Environmental Strategy

For the City of Ottawa

October 2003
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1.0 From Here to 2020: Setting Ottawa’s Environmental Context

Environment has meaning for all of us – it is our water, our air, our ability to live. The environment represents conditions, ranging from local to global, involving all of the senses as well as the intangible, such as a sense of well-being, comfort, aesthetics, safety and community. The theme throughout these conditions is one in which environment encompasses the surroundings where we do our living. In addition to being our habitat, the environment provides living conditions for all species. Each of us, and the diverse plant, mammal, bird, insect and microbial species with which we share the earth, depend upon favourable living conditions.

Of course, the environmental conditions change as we move from our home to other locations for our daily activities, such as a workplace, school, restaurant, museum, local park, an Ottawa River pathway, or even the South March Highlands. As the activities and locations change, so do our expectations of our surroundings to some degree. Consistent, however, is our desire for comfortable, attractive, safe, clean and healthy living conditions. Striving to achieve these positive conditions within those environments over which we have control, influences all of our lives.

Besides providing us with the necessities of life – air, water, food, shelter – the environment provides us with the other raw materials that contribute to our sense of well-being, comfort and accomplishment. All the materials in our homes such as books, furniture, stereos, appliances, and clothes; items in our workplace such as paper, computers and machinery; and the built structure and components of our cities such as houses, factories, office towers, roads, vehicles, fuels, water and sewer pipes have all been converted from materials in the environment. The cycle of how we remove, use and dispose of these items can have significant impacts upon the health of the environment – the air, water and land upon which all species, including us, depend for life.

Most importantly, humans and approximately ten million other species depend upon a large and complex set of systems to work well and in harmony in order for all species to be healthy. Our ecosystem relies on balanced cycling of nutrients, carbon and water as organisms die and as materials are used and returned to the earth, water or air. Throughout the earth, all species are connected to each other through a myriad of food chains. From a material standpoint, we must be aware that the earth is a closed system within which materials are continually converted into new compounds through the birth of new individuals of all species, man-made construction of goods or structures, discharges by living individuals to the environment or through decay of materials that are no longer in use. All of these materials remain contained within the
living segment of the earth – within the land, water and air that supports life. Energy, however, flows freely into our atmosphere from the sun with much of this energy captured by growing plants. Energy also leaves the earth’s atmosphere as heat or reflected radiation. This set of systems is the one that we need to preserve in balance to keep us, and our ten million species of neighbours, healthy and thriving.

1.1 Ottawa’s Environmental Features

From the City of Ottawa’s perspective, we have the opportunity to influence many of the environments that each of us experiences daily. This includes the large geographic area of 2760 km² that comprises the City. Also, as the nation’s capital, we enjoy the benefits of having Canada’s Parliament buildings, a range of wonderful museums, the National Arts Centre and National Gallery of Canada in our backyard. As we move to the landmarks and characteristics of the city’s natural environment, the list is equally impressive.

Residents and tourists alike treasure the Ottawa River as a major feature of our city. Historically, the Ottawa River provided an east-west trade route and a transportation system for logs. Now, the Ottawa River and its border of greenspace provides a respite for young and old, for those who wish to sit and gaze and think, to explore nature, as well as a place for more active pursuits like sailing, cycling, walking or training for the Olympics. This river also provides the drinking water for 723,000 residents in Ottawa through the City’s water treatment service that provides some of the highest quality drinking water in Canada. Wildlife also thrive within the waters and along the vegetated shores of our rivers. When looking for a place to think and where one can appreciate the beauty of our rivers, a captive destination is Rideau Falls, where the Rideau River empties with a roar into the Ottawa River.

Natural beauty and recreational opportunities also abound along the Rideau Canal and Rideau River that flow through our City. These systems provide a north-south water link for our City, support a majestic greenway corridor and represent a rich part of the early history of Ottawa. Both the Canal and the River attract thousands of residents and tourists each year. This provides a sense of vitality to our community. However, we must also take care of these systems to ensure their continued enjoyment.

From the perspective of major river systems, our City is home to three watersheds – the South Nation to the east, the Rideau River Watershed dominates the central portion of the City, and the Mississippi River Watershed to the west. In all three cases, the watersheds extend beyond the City of Ottawa municipal boundaries. Within the Rideau and Mississippi River watersheds, the City supports the downstream portions of the rivers, prior to their flow into the Ottawa River. The South Nation River flows in a south-easterly direction with Ottawa’s activities and land uses, impacting the quality of water flowing through our neighbouring communities downstream.
Connected to the river systems and watersheds of our City is a network of other natural features including forest and wetlands. **Map 1, Natural Landscapes in the City of Ottawa**, shows the physical relationship between these natural features. Other greenspaces include meadows, parks and other areas of open space. Likely the most recognized feature of the greenspace network is Ottawa’s Greenbelt as it borders a significant portion of the City’s urban or developed area. The Greenbelt, established by the National Capital Commission through land acquisition beginning in the late 1950s, is a source of pride and accomplishment for residents and a marvel for visitors flying or driving into the City. Major natural environment areas include the South March Highlands, Marlborough Forest and Stony Swamp to the west, and as well as Mer Bleue and Petrie Island to the east. Approximately 28% of the City’s land area is forested, the majority of which is located within the rural areas of the City. Almost 43%, or 1200 km², of the City is greenspace, including these forests, natural environment areas, open spaces and more than 850 parks. A further 36% of our land supports agricultural activities.

### 1.2 A Community Vision for Managing Growth: Ottawa 20/20

In evaluating the factors that will influence the City of Ottawa’s environment over the next twenty years, the major driving factor for change will be the increase in the number of people living within our City. The population is estimated to increase by approximately 50%, from 800,000 currently to approximately 1.0 to 1.2 million by the year 2020. This is a level of growth that is unprecedented in the history of Ottawa. To respond creatively to this change, to preserve, and ideally enhance our quality of life, the City of Ottawa undertook the Ottawa 20/20 planning process to define how we would plan and direct this growth over the next two decades.

Through 2002, numerous discussions occurred within the community, including meetings of Ward neighbours, environmental groups, community groups and business sectors. Ideas captured within these sessions determined the vision of how residents would like to see the City twenty years from now. This process identified seven main themes that the City has adopted as the Guiding Principles to manage the projected growth. These seven Guiding Principles and the goals that support them are described below.

#### A Caring and Inclusive City

- **Personal Safety and Security** – All people feel safe in their homes and communities.
- **Access to the Basics** – All people have access to adequate income, food, clothing, housing, transportation, health services and recreation.
- **Citizen Engagement** – Everyone has the opportunity to fully participate in the life of their community.
- **Diversity** – The people of Ottawa respect and celebrate cultural and social diversity, and have access to services that are responsive to special and differing needs.
- **Seniors** – Seniors have access to community services that respond to their needs.
A Creative City Rich in Heritage, Unique in Identity

- **A Proud City** – The people of Ottawa are proud of their city and treasure its identity as a wonderful place to live.
- **A Capital City** – We cherish the city’s amenities, recognizing that as Canada’s capital city, we have a rich variety of things to do. Being the nation’s capital brings us tourists, gives us the national cultural perspective and a window to the world.
- **Vibrant Local Arts and Heritage** – Local arts and heritage give our community vitality; a path to creativity and innovation; and a sense of who we are.
- **Culture in Every Community** – Culture is present in every community through libraries, local museums and archives, the preservation of our heritage buildings, opportunities for artistic expression, and places that present and connect local arts to people.
- **Distinct Rural Countryside** – Ottawa’s rural areas are distinct from the urban areas – its rural landscapes, villages and heritage are valued by all.

A Green and Environmentally Sensitive City

- **A Green City** – Ottawa preserves natural habitats and has a network of green spaces. Trees are an important way of maintaining environmental integrity.
- **Development in Harmony with the Environment** – Using land wisely, development builds within the current urban boundary and avoids outward sprawl.
- **A Focus on Walking, Cycling and Transit** – Ottawa implements policies that favour walking, cycling and public transit over the use of private motor vehicles, thereby facilitating the use of modes of transportation that are socially accessible, environmentally healthy and economically feasible.
- **Clean Air, Water and Earth** – All people work to improve the quality of the natural environment; limit noise and light pollution; and protect natural resources and agricultural lands.

A City of Distinct, Liveable Communities

- **A Sense of Community** – All communities look right and feel right. They have an identity that defines them and fosters pride and belonging among residents.
- **Complete Communities** – Ottawa’s communities have a variety of housing choices, employment, parks and a wide range of services and facilities accessible by walking, cycling and transit.
- **Easy Mobility** – Communities are easy to get around in and barrier-free for the disabled. There are wide sidewalks and recreational pathways; there is frequent, accessible transit service.
- **Beauty** – Ottawa’s communities are pleasing to the eye. They are interesting, clean, and benefit from an abundance of trees.

An Innovative City Where Prosperity is Shared Among All

- **Strong Export-Based Economic Generators** – Ottawa develops and supports local innovators to create a critical mass of knowledge and experience that attracts venture capital, more talent, and spins off new companies.
Strong Local Business – Ottawa’s local businesses thrive in an environment that provides opportunities for entrepreneurship, tourism and commerce.

Strong Rural Economy – All people recognize and support the special role of agriculture, rural businesses and tourism in our economy.

Connecting People to Opportunities – Citizens have access to quality training, information, education and community services that provide support to overcome barriers; increase employment; reduce poverty; and create opportunities to participate in the community.

Connecting Businesses to a Skilled Workforce – Ottawa’s skilled workforce attracts businesses to our city that in turn provide quality jobs.

A Responsible and Responsive City

Accountability – The City demonstrates leadership by following through and sticking to its decisions and by conducting on-going strategic monitoring and making appropriate adjustments.

Fiscal Responsibility – The City does not spend more than it can afford. It looks for innovative ways to fund and deliver services and makes efficient use of its infrastructure and resources.

Conduct an Open and Participatory Process – The City conducts business in a broad and open way that makes it easy for everyone to participate and collaborate.

Partnerships – The City works with other levels of government, the private sector and community-based organizations to achieve objectives.

Public Awareness – The City educates the public about important issues in order to raise awareness and understanding to enable the public to make knowledgeable choices.

A Healthy and Active City

Recreation and Sport – Citizens have the opportunity to participate in a broad range of recreational pursuits; personal fitness and sport activities.

Community Facilities – Recreation, arts and heritage facilities are provided to meet both local and citywide needs.

Accessibility – Citizens have access to affordable and barrier-free facilities, programs and services.

Health Protection and Promotion – Citizens have access to community based social and health promotion services.

1.3 Growth Management Plans and the Environmental Strategy

To address these seven Guiding Principles and associated goals, the City has developed five growth management plans that will direct growth over the next twenty years. The overall goal of the City’s Ottawa 20/20 planning process is to manage the growth in a sustainable way, such that the wealth of resources in our care are used in an effective manner. We want to be able to use and preserve these resources for both current residents and for future generations. The growth management plans focus on the strategic priorities...
needed to turn the guiding principles into more concrete policy directions to guide staff and Council as they balance competing priorities. They complement each other, and when viewed together they represent an approach that addresses and balances the social, economic and environmental interests of the community, ultimately leading to a strong and sustainable quality of life for Ottawa citizens. The growth management plans are described below. Their relationship to each other and a listing of supporting plans for each is illustrated in Figure 1.

The Official Plan sets out the new rules for the City’s physical development. It promotes walking, cycling and transit as viable alternatives to automobiles, supports development within existing urban and village boundaries, and aims to increase residential and employment densities along the rapid transit corridors, arterial roads and on main streets. The plan capitalizes on the many overlooked opportunities to focus growth in already built-up areas such as on parking lots, vacant and underused parcels of land, and above shops on main streets. The plan commits the City to building a stronger culture of design and a greater awareness of how urban design can contribute to the quality of the City’s urban environment.

But growing smarter will require more than just physical changes. Ottawa 20/20 called on the residents to look beyond material structures to the range of other factors that influence the lives of its people. The result is an ensemble of strategic plans laying out new directions for Ottawa on the full range of policy issues: an Economic Strategy, a Human Services Plan, an Arts and Heritage Plan, and an Environmental Strategy.

As in other cities, many businesses in Ottawa now compete globally. Cities must identify existing strengths and key opportunities in order to attract investment and a qualified work force. Ottawa 20/20’s Economic Strategy sets out the City’s strategy for positioning Ottawa for innovation, competitiveness and prosperity in the next two decades. The goal of the strategy is to help build a diverse community that is both prosperous and liveable, a city in which a growing economy generates high-quality jobs, investment and an improved quality of life. The strategy lays out policies for key Ottawa business markets, including the export sector, the local market and the rural sector. It analyses major economic trends such as how the new economy is changing business relationships in the region, the emergence of business “clusters”, and the importance of building an “innovation pipeline” in Ottawa.

The Human Services Plan is the people component of the Ottawa 20/20 sustainable growth planning process. The plan lays out strategies, sets priorities and directs investment in such areas as: community funding, recreation, arts and culture, libraries, employment and financial assistance, public health, long-term care, childcare, as well as affordable housing, police, fire, paramedic, by-law, and emergency and protective services. While its goal of maximizing investments in people to ensure a high quality of life may seem familiar, Ottawa’s new Human Services Plan introduces concepts and directions tied to sustainability, innovation, creativity, and collaboration.
The **Arts and Heritage Plan** addresses culture through two lenses: heritage and creativity. On the heritage side, the plan maps out the challenges and opportunities to be faced and the actions required to ensure the identification and preservation of local heritage through museums, archives, historic sites, historic buildings and cultural landscapes. But there is more to heritage than documents, artefacts and buildings. The ongoing research and interpretation of local heritage is as important as its preservation. On the arts side, the plan recognizes the primary need for the City to invest – and encourage others to invest – in the local arts sector, in order to sustain and build Ottawa’s creative capacity. The Plan includes measures aimed at improving and developing an appropriately supported network of artistic venues, increasing public access to information about Ottawa’s local arts scene, supporting community arts programs and nurturing public art. Strategies that aim to increase opportunities for Ottawa artists to work and to present their work remain key to building Ottawa as a creative and competitive city.

The **Environmental Strategy** addresses the need to protect and strengthen local ecological features and processes, and to reduce the city’s environmental impact at the global level. The Environmental Strategy will contribute to all of the guiding principles, however, its main focus will be the achievement of a *Green and Environmentally Sensitive City* and its goals, as follows:

- A Green City
- Development in Harmony with Nature
- A Focus on Walking, Cycling, and Transit
- Clean Air, Water and Earth

Ottawa is geographically very large and is blessed with a wide range of ecosystem types and ecological processes. Urban development that is not sensitive to ecological features and processes will gradually undermine them and result in serious problems that will not only compromise human health in the long-term, but be extremely expensive to remediate after the fact.

Issues addressed by this strategy include: air quality, preserving our natural habitats, promoting biodiversity, protecting groundwater, reducing soil decline and erosion, contributing to the health of the urban forest, reducing resource consumption, waste production and energy use, as well greenhouse gas emissions. The Environmental Strategy outlines a process for how specific objectives and targets will be determined along with the initiatives to achieve these targets and objectives. Given that our environment surrounds us everywhere we go, that all of our activities can impact the environmental quality – either positively or negatively – and that we are an integral part of that environment, that the physical components of air, water and soil (through food) filter through our bodies and those of all other organisms, the approach for our longer-term management must be developed collectively.
In April 2003, City Council adopted four of the five growth management plans for the City. This final version of the Environmental Strategy, the fifth growth management plan, will be presented to Council in October 2003.

The Environmental Strategy provides a guide to decision-making both within the City of Ottawa as a Corporation and as a Community. Its overall objective is to encourage and achieve sound management of our environment in balance with community needs and economic factors. By implementing the Environmental Strategy’s direction in concert with the City’s other strategic plans, we will be working together to achieve a more sustainable community for Ottawa in 2020.
2.0 Environmental Trends and Milestones

As the world’s population increases along with our overall economic prosperity, the impacts upon our environment continue to increase as well. The true cost of environmental degradation, however, is not fully accounted into our economic model. As the world’s knowledge base increases, people are becoming more aware of their impacts upon the environment and are seeking ways to reduce these impacts. This section outlines some of the observed environmental trends, the responses of other jurisdictions, global and national environmental commitments and our local responsibility in sound environmental management that will lead to a sustainable way of life both within and beyond the City of Ottawa boundaries.

2.1 Global Environmental Trends and Commitments

Environmental commitments have been undertaken globally over the past thirty years, starting with the United Nations’ Conference on the Human Environment in 1972. The public awareness established by this conference prompted the Bruntland report, *Our Common Future*. This report, published in 1987, was responsible for establishing the term *sustainable development*, defined as “economic development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Two decades later, compounding evidence of human effects on the environment in such areas as acid rain, stratospheric ozone depletion, climate change and loss of biodiversity led to the first Earth Summit in Rio de Janeiro, Brazil in 1992.

Ten years after that, the 2002 Earth Summit in Johannesburg, South Africa reaffirmed the commitment to sustainable development by calling on each and every one of us to build a humane, equitable and caring global society. Most importantly, the Summit’s declaration stressed an urgent need to address environmental deterioration. Specific actions, along with the supporting rationale for action that garnered the commitment of Canada and other Summit participants, are listed below:

- **Water and Sanitation** – Water is essential for all life and is a key resource for good health, food and energy production and the maintenance of ecosystem integrity. Commitments to act include the provision of safe drinking water supplies to all; preparation and implementation of water management plans; the improvement of water productivity in agriculture; the safeguarding of human health; and the protection of aquatic systems.

- **Energy** – Energy provides the means for humans to meet their basic life needs more easily. The summit identified a need to improve access to diverse, affordable and sustainable energy sources worldwide. Activities to accomplish this include: establishment and enforcement, by industrial countries, of emission standards that will drive innovation and markets toward more sustainable
technologies; improvement of rural and developing world access to energy services; implementation of energy efficiency and conservation initiatives; and investment in renewable resource technologies.

- **Health and Environment** – A direct relationship exists between the health of people and the health of the environment that they inhabit. In addition, human health status can be both an indicator and resource for sustainable development, i.e. if poverty is decreased, health is increased and people spend less time meeting basic life needs and have more time to contribute to environmental health. Countries committed to reduce poverty and malnutrition; improve access to healthcare services; and to control or eradicate major diseases.

- **Agriculture** – The global accomplishment of sustainable agriculture will be key to helping eliminate hunger and poverty. Countries committed to strengthen knowledge systems; expand rural infrastructure and services; undertake policy and institutional reform; and increase funding and cooperation.

- **Biodiversity and Ecosystem Management** – From a human perspective, loss of biodiversity significantly impacts upon the economic status of goods (such as food, medicine, building materials) and ecosystem services (clean water, nutrient cycling, clean air). The summit identified the need for countries worldwide to integrate biodiversity and ecosystem management principles into everyday practices, reverse loss of environmental resources through restoration efforts and to implement conservation initiatives.

Delegates at this Summit also committed to: develop specific plans to reverse degradation of agricultural lands, protect the global environment, and develop a ten-year framework of programs to accelerate the shift toward sustainable consumption and production.

In addition to participating in the Johannesburg Earth Summit, Canada ratified the Kyoto Protocol in 2002. This agreement committed Canada to reduce, by 2012, its greenhouse gas emissions to a level that is 6% below the 1990 levels. The Protocol is only binding at an international level if a sufficient number of countries sign with that number defined as enough countries to represent 55% of the total global carbon dioxide emitted in 1990. Should this condition not be met – we currently rest at approximately 44% – and the Kyoto Protocol not become legally binding at an international level, those nations that have signed will still proceed to reduce their greenhouse gas emissions. To respond to its ratification of the Kyoto Protocol, Canada released a *Climate Change Plan* in April 2003. This Plan identifies an approach and some of the measures to reduce our energy consumption and reliance on fossil fuels. Contributions to reduce greenhouse gases are identified for individuals, provinces, municipalities, industrial sectors and commercial enterprises.

*The Climate Change Plan* notes that municipalities have direct and indirect control of approximately 50% of energy use, and thus greenhouse gas emissions, within Canada. Key areas of municipal involvement include influencing individuals, industrial sectors and commercial enterprises in reducing energy used in transportation, home and building construction and maintenance, and waste production and management.
Municipalities can also reduce energy consumption by planning and implementing compact urban form, encouraging renewable energy sources and implementing energy efficiency in their own business. On August 12, 2003, the federal government announced a funding plan that will encourage individuals, business sectors and agencies to begin to implement greenhouse gas emission reductions. Opportunities for municipalities include potential access to transportation and building efficiency upgrades.

International agreements Canada has joined in the past include:

- Great Lakes Water Quality Agreement to work jointly with the United States to enhance and protect the water quality of the Great Lakes;
- Montreal Protocol that established a timetable to eliminate the discharge of chlorofluorocarbons to the atmosphere to protect and restore the ozone layer in the upper atmosphere.

## 2.2 The Canadian Experience

Overall, global and national organizations are recognizing that the health and quality of our environment is closely tied to our social and economic well-being. In response, many are making commitments to safeguard and enhance their environments.

A 2002 report by the United Nations on the state of the environment within North America notes improvements to our environment over the last thirty years, in such areas as:

- Protecting the ozone layer;
- Reducing emissions causing acid rain;
- Protecting parks and natural areas (11-13% overall land area);
- Slowing wetland losses;
- Reducing emissions from point sources (e.g. industries);
- Reducing pollution loading to the Great Lakes; and
- Expansion of plant cover in areas subject to soil desertification.

This report also identifies a number of environmental trends that are creating pressures at both a national level and within our community, including:

- A 31% increase in energy use between 1972 and 1997; and
- An increase in the number of automobiles and in the kilometres traveled, along with a trend towards heavier, less fuel-efficient vehicles that have more than offset improvements in vehicle fuel efficiency.
Resource efficiency and waste reduction efforts have been negatively affected by a “consumer lifestyle based on the desire for mobility, convenience and product disposability”1.

Many Canadian government agencies have developed strategies and plans to address environmental issues, along with tools and processes to effectively manage their environmental resources. For example, at the Rio Conference in 1992, Canada committed to preparing sustainable development strategies for all federal departments. In evaluating the completed sustainable development strategies, the Commissioner of Environment and Sustainable Development observed in 2002 that integration of sustainable development into planning and policies has been an important first step. However, the Commissioner recognized that strategy implementation will take some time and identified the following as crucial factors for success:

- strategic commitments must be clear, measurable, understandable and effective;
- implementation approaches should be simple and practical;
- the strategies should maintain a focus on outcomes and demonstrate how the departments will deliver their business differently to achieve sustainability;
- sustainable development principles must be integrated into all policy and planning documents, including business plans; and
- demonstrate that the long-term outcomes are the achievement of sustainable practices in all aspects of government business.

At the Provincial level, the Environmental Commissioner of Ontario reviewed the Provincial environmental state of affairs in the 2001/2002 report on Ontario’s environment. Mr. Gord Miller noted that “sustainable development has not been substantially incorporated into decision-making in Ontario” even though the approach has enormous potential to preserve capital – both the natural capital of our ecosystems and invested financial capital. When applying sustainable development principles, the requirement to conserve materials and energy inspires a level of efficiency and innovation that is characteristic of free enterprise. The Commissioner also noted that the resistance to sustainable development is likely due to people remaining with familiar approaches. To help change our focus, one suggestion is to reverse the term “sustainable development”, and instead concentrate on “developing sustainability”.

2.3 Our Municipal Role

Municipalities in Canada are fortunate to have a history of sharing their experiences and information amongst themselves and through the Federation of Canadian Municipalities. Many guides, best practices and approaches have evolved amongst organizations in recent years to guide organizations and

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governments in working towards achievement of sustainable and effective environmental management practices. This means that the City has a wealth of knowledge to draw upon in addition to its own experiences and expertise. Through the process proposed by the Environmental Strategy, the City of Ottawa will be continuing to contribute to this network of knowledge, learning from and building upon it to help the progress of other organizations in Canada.

Some examples of best practices and guides include:

- the Federation of Canadian Municipalities in partnership with the National Research Council is developing a Sustainable Infrastructure Guide. As part of the Guide development, scans of best practices are conducted in a variety of areas with recommendations for how municipalities can construct, operate and maintain sustainable infrastructures for water, wastewater, roads, infrastructure planning and environmental management.
- Environment Canada and Natural Resources Canada have programs and tools to assist organizations in reducing energy consumption and developing instruments to address environmental issues.
- Various guides to sustainable communities, prepared by the Federation of Canadian Municipalities and Canada Mortgage and Housing Corporation.
- Industry Canada is developing an Environmental Management System (EMS) support network for municipalities.
- Federal Government Sustainable Development Strategies prepared by all departments;
- Strategic environmental plans and innovative environmental initiatives implemented by municipalities across Canada and globally.

In preparing this Environmental Strategy, staff researched best practices for environmental management within other jurisdictions. A summary of the findings is presented in Annex 1 as Summary of Environmental Management Best Practices – 2003, organized by key environmental issues.

We consume large quantities of resources in Ottawa, at a level that is consistent with national consumption levels. Canadians as a whole consume large amounts of resources, resulting in an ecological footprint\(^2\) that would take three to five planets to support\(^3\), if people throughout the world consumed at our average rate. Examples of local consumption include 124,000 litres of water annually for the average resident in Ottawa and an average household production of 10.7 tonnes of carbon dioxide and 920 kilograms of solid waste.

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\(^2\) The Ecological Footprint is a method developed to determine the amount of productive land required to support our lifestyle. It takes into account energy and resource requirement related to factors such as style of residence, transportation habits, frequency of purchases, home heating system.

\(^3\) A variety of resources and estimates exist for calculating our ecological footprint. Some references include: Mathis Wackernagel, How Big is Our Ecological Footprint?, UBC Task Force on Healthy and Sustainable Communities, 1993; International Council of Local Environmental Initiatives at [www.iclei.org](http://www.iclei.org); and The Natural Step. 2000. the Natural Step – The Natural Step Framework Guidebook.
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(garbage, recycled products and leaf and yard materials) per year. Our city’s air quality is good, but Ottawa, like other cities, is seeing an increase in the number of annual smog days.

The industrial makeup of our City is unique when compared to other large Canadian cities. The city supports more service-oriented than manufacturing industries. This means that the individual actions each of us takes can have a larger overall impact on the city’s health. However, we must still count ourselves responsible for the industrial emissions that occur in other cities as a result of the products that we demand. We must also remember that our impact extends beyond our boundaries. For example, materials that we discharge to our water and our air flow beyond the city limits. In addition, much of the food we consume and many of the products that we buy come from other places. We share responsibility for the impacts resulting from the production and transportation of these products.

Annex 2 provides a summary of environmental issues at both the national and local level and the interest and concerns expressed by our community through Ottawa 20/20 consultation. In reviewing this summary, the role of the City of Ottawa in managing these issues becomes evident. As the Nation’s Capital, Ottawa’s obligation to follow national commitments, such as the Kyoto Protocol and the 2002 Earth Summit, and to demonstrate environmental leadership locally, nationally and globally, is particularly prominent. At a more local level, the community, both within and beyond the city’s boundaries, has come to expect it.

Also evident is the considerable range of environmental issues within Ottawa – from greenspace quality and quantity, species health and biodiversity to water, soil and air quality management – as well as the range of services we provide. The City of Ottawa provides waste and wastewater collection and provision of drinking water, recreational, social, health, emergency and protective services daily to a community of 800,000 residents. The City also owns and manages a significant number of properties and facilities, including 5200 kilometres of roads, 37 kilometres of Transitway, 200,000 right-of-way trees, and 825 parks covering 3220 hectares. Through the management of environmental issues and delivery of services, the municipal level of government provides the greatest opportunity for interaction with the community at large, thus positioning municipalities to demonstrate sound environmental management practices through balancing and promoting environmental initiatives and impacts with our social and economic considerations and needs.

What is key is that the City should not, or cannot, accomplish a sustainable community through its own actions. It is the community – individuals, industries, businesses, government agencies, non-government and not-for-profit agencies and community groups – that can make the greatest changes in our environment. It is therefore the role of the City as a Corporation to tap into best practices established by other organizations and to continue to coordinate its efforts with these organizations. The City can then begin to demonstrate those practices most appropriate to the community. From there, it falls upon the
community to follow this example, with support and reinforcement from City policies, programs and initiatives.

Annex 3 provides an overview of respective environmental roles to help establish clear roles of responsibility and to identify the coordination and partnership opportunities in implementing sustainability initiatives within the City.
3.0 The Environmental Strategy

The Environmental Strategy outlines a process for achieving community based environmental goals and Corporate environmental commitments. The Environmental Strategy consists of four main components that build upon each other: Setting Goals and Corporate Environmental Commitments; Strategic and Program Planning; Corporate Environmental Action Planning; and a Target Setting and Monitoring process. A commitment to this process will ensure that projects and programs are identified and matched to the environmental goals and commitments.

3.1 Setting Goals and Corporate Commitments

Citizens articulated their experiences and desires for the environment of the City of Ottawa through the Ottawa 20/20 consultations. The Corporation of the City of Ottawa, as a business and corporate entity, has the opportunity and obligation to deliver its services and programs, as well as deliver on all community-generated goals, in an environmentally sound manner. Both the community goals and Corporate commitments will be considered together when developing the action plans that will implement the Environmental Strategy.

3.1.1 Community Generated Environmental Goals

Through Ottawa 20/20, the community identified four comprehensive environmental goals to achieve a Green and Environmentally Sensitive City over the next twenty years. This section takes a closer look at what these goals mean and identifies their common features and relationships.

At one level, the environmental system is so complex that we cannot expect to ever fully understand ecological interconnections and relationships, or fully predict the outcomes of our actions on natural processes. In addition, since we are a part of the environment, as our interactions change, our role in the environment and our influence will also change. We are part of a dynamic system.

However, on another level, the complexity and inter-related nature of the environment means that a single action we may take can help work towards multiple goals for environmental protection. For example, removing forty cars from making a daily commute to work, the equivalent of one standard transit bus full of people, would decrease greenhouse gas emissions by one hundred and thirty-five tonnes per year\(^4\). There would be a corresponding decrease in air pollutants such as particulate matter, sulphur dioxide and

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\(^4\) This figure is based on an assumption of an individual reducing their car use by seventy percent by using transit for their work commute. Each car would reduce their carbon dioxide emissions by 3.4 tonnes per year.
nitrous oxides. With the cleaner air, both people and plant and animal life would see health benefits. As well, the road infrastructure and those vehicles that are now used less would last longer, delaying the need for replacement materials, as well as extending the life of our fossil fuel resources.

The interconnectedness of the goals means that the benefits from implementing one goal can result in a corresponding positive gain towards other goals. For example, the retention of greenspaces (Goal 1), can positively influence the design of new communities (Goal 2) and can provide more opportunities for safe and enjoyable cycling (Goal 3). Greenspaces also lead to cleaner water (Goal 4) because their porous surfaces can accept and filter surface runoff from less porous areas such as roofs, parking lots and roads.

Implementation of our environmental goals will also provide other benefits beyond those associated with the Environmental Strategy. The dependence of human health on environmental health reflects one of the key areas of sustainable development commitments from the Earth Summit in Johannesburg. The quality of our air, water and soil are direct determinants of human health because they provide us with the ability to breathe and provide us with a source of water and food and if contaminated, can lead to human ingestion of these contaminants. If we work towards maintaining and restoring clean air, water and earth through such efforts as reducing energy consumption, reducing smog, preventing contaminated surface runoff and managing contaminated sites (Goal 4), our community will be healthier overall. In addition, the retention of greenspace (Goal 1) and emphasis on walking and cycling (Goal 3) can result in an overall health benefits to the community as more people take their bikes to commute to work and enjoy their local natural features.

It is common threads such as these that help to simplify the development of a strategic approach to environmental protection by the City. The following sections explore the four goals that have been identified as forming the fundamental foundation upon which the Environmental Strategy is built.
GOAL 1:

A Green City is:
A city with trees, park spaces, forests, healthy rivers, creeks and streams, shorelines and undeveloped areas, all of which form a network of green spaces. A greener city is a calmer city, where residents feel more relaxed walking, driving or playing. Greenspaces, trees and forests are accessible to the public and support healthy watercourses by improving water quality and regulating water quantity. They also provide a range of habitats across the city, helping to protect biodiversity. They also help improve air quality, help shade buildings and ground surfaces, and sequester carbon to help reduce climate change. A green city relies on strong communal transportation networks and land use planning. A Green City is one that is overall environmentally responsible.

A Green City strives to:
Eliminate the demand for an endless network of pavement, concrete and buildings that can confine trees to concrete baskets. A green city also strives to preserve water quality and quantity, terrestrial habitats such as urban and rural forests and wetlands, biodiversity and ecosystem integrity.

GOAL 2:

Development in Harmony with the Environment means:
Using developed spaces wisely to make the best use of existing infrastructure and to minimize disturbance of existing greenspaces and subwatersheds. It means considering natural cycles such as water, carbon and nutrient movement through the environment, prior to development, to protect their function and integrity. Development is planned on the basis of subwatershed units and incorporates greenspace and natural features into development designs, where possible, using both traditional and creative conservation measures. It means considering how resources will be used during and after development, and maximizing the efficiency of their use. Design in harmony with the environment will mean changes to some standards (for stormwater management, for example) and it may mean presenting incentives for full use of infill opportunities (such as use of brownfield sites).

Development in Harmony with the Environment strives to:
Use greenspace and agricultural land in a well planned way to reduce urban sprawl and community satellites that must rely on single-vehicle transportation for work, groceries, and entertainment. Well planned development incorporates an understanding of individual subwatershed needs and of larger-scale environmental challenges such as climate change.
Goal 3:
Focus on Walking, Cycling, and Transit is:
Creating transportation corridors where pedestrians enjoy walking and feel safe from traffic, noise, pollution, and crime. Similarly, cyclists have routes available for commuting or recreation that are pleasant and safe. Focusing on transit means developing a public transit system that is convenient, and provides cost-benefits in comparison to single vehicle use. This goal also includes initiatives that reduce the need to travel or to travel long distances. Tools include development fees and taxes to provide incentives to use alternative modes of transportation, or disincentives to single vehicle use. This goal may also mean developing a new kind of transit system. Implicit to a focus on alternative transportation modes is recognition of air quality improvements, human and ecosystem health improvements and reductions in greenhouse gas emissions that are possible through reduced traffic.

Goal 4:
Clean Air, Water and Earth is:
Air that does not cause harm to human health or plants and animals; air that does not contribute to climate change; drinking water that is safe to consume; healthy groundwater aquifers; rivers, creeks and lakes that support healthy aquatic environments; soils that support agricultural activities, provide adequate nutrients for healthy plants and animals, and are safe for recreational and other uses. Clean air, water and earth also means managing our businesses and our lifestyles in such a way that we limit the amount of waste produced and that we moderate the amount of noise and light travelling through the air so that living beings, including people, are not adversely impacted.

Focus on Walking, Cycling, and Transit strives to:
Shift the focus and preference given to single-use developments and car-oriented transportation network use.

The goal of Clean Air, Water and Earth strives to:
Provide clean air that allows people to breathe easily and enjoy outdoor activities and is air that does not contribute to climate change; water supports diverse aquatic life and does not require increasingly complex treatments to make it potable; soils support healthy ecosystems for human, animal and plant life.
3.1.2 A Corporate Environmental Commitment

As a corporation, the City of Ottawa can make a significant contribution to achieving a sustainable community through effective resource management, reduction of emissions to our air, land and water, and protection of the resources we have within our city. This section proposes environmental commitments for the City of Ottawa and the key initial actions required to incorporate those commitments into City business.

This contribution can be achieved through actions that are aimed at our City operations and that influence the actions of other organizations and individuals within the community. In its operations, the City chooses the materials and services it will use to conduct its business and determines how it will use those services and materials in fulfilling its mandate. Examples include determining the number and type of vehicles in the City fleet, or specifying standards for facility design and construction of parks, sportsfields, fire stations, pumping stations, etc. and determining how those facilities will be operated and maintained.

To influence adoption of sound environmental management practices within the community, the City has the ability to direct certain activities. For example, policies in the Official Plan, standards in the zoning by-law, and development charges influence how and where development occurs within the city. Similarly, public awareness can be raised in areas such as the amount of water consumed or the amount of waste generated and can be influenced by associated policies and the level of information and service that the City provides to the public.

The City’s proposed environmental strategic commitments represent a focus in six key areas that, when followed, will enable the City to meet these four goals for a green and environmentally sensitive City. These commitments also encompass the approaches needed to achieve an environmentally responsible and sustainable community, as identified by a wide range of other jurisdictions and scientists. A broad range of activities will be required to implement the following strategic commitments. The City already delivers many initiatives that support these commitments and now needs to identify the priorities for future action through this strategy.

It is important to note that the commitment to reduce greenhouse gas emissions can be viewed as a part of the first commitment, to manage material, human and natural resources as efficiently and effectively as possible. Greenhouse gas (GHG) emissions result from resource consumption. A separate commitment is established for GHG reductions because of the recent North American trend in an ever increasing per capita energy use and the significant environmental impact that results from our energy consumption.

The City commits to:

1. **Manage material, human and natural resources as efficiently and effectively as possible.** The City will practice this approach in its own operations, developing the tools, policies and information to accomplish efficient and effective resource use. The City will also provide information and policies to
assist the community in managing its resources efficiently. The greatest gains are expected for those resources that are used in the largest quantities – energy, land and water. However, this commitment targets all resource use. This commitment also means that the City will employ its own authority wisely and in accordance with our mandated responsibilities, that we will establish priorities and then follow these to make the best use of our available human and financial resources, that we will use the best available technology whenever possible and that we will engage other agencies, organizations and residents in the development and delivery of programs.

2. **Manage greenhouse gas emissions** to reduce to targets identified as a *Partner for Climate Protection*. Proposed targets include a 20% reduction in greenhouse gas emissions within the City’s own operations by 2005 and a 20% reduction in the community by 2012.

3. **Incorporate environmental factors and costs into the City’s decision-making on policies, programs and initiatives**, both in its own business and in the community. This includes incorporating environmental principles into our policies, programs and initiatives that help reduce the environmental impact of our activities. Examples include pollution prevention, consideration of product and facility lifecycle management, use of accumulated knowledge on environmental impacts, sustainable agricultural and forestry practices and the promotion of local goods and services. Simple and understandable tools will be required to assist people in choosing the most environmentally sensitive approach. Implementation of this commitment will facilitate environmentally responsible choices and will ensure that we achieve integrated decision-making that leads to increasingly sustainable practices – ones that adequately balance economic, social and environmental factors – throughout the City as a corporation and as a community.

4. **Demonstrate and promote leadership in environmental stewardship** through application of innovative methods and practices. Recognize corporate and community leaders who take innovative and sustainable approaches and projects. Methods could include awards, showcases and documentation of best practices. City facilities will be showcases for emerging best practices for the use of greenspace and resource use efficiency.

5. **Take an ecosystem management approach in the protection of our natural resource features.** This includes land use policy, planning, incentives and education to increase tree cover, protect wetlands, create and preserve natural terrestrial and aquatic habitats and corridors, manage stormwater and protect groundwater and surface water resources. An achievement of ecosystem health for all of the species within and beyond our City boundaries will also ensure the health of our residents and of those in neighbouring communities. This approach will apply to both new and existing land development.

6. **Measure, assess, and report on progress of the City on these commitments**, using a meaningful, simple and consultative process.

These strategic commitments set an environmental direction for the City of Ottawa. Setting specific priorities and targets and assessing their implications would be the key next step. To meet many of these commitments, the City can build on the existing policies, legal and fiscal tools, and programs that implement and encourage sound environmental management. Adopting and acting upon these
environmental commitments will still result in significant changes to how the City conducts its business. Over the longer term, with a commitment to continually improving upon our environmental performance and adopting new approaches, the City will become a more sustainable community.

3.2 Strategic and Program Planning

Planning is required to ensure that there is a link between goals and commitments and how they will be achieved. Broader reaching strategic planning and master planning initiatives, such as this Environmental Strategy, identify more comprehensive themes, for example, to address greenspace protection and management, identified through the goals and commitments. These high level plans analyze existing conditions, compare them to the goals, and recommend various other methods to fulfill these goals. These plans are then followed by more detailed operational or business planning processes to establish and deliver the implementation mechanisms, such as tree-planting programs, recycling programs, energy efficiency initiatives and so on.

3.2.1 Strategic Planning

A number of other strategic plans that address the environmental goals and strategic commitments have already been directed through the Official Plan and the draft Environmental Strategy, and consequently are supporting plans to both. Many of these plans are currently underway, and include the following:

- **Groundwater Management Strategy** – To ensure that flows within natural systems are maintained and that new development can be accommodated within the system without affecting groundwater supplies available to current and future users.

- **Greenspace Master Plan** (implements both the Official Plan and Environmental Strategy) – To identify and characterize all of the individual greenspaces in the city. A key objective will be to identify those greenspaces in Ottawa that are physically connected, or could be connected, in a Greenspace Network (e.g., natural areas, public open spaces, recreational pathways as well as river and stream networks).

- **Forest Strategy** – A strategy to manage and protect the rural and urban forest. This will include consideration of a by-law regulating tree-cutting, continuing to naturalize City-owned greenspaces, and planting trees on municipal property and in municipal rights of way. This plan will also consider developing current forest management plans for City-owned forests, encouraging private landowners to maintain the health of established forests and trees, and expanding the forest cover.

- **Integrated Waste Management Master Plan** – Provides policies and programs for the provision of solid waste services in the areas of collection, processing and disposal for the next twenty years. Areas of review include waste diversion goals, landfill capacity, import and export of waste, financing, service levels and program design, technology review, and facility design and operation. The plan is being developed in phases, with Phase I including the strategic directions to be completed in the first quarter of 2003. Completion of the final plan is estimated for the end of 2004.
Air Quality and Climate Change Plan – The City will undertake a variety of initiatives to reduce greenhouse gases, sulphates, nitrates and particulate matter in the air. In particular, the City will reduce energy consumption in the three main sectors: buildings, transportation and waste. A key item for this plan is the establishment of an inventory of energy consumption, greenhouse gas emissions and agricultural and forest carbon sinks. By reducing our energy consumption, the City will help mitigate global climate change and reduce respiratory health problems and acid deposition. The plan will be complete early in 2004.

In addition, consultation both with the community and City program staff identified the need for additional strategic plans to provide direction in surface water management and biodiversity. The City will therefore prepare a Water Environment Strategy that will connect closely with both the Groundwater Management Strategy and Infrastructure Master Plan. The Water Environment Strategy will build upon water protection policies identified within these documents and the Official Plan by providing a comprehensive view of how the City will accomplish a healthy water environment that supports natural processes and will help to protect, restore and enhance the health of City rivers and streams for today and for future generations. Monitoring the health of this system to identify priority areas for action is an important component as are the preparation of watershed and subwatershed plans and effective management of stormwater within the built-up area of the City.

To help both maintain and enhance habitat health and species diversity within the City, staff will also prepare a Biodiversity Strategy that will be closely linked to the Greenspace Master Plan. Much work has already been conducted throughout the City to inventory our natural spaces. This plan will ensure that these inventories are complete enough to adequately inform decision-making and will compile the suite of existing and new policies required to maintain a rich biodiversity within our boundaries. Protection of natural spaces from disturbance and invasive species, protection and enhancement of wetlands and wildlife corridors, naturalization of some of our greenspaces, and living in harmony with wildlife within both the rural and urban areas of the City are key components of the Biodiversity Strategy. While the Greenspace Master Plan will take a City-wide view of managing greenspace, this Strategy will address the community and species levels of biodiversity. Activities will include such items as maintaining significant species lists, monitoring and assessing the health of forest interiors and developing approaches for humans and wildlife, such as deer, to live within the same places without conflict.

Table 1 identifies the key plans and strategies to support the goals, and further demonstrates how implementation of the four goals will effect positive change both on environmental components and on the quality of life of Ottawa residents. The goals have connections that influence both the living and built systems of our city.
In addition, actions for the first three goals can be implemented through other Growth Management Plans, and supporting plans. No individual infrastructure or land use plan can holistically address the all-encompassing goal of “Clean Air, Water and Earth”. This goal must be addressed through a commitment that encompasses all decisions made with respect to the environment by the City, and must be a driving factor for issues within the influence of the City in the community at large.

Table 1 Key Plans and Strategies that support the Goals

<table>
<thead>
<tr>
<th>Outcome Goal</th>
<th>Air Quality</th>
<th>Surface &amp; GroundWater Management</th>
<th>Climate</th>
<th>Biodiversity</th>
<th>Soils</th>
<th>Quality of Life for Residents</th>
<th>Key Linkages^5</th>
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<td>Official Plan and Greenspace Master Plan</td>
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<td>Development in Harmony with the Environment</td>
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<td>Official Plan and Greenspace Master Plan</td>
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<td>Focus on Walking, Cycling, and Transit</td>
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<td>Official Plan and Transportation Master Plan</td>
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<tr>
<td>Clean Air, Water and Earth</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>All Plans, Strategies and Environmental Commitments</td>
</tr>
</tbody>
</table>

^5 There are many other important linkages to plans for the City; these are the most influential identified.
3.2.2 Program Planning

In addition to these strategic plans and strategies, the City has a number of environmental programs and initiatives that have been implemented or are underway. Here is a brief summary of current City environmental initiatives along with a description as to how they contribute to the strategic directions of the Environmental Strategy. The programs are organized by broad resource categories of energy, water, waste and greenspace. It is important to note that all these projects demonstrate leadership in the responsible management of our activities to apply more sustainable practices, one of our strategic commitments. Many of these programs were initiated prior to amalgamation while others have been initiated more recently, acting upon the opportunities presented through amalgamation.

Energy

The following energy-related initiatives contribute primarily to achieving the objectives of the Air Quality and Climate Change Plan, a plan that aims to both maintain and improve the air quality for our residents and our neighbours and to reduce our greenhouse gas emissions to the atmosphere. All of these initiatives contribute to the strategic commitments To Reduce our Greenhouse Gas Emissions and To Manage our Resources Efficiently and Effectively.

- **Co-generation Facility at the Robert O. Pickard Environmental Centre:** Methane produced by the anaerobic digestion process of sludge from the wastewater treatment process fuels a cogeneration facility that produces both electricity and heat. The plant has been operational since 1998 and is expected to pay for itself by 2004 through annual electricity savings of approximately $650,000. This plant uses a by-product of wastewater treatment, one that would otherwise have been considered a “waste”, to provide heat and electricity and to reduce our GHG emissions.

- **Building Retrofit Program:** Over the past few years, the City has undertaken a program to retrofit 49 City buildings to become more energy efficient. This work includes upgrading lighting, converting to high efficiency boilers and shifting to automated building controls and water flow control devices. Current energy savings are approximately $250,000 per year with future savings projected to reach $1,000,000 per year.

- **Feasibility Study for Co-generation facility at Trail Road Landfill:** The potential exists to produce electricity through a co-generation plant at the City’s solid waste facility, the Trail Road Landfill site. Landfill gas that is collected on site would fuel the plant to produce approximately 5 Megawatts of green power. This would be enough energy to serve approximately 3,000 homes.

- **Transportation Master Plan (TMP):** Council adopted this Plan in September 2003 as a supporting plan to the City’s Official Plan. The TMP provides direction for management of the City’s transportation infrastructure. Many of the TMP’s objectives are environmentally focused, including: minimizing the impacts of transportation on the natural and social environments, minimizing road infrastructure costs, reductions to individual trip numbers and length, promoting alternatives to travel,
introduction of low emission/clean-powered buses and light rail vehicles and expansion of the rapid transit network.

- **Feasibility Study for District Energy System:** The City of Ottawa and Energy Ottawa are exploring the potential feasibility of establishing a district energy system that would provide heating and cooling services to large buildings in downtown Ottawa. Such systems are considered sustainable because the benefits include economic savings to the participants and local spending to obtain the energy services, more reliable systems and reduced overall resource consumption (less loss of energy due to transmission) and decreased production of greenhouse gases.

- **Transportation Demand Management Strategy:** This strategy outlines the initiatives to be directed at all sectors of the community to facilitate and encourage alternatives to the use of a single occupancy vehicle. Alternatives range from transit, cycling, walking to trip reduction initiatives such as telecommuting, ride-sharing and job-sharing.

**Waste Management**

Current City waste management initiatives contribute to both the Air Quality and Climate Change Plan and the Integrated Waste Management Master Plan. Strategic commitments addressed by these projects are similar to those of our energy conservation projects – *To Manage our Resources Efficiently and Effectively* and *To Reduce our Greenhouse Gas Emissions*.

- **Residential Recycling Program:** An expanded residential recycling program has been in place within our municipality since the early 1990’s. Materials such as newspapers, cans, glass, cardboard, other paper and a full range of plastics are collected at the curb. Containers are placed in a blue box and paper materials in a black box, each of which is collected every two weeks on alternate week schedules. Once collected, the materials are sorted further for re-use to create new products such as newspaper, mats, plastic boxes and even fleece shirts. This program, combined with leaf and yard waste collection, is responsible for diverting approximately 34% of materials from going to landfill.

- **Compost Plus Pilot Project:** Since October 2001, four City wards have participated in this pilot project. Residents place all materials that can be composted at the curb every two weeks. The mix of wastes such as all food materials, grass clippings, etc. are then transported to be composted at the Trail Road Facility. Should the program be successful, it will be expanded to other residents and will help our community divert more material from going to landfill.

- **Household Hazardous Waste Depot:** A permanent depot is set up at Trail Road to accept hazardous waste materials that need special handling for responsible disposal. These materials include old paint cans, antifreeze, turpentine, disinfectants, pesticides, and other chemicals no longer required. Mobile units are also set up throughout the City on an annual basis to make it easier for residents to carefully dispose these items.

- **Take It Back! Program** – *Take it Back!* provides further convenience to residents who wish to dispose of hazardous materials. More than 360 local retailers have committed to take back products that they sell and dispose of them responsibly. A directory of participating retailers and the products they accept...
helps residents use this service. Products accepted range from automotive parts, tires and fluids, electronics, batteries, pharmaceuticals and needles, packaging and household items.

Water

Water is a resource that is valued highly and yet sometimes taken for granted. Our city already has in place many initiatives to protect and enhance our plentiful water resources. These projects contribute to the strategic commitments – To Incorporate Environmental Factors Into Our Decision-Making and Programs and To Take An Ecosystem Management Approach – that will also form the basis of the Water Environment Strategy and Groundwater Management Strategy.

- **Sewer Use Program**: This program was established in the early 1990’s to ensure that the quality of industrial wastewater discharged to sanitary and storm sewers meets limits set in the municipality’s Sewer Use Control By-Law. The intent of the by-law is to prevent pollution from being generated at source. By requiring sewer discharges to meet standards, this program helps protect the integrity of the City’s sewer collection system and wastewater treatment plant as well as help provide a higher quality of effluent and biosolids product from the wastewater treatment system.

- **Rural Clean Water Program**: This program offers financial incentives to rural residents to encourage them to implement rural and agricultural best management practices that will help protect and improve surface and ground water quality. Eligible projects include agricultural waste management, soil conservation and shoreline protection, and septic system repair.

- **Water Environment Protection Program**: The City's Water Environment Protection program assesses the state of surface watersheds and coordinates initiatives to preserve and improve our surface water environment. Twenty-two creeks and three rivers in the City are monitored to determine the current state of surface water quality and to assess changes in water quality over time. As sources of pollution are identified, City staff initiate corrective action and coordinate action plans with conservation authorities and provincial and federal agencies. The City helps set priorities for future water initiatives such as the development of storm water treatment facilities.

- **Subwatershed Planning**: Subwatershed planning is an integrated, ecosystem approach to land-use planning based on the boundaries of a subwatershed. Subwatershed studies examine the natural-environment features, such as the river and associated tributaries, groundwater resources and the aquatic and terrestrial (woodlands, wetlands) habitats. The resulting Plans attempt to balance environmental protection, conservation and restoration with development and other land-use practices to ensure long-term, ecological sustainability of the watershed and its significant natural resources. To date, either the City or the Conservation Authority has completed subwatershed/watershed plans for Upper Poole Creek, Sawmill Creek, Jock River, Shirley's Brook and Watts Creek. Studies soon to be complete include Carp River, Shields Creek and Lower Rideau while the Jock River Reach 2 and Mud Creek subwatershed study will be conducted in 2004. City subwatersheds are identified on Map 1.

- **Water Efficiency**: In Ottawa, residents pay for the water that they use. Although we have access to an abundant supply, conserving water use reduces City energy use and also saves money by deferring the need to expand our water treatment facilities. The Water Efficiency program encourages residents
to use water wisely and to reduce peak usage by shifting the times they usually use water. Information provided includes tips on water efficiency for indoor (kitchen, laundry, bathrooms) and outdoor (the water-efficient garden, how to make a rain barrel, when and how to water lawns) home use.

- **Pesticide Reduction Strategy:** On its own property, the City implemented a policy in early 2001 to prohibit the use of pesticides for cosmetic purposes. In 2003, the City initiated a community-based program to encourage residents, businesses and large property owners to reduce their use of pesticides for cosmetic purposes. Efforts include workshops, community grants for education and demonstration projects, offer of horticultural advice, work with large landowners and lawn care service providers and provision of information on alternatives to pesticide use. Reductions in target use of 70% on residential properties, 65% on commercial/industrial lands and 100% on institutional sites, relative to 2002, are to be met by 2005.

- **Salt Management Strategy:** The City uses road salt (crushed rock salt- Sodium Chloride) for snow and ice control on roads to ensure public safety. Salt lowers the freezing point of snow and ice to prevent the formation of slippery road conditions. In large quantities, salt can damage roadside vegetation and contaminate surface and groundwater. The Salt Management Strategy provides an approach for engaging a variety of winter maintenance technologies such as establishing a Road Weather Information System (RWIS), forecasting of road-conditions, investigating and adopting technologies such as pre-wetting and anti-icing and researching alternative methods and products. These activities help decrease the quantity of salt used.

- **Greenspace Management:** Communities throughout Ottawa have strongly voiced their desire and need to maintain, enhance and increase or improve the greenspace within our city, particularly within the urban boundaries. This desire is reflected in our strategic commitments *To Take An Ecosystem Management Approach* to support natural systems and *To Manage Our Resources Efficiently And Effectively*. A well-placed and functioning network of greenspaces can also help us *To Reduce Our Greenhouse Gas Emissions*. Many policies to protect natural spaces are outlined in the City’s Official Plan. A few are noted while others will be refined and developed with the preparation of the Greenspace Master Plan, the Forest Strategy and the Biodiversity Strategy.

- **Green Acres Program:** The City of Ottawa's Green Acres Program identifies idle agricultural fields that can be transformed into thriving woodlands. The program provides landowners with advice and assistance in setting up a proper planting plan for their properties and a source of suitable planting stock in the form of high quality, genetically appropriate, and cost effective bare root seedlings.

- **Forest and Park Management:** The City actively manages over 850 parks and 10,000 acres of forest throughout the City. Detailed management plans have been prepared for specific areas such as the Marlborough, Torbolton, Carp Hills & Pinhey and Long Swamp forests.

- **Integrated Environmental Review:** Integrated Environmental Review is required for all subdivisions, major site plans and major rezoning applications to ensure that the interconnections between findings of supporting studies to development (i.e. tree preservation and protection plans, stormwater site management plans, serviceability studies) are identified and any inconsistencies addressed through revision of the supporting studies and/or the development design. A statement must be prepared reporting on the results of the review, how the development design has been modified to reflect the review results, and on the consistency of the application with the Official Plan policy.
requirements for review of development applications. In addition to greenspace, the Review will be expected to balance address management of water and material resources in such areas as site contamination, waste management and energy use.

Future proposed activities to enable the City to meet its strategic commitments have been identified through a review of our current environmental status and through learning from the experiences of other municipalities as a result of the City’s environmental management best practices research. For example, the City will pursue the development of an environmental purchasing policy, similar to that of Richmond, British Columbia. Whistler, British Columbia’s LEED Green Building Rating System is also being carefully considered, as is Winnipeg’s requirement for environmental design criteria in request for proposals for new building developments.

### 3.3 Connecting the Goals to City Services

Not only are there interconnections between the individual community generated goals and commitments, the City administration, tasked with the programs to work toward those goals, have many shared roles. All issues involving the environment are not delivered by one work or service unit. Table 2 demonstrates the degree to which various departments are working towards environmental goals. Land use planning, transportation services, and water, wastewater, stormwater and solid waste plans are addressed in specific planning documents, as are plans for Human Services, Economic Development, and Arts and Heritage.

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Links and connections between and amongst strategies and plans developed by various departments will be identified and communicated, and comprehensive efforts will be made to work together in a concerted manner.

3.4 Corporate Environmental Action Planning

To implement the direction of this Environmental Strategy, a comprehensive Corporate Environmental Action Plan will be prepared every five years. The action plan will outline any individual supporting plans, projects and activities that will be rolled out within the five-year span of the plan. Specific items will be linked in the action plan to both the environmental goals and strategic commitments. The plan will be adjusted annually to reflect emerging trends and priorities, during the City’s annual budget and business planning cycle. Long-term budget needs will be incorporated into the City’s Long Range Financial Plan.

The first Corporate Environmental Action Plan, for the period of 2004-2008, is provided in Table 3. Key short and medium-term actions proposed to meet the strategic commitments are highlighted. Some of the actions identified will establish the targets and priorities to complete this strategy and will establish the medium to long-term activities for implementation of the Environmental Strategy.

<table>
<thead>
<tr>
<th>Commitments</th>
<th>Short-term Actions (0-2 years)</th>
<th>Medium-term Actions (3-5 years)</th>
</tr>
</thead>
</table>
| Overall – Associated with several commitments | ■ Establish clear roles, responsibilities and timeframes for conducting business area inventories, setting targets and monitoring progress  
■ Complete an environmental scan of strengths, weaknesses, opportunities and barriers to environmental management  
■ Prepare a coordinated communication strategy for delivery of the City’s environmental initiatives and as a support to implementing the Environmental Strategy | ■ Update the Environmental Strategy in five years to assess the targets, priorities and effectiveness of the process and progress in achieving the environmental goals and commitments |
### Commitments

<table>
<thead>
<tr>
<th>Short-term Actions (0-2 years)</th>
<th>Medium-term Actions (3-5 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Manage material, human and natural resources as efficiently and effectively as possible</td>
<td>Conduct an inventory of current resource use within City operations to establish a baseline – major areas of focus will include water, land, energy, and will include a comprehensive inventory of all resources used</td>
</tr>
<tr>
<td></td>
<td>Set targets for reduction in resource use</td>
</tr>
<tr>
<td></td>
<td>Establish and develop internal and external networks, partnerships and resources to coordinate and integrate efforts in environmental management</td>
</tr>
<tr>
<td></td>
<td>Complete the Integrated Waste Management Master Plan</td>
</tr>
<tr>
<td>Conduct an inventory of current resource use within City operations to establish a baseline – major areas of focus will include water, land, energy, and will include a comprehensive inventory of all resources used</td>
<td>Set targets for reduction in resource use</td>
</tr>
<tr>
<td>Establish targets and a comprehensive set of measures for GHG emission reduction as part of the Air Quality and Climate Change Plan</td>
<td>Continue implementation of measures to reduce GHG emissions</td>
</tr>
<tr>
<td>Implement measures to reduce GHG emissions</td>
<td>Develop a policy to promote longer term payback for capital investments in energy efficiency</td>
</tr>
<tr>
<td>Continue, and enhance where appropriate, existing community programs related to solid waste reduction, water efficiency, land stewardship, energy use; Coordinate materials with schools for curricula, where appropriate</td>
<td>Develop a method for budgeting of GHG that will help incorporate consideration of GHG emissions into project design</td>
</tr>
<tr>
<td>Establish a network of information</td>
<td>Implement a procedure for full cost accounting, building in a consideration of the environmental costs associated with the provision of City services and the purchase, use and disposal of materials and assets</td>
</tr>
<tr>
<td>Develop a program to encourage eco-industrial systems</td>
<td>Develop targets, procedures and programs to address and reduce identified environmental impacts, on a priority basis</td>
</tr>
<tr>
<td>Develop a green procurement policy</td>
<td>Develop tax initiatives and other economic incentives to encourage sustainable practices</td>
</tr>
<tr>
<td>Review City operations and policies and Community practices for their potential environmental impact to such as water, air, soil, forests, greenspaces, species diversity, using or building upon existing guides such as provincial Environmental Assessments of municipal environmental impact statements</td>
<td></td>
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</tbody>
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**Environmental Strategy for the City of Ottawa**

Page 32  October 2003
<table>
<thead>
<tr>
<th>Commitments</th>
<th>Short-term Actions (0-2 years)</th>
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</table>

4. Demonstrate and promote leadership in environmental stewardship

- Begin to develop City facilities, lands, parks, forests roadways as showcases for environmental best practices
- For community-directed environmental education programs, model the corresponding sustainable practices and sound environmental management within City business
- Implement an awards program to recognize the innovative and exemplary actions of organizations and individuals
- Enhance promotion of land stewardship and sustainable land management throughout the community

5. Take an ecosystem management approach to new and existing land development and in the protection of the City’s natural resource features

- Complete the Groundwater Management Strategy, Water Environment Strategy, Greenspace Master Plan, Biodiversity Strategy and the Air Quality and Climate Change Plan
- Implement Official Plan policies for protection of Natural Environment Areas, Urban Natural Features and water and policies related to transportation, land use and conduct of subwatershed studies
- Implement Integrated Environmental Review process
- Implement Design Guidelines to guide how development is situated within the existing environment
- Develop a program to encourage development of brownfields

- Develop a method of adequately valuing green spaces in both an urban and rural context
- Develop and encourage community greening initiatives, such as naturalization of public and private lands, community gardening.
### Commitments

<table>
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<th>Short-term Actions (0-2 years)</th>
<th>Medium-term Actions (3-5 years)</th>
</tr>
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<tbody>
<tr>
<td>Contribute to the annual report card that will monitor the City’s progress in implementing the Ottawa 20/20 plans.</td>
<td>Develop a comprehensive set of environmental indicators to assess overall quality of life in Ottawa.</td>
</tr>
<tr>
<td>Develop an internal data collection and monitoring process to measure environmental progress.</td>
<td></td>
</tr>
<tr>
<td>Adopt and report on an ecological footprint model that best captures our community environmental impact.</td>
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</tr>
</tbody>
</table>

#### 6. Measure, assess, and report on progress of the City on these commitments, through a meaningful, simple and consultative process

Many of the activities in the Corporate Environmental Action Plan will be conducted through existing resources within environmental programs across the corporation. Some examples include the completion of supporting plans, conduct of baseline data collection, setting of targets, review of City practices and policies, review of community practices for environmental impact and delivery of education and awareness programs. Other initiatives are likely to require additional financial or human resources. These will be identified through both the annual budget process and in the long-term financial plan with resources allocated according to available resources and current priorities. It is expected that other sources of funding will be available for many of the environmental initiatives, especially for climate change, an area that is currently a priority for the federal government. As the City explores incentives and disincentives for responsible environmental management within the community, opportunities for some cost recovery will be identified. Finally, improving our environmental performance will, at times, cost more initially. In the longer term, however, City operational costs will be reduced when we improve our resource use efficiency, for example. This payback will also be true for the businesses and individuals within our community.

#### 3.5 Setting Targets and Monitoring our Progress

Targets can be defined as a numeric or descriptive result that a group wishes to reach within a specific timeframe. These desired results or targets should be both measurable and realistic. In order to track progress, baseline information must be available to act as the starting point from which progress towards the target can be compared. Targets are only as useful as the quality of baseline data and the consistency, quality, and reliability of data collection.

Some interim targets have already been set through other growth management plans, supporting plans and programs. For example, Policy 1 b) section 2.4.5 of the Official Plan directs that targets for forest cover...
and greenspace throughout the City be established through the Greenspace Master Plan, and also sets an overall forest cover target for the City at 30%, pending the outcome of the Greenspace Master Plan.

Most of the targets associated with the Environmental Strategy will need to be established, as will some of the associated baseline data. Baseline data will be collected and targets will be set for areas such as greenhouse gas emission, resource use and green purchasing within the next two years, as identified in the Corporate Environmental Action Plan.

The City has committed to monitoring the progress of both the corporation and the community in meeting our environmental goals. As part of the Ottawa 20/20 process, an Annual Report Card will be prepared that tracks progress towards our Corporate goals as set through the five Growth Management Strategies. In addition, a set of Quality of Life indicators is currently being developed to further track our progress and assist in comparing our community to the progress of others. Decision-making and monitoring systems that consider and provide information in a way that balances social, financial and environmental considerations – this includes systems that strive to adequately “value” environmental aspects – will need to be developed.

Complementary to the above reporting initiatives, the City will review the Environmental Strategy every five years to monitor progress towards established targets, priorities, and the overall effectiveness of the process. This, along with the Annual Report Card, will ensure that the profile of the Environmental Strategy remains prominent in the eyes of Council, staff, and the community. The review will provide the opportunity to:

- continue to review Best Practices and incorporate them into our short and long–term planning;
- refine targets and priorities;
- integrate new targets into the Strategy as they are developed through completion of the supporting plans and other programs;
- ensure that targets that have been developed continue to be realistic; and
- respond to the changing needs and priorities of a growing community.
4.0 Making it Happen

In addition to the positive environmental benefits of adopting the strategic direction established in this document, its implementation will affect many functions and services of the City and the community. Some may have budget requirements that must be incorporated into the City’s planning and budgeting process. Implementing the actions and programs associated with the strategic commitments will also be integrated with the implementation of the other plans. The beginning of the collaborative process that has been established through planning for Ottawa 20/20 provides an excellent basis for continuing to align efforts within the Corporation and the Community according to the Ottawa 20/20 guiding principles.

In determining the process for implementing the strategic directions of the Environmental Strategy, the experience of organizations such as the International Council for Local Environmental Initiatives (ICLEI)\(^6\) and the Federation of Canadian Municipalities\(^7\) provide some key factors for successful sustainability initiatives, such as the following:

- Integrated planning processes, that include ecological, social and economic factors together;
- Coordinated direction and efforts of organizations – public, private and non-profit at local, national and international levels;
- Collaboration and participation on development and implementation, with a strong representation from the community;
- Decision-making and monitoring systems that consider and provide information in a way that balances social, financial and environmental considerations – this includes systems that strive to adequately “value” environmental aspects; and
- Monitoring and reporting on their progress.

In addition to considering the above, implementation of the Environmental Strategy will follow the process set out in the Ottawa 20/20 Implementation Strategy. These include: development of a communication strategy (that targets both City staff and the community), incorporation of the environmental initiatives identified within this Strategy into the City’s annual budgeting and long-term financial planning processes, the establishment of new legislative powers and sources to sustain funding, development of mechanisms to enhance Corporate learning, and monitoring on implementation progress through the annual Report Card.

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\(^6\) ICLEI Canada. 2002. *Local Strategies for Accelerating Sustainability – Case Studies of Local Government Success*

4.1 Integration and Communication

Implementation of the Environmental Strategy will require a concerted effort on the part of a number of City Departments and individual work units including those within Development Services, People Services, Transportation, Utilities and Public Works, Corporate Services and Emergency & Protective Services. Integrating the directions and activities of the Environmental Strategy with those of the City’s other strategic plans – the Official Plan, Human Services Plan, Arts and Heritage Plan and Economic Strategy represents an additional communications challenge. Through the activities of both identifying Ottawa 20/20 priorities during the financial planning process and assessing and reporting on plan implementation through the annual report, integrated programs will be established and maintained. These efforts will result in City programs that work together towards achieving our common goals.

A further challenge is to ensure that the public is aware and informed of environmental initiatives. This will be accomplished through development and delivery of a communication strategy that includes updates on the City’s web site, media coverage, and advertisements in local and community newspapers, to describe progress and celebrate milestones in reaching our environmental goals and commitments. The five-year review of the Environmental Strategy provides the opportunity for the community to ensure that the goals identified are still applicable and appropriate. As a result, community participation will be sought throughout the process of establishing baseline conditions, setting of priorities, development and implementation of programs.

4.2 Corporate and Community Participation

Given the nature of the environment, that it surrounds us everywhere we go, and that our activities impact the quality and integrity of natural systems through everything that we do, the successful implementation of the Environmental Strategy will depend upon the participation of all City staff, residents of all ages and businesses, community groups and other agencies. Such a level of participation requires that everyone contribute to the entire process.

Many of the projects identified in the Corporate Action Plan such as the Greenspace Master Plan and the Forest Strategy will involve participation from a broad range of community members, other agencies and City staff. Other programs, such as the Rural Clean Water Program and the Take it Back! program require direct participation from the community. The success of these projects, and consequently our progress towards our goals, will be directly proportional to community participation. The City will engage this participation in environmental initiatives according to the community interest and program need. In addition to being a key success factor in meeting our environmental goals, effective community
participation also has the potential to reduce City resource needs in program development and delivery. This will also contribute to the strategic commitment of managing resources efficiently and effectively.

4.3 Partnerships

The City of Ottawa currently has established many partnerships with other organizations and agencies with similar mandates and interests in meeting our environmental goals. Existing partnerships cover a range of organizations, including government agencies, non-government organizations, community groups, businesses and individuals. Establishing and maintaining partnerships will contribute significantly to our effective use of resources, as well as the sharing of expertise and experiences. Coordinated direction and efforts of organizations – public, private and non-profit – will lead to positive environmental results and commitment at local, national and international levels.

At present, the City has established a number of environmental partnerships, such as:

- Development application review, subwatershed planning, septic system inspection and stewardship information services provided by the Conservation Authorities;
- Delivery of home energy efficiency inspections by EnviroCentre to help the City meet reductions in greenhouse gas emissions;
- Over 360 retailers in the Take it Back! program;
- Delivery of a vehicle anti-idling campaign with Climate Change Bureau, Natural Resources Canada and Friends of the Earth; and
- Exploring feasibility of district energy and landfill gas cogeneration facilities with Energy Ottawa.

The City will continue to explore and develop new opportunities for partnerships that will help us effectively meet our environmental goals. As described in Annex 3, numerous agencies and individuals possess the expertise, resources and interest in improving the environmental health of our community. Coordinating these efforts will hasten our progress in achieving sustainability.
5.0 Conclusion

Many of our resource consumption patterns have developed into habits that we see as “normal”, even necessary, parts of our lives. Daily single-vehicle commutes to work, uniform green lawns and individually wrapped food servings are part of everyday life for many of us. They become activities that we rarely question. The health of the resources that support our consumption – such as water, land, air, trees, minerals, oil and gas – are not generally incorporated into decision-making processes. Similarly, the wastes generated by the consumption of resources – such as emissions to air, water and land or the generation of solid waste which is generally sent to landfill – are not considered when we decide to consume products.

Individuals and communities worldwide are acknowledging that altered patterns of resource use are essential to maintaining our quality of life. A sense of urgency, however, is not shared by all of us. Usually environmental changes appear subtle because they occur over long periods of time and we need the information at our fingertips to be able to recognize the extent of our impacts. Recent events such as the August 14, 2003 power outage across southern Ontario and the northeastern United States and extensive forest fires and drought in British Columbia and Europe have awakened our environmental concerns, for now. Maintaining a heightened level of awareness, without overwhelming, will help us reach our community environmental goals.

The City of Ottawa developed the Environmental Strategy through a combination of public contributions through the Ottawa 20/20 process, through application of knowledge of the City’s business and existing environmental conditions, and through a review of emerging best practices in achieving responsible environmental management and a sustainable community. Implementing the City’s approach to responsibly managing our activities and their impact on our environment will be through a collaborative process that involves all of us as required participants. Together we will identify targets and initiatives to which all of us must contribute.

This Environmental Strategy outlines strategic directions and an approach to systematically improve our adoption of increasingly more sustainable practices over the next twenty years. We will aim to keep information simple and engage all of our community in practicing sustainability. A sustainable community with the high quality of life envisioned by its citizens depends upon contributions from all of us. Our participation rate will be the most important measure of success.

When we accomplish the goals, commitments and targets set out in this strategy, the City of Ottawa as a community will be balancing environmental needs with the its social and economic requirements. The benefits will become countless – healthier people, species diversity, continued availability of resources and
cleaner air, water and earth. In addition, the “cost” of doing business and of our lifestyles will decrease while providing an improved quality of life. We will be able to pass on a healthy and resource-rich community, a green and environmentally sensitive city, for future generations.
Annexes
Annex 1: Summary of Environmental Management Best Practices

The following is a sampling of best practices employed by various Canadian municipalities and other government agencies to address current environmental issues and, ultimately, to achieve more sustainable communities. Electronic and paper literature searches were conducted to collate the following text. Each environmental issue is described and includes a sampling of environmental management best practices that include by-laws, techniques to engage public participation, and public education measures. A list of examples aimed at corporate and community initiatives are also provided.

The City of Ottawa’s Environmental Strategy will aim to address these environmental issues that have been identified as currently relevant at both a national level and within our community. Over time, the environmental issues will change in subject and magnitude, as they have in the past, in response to changes in environmental conditions, human numbers and behaviour.

Air Quality/Climate Change

Issue: The air is a common space that is significantly influenced by global human activities. Poor air quality arrives as the concentration of primary air pollutants, including sulphur dioxide, ozone, nitrogen dioxide, volatile organic compounds, carbon monoxide and particulate matter, concentrate in our air. Above certain levels, these compounds have an adverse effect on human and ecosystem health.

As fossil fuels burn, both increases in atmospheric temperature and releases of carbon dioxide (CO₂), carbon particulate matter and methane (CH₄) occur. The increased temperature acts as a catalyst for chemical reactions, which can in turn trap more heat. In addition, carbon particulate matter and gases trap energy. Finally, these high temperatures assist in evaporating toxic substances from sediments, paved surfaces and other areas where they were trapped. What has been achieved includes both climate change and deteriorating air quality. Within Ottawa, the source of our greenhouse gas emissions includes approximately 40% from building heating, cooling and use, 40% from transportation and about 20% from waste production.

Aerosols, which are pollutants in the form of particles or gases, can have both positive and negative atmospheric impacts. They act as cooling agents in the atmosphere because they reflect sunlight and indirectly modify cloud properties. Aerosols also form acid rain and trigger negative health impacts. Although aerosols counteract the warming effect of carbon dioxide emissions by about 25 percent, as long-lived CO₂ accumulates in the atmosphere, continued balancing would require a greater and greater aerosol load with subsequent impacts on ecosystem and human health.
Based on 2000 data, Ontario is the second highest emitter of greenhouse gases in Canada, accounting for 29% of the national total (207 Mt) (www.ec.gc.ca/pdb/ghg/factsheet_e.cfm). Key to the success of managing air quality and climate change is to implement a variety of measures to reduce energy use and emission of pollutants and track the success through maintenance of a community wide GHG and air emission inventory. Management practices must be based on a solid understanding of the complexity involved in air quality and climate change issues.

Concern: Hospital admissions due to poor air quality have been reported in almost all major cities in Canada. Health problems include respiratory and cardiovascular diseases. Asthma is also on the rise worldwide, with children and the elderly particularly vulnerable. Warmer temperatures and prolonged heat waves bring an increase in air pollution, particularly in urban and industrialized areas. More smog (ground-level ozone) days are expected to occur over time, due to sunlight and heat interacting with pollutants such as nitrogen oxides and volatile organic compounds.

Ontario could experience anywhere from 3-8°C increase in the average annual temperature by the latter part of the 21st century. This climate change will increase our weather variability and consequently impact our ecosystem balance. Some of the effects expected include:

- an increased number of stagnant air masses over our region, causing an increase in noxious pollutants;
- fewer weeks of snow;
- a longer growing season;
- less moisture in the soil;
- more pests and disease;
- an increase in the frequency and severity of droughts and hence more fires, and increased invasion of non-native species;
- lower water levels that would create risks to waterfowl populations and other wildlife and lower hydroelectric generating potential;
- more days when heat stress and air pollution adversely affect people's health; and
- an increase in the occurrence and severity of extreme weather events such as heavy rains, ice storms or droughts.

These impacts would have serious implications for the security and integrity of Canada's natural resource and social systems (www.on.ec.gc.ca/canada-country-study/intro.html).

Best Management Practices:

- Ontario Air Quality Management Plan – includes public education, smog action plans, emission reporting, drive clean test (car emissions) and measures to encourage energy efficiency, use of clean and alternative fuels and reduced exposure to tobacco and wood smoke;
- Control Instruments and Monitoring such as Certificates of Approval to control air emissions and air quality & energy use monitoring by The Ontario Ministry of Environment;
Encourage walking, cycling and public transportation over single occupancy vehicle use through various measures, usually formalized in a transportation master plan. Municipalities practicing this include Toronto; Ottawa; Guelph; London; Waterloo; Kingston; Hamilton; Edmonton; Vancouver; Monterrey, California; Columbia River Gorge; Oregon, Washington;

Walking and Wheeling, Park & Ride and Light Rail Train consist of facilities to support more than one transportation mode for travel (Ottawa; Edmonton; Guelph; Halifax; Middlesex – London; Winnipeg; Portland, Oregon);

Implementation of a comprehensive approach, such as a Transportation Demand Management Strategy, which includes a bicycle route development program, Rack + Roll (bicycles on buses), subsidized bus passes, encouragement of alternatives to travel through revised work policies and provision of facilities that encourage walking, cycling and transit use.

Examples of legislative tools, including municipal by-laws, to address air quality and climate change include:

- Smoke free By-Law in public places (Ottawa, Toronto);
- By-laws to improve air quality (London, Toronto, Burlington, Caledon, Halton, King Township, Markham, Oakville, Oshawa, Peel Region, Pickering, Richmond Hill, York);
- Regulation of solvent use, automobile painting (California);
- By-laws for gasoline vapour recovery systems at gas stations (Europe, Washington DC);

Programs for public education and community participation include:

- Promotion of water efficiency items such as showerheads and aerators (Ottawa)
- Cash rebates for energy efficient items such as clothes washers, discounts on Energy Star light bulbs and fixtures (Seattle);
- Cool Schools – school projects leading to GHG reductions (Toronto);
- Energy Efficiency Fair to market information to the public (Ottawa);
- Leave your Car at Home week (Toronto);
- Anti-Idling Campaign (promoted nation-wide through Natural Resources Canada and the Climate Change Bureau of Canada) and municipal anti-idling campaigns (Mississauga, Ottawa, Toronto, London);
- Clean Air Festivals – workshops on climate protection (Guelph);
- EnerGuide home energy efficiency audits (conducted by EnviroCentre in Ottawa, by Green Community Associations nation-wide);
- Assisting with car co-op programs (Guelph);
- Better Buildings Program to encourage commercial and industrial building retrofits (Toronto, Kingston);
- Revolving funds to provide loans for community energy efficiency projects (Toronto, Edmonton).
Excess waste charge (Winnipeg); and
Promotion of urban cooling and Green Roofs (Toronto).

Examples of municipal corporate programs include:

- Comprehensive recycling programs (Winnipeg, Waterloo, Guelph, Toronto, Ottawa);
- District energy systems (Calgary, Hamilton, Ottawa, Sudbury, Toronto);
- Residential street lighting retrofit (Calgary, Guelph);
- Using 10% recycled asphalt for road renewal (Winnipeg);
- High-occupancy vehicle lanes (Winnipeg, Gatineau);
- Wide curb lanes to accommodate bicycles (Ottawa, Calgary, Guelph);
- Fleet emission reduction strategy (Ottawa); and
- Effective Public Transit Systems (Ottawa, Toronto, Calgary, Vancouver, etc.)

**Biodiversity**

**Issue:** Biodiversity is the assemblage of a broad range of inter and co-dependent living organisms within terrestrial, marine and aquatic ecosystems. With the fundamental changes to Ontario’s landscape over the last 150 years, the range of species supported by our systems has been negatively affected. For example, over 75% of the wetlands south of the Canadian Shield have been lost to urban development. Forest cover has also experienced a rapid decline. With the loss of forest cover and wetlands there is a corresponding and direct loss of biodiversity because of decreased areas of natural habitat, reduction in water quality and flood control, decreased areas for fish spawning and consequently, the loss of the species themselves. Natural areas are storehouses of biodiversity. Loss of this species diversity and resulting genetic diversity can upset the delicate balance upon which ecological processes depend. **Key to the success** of managing biodiversity is limiting the loss of natural features.

Biodiversity supports human societies ecologically, economically, culturally and spiritually. Presently ecosystems are being degraded by human activity. Species and genetic diversity are being reduced at an alarming rate due to the impact of increasing population and resource consumption rates ([www.cbin.ec.gc.ca/Document/CBs_e.pdf](http://www.cbin.ec.gc.ca/Document/CBs_e.pdf)).

**Concern:** The threat to biodiversity in Ontario is imminent due to habitat loss and fragmentation as well as having been impacted by toxic substances, commercial and recreational use, non-native species, and climate change ([www.cielap.org/infocent/research/biodiv.html](http://www.cielap.org/infocent/research/biodiv.html)).
Best Management Practices:

- Comprehensive plans to protect biodiversity through the preservation of an interconnected system of sensitive natural features and other greenspaces including Greenslands Strategy (York Region) and Greenspace Master Plan (Ottawa);
- Environmental Assessment (Ontario) – Provincial (full) Environmental and Class Environmental Assessment process that requires identification and mitigation of environmental impacts when planning public development projects;
- Forest Strategy (York, Ottawa) – comprehensive plan to manage and protect the urban and rural forest.

Examples of legislative tools, including municipal by-laws, to encourage biodiversity include:

- Tree Cutting by-laws (Oakville, York); and
- Site Alteration by-laws (London).

Programs for public education and community participation include:

- Specific Time Period Surveys – to survey a particular geographic area and identify and record as many species as possible in a 24-hour period (Ottawa); and Christmas Bird Count (Ontario) – annual count of bird species such that biodiversity can be monitored over time;
- Wildlife Festival (Ottawa) – an annual event showcasing work of various wildlife agencies, with speakers, display booths, etc.;
- Canadian Biodiversity Museum (Ottawa);
- Fletcher Wildlife Garden (Ottawa);
- Field Naturalists Clubs (Kitchener-Waterloo Field Naturalists Club) – gather biodiversity data to undertake habitat enhancement projects, native species re-vegetation, and demonstration projects;
- Schoolyard greening projects (Evergreen and Toronto District School Board, Toronto; Biodiversity Institute, Ottawa);
- Briar Nine Park and Nature Reserve (Richmond Hill); and
- Stewardship programs to inform public on sustainable land practices (Stewardship Council, Conservation Authorities).

Examples of municipal corporate programs include:

- Greening Strategy (York); and
- Environmental Lands Protection Program – educate public on the human use impacts of environmental features (Waterloo); and
- Trail Greening – City of Victoria Trail System.
Brownfields

Issue: Brownfields are defined as abandoned, idle or underused industrial or commercial properties that formerly supported development. They are located in built-up urban areas where expansion or redevelopment is complicated by real or potential environmental contamination, building deterioration/obsolescence, and/or inadequate infrastructure. The objective of a brownfield redevelopment is to recapture the social and economic value from contaminated property. It has long been difficult for communities to bring brownfield sites back into productive use because of the high costs of remediation, uncertainty about the level of contamination at many sites, and environmental liability issues. The benefits of brownfield redevelopment are many and include: renewal of downtown cores with consequent increases to municipal tax revenues (directly) and to the federal and provincial governments due to the increased employment; the ability to reduce urban sprawl, and subsequently reduce the impact on human health and the environment. Brownfield redevelopment is a key strategy for promoting reinvestment in existing urban areas and for reducing the need to expand into greenfield sites. Key to the success of managing brownfields is an ability to limit risk and liability and facilitate re-use of these sites.

Concern: The soil and groundwater may or may not be impacted by contaminants as a result of past practices and uses. The costs associated with site clean-up, the unknown financial risk and potential liabilities are areas of major concern.

Best Management Practices:
- The National Brownfield Redevelopment Strategy (national) – incorporates federal, provincial and municipal measures that will facilitate the redevelopment of brownfields in Canada;
- Tax increment equivalent financing to leverage the difference between current and potential tax yields on redevelopment properties (London, Thunder Bay);
- Municipal loans and grants – such as Contaminated Site Grants Program (Cambridge) – grants of up to 100% of restoration costs for all new development on contaminated properties in core areas and Urban Contaminated Sites Rehabilitation Program-Revisols (Montreal) – to spur revitalization of urban areas through the rehabilitation of contaminated sites with strong potential for redevelopment. The program contributes 50% of the eligible clean-up costs;
- Waiver for municipal fees and Brownfields Strategy – provision of measures to encourage brownfield development (Kingston);
- Environmental liability insurance (municipalities, lenders) – limits exposure to liability risks when developing sites.

Examples of legislative tools, including municipal by-laws, to encourage development of brownfields include:
- Brownfields Statute Law Amendment Act (Ontario) – an Act to encourage the revitalization of contaminated land and to make other amendments relating to environmental matters.
Programs for public education and community participation include:

- **Community Task Forces** (Kingston) – program development through consulting those senior private and public sector stakeholders from legal, finance, real estate, environmental management, engineering and urban planning that have an interest in addressing the redevelopment of brownfields;

- **Recognition Programs** (Hamilton) – to recognize successful brownfield re-development projects and demonstrate to others how such initiatives can be achieved. For example, The Canadian Urban Institute (CUI) awarded Minister Chris Hodgson for ground-breaking work on brownfields promotion and legislation.

Examples of municipal corporate/community brownfield development programs include:

- **Concord Pacific Place** *(Vancouver, BC)* – Former uses on this site included a harbour, railway maintenance yard and a number of coal gasification plants. Later the site of Expo 86, this project is currently under redevelopment as a mixed land use project. Upon completion, it will comprise 9,000 residential units (mostly apartments), 1.9 million square feet of office space, 600,000 square feet of retail and 20 hectares of parks and open space. A former railway roundhouse has been refurbished as a community center.

- **Conor Pacific site** *(Cochrane, AB)* – This was a former wood preservative treatment facility. Launched in June 2000, upon completion the project will consist of between 400 to 700 residential units, most of which will be high-density buildings. In addition, a number of commercial and industrial developments are planned, including a 130,000 square foot shopping centre. Under an agreement between the Town and the developer, profits generated from the development of the commercial phase are being used to finance the remediation of the residential portion of the project.

- **CityPlace** *(Toronto, ON)* – This site sits on the former Canadian National (CN) railway lands in the City of Toronto. This $1.5 billion development is expected to consist of approximately 20 residential high-rise buildings, accounting for some 7,000 units when completed in approximately 10 years. In addition, about 5-hectares of green space is planned, plus community centre facilities, pedestrian bridges, a neighbourhood shopping precinct and an elementary school.

- **Spencer Creek Village** *(Dundas, ON)* – The site of a former steel foundry, this 5 hectare parcel is being redeveloped as an adult lifestyle community with 398 high-rise apartment units and a 100-unit retirement home. Additional facilities include a "Eurohotel", clubhouse, community center and small retail uses. Development focused heavily on the recycling and reuse of materials from the former foundry. Before cleanup, the site contained a number of contaminants, including creosote, PCBs and hydrocarbons. Expected completion date is 2005.

- **Bois-Franc** *(Saint Laurent, QC)* – Developed on part of the former Canadair airport and manufacturing facilities, the community of Bois-Franc began development in 1993. In all, it will consist of 8,000 units, mostly condominium apartments and town-homes. Amenities include an outdoor swimming pool, tennis courts, ball fields, pedestrian walkways and numerous man-made lakes.

- **Moncton Shops Project** *(Moncton, NB)* – A former CN repair shop and rail yard, this site is under development as a mixed-use project. To date, 16 ball fields are being completed on 40 hectares, while
plans to develop a 24-hectare technology park are also underway. Some 26-hectares of land have also been set aside for residential development. Uses for the remaining parcels of land have yet to be decided. The site was previously contaminated with materials such as asbestos, paint residue and arsenic. The site was cleaned up using risk-based assessment (cleaned up to comply with safety standards for proposed future use).

**Emergence of Vector-borne Diseases**

**Issue:** Insects are a major cause of human mortality and morbidity, largely as a result of infectious pathogens transmitted by blood-feeding species. Transmission of these vector-born diseases is governed by complex interactions between the parasite, the vector and people. Vector-borne diseases are diseases caused by protozoa, bacteria, and viruses, which are transmitted from one living organism to another by an insect or worm, which acts as the carrier of the disease. **Key to the success** of managing vector-borne diseases is to know the life cycle of the vector and determine the best measure (either chemical or biological control) to manage the vector.

**Concern:** Vector-borne infectious diseases are emerging or resurging as a result of changes in public health policy, insecticide and drug resistance, shift in emphasis from prevention to emergency response, demographic and societal changes, genetic changes in pathogens and increases in annual average temperatures.

**Best Management Practices:**

African countries are advanced in their management of vector borne diseases such as malaria, tsetse flies (sleeping sickness) and yellow fever. They have the following **strategic programs** in place:

- Environmental Information systems and GIS – to determine the area of insect vector concentrations in order to implement the most effective control measures;
- Advanced weather forecasting systems – sing remote sensing to determine when the vectors are at their most vulnerable state so as to manage their populations;
- Safe and sustainable use of chemical pesticides – without compromising the destruction of beneficial predators and parasites;
- Avoiding the development of resistance in the target pest – programs include insecticide resistance management, advice and training for safe and effective handling and application of pesticides, pesticide legislation and residue analysis and integrated vector management;
- In the USA, the American Mosquito Control Association advocates control methods such as larviciding, adulticiding, biological control, research and education (New Jersey).

Currently, relevant **by-laws do not exist.** West Nile, Dengue and Yellow fever are relatively new arrivals to North America. Dengue and Yellow fever have not yet been reported in Canada.
Programs for public education and community participation include:

- National mosquito awareness week (USA);
- Provincial and Municipal West Nile Education Programs – website and pamphlet information and media promotion.

Examples of municipal corporate programs include:

- West Nile Surveillance Program (nation wide);
- Mosquito Control Programs (nation wide) includes larvicide and adulticide if required; and
- Web information links on environmental health (federal, provincial and municipal).

### Forest Health

**Issue:** Forest health is the condition in which forest ecosystems sustain their complexity, species diversity, resiliency, and productivity. Forest health concerns are becoming more prominent as forests experience increasing stress in the form of invasive species, forest pests, air pollution, and poor forest management practices. Municipalities have relatively limited control over forest health in that forest management on private lands is not a direct municipal responsibility. However, there are some tools and best practices that are gaining wider application at the municipal level in an effort to ensure that public forests are healthy and that forest management follows best practices on private and public lands. **Key to the success** of managing forest health is to promote proper forest management practices.

**Concern:** Forests are becoming less able to withstand stress. The health of a forest is impacted by the incursions by unwanted pests, weeds and diseases. In addition, forests are vulnerable to natural forces, such as wind, ice and fire. The warming occurring as a result of climate change will increase lightning occurrences and thus make weaker forest more susceptible to damage. Acid rain, acidic fog and nutrient deficiency in soils are some elements that will also harm a forest. A forest’s health depends upon its biodiversity and the age of the stand. The forest’s health, in turn, determines its economic and ecosystem value.

**Best Management Practices:**

- Programs to monitor forest health (Hamilton) – partners, including the City, have established permanent monitoring plots in several forest ecosystems based on the Canadian Ecological Monitoring and Assessment Network (EMAN) program;
- Good forest management practices (York)- includes sustainable harvesting practices, promotion of native species and control of invasive species such as glossy buckthorn;
- **Urban Forest management** – to address tree health, discourage tree cutting on private lands, education on trees, greenspace, diversity, and decreasing energy needs by shading. Municipalities are increasingly improving maintenance programs for urban tree cover;

- **Forest Certification Program** – in York Region, the regional Forest has been certified as sustainable in accordance with international standards (a set of 75 criteria) set by the Smartwood Program and the Forest Stewardship Council;

- **Encourage use of native species and promote natural diversity** – in public forests and along rights-of-way. City of Ottawa Official Plan and Pesticide Reduction Strategy include policies to promote use of native species;

- **Effective tree saving measures during development planning** – requirement for preparations of tree saving plans is now a relatively common aspect of the development process. City of Ottawa policies require tree preservation and protection plans for development applications.

**Programs for** public education and community participation **include:**

- **Green Acres Program** (Ottawa) – in partnership with the Conservation Authorities to support rural tree planting;

- **Advisory Committees** (Ottawa, York, Waterloo) – organize forums and other community liaison activities;

- **The Landowner Resource Centre** (Manotick) – to provide information to rural landowners on, among other topics, proper forest management; and

- **The Eastern Ontario Model Forest** – an organization supported in part by municipalities, promotes proper forest management and forest health across Eastern Ontario including the publishing of a State of the Forests report.

Examples of legislative tools, including **municipal by-laws, to address forest health** include:

- **Tree Conservation By-laws** (York, Mississauga, Waterloo, London) – to regulate tree cutting to protect environmental values, and ensure that proper forest management practices are followed.

### Groundwater and Surface Water

**Issue:** Groundwater occurs in an extensive underground network of aquifers. Approximately 23% of Ontario’s residents and almost all rural communities depend on groundwater for their potable water supply. Groundwater often flows into our surface water, and plays an important role in maintaining unique fish habitat in some area streams. Surface water (fresh) is found within our lakes, rivers and streams and is fundamental to sustaining life. Water is critical for the survival of fish and aquatic life in Ontario’s watercourses. As a community, our rivers and streams provide the majority of the water that we drink and otherwise use to carry out our day-to-day activities. Both surface water and groundwater are a major source of water supply for agricultural, commercial, industrial, municipal and residential uses. **Key to the**
success of groundwater management is conservation and protection of this resource at its source. **Key to the success** of surface water management is mitigation of the effects of existing and new development in such a way as to preserve natural processes, water flows and water quality to the extent possible.

Although groundwater across Ontario is generally abundant, it has been perceived as an unlimited resource; when our demand increases, more wells are drilled. Now, with increasing agricultural and industrial activities of many kinds, this historical perception of a secure, unlimited resource must be re-examined in light of such events as drinking water contamination in Walkerton and increasing concerns around excessive water-taking. Disruption of our streams and rivers often results in increased erosion and sedimentation, decreased water flows and increased water temperatures which in turn affect fish populations and water quality. Slope stability may also be compromised. Loss of vegetative cover along watercourses reduces water quality through an inability to filter particulate matter, and increased water temperatures resulting in decreased fish species diversity. The presence of vegetation and presence of wetlands also reduce the impact of flash flooding in storm events through their regulation of decreased run-off velocity and capture of particulate matter.

**Concern:** Sources of groundwater contamination can include leakage from buried sources such as underground storage tanks, and waste sites established through municipal, industrial or private ownership or from septic systems. As well, any discharges or spills of contaminants to surface waters or to land have the potential to impact upon the quality of our water resources. Agricultural practices today employ a broad range of chemicals in order to improve both the quantity and quality of our agricultural products. Runoff from or leaching through agricultural lands also has the potential to affect water quality ([www.cciw.ca/wqrjc/30-3/30-3-443.htm](http://www.cciw.ca/wqrjc/30-3/30-3-443.htm)). As both the quality and quantity of water resources decrease on a global basis, the demand for fresh and uncontaminated water will increase. The potential exists for our water sources to be extracted at ever increasing volumes that eventually affect both the amount of water available to us (quantity) as well as the quality of that resource. Climate change is also expected to impact flows within the water cycle with the potential to decrease both the quality and quantity of our water resources. In turn, negative effects will be observed in the ecosystems that support us and other species.

**Best Management Practices:**

- **Wellhead Protection Strategy** to prevent contaminated waters from entering wells (Ottawa, Waterloo);
- **Watershed / Subwatershed Planning** to assess the impacts of existing and future land uses on natural processes and recommend approaches to mitigate effects and restore ecosystem health (Ottawa, Toronto, Waterloo);
- **Groundwater Management Strategy** (Ottawa, Waterloo);
- **Infrastructure Master Plan** to plan water, sanitary and storm infrastructure needs of existing and future development (Ottawa);
Comprehensive Environmental Plans – to provide direction for establishing more a sustainable community over 20 year period (Hamilton, Waterloo, Winnipeg, Ottawa) and citiesPlus 100 year plan (Greater Vancouver Regional District);

Geographic Information System to compile and track land use and environmental data (Ottawa, Waterloo, Toronto);

Natural Environment Systems Strategy – ecological inventory and approach to preserve important natural features (Ottawa);

Environmental Land Acquisition Policy for measures to acquire and protect natural environment areas (Ottawa, Waterloo);

Groundwater Resource Assessment through such initiatives as conduct of Aquifer Vulnerability Studies (Ottawa, Waterloo), Eastern Ontario Water Resource Management Study (Ottawa, Prescott-Russell, Stormont Dundas & Glengarry) and Renfrew County-Mississippi-Rideau Groundwater Study (Ottawa, Renfrew County) and

Historical Land Use Inventory to identify potential sites of soil contamination, based upon past land uses (Ottawa, Toronto, Kingston, Calgary).

Examples of legislative tools, including municipal by-laws, to address water quality include:

Sewer Use By-law to control industrial discharges to sanitary and storm sewers (Toronto, Kingston, Ottawa);

Top Soil Preservation By-law;

Wells by-laws to regulate communal and private wells;

Site Alteration By-laws; and

Municipal Zoning and Site Plan Control by-laws, Ontario Building Code to regulate facility, development and site plan details.

Programs for public education and community participation include:

Well Inspection Pilot Program (Ottawa);

Rural Clean Water Program – grant program to help residents implement best management practices to protect surface and groundwaters (Ottawa, Waterloo);

Water Collection Program – assists rural landowners with regular collection and analysis of drinking water from private wells (Ottawa, Prescott-Russell, Stormont, Dundas and Glengarry);

Water conservation initiatives (Ottawa, Waterloo, Guelph);

Workshops on well and septic system construction & maintenance and well water quality (Ottawa);

Eastern Ontario Children’s Water Festival (Ottawa, Prescott-Russell, Stormont Dundas and Glengarry);

River clean up by community (Ottawa);

Removal of underground fuel storage tanks/protection against spills and leaks (Ottawa, Waterloo);

Septic system maintenance and inspection and proper well construction and maintenance programs (Ottawa, Waterloo);
Examples of municipal **corporate programs** include:

- **Fraud/Waste Hotline** (Toronto) – hotline to report suspected wrongdoing involving municipal resources, waste or contracts;
- **Downspout disconnection** (Toronto, Vancouver) – direct roof runoff away from storm sewers;
- **Biosolids Management Plan** (Kingston, Halton) – conventional and alternative treatment processes and end uses are considered with a view to promoting public health, environmental sustainability, flexibility, and cost-effectiveness;
- **Green Roofs** (Waterloo) – establish vegetation on building roofs;
- **Environment First Policy** (Waterloo) – consider the environmental impacts in all City services and programs before making decisions;
- **Road Salt Reduction** (Waterloo, Ottawa) – innovative technologies, strategic planning and monitoring program;
- **Groundwater Monitoring** (Waterloo, Ottawa, Ontario Ministry of Environment) – of water levels and quality;
- **Community Environmental Grants** (Vancouver, Waterloo, Ottawa) – fund community/individual projects that protect or enhance the natural environment; and
- **Environmental Handbook for Residents** (Guelph, Toronto) – assists individuals and groups to become stewards of our natural resources.

### Health of Sensitive Populations

**Issue**: The field of environmental health focuses on the relationships between human health and well-being and the influence of the physical, social and societal environments. The physical environment encompasses both natural and built aspects. Some groups of society are more sensitive to pollutants, either natural or man-made, than others. A number of populations are more susceptible to endangering their health through exposure to pollutants. These more sensitive populations include the following:

- Infants and children;
- People who are immune-suppressed;
- People with allergies;
- People who have environmental sensitivities;
- Seniors;
- Pregnant women and their fetuses; and
- People suffering from cardio-vascular and breathing problems.

**Key to the success** of managing health sensitivities of the population are programs to protect and improve the quality of our air, water and land.
Concern: The health of sensitive populations can be adversely affected by contaminants that abound in the environment as a result of our consumer and industrial society. Biological contaminants consist of bacteria, viruses, moulds, fungi and allergens. Chemical pollutants include pesticides, volatile organic compounds, acids, PCB’s, dioxins, and man-made formulants, while physical contaminants include electromagnetic frequencies, UV radiation, electromagnetic radiation, and particulate matter. In our mostly urban society, much of our time is spent indoors, in homes, buildings or cars. The occurrence of asthma, allergies, cancers and other ailments amongst more sensitive individuals is increasing.

Best Management Practices:

- **Air Quality Management Plans/Transportation Demand Management** – as described under Air Quality and Climate Change;
- **Water Quality Management Strategies**; and
- **Management of Contaminated Lands**.

Examples of legislative tools, including municipal by-laws, to address human health include:

- **Pesticide Use By-Laws** and/or Pesticide Reduction Strategies (Halifax, Toronto, Cobalt, Caledon, Quebec, Ottawa);
- **Household Hazardous Waste and Special Waste Depots** (Waterloo, Guelph, Ottawa).

Programs for public education and community participation include:

- **Health Promotion Programs** (nation wide);
- **Pesticide Reduction Strategy** (Ottawa, Halifax, Toronto, Guelph);
- **TravelWise** transportation demand management program (Ottawa);
- **Commuter Challenge**; and
- **Waste Reduction Week**.

Examples of municipal corporate programs include:

- **Active Living programs** (Ontario municipalities);
- **Drinking Water Standards and Monitoring Programs** (nation wide);
- **Heat and Smog Alert Programs** (Ontario municipalities);
- **Health Promotion Programs** – Mould in Indoor Air, Carbon Monoxide in Arenas, West Nile Virus Prevention Initiatives, Lead Paint Removal, Radon Gas, etc (nation wide);
- **Occupational Health and Safety legislation** (Ontario, Canada); and
- **Recreational Water Quality Guidelines and Monitoring Programs** (municipal, provincial and federal programs);
Natural Disasters

**Issue:** Across Canada, emergency preparedness is a shared responsibility. When an emergency occurs, municipal services are the first to respond. If those emergency officials cannot handle the situation, municipal authorities will ask for assistance from their province or territory. The federal government intervenes when provincial or territorial officials ask for help or when the disaster affects an area under federal jurisdiction, such as an airport. Natural disasters are catastrophic consequences of a natural phenomenon or combination of phenomena resulting in injury, loss of life and property on a relatively large scale, and severe disruption to human activities. **Key to the success** of managing natural disasters is the formulation of an emergency plan governing the provision of necessary services during an emergency.

**Concern:** Increasing irregular weather patterns are causing a higher incidence of floods, droughts and extreme snow/ice events. Some economical costs are transferred to homeowners, businesses and to the health system. There is a concern that government programs sometimes undermine each other by indirectly sponsoring development and redevelopment in areas of recurrent hazard.

**Best Management Practices:**

Agencies have the following **strategic programs** in place:

- **State of Emergency** – can be declared by any level of government;
- **Federal Emergencies Act** – all emergency plans and procedures in all jurisdictions are based on principles in this Act.
- **Office of Critical Infrastructure Protection and Emergency Preparedness** – maintains operational links at all levels, maintains inventories of resources and experts in various fields, administers funding programs (Joint Emergency Preparedness Program, Disaster Financial Assistance Arrangements); and
- **Provincial Disaster Recovery programs**.

Programs for public education and community participation include:

- Web sites on emergency preparedness (Vancouver, Victoria); and
- **Disaster-resistant homes** (London).

Examples of **corporate programs** include:

- Using new technology at fire emergency scenes and inspections to improve risk assessment, response and emergency preparedness (Calgary);
- Increasing urban search & rescue training provided to respond to natural disasters (Calgary); and
- Deliver disaster social services as part of The City’s disaster response plan (Calgary).
Persistent Organic Pollutants

Issue: Persistent organic pollutants (POPs) are chemical substances that remain in the environment, accumulating over time throughout the food web. Persistent organic pollutants by their nature cannot be managed, because they do not degrade and are considered highly toxic. These pollutants are a risk to human health and the environment (http://www.chem.unep.ch/pops/). They are toxic substances composed of organic (carbon-based) compounds and mixtures, including such industrial chemicals as PCBs and pesticides like DDT. They are primarily products and by-products of agriculture, industrial processes and chemical manufacturing (http://www.wordwildlife.org/toxics/progareas/pop/). The elimination of DDT in Canada took almost 30 years, starting in the mid 1970’s with all uses of DDT banished by December 31, 1990. The phased reduction helped avoid the creation of a large-scale disposal problem. Key to the success of managing persistent organic pollutants is linking them to human and environmental health and instituting strict regulations with punitive fines.

Concern: POPs are volatile compounds that can travel long distances. They establish within the food chain, and bioaccumulate in organisms such as fish, mammals and birds. Colder climates enhance bioaccumulation. POPs in rural areas usually result from agricultural activities, previous land uses or the long-range transport of contaminants from industrial processes. Urban related POP’s are the result of cosmetic or aesthetic activities by homeowners, industries and commercial businesses.

Best Management Practices:

Have the following strategic programs in place:

- Pesticide reduction strategy for cosmetic use of pesticides (several municipalities across Canada);
- Household hazardous waste and special waste depots in municipalities.

Existing Federal and Provincial guidelines and regulations include:

- Canadian Environmental Protection Act and Pollution Prevention – prohibits the release of 12 substances to the environment: Dioxins, Furans, Hexachlorobenzene, PCBs, Aldrin, Chlordane, Dieldrin, Endrin, DDT, Heptachlor, Mirex and Toxaphene. Mercury, cadmium, and other heavy metals are also addressed;
- Canadian Water Quality Guidelines for major water use in Canada and Ontario Provincial Water Quality Objectives;
- Ontario Ministry of the Environment Model Sewer Use By-Law;
- Canada-Ontario Agreement Tier I and Tier II Pollutants;
- United States Environmental Protection Agency Industrial Water Pollution Control Effluent Guidelines;
Ontario Guidelines for the Utilization of Biosolids and other Wastes on Agricultural Land; and
Ontario Drinking Water Standards.

Examples of legislative tools, including municipal by-laws, to address persistent organic contaminants include:

- Sewer Use By-law (Toronto) – requires pollution prevention plans to reduce mercury discharges into the sewage system and limits, and in some cases prohibits, the discharge of contaminants to sanitary and storm sewers;
- Pesticides By-laws (E.g. Quebec: Notre-Dame-de-L’île-de-Perrot, Longueuil, Chelsea, Hudson, Westmount; New Brunswick: Shediac; Nova Scotia: Halifax; Ontario: Thorold, Toronto, Cobalt, Perth) – ban the cosmetic use of pesticides on private property

Programs for public education and community participation include:

- Environmental Education campaigns (Ottawa, Vancouver, Toronto); and
- Public Events (Waterloo, Ottawa).

Examples of municipal corporate programs include:

- Responsible Pest Management (Marblehead) and Integrated Pest Management (NB, NS, PEI, NFLD); and

Resource Consumption

**Issue:** Air, water, trees and minerals are some examples of resources that are consumed daily by the world’s population. While a certain level of resources is necessary to support human life, it is important that both finite and renewable resources are consumed in a sustainable manner. A community is unsustainable if it consumes resources faster than they can be renewed, produces more wastes than natural systems can process, or has to rely upon distant sources for its basic needs. The level of resources that we consume will eventually impact upon our quality of life – social, environment and economic – and cannot be sustained and provide an adequate quality of life for future generations. **Key to the success** of managing resource consumption is to limit consumption at the source.

**Concern:** Our current lifestyle is supported by consumption of various types of resources – land, trees, water, fossil fuels, minerals. Unless we change the cycle of use of many of these products, not wasting them after a single use, we will run out of resources to support a liveable quality of life.
Best Management Practices:

Have the following strategic programs in place:

- Waste Management Master Plan (Ottawa, Waterloo, Toronto);
- Infrastructure Master Plan (Ottawa, Banff);
- Environmental Strategy (Ottawa, Waterloo, Hamilton, Winnipeg); and
- Municipal Recycling Programs (Ottawa, Toronto, Kenora, etc.).

Examples of legislative tools, including municipal by-laws, to address waste management and resource consumption include:

- Solid Waste By-law (Toronto, Vaughan, Vancouver);
- Woodland Preservation By-law (Ottawa, Caledon); and
- Water By-law (Toronto, Waterlo).

Programs for public education and community participation include:

- Media analysis of and profile given to Kyoto Accord;
- EnviroCentre (Ottawa, Mississauga); and
- Manufacturers’ EnerGuide program.

Examples of municipal corporate programs include:

- Aquatic Facility for Renewable Energy (Sylvan Lake, AB);
- Water for Tomorrow Student Education (York);
- Energy Management Program (Richmond, BC);
- Eco-Industrial Systems where the waste heat and by-products of one industrial process provide energy and raw materials to feed another process (New Brunswick, Denmark, Sweden);
- Municipal Composting of Organic Materials (Halifax, Guelph, pilot in Ottawa); and
- Take-It-Back program through which retailers take back used products for responsible disposal (Ottawa).

Examples of municipal community programs include:

- Ottawa Riverkeeper (Ottawa);
- Spring Cleaning the Capital (Ottawa);
- Bring Back the Don River task force (Toronto); and
- Project Wet (Richmond B.C.)- informs and educates school students on the importance of water quality and water supply.
**Soil Decline and Erosion**

**Issue:** Healthy productive soil is the foundation of a stable, productive economy and the many environmental amenities all Canadians enjoy – clean air and water, enhanced fish and wildlife habitat, and diverse plant and animal communities. Soil erosion is a naturally occurring process on all land, however, human activity tends to accelerate this process substantially. The agents of soil erosion are water and wind, each contributing a significant amount of soil loss in Ontario each year. In fact, sedimentation (the depositions of eroded soil into waterways) is often considered the number one pollutant of Canadian rivers and streams. Surface runoff and the materials carried with it can also clog our culverts, flood channels, destroy wildlife (e.g. fish breeding grounds) and compromise recreational areas. Accelerated erosion most often occurs during construction or land altering activities. Soil movement at these sites is usually greatest and most noticeable during short-duration, high-intensity thunderstorms. Soil erosion potential is also increased if the soil has very little to no vegetative cover and/or crop residues. **Key to the success** of reducing soils decline and erosion is maintaining soil cover in place through implementation of advances in soil erosion and sedimentation control, soil management and crop production technology.

**Concern:** Soil decline and erosion can cause agricultural land to become less productive because the soil loses its fertile topsoil and is less able to supply plants with necessary water and nutrients. These changes, in turn, result in higher agricultural production costs, including costs for the increased use of petrochemical-based fertilizers. In both urban and rural environments, eroded soil delivers sediment to waterways, which then threatens aquatic life and hinders water flow. The erosion of soil by water can also carry man-made chemicals into rivers, streams, lakes, and reservoirs.

**Best Management Practices:**

- **Ontario Soil and Crop Improvement Association** (Ontario) – promotes soil conservation;
- **Conservation Authorities** (e.g. Rideau Valley Conservation Authority) – promote land stewardship and participate in shoreline characterization studies, review development applications;
- **Sediment and erosion control techniques** (Ottawa) – available to construction community e.g. silt fencing, erosion mats, maintain buffer strips;
- **Techniques to reduce soil loss** – used by farming community e.g. conservation cropping, grassed waterways, maintain natural vegetation adjacent to watercourses; and
- **Drainage Master Plans** (Ottawa, Edmonton, Toronto)- to establish community-level stormwater management.

Examples of legislative tools, including municipal by-laws, to address soil erosion and decline include:

- **Erosion and sedimentation By-law** (Mississauga);
- **Fill, Construction and Alterations to Waterways Regulation** – implemented by Conservation Authorities in Ontario;
- **Fisheries Act** (Federal) – sediment entering a waterway can be detrimental to fish and an offence under the act;
Top Soil Preservation By-Laws (in some municipalities, to be consolidated in Ottawa); Fill By-Law (Caledon); and Site Plan Control By-Law.

Programs for public education and community participation include:

- Rural Clean Water Program (Ottawa);
- Gaining Ground (Waterloo);
- Landowner Resource Centre (Manotick);
- Workshop-in-a-Box Program (national partnership initiative) promotes methods for managing shoreline erosion challenges and provides a Home Site Assessment; and
- Environmental Farm Plans – the Ontario Federation of Agriculture encourages farmers to prepare these comprehensive management plans.

Examples of corporate programs include:

- Riverbank Characterization Study (Winnipeg, Niagara); and
- Living by Water Project (national partnership initiative).

### Urban Sprawl

**Issue:** Urban sprawl is the uncontrolled growth of urban centres. This condition poses a serious threat to the natural environment, our agricultural and energy resources, and to human health and quality of life. Urban Sprawl has become one of the most significant environmental issues over the last decade as people and communities begin to realize the cost of development patterns that consume increasing amounts of land at the edge of cities. Best practices to combat urban sprawl can be grouped into five categories: growth management strategies (e.g. urban boundaries and ensuring a balance of residential and employment lands in the same general areas), zoning and land use policy (e.g. mixed use and alternative development standards), provision of infrastructure (e.g. efficient transit), incentives (e.g. variable development charges) and community dialogue (e.g. education on infill). **Key to the success** in controlling urban sprawl is to establish a firm urban envelope and facilitate quality compact development of various types within that envelope.

**Concern:** Ontario's major urban centres are growing rapidly. Without careful planning and compact development, more land than is necessary will be lost. Natural areas will be lost as will biodiversity. Existing air and water quality problems will be exacerbated. There will be an inability to capitalize on unique cultural, historic and public space resources (such as waterfronts) in urban and village centres.
Best Management Practices:

- Maintain urban area boundaries – stops outward expansion and directs growth within urban area boundaries (Nanaimo has a permanent urban boundary, Ottawa – no expansion beyond urban boundary).
- Priority on efficient public transit – Encourage growth and redevelopment along selected corridors and centres that are well served by transit (Toronto);
- Increase development densities on Greenfields;
- Intensify uses within existing areas of development (Ottawa Official Plan).

Examples of municipal corporate programs include:

- Creative Zoning – four new residential zones that permit substantially reduced lot sizes and offer alternative engineering standards such as narrower right of ways (Surrey, B.C.);
- Development Charges – re-balance municipal development charges to more accurately reflect the true costs of greenfield development;
- Creative Design – Narrower streets, lanes for garage access, range of housing types (Cornell Community in Markham, ON). Bring houses closer to the street (Montgomery Village in Orangeville, ON).

Programs for public education and community participation include:

- Brownfield development support – use existing lands and adjacent infrastructure. Some programs fund up to 100% of restoration costs (Cambridge, Montreal) or municipal facilitation of redevelopment efforts (LeBreton Flats, Ottawa); and
- Incentives for economic development within existing development areas – Maryland, USA only subsidizes economic development in state-approved smart growth areas; waiving of development charges (downtown Ottawa).

Successful programs for effective public education and participation include:

- Community Visioning (Ottawa, Hamilton) – discuss future urban visions with community stakeholders;
- Good urban design practice for compact development and infill – City of Vancouver has been showcasing the Southeast False Creek redevelopment as a Sustainable Urban Neighbourhood.
### Annex 2: Summary of Environmental Issues – National and Local Context

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<th>Environmental Issue</th>
<th>City of Ottawa Context</th>
<th>Community Interest</th>
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| **Groundwater:**    | City has completed regional groundwater studies documenting quality, vulnerability, quantity, sources of contamination, etc. | ▪ Human health  
▪ Water supply for private use, agriculture, habitat protection  
▪ Community can assist by implementing private land stewardship, best management practices, and water conservation  
▪ Contaminated groundwater is extremely expensive to remediate (if possible at all) |
| Both contamination (quality) and excessive water-takings (quantity) issues are noted for the North American groundwater supply. Leading causes of groundwater contamination include underground storage tanks, septic systems and agricultural nutrient use (fertilizer and manure) | | |
| **Surface Waters:** | City has extensive surface water quality and quantity monitoring programs | ▪ Social impacts include threat to human health from contaminated drinking water or recreational waters  
▪ Economic impacts may include excessive soil erosion of farmland, expensive river cleanup  
▪ Recreational impacts may include limited boating and recreational opportunities due to low flows or flooding; poor water quality. May influence transportation of goods by shipping industry  
▪ Exotic species upset the balance of the ecosystem and may lead to a domino effect of loss habitat and diversity  
▪ Climate change may cause more frequent & larger episodes of drought and/or flooding  
▪ Loss of fish habitat due to impacts of increased volumes of runoff from urbanized areas |
| Quality and quantity concerns including impacts from urban/suburban growth and existing development, toxic chemicals that enter by both water and air, invasion by exotic species and threats associated with climate change. | | |
Environmental Issue | City of Ottawa Context | Community Interest
---|---|---
**Soil Decline and Erosion:**
The rates of soil erosion, particularly in agricultural areas, have decreased, however, both erosion and soil fertility decline still occur.

- Farming community actively implementing soil erosion techniques
- Construction community required to implement sediment management techniques; City to confirm effective implementation of erosion and sedimentation controls.
- Economic impacts may include excessive soil erosion of farmland. May result in increased food prices.
- Soil erosion contributes to degraded fish habitat, increased cost for water purification, loss of recreational opportunities
- May have safety implications for slope stability

**Brownfields:**
Brownfields are sites within primarily urban areas where historical industrial uses may caused soil, groundwater and/or surface water contamination on the property and adjacent properties. Leading causes of groundwater and surface water contamination include underground storage tanks, improper waste disposal practices and lack of pollution control systems.

City has completed Historical Land Use Inventory documenting over 600 activities that pose a risk to causing contamination on a property.

- Human health
- Water supply for private use, in rural areas
- Community concern for potential impact to land values
- Contaminated soil, and groundwater are extremely expensive to remediate. Surface water contamination poses both health and environmental risk.

**Climate Change:**
The temperature in Canada is expected to increase by 4°C over this century. The impacts of such increase will be evident in such areas as on the water level in the Great Lakes, the reduction of hydro-electric power, poor water ways, more smog episodes in Ontario, invasion of foreign species (already started in the Great Lakes affecting the food chain), intense droughts in the prairies, increase incidence of floods, loss of fisheries, etc. The potential impacts of this issue are too numerous to mention.

In 1998 corporate energy use was 12% below 1990 levels. Corporate CO₂ emissions declined reaching a plateau due to changes in the electrical fuel mix. They were 19% below 1990 levels. In 1998 GHG emissions from the City of Ottawa as a community were 5% below 1990 levels despite a population increase of almost 6% since 1990. Building emissions increased due to Ontario Power generation (formerly Ontario Hydro) taking nuclear reactors off line. Transportation emissions also increased due to population and Climate change is anticipated to increase the intensity and frequency of storms, floods, droughts and other weather disasters such as tornadoes and ice storms, placing more strain on the emergency response structure.

Potential impacts will be increased flood damages, higher frequency of sewer overflows to natural environment, increased erosion, flash floods and landslides. Also, the frequency and length of heat waves are expected to increase which will amplify smog.
Environmental Issue | City of Ottawa Context | Community Interest
--- | --- | ---
In 1998, North America contributed ~26% of the global carbon dioxide emissions. Transportation generated approximately one third of this amount. Canada is the second highest per capita carbon dioxide emitter in the world, 16 tonnes per capita. We are the top energy users in the world. | suburban growth and an increase in the use of less energy efficient vehicles such as SUVs, trucks and vans. Methane emissions from landfill sites are in decline due to increasing diversion rates | Exposure to air pollution and smog will increase death rates, hospitalizations, complications of asthma and bronchitis and lung damage in children and adults. Rising average temperatures will likely extend the range of disease-carrying organisms like mosquitoes, rodents and bats. The West Nile virus and disease-causing tropical plants have begun migrating northward. Climate change may affect the agricultural industry and the insurance industry.

Air Quality:
Urban centers are the major generators of air pollution where accumulation and formation of gases and particulates occur. Smog, a regular occurrence in large urban areas is mainly composed of ground level ozone and particulate matter.

In Canada, 5000 deaths are attributed to poor air quality annually. Between 5-8% of Canadians are asthmatics.

The incidence of smog events in Ottawa has increased from zero in 1993 to 6 in 2002.

Temperatures have increased by 1°C in the Ottawa region over the past 40 years.

The Canadian government estimates that air quality is responsible for 5000 pre-matures deaths annually across the country. The incidence of asthma among pre-school children is increasing at alarming rate.

Ground level ozone does not only damage the respiratory system, but it also causes necrosis of plants. Particulate matter (the acid type) causes acid rain.

Allergic rhinitis will affect those sensitive more intensely and for longer periods.

Climate Change and Air Quality:
Higher temperatures will increase the incidence of smog episodes; the production of pollen will occur earlier and last longer and in some cases its quantity will increase i.e. ragweed.
**Environmental Strategy for the City of Ottawa**

<table>
<thead>
<tr>
<th><strong>Environmental Issue</strong></th>
<th><strong>City of Ottawa Context</strong></th>
<th><strong>Community Interest</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Pesticides:</strong></td>
<td>Ottawa has an interim policy prohibiting the use of pesticides for cosmetic purposes on city-owned land. A formal policy is presently in the review stage and should be in place before Spring 2004. Ottawa council approved a three year pesticide reduction strategy for private property with reduction targets established for 2005 of:</td>
<td>Significant rise in community awareness and willingness to reduce the use of pesticides. A number of community groups and networks are working in the city to help individuals learn about alternatives to pesticides. Growth in organic lawncare businesses and products.</td>
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<tr>
<td></td>
<td>■ 70% residential land</td>
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<td>■ 100% institutional land</td>
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<td>■ 65% all remaining non-residential property</td>
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<td>If the targets are not met, a bylaw prohibiting the use of pesticides on private property will be prepared. Ottawa has implemented an extensive public education campaign to encourage all sectors of the community to reduce and where possible eliminate the use of pesticides, to meet the targets, by 2005.</td>
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<td><strong>Vector borne diseases:</strong></td>
<td>West Nile came for the first time to Ontario in 2001. This year (2003) the incidence in Ottawa has been observed months ahead of last year. Overall, temperature increases may be a factor in extending the mosquito season, though the limiting factor is not climate, but suitable habitats. The other diseases (Hanta virus, malaria and Lyme disease) are not likely to affect Ottawa because it</td>
<td>Health implications of all diseases are a community concern.</td>
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*October 2003*
Environmental Issue | City of Ottawa Context | Community Interest
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is not located on an endemic area for either of them. In addition, the Lime disease infects only 10% of the ticks. | Climate change is expected to increase populations of rodents, thus increasing the risk of Hanta Virus. This is more of a problem in Manitoba than it is here in Ontario. |  

**Biodiversity:**

North America has several thousand protected areas, which have tripled in area since the 1970s. Many governmental commitments exist to protect biodiversity.

The single biggest threat to biodiversity in North America continues to be habitat loss. Development pressure disproportionately affects temperate, tropical, and coastal environments, which contain the most diverse habitats on the continent. Habitat loss has many damaging effects:

- Increased fragmentation and decreased dispersal ability of many species;
- Disruptions to natural processes and gene flow;
- Disruption and destruction of migration and breeding habitat.

In Canada, 398 species of flora and fauna are at risk, and 33 more are totally extinct or extirpated from their Canadian range. Freshwater and marine biodiversity are of increasing concern, being susceptible to coastal development, changes to water chemistry, and the effects of harvesting on the fragile aquatic food web.

Ottawa is in a transitional zone between the cool, coniferous (Boreal) forest zone and the warmer, deciduous forest zone to the south. Combined with the diversity of landforms (shield, limestone, clay plain, emergent beaches, etc.), this adds “a tremendous richness to the diversity of the Capital” (Brunton, 1995)

The Ottawa area has a rich forest dependent avifauna (10-20% more species than Niagara even though there should in theory be higher diversity further south) partly as a result of the extensive forested habitat in and around the City.

Significant uncommon habitats include Alvar areas (e.g. Burnt Lands), RAMSAR recognized bog (Mer Bleue), sand dune forests, and emergent beach communities.

There are individual large areas with enough diversity of habitat to support a broad range of natural environment values including Shirley’s Bay (Significant Waterfowl habitat, diverse vegetation communities, over 500 plant species), Marlborough Forest, and South March Highlands/Carp Ridge. Natural areas make a significant contribution to the quality of life in Ottawa.

Biodiversity supports a healthy environment which is an essential part of the life support system for all species. The same conditions that support biodiversity are valued for green-space benefits by communities.

Communities value having areas in which to experience nature, either in more remote settings through hiking or cross country skiing, to seeing varied and healthy wildlife species on a daily basis in urban areas.
Other major threats to biodiversity include:

- Biological invasions, which can permanently alter natural habitats and nutrient cycles;
- Global climate change, in the form of altered temperature and rainfall patterns;
- Cumulative and synergistic impacts of all threats, with the extent and severity of these being largely unknown.

However, Ottawa suffers from many of the same stresses to biodiversity including:

- Alteration of drainage patterns leading to reduction of wetland areas
- Fragmentation of natural areas as a result of rural estate subdivisions, agriculture, abandoned railway lines, minor highways and utility corridors.
- Forests dominated by younger, early successional species and many are in only fair condition.
- Aggressive Invasive species, particularly Glossy Buckthorn, pose a significant problem, particularly in areas that have been disturbed or fragmented.

Land management practices including grazing in natural areas and logging

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**Forest Health:**

Forest health is a measure of the degree to which forest ecosystems sustain their complexity, species diversity, resiliency, and productivity. Forests are generally becoming less able to withstand stress. Forest health concerns are becoming more prominent as forests experience increasing stress in the form of invasive species, forest pests, air pollution, and poor forest management practices. Forest fragmentation from development

Ottawa’s forests have been subject to similar disturbances and stresses, including

- The 1998 Ice storm, which damaged many forests and made many species vulnerable to disease;
- Disease, including Butternut canker, Dutch elm disease & others;
- Insect damage by tent caterpillars, spruce budworm, Gypsy moth and others;

Healthy forests in Ottawa:

- provide greenspace within communities for recreation and opportunities for tourism;
- provide biodiversity and habitat for regional flora and fauna;
- help to maintain air quality and reduce atmospheric carbon dioxide;
- maintain other healthy ecosystem functions such as nutrient cycling, erosion control, and water table regulation;
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<td>further exacerbates these problems, as forest health is generally directly proportional to forest size. Fragmentation also increases edge effects such as susceptibility to wind and soil erosion.</td>
<td>■ Concern over biological invasions, e.g. by the non-native Asian long-horned beetle; ■ Crown defoliation and tree decline in sugar maples as a result of acid precipitation; ■ Effects of atmospheric pollution such as increased ground-level ozone and other industrial pollutants; ■ Projected but largely uncertain effects of global climate change, including increased CO₂ levels, altered precipitation patterns, and possible loss of forest biodiversity.</td>
<td>■ allow a sustainable timber harvest and provide employment in the forest industry; ■ provide other sustainable forest products, such as maple syrup.</td>
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**Urban Sprawl:**

Urban sprawl, defined as the uncontrolled growth of urban centres, poses a serious threat to the natural environment, our agricultural and energy resources, and to human health and quality of life. Urban sprawl has become one of the most significant environmental issues over the last decade as people and communities begin to realize the cost of development patterns that consume increasing amounts of land at the edge of cities. While urban sprawl increases the tax base, these financial gains cannot offset the costs of providing new infrastructure and facilities to new communities, as well as the increased maintenance and life cycle costs associated with added stress on older infrastructure and facilities.

The newly adopted Official Plan has recognized concerns with urban sprawl and has adopted a policy of not expanding urban area boundaries, and any future expansions would have to occur within the context of the 5 year review of the Plan. However, urban sprawl is a significant issue in the City. Urban density in general decreased substantially since 1925 (57 people/ha in 1925, 46 in 1955, 34 in 1967 and has remained steady at around 28 since the 80’s). When urban areas were created beyond the greenbelt, it also meant that suburban communities began to develop in “Greenfield” settings that were separate from the historical urban centre. Issues related to this growth in Ottawa reflect Provincial and National concerns including loss of farmland (South and East Urban areas), pressure on natural areas such as farmland and forests.

Urban sprawl creates a variety of community issues and concerns. Quality of life is influenced by sprawl as demands on the transportation system mount, reliance on the private automobile increases, and commuting consumes more of the day. Natural areas become more removed as travel distances to larger natural landscapes or recreation areas increase. Money spent providing infrastructure means that public dollars are not as available for other priorities such as parks and recreation. Air quality and smog increases as more of the City is paved and traffic increases.

At the same time, communities are concerned with protecting current neighbourhood character and green spaces. Finding the appropriate balance between density, intensification and liveable communities through urban design and good planning is a critical
Environmental Strategy for the City of Ottawa

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<th>Environmental Issue</th>
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<td></td>
<td>as the South March Highlands, and costs of infrastructure. While projections indicate that up to 190,000 new homes may be needed over the next 20 years accommodating these homes within the existing urban area boundary is possible. In 2001, the entire area within the urban area boundary was 35,100 ha with 10,600 still remaining vacant. However, this will require efforts to increase densities in suburban and developing communities and continued intensification inside the greenbelt.</td>
<td>challenge facing the City and our communities.</td>
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## Annex 3: Summary of Environmental Roles and Mandates

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<tr>
<th>Biodiversity</th>
<th>City of Ottawa</th>
<th>Province</th>
<th>Federal</th>
<th>Other Agencies &amp; Non-Government Organizations</th>
<th>Industry</th>
<th>Individual</th>
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<tbody>
<tr>
<td>- Habitat protection through environmental designations (significant woodlands, wildlife habitat, etc.)</td>
<td>- Sets planning policies which give municipalities the mandate to protect habitat (i.e. Provincial Policy Statement and Official Plan approval authority)</td>
<td>- National level policies</td>
<td>- Comments and recommends action on habitat and species protection (lobby City and Province)</td>
<td>- Development industry encouraged to design projects in line with existing natural features</td>
<td>- Landowners can practice environmental stewardship on their properties (tree planting, riparian zone enhancement)</td>
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<tr>
<td>- Significant owner of conservation lands which support biodiversity (land management)</td>
<td>- Provides guidelines on habitat assessment</td>
<td>- Species at Risk Act</td>
<td>- May pursue projects such as land trusts</td>
<td>- Must meet requirements of the Official Plan</td>
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<tr>
<td>- Monitor and assess biodiversity (through partnerships)</td>
<td>- Provides lists, policies and legislation for endangered and threatened species</td>
<td>- Indicators work</td>
<td>- Source of information on species and habitat</td>
<td>- Actions can have a significant role in changes in the physical environment</td>
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<tr>
<td>- Prepare species status lists for the City</td>
<td>- Provides list of species and vegetative community rarity</td>
<td>- Park protection</td>
<td>- Active NGO’s include:</td>
<td>- Private funding programs for environmental initiatives i.e. TD Friends of the Environment Foundation, Shell Environmental Fund.</td>
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<tr>
<td>- Education</td>
<td>- Evaluates and provides policies for significant wetlands and Areas of Scientific and Natural Interest</td>
<td>- Promote wetland conservation through commitment to the Ramsar Convention on Wetlands of International Importance; the World Heritage Convention; and international agreements and treaties.</td>
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<tr>
<td></td>
<td>- Park protection</td>
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- **Biodiversity**
- **Industry**
- **Individual**
### Bioinvasion

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<th>City of Ottawa</th>
<th>Province</th>
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<th>Other Agencies &amp; Non-Government Organizations</th>
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<tbody>
<tr>
<td>Encourage and educate public on integrated pest management</td>
<td>Weed Control Act – addresses the control of both weed seeds and weeds already established (includes agricultural plant species and species affecting horticulture, recreational land uses, and those affecting environmental integrity)</td>
<td>Develop and implement legislation (e.g. Seeds Act), policy, plans and programs that focus on preventing, controlling, and eradication of invasive species</td>
<td>Provide guidance to general public and land managers concerning the purchase of garden plants and land management practices to reduce the import of invasive species</td>
<td>Develop effective methods of controlling invasive species</td>
<td>Apply best management practices to control exotic species</td>
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<tr>
<td>Apply these techniques on public lands</td>
<td>Laws exist to help ensure that unauthorized introductions do not take place by anglers/boaters</td>
<td>Canadian Biodiversity Strategy</td>
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<td></td>
<td>Invading Species Hotline – to report sightings and get latest information about exotic species in Ontario’s waters</td>
<td>Development of monitoring programs and information systems to help control bioinvasion</td>
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<td></td>
<td>Promotes the Fish Rescue Program for unwanted aquarium pets</td>
<td>Seeds Act – focus on protecting crop seed integrity and establishes standards for the importation of commercial seed</td>
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<td>Canadian Parks Service Policy – states that efforts will be made to remove non-native species from National Parks</td>
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<td>Guidelines for ships to exchange ballast water at sea</td>
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<td>Plant Protection Act and regulations</td>
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### Brownfields

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<th>City of Ottawa</th>
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<th>Other Agencies &amp; Non-Government Organizations</th>
<th>Industry</th>
<th>Individual</th>
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<tbody>
<tr>
<td>• Historical Land Use Inventory</td>
<td>• Brownfield Legislation “Bill 56” to amend the Environmental Protection Act</td>
<td>• No Legislation</td>
<td>• Federation of Canadian Municipalities’ Green Municipal Funds support brownfield redevelopment plans</td>
<td>• Development industry initiatives to turn brownfields into productive use</td>
<td>• Support intensification and overcome NIMBY (Not In My Back Yard)</td>
</tr>
<tr>
<td>• Insures clean-up to proposed land uses prior to development on more than 5000 sites where activities could have the potential to cause contamination in soil, groundwater or surface water</td>
<td>• Enabling Brownfield Regulations to provide “level playing field”</td>
<td>• National Round Table on the Environment and the Economy has a strategy with recommendations to provide tax incentives and deduction of business expenses to corporations</td>
<td>• May provide funding to municipalities to assist in brownfield development</td>
<td>• Banks and insurance companies will need to accept more risk in granting loans</td>
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</table>
## Climate Change and Air Quality

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<th>City of Ottawa</th>
<th>Province</th>
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<th>Other Agencies &amp; Non-Government Organizations</th>
<th>Industry</th>
<th>Individual</th>
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<tbody>
<tr>
<td>Kyoto – 20% reduction of CO2 emissions below 1990 levels</td>
<td>Kyoto Protocol</td>
<td>Energy conservation</td>
<td>80 mega tones reduction goal</td>
<td>Kyoto – 1 tonne CO2 emissions reduction</td>
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<tr>
<td>Climate Change Action Fund funding</td>
<td>National Air Pollution Surveillance Network</td>
<td>Kyoto Protocol</td>
<td>Meet provincial and federal legislative requirements for emission concentrations, inventory (National Pollution Release Inventory)</td>
<td>Manage own air emissions (vehicles, home energy use, furnace)</td>
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<tr>
<td>Participate in air quality monitoring</td>
<td>Climate Change Action Fund (CCAF)</td>
<td>Promote community activities that help improve air quality</td>
<td>Agriculture to practice best management practices to reduce NO2 release (i.e. reduced tillage)</td>
<td>Farmers complete individual Environmental Farm Plans</td>
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<tr>
<td>Municipalities have the power to develop by-laws that protect their citizens of harmful pollutants</td>
<td>Pollution prevention initiatives for toxic substances</td>
<td>National standards</td>
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<tr>
<td>Corporate Anti-Idling Policy</td>
<td>National standards</td>
<td>Air Quality Index</td>
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<tr>
<td>Education</td>
<td>Air Quality Index</td>
<td>Air quality measurement programs advance understanding of atmospheric constituents</td>
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<td>Corporate Fleet Emission Reduction Strategy</td>
<td>Air Quality and Climate Change Action Plan</td>
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<tr>
<td>Air Quality and Climate Change Action Plan</td>
<td>Certificates of approval for a large number of air toxics</td>
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<td>Smog Action Plan aimed at 75% reduction</td>
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### Forest Health

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<th>Other Agencies &amp; Non-Government Organizations</th>
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<tbody>
<tr>
<td>Maintain regional forest cover</td>
<td>MNR manages forests on Ontario crown lands and responds to declines in forest health, i.e. drought, insect outbreaks</td>
<td>Canadian Forest Service (NRCan) and Environment Canada develop and use monitoring tools to evaluate forest health</td>
<td>Federation of Ontario Naturalists (FON) monitors provincial initiatives for sustainable forestry, especially with regard to biodiversity</td>
<td>Industry-sponsored research and development develops solutions to forest disease/insect outbreaks, etc.</td>
<td>Decrease paper use, increase recycled paper use</td>
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<tr>
<td>Ensure that sufficient sizes of forest patches will help maintain their health</td>
<td>Ontario Forest Research Institute (OFRI) conducts research on forest ecosystem function</td>
<td>Parks Canada monitors ecological integrity of and stresses on National Parks and Heritage sites</td>
<td>Conservation Authorities manage some agreement forests, promotes sustainable forest management, private land stewardship and reforestation</td>
<td>Support support urban intensification</td>
<td>Support ecologically-friendly wood and paper products</td>
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<tr>
<td>Maintain linkages between patches to promote genetic health</td>
<td>NCC manages Greenbelt</td>
<td>Stewardship Councils promote sustainable forest management, private land stewardship and reforestation</td>
<td>Eastern Ontario Model Forest promotes sustainable forest management, private land stewardship and reforestation</td>
<td>Be aware of origin of wood and paper products</td>
<td>Monitor local forest health</td>
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<tr>
<td>Maintain regional air quality through progressive planning measures</td>
<td>Promote sustainable forest management, private land stewardship and reforestation</td>
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<td>Promote forest stewardship on private land where possible</td>
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<tr>
<td>Promote sustainable forest management, private land stewardship and reforestation</td>
<td>Green Acres Program</td>
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<td>Protect significant natural areas through land use policies</td>
<td>Green Space Master Plan (pending)</td>
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<td>City of Ottawa</td>
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<tr>
<td><strong>Groundwater</strong></td>
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<td>• Approvals &amp; inspections for septic system installation &amp; repair</td>
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<tr>
<td>• Ottawa’s Well Inspection Pilot Program</td>
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<td>• Regional aquifer studies</td>
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<td>• Wellhead protection</td>
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<td>• Monitoring network – quality and levels (future)</td>
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<td>• Protect sensitive recharge/discharge areas</td>
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<td>• Approve development on private services (groundwater supply)</td>
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<td>• Water conservation</td>
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<td>• Education</td>
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<td>• Subwatershed planning</td>
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<td>• Rural Clean Water Program</td>
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<td>• Drought mgmt</td>
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<td>• Aquifer Vulnerability Study</td>
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<td>• Groundwater Mgmt Strategy</td>
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<tr>
<td>• Historical Land Use Inventory</td>
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<td>• Overview of Permit Take Water Program</td>
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<td>• Operates public drinking water systems</td>
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<tr>
<td>• Under the Health Promotion &amp; Protection Act, the City organizes &amp; delivers a public health program to prevent the spread of disease &amp; promote the health of Ontarians</td>
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<td>• Safe Drinking Water Act</td>
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<td>• Ont. Regulation 903 for well construction</td>
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<td>• Permits to Take Water</td>
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<td>• Groundwater Monitoring Network</td>
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<td>• Ontario Water Resources Act</td>
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<tr>
<td>• Testing of private well water through Public Health Laboratory</td>
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<td>• Health Promotion and Protection Act</td>
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<td>• Education</td>
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<td>• Mapping &amp; databases</td>
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<tr>
<td>• Conservation Authorities encourage private land stewardship and well/septic maintenance</td>
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<tr>
<td>• Agricultural organizations promote land stewardship practices</td>
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<tr>
<td>• Conservation Authorities for drought management</td>
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<td>• Conservation Authorities for monitoring</td>
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<tr>
<td>• Ontario Federation of Agriculture’s Rural Water Quality Testing Program; and Rural Water Well Upgrading and Decommissioning Project</td>
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<tr>
<td>• Best management practices</td>
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<tr>
<td>• Private land stewardship i.e. nutrient management, fuel and pesticide storage</td>
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<tr>
<td>• Testing of private well through Health Unit or private laboratory</td>
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<tr>
<td>• Ensure proper construction and maintenance of well and septic systems</td>
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<tr>
<td>• Proper abandonment of private wells</td>
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<tr>
<td>• Farmers complete individual Environmental Farm Plans</td>
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</tbody>
</table>

- Best management practices
### Natural Disasters

- Land use policy to prevent development in hazardous areas
- Emergency response for natural disasters
- Air Quality and Climate Change Action Plan
- Subwatershed planning
- Sets land use policy for Hazard Lands
- Conservation Authorities Act – address flooding and unstable slopes, ice storm cleanup
- Ottawa River Regulatory Authority
- Climate Change

### Pesticides

- Pesticide reduction strategy for private property
- Public education program to reduce pesticides to 2005 targets: 70% residential; 100% Institutional; 65% all remaining non-residential
- Corporate Pesticide Use Policy 2003 (pending)
- Maintenance Quality Standards for Roads, sidewalks, Parks and Tree Operations Policy (pending)
- Sports Fields Strategy (pending)
- Facility needs study (pending)
- Ontario Weed Control Act lists provincial noxious weeds
- Pesticides Act RSO 1990 Ch. 11 and Regulation 914
  - Controls all aspects of pesticide inspection and applications
  - Classifies pesticides; applicator licences
  - Regulates storage and disposal of pesticides
- Health Protection and Promotions Act
- Workplace Health and Safety Act
- Health Canada is Pest Management Regulatory Agency
  - Registers pesticides for use in Canada
  - Presently offers limited education information about alternatives to pesticides
  - Pesticides Control Products Act
- Health Canada – joint funding to promote public education to reduce pesticide use through using alternatives
- Federation of Canadian Municipalities has pesticides information website promoting:
  - pesticide bylaw
  - alternatives to pesticides
  - assistance/template for municipalities in preparing a bylaw
- Various lobby groups promoting use of pesticides as an approved product.
- Various lobby groups promoting elimination of pesticides for cosmetic purposes because of potential health effects to humans and the environment
- Landscape Ontario offers alternatives to pesticides in designing lawns and sports fields
- IPM Council of Ontario co-ordinates pesticide use reduction data monitoring and reporting for lawn care industry in Ottawa
- Various businesses, industries etc involved with the distribution, sale and application of pesticides
- Partners with City to reduce pesticide use to meet 2005 targets
- Various industry associations promoting the use of pesticides as legal pest control substances
- Reduce pesticide use to meet city targets
- Community associations and federations which promote pest management methods without use of pesticides
- Farmers complete individual Environmental Farm Plans.

<table>
<thead>
<tr>
<th>City of Ottawa</th>
<th>Province</th>
<th>Federal</th>
<th>Other Agencies &amp; Non-Government Organizations</th>
<th>Industry</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Disasters</td>
<td>Sets land use policy for Hazard Lands</td>
<td>Ottawa River Regulatory Authority</td>
<td>Conservation Authority Fill Construction and Alterations to Waterway Regulations to avoid upstream flooding impacts</td>
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</tbody>
</table>
**Environmental Strategy for the City of Ottawa**

**Soil Decline and Erosion**

- Rural Clean Water Program
- Construction and sediment control
- Stormwater management
- Education
- Promote best management practices and land stewardship
- Research and development
- Funding programs
- Educational programs
- Fisheries Act through Department of Fisheries and Oceans
- Conservation Authorities promote best management practices and land stewardship
- Ontario Soil and Crop Improvement Association promotes soil conservation
- Development community is required to implement sediment and erosion control plans
- Private land stewardship and implement best management practices i.e. streambank stabilization, conservation tillage.
- Farmers complete individual Environmental Farm Plans

**Surface Water**

- Comply with Certificate of Approval for wastewater discharge and water takings
- Monitoring programs
- Subwatershed planning
- Rural Clean Water Program
- Construction and sediment control
- Stormwater management
- Education
- Provincial Water Quality Objectives
- Permits to take water
- Certificates of Approval for wastewater discharge
- Provincial Water Quality Monitoring Network
- Ontario Water Resources Act
- Environmental Protection Act
- Conservation Authorities Act
- Environmental Assessment Act
- Canadian Water Quality Guidelines
- Research and development
- Funding
- Education
- Mapping & databases
- Fisheries Act through Department of Fisheries and Oceans
- Conservation Authorities (Agencies established by Provincial legislation) promote private land stewardship programs, monitoring initiatives, drought / flood management, Fill Construction and Alterations to Waterways regulations.
- Agricultural organizations promote land stewardship practices
- Cottage associations promote environmental protection
- Pollution Probe
- Ottawa River Keeper
- Comply with Certificate of Approval for wastewater discharge and water takings
- Development community required to implement sediment and erosion control plans during construction
- Private land stewardship and implementation of best management practices such as streambank naturalization and stabilization, nutrient management plans, conservation tillage.
- Farmers complete individual Environmental Farm Plans
### Urban Sprawl

<table>
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<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant and direct control through:</td>
<td>Land use planning and Planning Act provides tools</td>
<td>Indirect federal role</td>
<td>Provides input into the planning process – i.e. Community Design Plans</td>
<td>Development industry has direct control over what gets built where within the confines of planning policies</td>
<td>Consider sustainable housing choices – do you live where you work?</td>
</tr>
<tr>
<td>• Official Plan Policies and future community design plans – firm urban boundaries and density targets</td>
<td>• Provincial Policy Statement</td>
<td>• Funding for infrastructure projects</td>
<td>• Can support or object to infill and community design plans and influence outcomes</td>
<td>• Must pursue creative infill, mixed development</td>
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<tr>
<td>• Infrastructure investment decisions (e.g. roads vs. transit)</td>
<td>• Provincial Smart Growth Panels</td>
<td>• Locational choices for federal facilities</td>
<td>• Higher densities in new communities</td>
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<tr>
<td>• Locational decisions for city facilities</td>
<td>• Infrastructure funding decisions on transit</td>
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<td></td>
<td>• Provincial projects can help contain or aggravate sprawl (Queensway, By-pass)</td>
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### Vector Borne Diseases

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</thead>
<tbody>
<tr>
<td>• Intervention i.e. mosquito control, control of rodents</td>
<td>• Measure, mitigate and educate the public with help from the Federal government</td>
<td>• Measure risk, mitigate risk</td>
<td>• The Canadian Cooperative Wildlife Centre</td>
<td>• Private industry is performing tests, developing vaccines, screening blood supply. This sector is the most active.</td>
<td>• Prevention</td>
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<tr>
<td>• Education</td>
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