Climate Change Action Plan containing mitigation and adaptation strategies to reduce the environmental as well as social and
economic effects of predicted climate change on the community. Such a Plan shall, among other matters, identify how to reduce the risk of damage to buildings, infrastructure and the environment for all types of development and site alteration by... (Town of Ajax, 2010a).

Changes were made to Section 2.1.2 (a) in Council Adopted OPA 38 to read as follows,

Prepare an effective, integrated Climate Change Action Plan containing mitigation and adaptation strategies to reduce the environmental, social and economic effects of predicted climate change and severe weather events on the community. Adaptation will increase the Town’s ability to reduce, and cope with disruptions to critical community infrastructure and minimize risks to health and safety over time. The Plan shall, among other matters, identify how to reduce or mitigate the risk to people and damage to property, buildings, infrastructure and the environment. In part, this shall be achieved through the design and retrofit of development and site alteration... (Town of Ajax, 2010b).

There were several reasons for the addition of stronger language. This approach enabled planners to make future changes based on public and political input, and for alignment with the Town’s budget forecast and anticipated resources in various Departments (i.e. time, money, or staff).

Finally, Hodgins (2011) explained that some of the suggested recommendations were included because they reflected and reinforced provisions in other Council-approved Town Plans. In general, the principles, goals and policies set out in Draft OPA 38 remained intact, with very few changes and very limited concern/opposition from the community.

On June 14, 2010, Ajax Council Adopted OPA 38 (Town of Ajax, 2011a). Pre-consultation comments exchanged by the Region and follow-up meetings indicated the Region was not proposing any substantive changes.

On October 13, 2011, the Region of Durham issued a Post-Circulation letter to the Town primarily recommending minor housekeeping modifications. A Town staff report to the Community Affairs and Planning Committee recommending endorsement of the modifications to OPA 38 was scheduled for November 28, 2011. Once Town of Ajax Council’s Resolution was received by the Region, the Regional Planning Commissioner issued a Notice of Decision on OPA 38. OPA 38 came into full force and effect in December, 2011.
<table>
<thead>
<tr>
<th>Section #</th>
<th>Section Title</th>
<th>Adaptation Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.1</td>
<td>Goals</td>
<td>b) Develop and implement an integrated Climate Change Action Plan with <em>mitigation</em> and <em>adaptation</em> strategies to improve <em>resilience</em> to environmental stresses and changes.</td>
</tr>
<tr>
<td>2.1.1</td>
<td>Goals</td>
<td>c) Require environmental designs and retrofits of buildings and <em>infrastructure</em> in the Built Environment that reduce the quantity and improve the quality of stormwater runoff.</td>
</tr>
<tr>
<td>2.1.2</td>
<td>Climate Change Protection</td>
<td>a) Prepare an effective, integrated Climate Change Action Plan containing <em>mitigation</em> and <em>adaptation</em> strategies, to reduce the environmental, social and economic effects of predicted <em>climate change</em> and severe weather events on the community. <em>Adaptation</em> will increase the Town’s ability to reduce, and cope with disruptions to critical community <em>infrastructure</em> and minimize risks to health and safety over time. The Plan shall, among other matters, identify how to reduce or mitigate the risk to people and damage to property, buildings, <em>infrastructure</em> and the environment. In part, this shall be achieved through the design and retrofit of <em>development</em> and <em>site alteration</em> by:</td>
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<tr>
<td></td>
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<td>i) increasing the proportion of permeable surfaces to reduce flood risk and strain on sanitary sewer and stormwater <em>infrastructure</em>.</td>
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<tr>
<td>2.1.3</td>
<td>Air Quality and Urban Heat Island</td>
<td>c) Define urban heat island action areas for targeted greening.</td>
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<tr>
<td>2.1.3</td>
<td>Air Quality and Urban Heat Island</td>
<td>d) Promote tree planting and innovative green spaces, such as green roofs in new and existing <em>development</em>, to reduce energy use through shading and sheltering.</td>
</tr>
<tr>
<td>2.1.3</td>
<td>Air Quality and Urban Heat Island</td>
<td>e) Promote the installation of artificial shade, such as covered walkways, awnings and canopies, in appropriate locations.</td>
</tr>
<tr>
<td>2.1.3</td>
<td>Air Quality and Urban Heat Island</td>
<td>f) Promote greater use of permeable surfaces and pervious pavement in areas such as parking lots and sidewalks, where appropriate, as well as by conducting pilot projects, and participating in public education programs.</td>
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<tr>
<td>2.1.4</td>
<td>Tree Canopy</td>
<td>a) Develop and implement an Urban Forest Master Plan.</td>
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<tr>
<td>2.1.4</td>
<td>Tree Canopy</td>
<td>b) Encourage the planting of native or non-native non-invasive tree species and vegetation that are resilient to <em>climate change</em> and provide high levels of carbon sequestration, subject to the Town’s approval, particularly through new <em>development</em> and on municipally-owned land.</td>
</tr>
<tr>
<td>2.1.4</td>
<td>Tree Canopy</td>
<td>c) Consider enacting a Town-wide tree-cutting by-law to regulate the destruction or injury of trees.</td>
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<tr>
<td>2.1.4</td>
<td>Tree Canopy</td>
<td>f) Encourage tree planting by local residents and organizations, and educate residents about the benefits of planting trees versus the environmental impact of removing trees.</td>
</tr>
<tr>
<td>2.1.7</td>
<td>Urban Agriculture</td>
<td>b) Encourage the establishment of community gardens in suitable locations having maximum exposure to sunlight. Community gardens shall not be permitted in the Environmental Protection designation and in areas contaminated by existing or previous land uses. Community gardens and associated accessory structures, such as garden sheds, shall be minor in scale and secondary to the primary permitted land use(s).</td>
</tr>
<tr>
<td>2.1.7</td>
<td>Urban Agriculture</td>
<td>d) Encourage gardens on public and private lands designed to capture and infiltrate surface runoff.</td>
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<tr>
<td>2.1.7</td>
<td>Urban Agriculture</td>
<td>i) Consider establishing permanent agricultural easements to secure lands for community gardens in perpetuity.</td>
</tr>
<tr>
<td>2.2.2</td>
<td>Greenlands System (Policies)</td>
<td>a) Make decisions and take actions that will protect the Greenlands System, as a key structural element of this Plan, from the adverse effects of climate change, population growth and infrastructure to the fullest extent possible.</td>
</tr>
<tr>
<td>2.2.5.1</td>
<td>Environmental Protection (Goals)</td>
<td>a) Protect, enhance, and restore natural heritage features and areas, hydrologic features, and potential natural cover from the adverse effects and/or negative impacts of development and site alteration.</td>
</tr>
<tr>
<td>2.2.5.2</td>
<td>Environmental Protection (Policies)</td>
<td>a) Protect, enhance and restore all areas within the Environmental Protection designation, which are comprised of the following: i) natural heritage features and areas and their vegetation protection zones, ii) hydrologic features and their vegetation protection zones, iii) areas of potential natural cover, iv) the Lake Ontario waterfront, hazardous lands, and other water-related hazards; v) the Lake Iroquois Shoreline.</td>
</tr>
<tr>
<td>2.2.5.2</td>
<td>Environmental Protection (Policies)</td>
<td>f) Encourage senior governments, the Conservation Authorities, and agencies to review existing standards for various hazards to reflect the impacts of climate change in Ajax.</td>
</tr>
<tr>
<td>2.1.10.1</td>
<td>Lake Ontario Waterfront (Goals)</td>
<td>Protect people and property from the flooding, slope instability and erosion hazards resulting from severe weather events and climate change, development in watersheds, and fluctuations in the water level of Lake Ontario, using non-structural and structural protection works, and allowances for slope stability, flooding, and erosion, in conjunction with senior governments and Conservation Authorities.</td>
</tr>
<tr>
<td>2.1.10.2</td>
<td>Lake Ontario Waterfront (Policies)</td>
<td>e) Ensure the Watershed Plans for Carruthers, Duffins and Lynde Creeks evaluate the impact of planned development and infrastructure.</td>
</tr>
<tr>
<td>2.5.3</td>
<td>Green Buildings and Environmental Design</td>
<td>e) Promote the infiltration of stormwater, subject to underlying soil conditions, to improve local drainage.</td>
</tr>
<tr>
<td>2.5.3</td>
<td>Green Buildings and Environmental Design</td>
<td>f) Support and promote green industries and green building technologies and construction practices.</td>
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### 2.5.4.4 Stormwater Management Systems

**b)** Apply the following principles in the review of *development* applications:

i) stormwater will be considered to be a valuable water resource to be retained and infiltrated into the land within the Built Environment to the fullest extent possible, not a waste product;

ii) stormwater shall be discharged into *creeks* and the waterfront in a manner that does not cause additional flooding, erosion, slope instability, and reduced water quality;

iii) *development* shall be designed with regard for predicted impacts of *climate change*, such that the quantity of stormwater requiring conveyance from the Built Environment shall be minimized;

iv) stormwater management facilities shall be designed, maintained and upgraded, or modified to maintain and improve local water quality and environmental conditions, including nearshore water quality in Lake Ontario along the shoreline;

v) existing *creeks* are to be retained in naturalized, open channels and used to maintain and protect *creek* corridor integrity; and,

vi) stormwater management facilities will be designed to complement and enhance community amenities. Where stormwater management facilities are located contiguous to areas designated Environmental Protection or within areas designated Open Space, they will be treated as integrated, functional and aesthetic elements of the Greenlands System.

**e)** Encourage Conservation Authorities, in their review of *development* applications, to ensure that stormwater discharges from *development* in upper portions of *watersheds* shall not adversely affect the Town.

**i)** Encourage the use of permeable pavement and permeable surfaces, such as soft landscaping where possible, to allow infiltration of the first 5 mm or more of rain.

**j)** Require new *development* to be designed in accordance with the best available stormwater approaches, which may require a combination of practices to:

i) ensure, monitor, and preserve groundwater and baseflow characteristics, such as water quantity and quality;

ii) measure erosion near stormwater outfalls along *creek* banks periodically and, if necessary, install protective works;

iii) minimize increases in flood risk;

iv) reduce pollutant concentrations and loadings in surface water to *creeks* and Lake Ontario; and,

v) sustain the best possible diversity of aquatic life and *natural heritage features and areas, hydrologic features and hydrologic functions*. 

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3 Challenges

The Mayor, Councillors and staff interviewed for this case study confirmed that Council, Senior Management and the public supported the policies and goals of OPA 38, and Council unanimously endorsed both the Environment Policies Discussion Paper and OPA 38 (Andis, 2011). There were several challenges experienced in getting climate change adaptation integrated into Ajax’s Official Plan.

The first challenge was in proposing policies that are realistic and implementable. As with any plan, while it is relatively easy to identify the risks and assert that action should be taken, determining which actions are best for a community and developing them so that they are implementable is much more challenging. In the case of OPA 38, this challenge was eased by the knowledge that the policies would have to be reviewed after five years (Andis, 2011). The scheduled review process ensures that policy amendments can be made to reflect knowledge gained and to address challenges that may have arisen in implementing the policies (Andis, 2011).

Another challenge, identified by Mayor Parish and Councillor Jordan (2011), related to financial constraints on Town budgets. Suggested actions requiring substantial investments from the Town must be carefully implemented. To this end, prior to OPA 38 being put forward for political consideration, staff were requested to provide Senior Management with a timetable estimating when various actions could be taken (in the short, medium and long term) and what internal resources and external consulting support, if any, would be needed to do so.

From staff’s perspective, the challenge was to meet and, where possible, exceed Senior Management’s and Council’s expectations, knowing that staff’s recommendations tend to be well-received and having been asked to provide additional and/or enhanced policies during the process (Hodgins, 2011).

4 Lessons Learned

Lesson 1: Initial and sustained support from elected officials and senior management was essential for the development, adoption and implementation of climate change adaptation goals and policies.

Senior planners (Hodgins and Andis, 2009) were directed by senior staff and Council to prepare the Environment Policies Discussion Paper and OPA 38. Staff were given considerable flexibility to determine the contents of the environment policy framework in the various documents produced through the process.

Ajax’s Council support may be related to the “open-mindedness” of its members and other
factors, including Ajax’s strong sense of natural heritage, its previous direct experience with climate impacts (localized flooding), respect for its municipal staff, and strong communication with the community.

Lesson 2: Building on a range of existing policies, plans and studies can enhance the development of climate change adaptation goals and policies. When an Official Plan Review is conducted, as required under the Planning Act, the process affords opportunities to integrate implementable, relevant climate change adaptation goals and policies. Ajax’s review formalized in policy a variety of progressive environmental policies to which Ajax had previously committed and best practices that had been undertaken for some time. The policy framework was enhanced by including environment-related policies from other existing Town plans and policies (the need to ‘reinvent the wheel’ was avoided where suitable policy existed elsewhere).

Lesson 3: Extensive and thorough consultation will help garner widespread support, and also help to avoid disputes or confusion later on. From the outset, extensive public and agency consultation was crucial to the development, approval and subsequent implementation of OPA 38. Municipal staff engaged with various stakeholders using a variety of approaches. If groups or individuals chose not to engage in the opportunities provided by the Town, it was not due to a lack of effort or insufficient notice.

Lesson 4: Using the expertise and experience of municipal Advisory Committees, particularly an Environment Advisory Committee, leads to greater acceptance of proposed Official Plan policies within communities. Additionally, it contributes to a more “complete” environment policy framework. Ajax staff met with each advisory committee at least twice. These committees are made up of a combination of Council members and community members. They allowed for connection of high-level policies to what is occurring on the ground within the community and for capture of public perception of the Town’s actions. Additionally, staff’s presentation of the Discussion Paper and emerging environment policy framework helped educate Committee members so they could better appreciate the basis for and implications of climate change and adaptation to Ajax. They were provided with opportunities to have practical input into the Official Plan Review process. Consulting with these committees also enhances the transparency and accountability to the Official Plan Review process, as the community and Council not only contribute with input, but also provide comments, criticisms and a type of “quality control” that was appreciated.

Lesson 5: Use various and creative ways to communicate and engage with the public. While consultations were not widely attended, the input provided by those who attended was very focused and valuable. Many Ajax residents are commuters with limited time available to attend municipal consultation sessions. Low turnout may also suggest that the
public or relevant stakeholders accepted a substantial level of what was being proposed. Whether this is accurate or not, extensive communication can only serve to strengthen the relationship between municipal officials and the public. Information was provided through various means, including newspapers, mail, Facebook, the Town’s website and online forums.

**Lesson 6:** It can be challenging to incorporate the Provincial Policy Statement and relevant parts of new Provincial and Regional planning policies and related environmental legislation, such as the Endangered Species Act, into Official Plans, as their language and definitions can be different, but doing so is important to increase awareness of their requirements. Use the language in these policies to inform your goals and policies, but tailor them in a manner that more specifically relates to your community, as Official Plan policies can be more prescriptive.

Staff reviewed all applicable plans and policies from senior governments, and found that the language and definitions overlapped and varied (e.g. Provincial Policy Statement, Growth Plan for the Greater Golden Horseshoe, Greenbelt Plan, and the Durham Region Official Plan). This was evident when staff compiled a list of the definitions and faced the challenge of incorporating them as “italicized” words in the policies. These definitions were used not only to conform to upper level policies, but also to provide the basis for new, more local policies being introduced. Staff carefully crafted policies to ensure that defined terms were being used appropriately within the policy context. In some cases a defined term was used outside the meaning of the definition and was therefore not italicized.

**Lesson 7:** Municipal staff and council need a clear understanding of climate change mitigation versus adaptation strategies.

The lead authors (Hodgins and Andis, 2009) developed a strong understanding of both climate change adaptation and mitigation through extensive “homework”. This allowed them to communicate the difference easily to the public and stakeholders.

**Lesson 8:** Fear of pushing past traditional policy boundaries will hold back progress

The two senior planners made it their goal to be as detailed as possible when writing the Discussion Paper and to write clear, action-oriented goals and policies for OPA 38. They wrote policy direction on climate change adaptation that had never appeared in previous municipal documents. The planners recognized that the proposed policies could be amended prior to Council adoption, reflecting political realities (i.e. current resource limitations), but they challenged themselves to exceed expectations and in the end, very few modifications were made prior to Council’s adoption of OPA 38. In fact, Council requested staff to add more policies on other germane environmental matters prior to adoption.

Staff put significant effort into explaining the basis for OPA 38 throughout the Official Plan Review process, to ensure the rationale for the proposed policies were clearly understood by both the Ministry of Municipal Affairs and Housing and Durham Region Planning staff. Minor modifications to OPA 38 were proposed; however, both Ministry and Regional
planners determined that OPA 38 conforms to or complies with all applicable Provincial and Regional legislation and policies.

OPA 38 is a lengthy, comprehensive document that provides a forward-thinking rationale/policy framework for climate change adaptation and other environmental topics that can be readily adopted by any municipality in the GTA and southern Ontario.
References


Appendices

Plans and Policies Considered During Environmental Policies Review

**Text Box 3: Conformity**

In developing the contents (principles and policies) of OPA No. 38, the Town of Ajax was required to be consistent with all applicable federal and provincial policies, plans, and legislation as well as the Durham Regional Official Plan. Additionally, existing Town plans, ongoing Town programs and best practices were examined and, where appropriate, incorporated into the considerations to provide Official Plan policy support and guide future actions and decision-making. The following is a list, in no particular order, of some of the plans and policies that were considered during the Environmental Policies Review process:

**Provincial Government Initiatives**
- Ontarians with Disabilities Act, 2001
- Provincial Policy Statement, 2005*
- Greenbelt Plan, 2005*
- Ontario’s Biodiversity Strategy, 2005*
- Ontario Heritage Act, 2005*
- Accessibility for Ontarians with Disabilities Act, 2005*
- Growth Plan for the Greater Golden Horseshoe, 2006*
- Amendments to the Planning Act through the Planning and Conservation Land Statue Law Amendment Act, 2006*
- Building Code Act, 2006
- Drinking Water Source Protection, 2006
- Endangered Species Act, 2007*
- Pesticides Act, 2009*
- Proposed Green Energy and Green Economy Act, 2009 (Bill 150).

**Regional Government Initiatives**
- Regional Municipality of Durham Official Plan*
- Round Table on Climate Change
- Growing Durham.

**Town of Ajax Initiatives**
- Strategic Plan (2007-2010)
- Recreation, Parks and Culture Master Plan
- Green Fleet Strategy
- Urban Forest Strategy
- Draft Facility Accessibility Design Standards
- Site Plan Review Manual
- Bottled Water Policy
- Transportation Master Plan
- Public Art Policy
- Water and Energy Conservation
- Air Quality
- Central Ajax Employment Area Land Use Compatibility Study.

* Indicates new legislation enacted by senior levels of government with which OPA No. 38 was required to be consistent with or conform to. (Hodgins & Andis, 2009)